PROJECT MANUAL
FOR
MINE FILLING
AT
PRYOR CROSSING

NORTHWEST QUADRANT OF NW PRYOR ROAD AND NW LOWENSTEIN DRIVE
LEE'S SUMMIT, MISSOURI

SEPTEMBER 10, 2020

Sept 10, 2020

GEOTECHNOLOGY INC
FROM THE GROUND UP

GEOTECHNOLOGY, INC.
5055 ANTIOCH ROAD
OVERLAND PARK, KANSAS 66203

SECTION 00 01 01
PROJECT TITLE PAGE

PROJECT MANUAL
FOR
MINE FILLING AT PRYOR CROSSING

GEOTECHNOLOGY PROJECT NUMBER J035637.02

NORTHWEST QUADRANT OF NW PRYOR ROAD AND NW LOWENSTEIN DRIVE
LEE'S SUMMIT, MISSOURI

DATE: SEPTEMBER 10 2020

PREPARED BY:
GEOTECHNOLOGY, INC.

END OF SECTION 00 01 01

SECTION 00 01 02
PROJECT INFORMATION

1.01 PROJECT IDENTIFICATION

A. Project Name: Mine Filling Pryor Crossing
Northwest Quadrant of NW Pryor Road and NW Lowenstein Drive
Lee's Summit, Missouri

B. The Owner, hereinafter referred to as Owner: Streets of West Pryor, LLC

C. Owner's Project Manager: David Olsson
1. Address: 7200 W 132nd Street, Suite 150
2. City, State, Zip: Overland Park, Kansas 66213
3. Phone: 314-413-3598
4. E-mail: daveolson@monarchprojectllc.com

1.02 PROJECT DESCRIPTION

A. Summary Project Description: The mine space, formerly known as Union Quarries Mine, will be filled prior to the construction of single-family homes and a multi-family apartment complex on the Streets of West Pryor property. The mine will be filled from the surface by drilling holes into the mine space and placing a 2-inch minus crushed aggregate. The mine will be filled in a checkerboard pattern, filling every other room, and will be limited to two rooms beyond the footprint of the planned development.

B. Contract Scope: Mine Filling

1.03 PROJECT CONSULTANTS

A. The Engineering Geologist, hereinafter referred to as Engineering Geologist: Geotechnology, Inc.
1. Address: 5055 Antioch Road
2. City, State, Zip: Overland Park, Kansas 66203
3. Phone: 913-438-1900
4. E-mail: aprince@geotechnology.com

B. The Mine Filling Contractor, hereinafter referred to as Mine Contractor: Drill Tech
1. Address: 8334 Ruby Avenue
2. City, State, Zip: Kansas City Kansas, 66111
3. Phone: 913-422-5088
4. Email: Patrick.Carr@drilltechdrilling.com

1.04 PROCUREMENT TIMETABLE

A. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

1.05 PROCUREMENT DOCUMENTS

A. Availability of Documents: Complete sets of procurement documents may be obtained:
   1. From Owner at the Project Manager's address listed above.

END OF SECTION 00 01 02

SECTION 00 01 03
PROJECT DIRECTORY

1.01 SECTION INCLUDES

A. Identification of project team members and their contact information.

1.02 OWNER

A. Name: Streets of West Pryor, LLC
   1. Address Line 1: 7200 W 132nd Street, Suite 150
   2. City: Overland Park
   3. State: KS
   4. Zip Code: 66213
   5. Telephone: 314-413-3598

B. Primary Contact: All correspondence from the Mine Contractor to the Engineering Geologist will be direct, with copies to this party, unless alternate arrangements are mutually agreed upon at the preconstruction meeting.
   1. Title: Owner
   2. Name: David Olson
   3. E-mail: daveolson@monarchprojectllc.com
   4. Telephone: 314-413-3598

1.03 PROJECT CONSULTANTS

A. Engineering Geologist: Design Professional of Record. All correspondence from the Mine Contractor regarding construction documents authored by the Engineering Geologist will be direct, with copies to this party, unless alternate arrangements are mutually agreed upon at the preconstruction meeting.
   1. Company Name: Geotechnology, Inc.
      a. Address Line 1: 5055 Antioch Road
      b. City: Overland Park
      c. State: KS
      d. Zip Code: 66203
      e. Telephone: 913-438-1900
   2. Primary Contact
      a. Title: Engineering Geologist, Senior Project Manager
      b. Name: Andrea Prince, R.G.

c. E-mail: aprince@geotechnology.com

d. Cell Phone: (913) 998-0527

B. Project Surveyor

1. Company Name: BHC Rhodes
    a. Address Line 1: 712 State Avenue
    b. City: Kansas City
    c. State: KS
    d. Zip Code: 66101
    e. Telephone: 913-371-5300
2. Primary Contact
    a. Title: Surveyor
    b. Name: Matthew Schepmann
    c. E-mail: matthew.schepmann@ibhc.com
    d. Cell Phone: 816-898-2832

C. The Mine Filling Contractor

1. Drill Tech
    a. Address Line 1: 8334 Ruby Avenue
    b. City: Kansas City Kansas
    c. State: Kansas
    d. Zip Code: 66111
    e. Phone: 913-422-5088
2. Primary Contact
    a. Title: Manager
    b. Name: Patrick Carr
    c. Email: Patrick.Carr@drilltechdrilling.com
    d. Cell Phone: 913-378-2580

END OF SECTION 00 01 03

SECTION 00 01 10

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END OF SECTION 00 01 10

SECTION 00 31 00
AVAILABLE PROJECT INFORMATION

00 31 13 – PRELIMINARY SCHEDULES

00 31 13.13 – PRELIMINARY PROJECT SCHEDULE

A. A total of 173 days is estimated for completion of the project, utilizing 10-hour daytime shifts, 5 days a week.
   1. This time estimate excludes survey and layout of the drill locations, clearing, grubbing, or preparation of a working surface, removal of excess materials or spoils, and repair/restoration of site.
   2. This project timeframe assumes the availability of at least 540 cubic yards of fill material per day.

00 31 13.26 – PRELIMINARY CONSTRUCTION SEQUENCING

A. The project Surveyor shall tie the existing surveys for the surface and mine space together. If additional work is required to do so, it shall be at the Owner's expense.
B. Twelve- to Fourteen-inch diameter holes shall be drilled from the surface penetrating the mine space on a checkboard pattern within the footprint of the planned development. The drill holes shall be cased from the surface to the top of rock and capped to prevent the leakage of water into the mine space.
C. The mine shall be filled at each drill hole location by dropping material down the hole until the resulting pile reaches the mine ceiling. A device capable of spreading the mine material such that the pile extends radially from the drill hole a distance of 1.5 rooms should be employed.
D. At the completion of filling at each drill hole, the hole shall be promptly backfilled with grout extending to the top of rock, the casing removed, and the remaining length of the drill hole backfilled with soil.

00 31 19 – EXISTING CONDITION INFORMATION

A. Based on the previous work performed by Engineering Geologist. for the subject mine space, a majority of the mine area is underwater with depths of up to 10 feet and a number of dome outs are located along the major joint directions. These dome outs extend into multiple rooms and evidence of propagation can be seen in the surrounding rooms.

00 31 21 – SURVEY INFORMATION

A. Survey of the surface and mine space has been performed by BHC Rhodes. For Mine Contractor convenience a copy of the available survey is included following the end of this section.

00 31 32 – GEOTECHNICAL DATA

A. Observation Letter: Summary of Preliminary Mine Evaluation, Streets of West Pryor Development over Former Union Quarry Mine, Lee's Summit, Missouri, dated May 15, 2020.
   1. Prepared by Geotechnology, Inc., Overland Park, Kansas
   2. For Mine Contractor's convenience a copy is included following the end of this section.
   3. The letter identifies potential sources for instability after the construction of the Street of West Pryor development.
   4. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in the Contract Documents.
   5. This letter, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design of the mine filling will be made, with resulting credits or expenditures accruing to the Owner.

END OF SECTION 00 31 00

May 15, 2020

Mr. Matt Pennington
Streets of West Pryor, LLC
7200 W 132nd Street, #150
Overland Park, Kansas 66213

Re: Summary of Preliminary Mine Evaluation
Streets of West Pryor Development Over
Former Union Quarry Mine
Lee's Summit, Missouri
Geotechnology Project No. J035637.01

Dear Mr. Pennington:

At your request, Geotechnology observed the underground space south of Interstate 470 (I-470) in Lee's Summit, Missouri. This evaluation was performed in general accordance with our authorized Proposal P035637.01 dated January 22, 2020. This letter documents our observations and considerations regarding the stability of the mine space and future investigation and development.

1.0 MINE HISTORY

The mine is located near NW Quarry Park Road in Lee's Summit, Missouri and was mined for limestone aggregate by Union Quarry starting in 1959. The mine has been owned and operated by multiple entities during and after mining was completed in the mid1980's. For simplicity, the mine space will be referred to herein as the Lee's Summit Union Quarry Mine[1].

The underground space is approximately bounded to the north by East Bannister Road and to the south by Northwest Lowenstein Drive and is bisected by I-470. The mine space north of I-470 will be referred to as the north side, and the space located to the south of I-470 as the south side. The two sides are connected by four tunnels running beneath I-470. Access to the mine space is limited to the north side.

The surface is currently owned by different entities north and south of I-470.At the time of this report, Star Excavation operates a quarrying operation on the north side of the mine. Star Excavation is currently blasting and excavating the remaining pillars and roof beam north of I-470. The original portal has been removed and the mine can be accessed through the exposed mine

1 To be differentiated from the Union Quarry Mine in Lenexa, Kansas

rooms on the edges of the open quarry pit, as shown in Photo #1 in Appendix A. The north side of the Union Quarry mine has a random room and pillar design and pillar dimensions vary.

The south side was generally mined on a grid pattern and appears to have more uniform pillar dimensions than the north side. During initial mining, the mine was subject to Lee's Summit Missouri Ordinance's (#893, 1305, and 1402) which outlined dimensions for minimum pillar diameter (25 feet), maximum pillar spacing (55 feet cent-to-center), maximum span between pillars (35 feet), and minimum thicknesses of the roof beam and overlying units (Bethany Falls 10 feet, 4 feet of Galesburg and/or Stark Shale, 10 feet of Winterset Limestone, and 40 feet of soil overburden). The ordinances expired in 1981. Based on the investigations performed by others, portions of the mine may not have conformed to city ordinance and roof collapses had been noted on the surface.

2.0 PROJECT INFORMATION

Streets of West Pryor, LLC is currently developing the land east of the southern side of the mine in an area not underlain by the Union Quarry Mine. It is our understanding Streets of West Pryor would like to develop the surface over the mine space. This preliminary report is intended to provide information which may be critical to determining the potential scope required to develop over the mine space.

2.0 GEOLOGIC CONDITIONS

The regional geology generally consists of lower formations of the Kansas City Group which is characterized by alternating layers of limestone and shale. The Bethany Falls Limestone, the mined unit, serves as the mine roof beam and is overlain by the Galesburg and Stark Shales, followed by the Winterset Limestone.

3.0 MINE CONDITIONS

In late April 2020, a cursory inspection of the mine space was made by Ms. Andrea Prince by boat during the lidar survey performed by BHC Rhodes. During this limited mine observation, dome-outs were noted in several areas of the mine and the water was observed to be up to 8 feet deep.

After receiving preliminary survey information from BHC Rhodes, a second trip was made to the subsurface. Representatives of Geotechnology, Ms. Amy Yang and Mr. Rob Jeronimus, were escorted by BHC Rhodes through the mine to confirm the location and extent of dome-outs, as shown on Figure 1 – Mine Column and Extents Exhibit, provided by BHC Rhodes. The southern side of the mine was accessed through the western set of tunnels which were dry. Along the mine face to the west and southwest, the mine floor was relatively dry, as indicated on Figure 1. Due to the deep water towards the center of the southern mine space and difficult to navigate underwater rock piles, the dome-outs could only be observed from three or more rooms away.

In general, the dome-out extents presented on Figure 1 are representative of the mine space. The perimeter of the dome-outs was characterized by 4 to 12 inches of roof break out in the one to three rooms surrounding the dome-outs. During the mine observation, several splashes were heard which may indicate rock fall is still occurring. At one dome-out location, as shown in Photo #2, a large rock appeared to be partial detached from the roof.

4.0 RECOMMENDATIONS FOR FURTHER EXPLORATION

Due to the presence of deep water in the mine space, no further exploration of the mine space is feasible until the mine can be dewatered.

* * * * *

The following attachments are included in and complete this mine evaluation.

Figure 1	–	Mine Column and Extents Exhibit – Provided by BHC Rhodes
Appendix	–	Photographic Log

* * * * *

We appreciate the opportunity to work with you on this project. Please contact the undersigned should you have any questions or need additional information.

Very truly yours,

GEOTECHNOLOGY, INC.

Andrea Prince, P.G.
Senior Project Manager

ALY/ALP:aly

APPENDIX

Photographic Log

Project:	Streets West of Pryor	J035637.01
Site Location:	Star Excavation Quarry - Pit Northern Side of Mine	Date: 5-8-2020

Description: Base of the quarry pit where the mine space can be accessed.

Photo #1: Quarry Pit

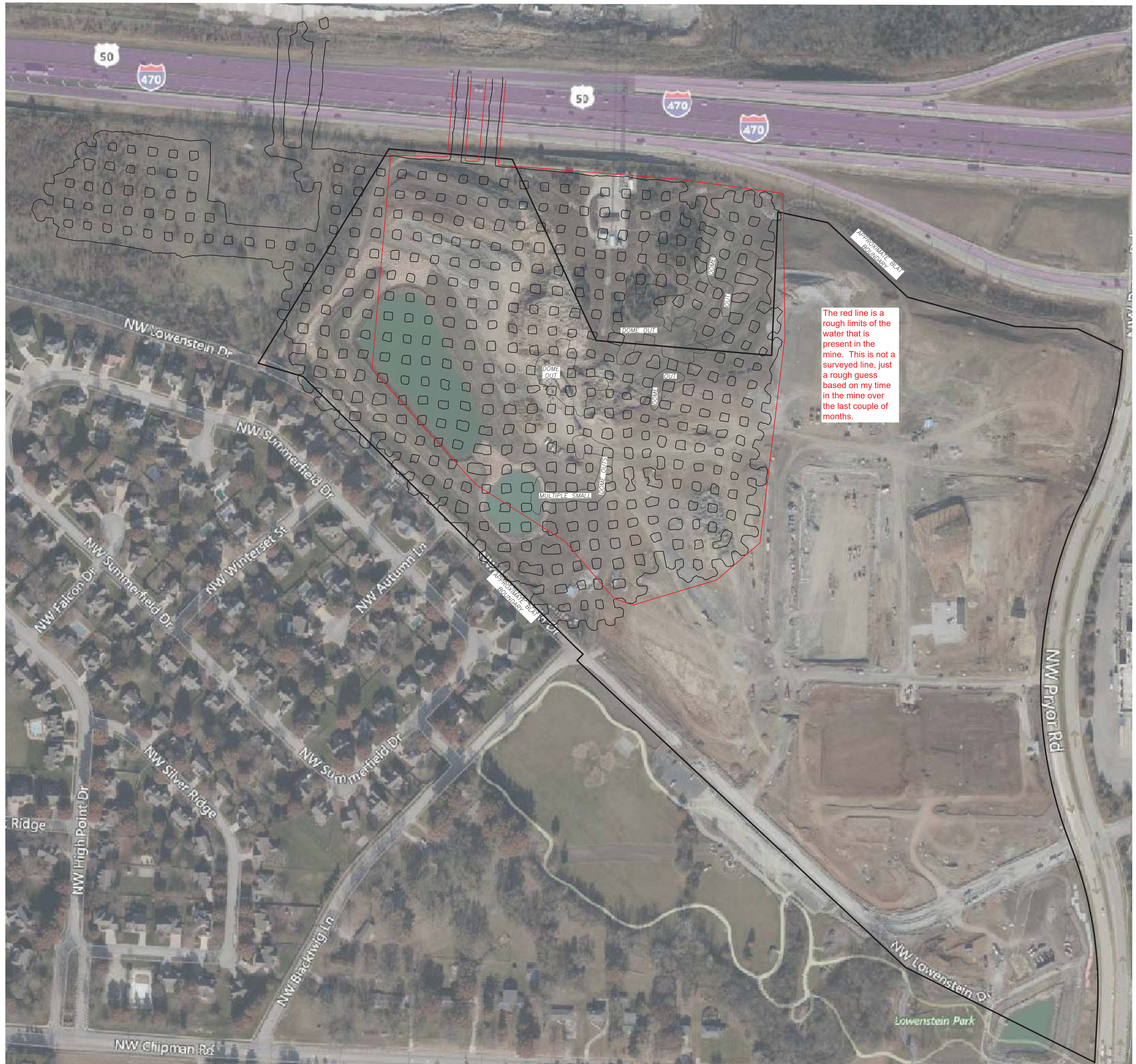
Project:	Streets West of Pryor	J035637.01
Site Location:	Southern Portion of the Mine	Date: 5-8-2020

Description: Small dome-out and surrounding roof fall. Large loose rock on the roof.

Photo #2: Dome-Out

MINE COLUMN AND EXTENTS EXHIBIT
PART OF THE SOUTH HALF, SECTION 35, TOWNSHIP 48 NORTH, RANGE 32 WEST,
CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

GRAPHIC SCALE
100 0 100
1 inch = 100 feet



LEGEND
- Columns
- Wall of Mine
- Dome Out

GENERAL NOTES

1. This is **not** meant to be a geological report or to represent anything other than what we show on the face of this document. Dome out limits are approximate limits based on the fieldwork completed on April 21, 2020. These limits are not meant to indicate areas of the mine that are unstable, only to show areas as indicated. There may be other areas of dome out activity that are not represented on this document.
2. The columns and limits of the mine have been applied an elevation of zero due to a large portion of the mine inundated with water that does not allow for a floor elevation to be obtained with the data collection method used.
3. The aerial image shown on the exhibit is for **informational purposes only.** The image might not represent the actual conditions on the surface. Additional information needs to be obtained to show actual conditions on the surface.
4. The plat boundary show on the exhibit is for **informational purposes only.** This is not a signed and sealed boundary survey.

Rev.	Date	Description	Drawn	Checked

BHC RHODES
Civil Engineering • Surveying • Utilities
712 State Avenue
Kansas City, Kansas 66101
p. (913) 371-5300 f. (913) 371-2677

Client:
HANEY CO
132ND STREET, SUITE 150,
OVERLAND PARK, KS 66213

Project:
MINE COLUMN AND EXTENTS EXHIBIT
PART OF THE SOUTH HALF,
SECTION 35,
TOWNSHIP 48 NORTH, RANGE 32 WEST,
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Project No:	028440
Field Crew:	MS,TH,ZL
Field Date:	04.21.20
Drawn By:	TAR
Issue Date:	04.27.20

Sheet: 1 OF 1

FIGURE 1

Apr 29, 2020 – 9:00am Plotted by: travis.robertson I:\028440 Streets of West Pryor Mine Scan\DWG\Survey\028440-SRVY-SCAN-XTRT.dwg

MINE COLUMN AND EXTENTS EXHIBIT
PART OF THE SOUTH HALF, SECTION 35, TOWNSHIP 48 NORTH, RANGE 32 WEST, CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

GRAPHIC SCALE
100 0 100
1 inch = 100 feet

LEGEND

- Columns
- Wall of Mine
- Dome Out

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HANEY CO
132ND STREET, SUITE 150,
OVERLAND PARK, KS 66213

Project:
MINE COLUMN AND EXTENTS EXHIBIT
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Apr 29, 2020 – 9:00am Plotted by: travis.robertson I:\028440 Streets of West Pryor Mine Scan\DWG\Survey\028440-SRVY-SCAN-XTRT.dwg

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

01 31 13 – PROJECT COORDINATION

A. Project coordination will be in collaboration with the Engineering Geologist and Mine Contractor as to mine filling activities and source materials.

01 31 19 – PROJECT MEETINGS

01 31 19.13 – PRECONSTRUCTION MEETING

A. A preconstruction meeting will be scheduled by the Engineering Geologist and held after the completion of survey tying the subsurface and surface together and at least 7 days prior to the anticipated start of any construction activities. Attendance by the Mine Contractor and any subcontractors is mandatory. The preconstruction meeting will be conducted to clarify the construction requirements, discuss submittals for the work, to coordinate the construction schedule and activities, and to identify contractional relationships and delineation of responsibilities among the Mine Contractor and any approved subcontractors.

01 31 19.16 – SITE MOBILIZATION MEETING

A. A site mobilization meeting will be scheduled by the Engineering Geologist and held prior to site mobilization. The site mobilization meeting will be conducted to clarify any remaining questions about the site mobilization and discuss staging areas and sequencing of room filling.

01 31 19.23 – PROGRESS MEETING

A. At least one progress meeting will be scheduled by the Engineering Geologist during construction. The progress meeting will be conducted to update the Owner on the construction progress and to discuss any changes in scope, if required.

END OF SECTION 01 31 00

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

01 32 29 – PERIODIC WORK OBSERVATION

A. The Owner will retain Engineering Geologist to perform periodic work observations including but not limited to testing samples of the fill material to conformance of the project standards.
   1. The Mine Contractor shall coordinate with Engineering Geologist access to material samples and work areas for personnel and equipment.

B. Periodic observation of the mine space by the Engineering Geologist, or their representative, is required to confirm placement of the fill material in accordance with specifications.
   1. Coordination of access will be the responsibility of the Owner.
   2. Additional personnel may be required to accompany the Engineering Geologist through the Star Excavation property and through the mine space to the project site. Additional personnel, where required, will be at the Owner's expense.

C. Employment of testing and observation services in no way relieves Mine Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

END OF SECTION 01 32 00

SECTION 01 33 00
SUBMITTAL PROCEDURES

01 33 19 – FIELD TEST REPORTING

A. Engineering Geologist will provide the Owner with field reports detailing observations and samples collected for testing.
   1. Field reports will be sent to the Mine Contractor with Owner permission.

01 33 26 – SOURCE QUALITY CONTROL REPORTING

A. Engineering Geologist will provide the Owner with reports detailing the origin of test samples, the drill hole(s) filled with the associated material, and the results of laboratory testing and observation.
   1. Testing reports will be sent to the Mine Contractor with Owner permission.

END OF SECTION 01 33 00

SECTION 01 35 00
SPECIAL PROCEDURES

01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS

A. Applicable OSHA Requirements for Health and Safety Plan
   1. The Mine Contractor shall be responsible for developing a site-specific Health and Safety Plan, as required by 29 CFR 1926.65(b), based on site characterization, monitoring, and exposure assessments as stated in 29 CFR 1926.65 and 29 CFR 1926.62.

B. The Mine Contractor shall comply with all applicable provisions of 29 CFR 1926.65 and 29 CFR 1926.62.

C. All Mine Contractor personnel involved in construction shall receive training meeting the requirements on 29 CFR 1926.65(e)(3)(iii) before construction begins.

D. The Mine Contractor shall submit the Health and Safety Plan to the Engineering Geologist one week prior to beginning construction. Along with the plan, the Mine Contractor shall submit the monitoring and exposure assessment data used to determine the requirements of the plan. This plan will be reviewed and filed by the Engineering Geologist for availability to enforcement agencies. The Mine Contractor shall also follow all other safety requirements incorporated elsewhere in these provisions and include them in this Health and Safety Plan.

01 35 29 – HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES

A. The Mine Contractor shall exercise extreme caution when performing any activities on the site and especially around a known dome-out. The Mine Contractor shall take appropriate precautions to ensure all personnel are aware of the hazards and provide adequate safety equipment.
   1. The construction site shall be a hard-hat and steel-toe shoe area.
   2. The Mine Contractor shall continually monitor the area for instability and notify the Engineering Geologist immediately if any signs of potential instability are noted. The Engineering Geologist, in conjunction with the Mine Contractor, shall then determine a course of action, including if and when the work can continue.
   3. Dust control will be provided by others.

B. The Mine Contractor shall have communication equipment on the construction site or immediate access to other communication systems to request assistance from the

police or other emergency agencies for incident management. The Owner and Engineering Geologist shall be notified when the Mine Contractor requests emergency assistance.

C. In addition to the 911 emergency telephone number for ambulance, fire, or police services, the following agencies may also be notified for an accident or emergency situation within the project limits.
   1. Missouri Highway Patrol: (816) 622-0800
   2. Jasper County Sheriff: (816) 524-4302
   3. City of Lee's Summit Police: (816) 969-7390
   4. City of Lee's Summit Fire: (816) 969-7407

D. The Mine Contractor shall notify enforcement and emergency agencies before the start of construction to request their cooperation and to provide coordination of services when emergencies arise during the construction at the project site. When the Mine Contractor completes this notification with enforcement and emergency agencies, a report shall be furnished to the Engineering Geologist on the status of incident management.

E. No direct pay will be made to the Mine Contractor to recover the cost of the communication equipment, labor, materials, or time required to fulfill the above provisions.

END OF SECTION 01 35 00

SECTION 01 43 00
QUALITY ASSURANCE

01 43 26 – TESTING AND INSPECTING AGENCY QUALIFICATIONS

A. Prior to start of work, submit agency name, address, telephone, and names of responsible officer.

01 43 36 – FIELD SAMPLES

A. The fill material should be sampled initially and at intervals when the source material changes. The samples should be taken from the stockpile in accordance with ASTM standards and (1) marked with their source/origin and the room(s) the material was placed and (2) transported to the laboratory for testing.

END OF SECTION 01 43 00

SECTION 01 45 00
QUALITY CONTROL

01 45 13 – SOURCE QUALITY CONTROL PROCEDURES

A. Mine filling material should consist of 2-inch minus aggregate free of organics.
B. Periodic inspection should be made prior to crushing of material to reduce size and whenever a change in material is noted.

01 45 16 – FIELD QUALITY CONTROL PROCEDURES

A. Material should be visually inspected for aggregate large enough to block the drill hole.
B. Saturated material should be excluded from the stockpile.
C. Drill holes should be sealed promptly after filling of the mine space to prevent surface water from entering the mine space which may cause washout of the placed materials.

01 45 16.13 – CONTRACTOR QUALITY CONTROL

A. All Mine Contractor plans for the completing the work of mine filling shall be submitted to the Engineering Geologist for approval prior to execution in the field. Changes made to the work plan during the course of construction shall likewise be approved by the Engineering Geologist.

01 45 23 – TESTING AND INSPECTION SERVICES

A. A representative sample shall be taken from the stockpile or conveyor on an as needed basis based on conditions and location of mine filling activities
    1. Sample will be marked with the following:
        a. Date
        b. Mine Room(s) filled
        c. Aggregate Source
    2. Testing to Include:
        a. Gradation
        b. Slake Durability (as needed)
B. Observation should include, but is not limited to:
    1. Depth to Mine Floor
    2. General Description of Fill Materials

3. Depth to Top of Fill
4. Placement of Grout and Backfilling of Drill Holes

C. Periodic inspection of the mine space is required to verify fill height and breadth.

01 45 29 – TESTING LABORATORY SERVICES

A. Prior to Mine Filling, testing shall be performed on an aggregate sample prepared from the source material and processed in the project crusher:
   1. Gradation
B. During construction, the following tests will be performed on collected samples:
   1. Gradation
C. Significant variation in the source rock may warrant additional gradation and slake durability testing. The Engineering Geologist should be notified of changes in the source aggregate.

END OF SECTION 01 45 00

SECTION 31 23 00
EXCAVATION AND FILL

31 23 23 – FILL

A. Mine fill material shall be:
   1. 2-inch minus aggregate
   2. Free of organics

END OF SECTION 31 23 00