

LOCATED IN
PART OF NE 1/4 SECTION 4, T5N, R65W OF THE 6TH P.M.
COUNTY of WELD, STATE of COLORADO
APRIL, 2020

SHEET INDEX

1. THESE CONSTRUCTION PLANS ARE TO BE USED IN CONJUNCTION WITH THE TECHNICAL SPECIFICATIONS PREPARED BY J&T CONSULTING, INC., AND GEOTECHNICAL INVESTIGATION AND ENGINEERING DESIGN RECOMMENDATIONS PREPARED BY Cesare, INC.
2. COMPLY WITH ALL REQUIREMENTS OF OWNER OBTAINED PROJECT PERMITS: INCLUDING, BUT NOT LIMITED TO, PERMITS FROM THE U.S. ARMY CORPS OF ENGINEERS AND COLORADO DEPARTMENT OF HEALTH AND ENVIRONMENT. CONTRACTOR SHALL OBTAIN ALL OTHER PERMITS NECESSARY FOR CONSTRUCTION OF THE WORK.
3. PROTECT ALL EXISTING WETLANDS.
4. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION.
5. ALL CONSTRUCTION ACTIVITIES MUST COMPLY WITH THE STATE OF COLORADO PERMITTING PROCESS FOR "STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY." FOR INFORMATION, PLEASE CONTACT THE COLORADO DEPARTMENT OF HEALTH, WATER QUALITY CONTROL DIVISION, 4300 CHERRY DRIVE SOUTH, DENVER, COLORADO 80246-1530. ATTENTION: PERMITS SECTION. PHONE 303-692-3500.
6. IF DEWATERING IS REQUIRED, A STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT IS REQUIRED FOR DISCHARGES TO A STORM SEWER, CHANNEL, IRRIGATION DITCH, ANY STREET THAT IS TRIBUTARY TO THE AFOREMENTIONED FACILITIES, OR ANY WATER OF THE UNITED STATES.
7. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL UTILITIES TO COORDINATE SCHEDULES.
8. THE CONTRACTOR SHALL REGULARLY PATROL THE PUBLIC LANDS ADJACENT TO THE PROJECT, REMOVE CONSTRUCTION DEBRIS AND KEEP AREAS CLEAN AND SAFE.
9. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING A SEQUENCE AND SCHEDULE FOR COMPLETION OF THE WORK IN ACCORDANCE WITH APPLICABLE PROVISIONS OF THE CONTRACT DOCUMENTS.
10. READ THOROUGHLY AND BECOME FAMILIAR WITH THE SPECIFICATIONS AND INSTALLATION DETAILS FOR THIS RELATED WORK PRIOR TO CONSTRUCTION.
11. VERIFY SITE ELEVATIONS PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL PROCURE ALL PERMITS AND LICENSES, PAY ALL CHARGES AND FEES INCLUDING, BUT NOT LIMITED TO, ALL INSPECTION CHARGES OF AGENCIES HAVING APPROPRIATE JURISDICTION.
13. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF ENTIRE PROJECT, AS SPECIFIED, UPON FINAL COMPLETION OF PROJECT.

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEDIMENT AND EROSION CONTROL AT THE SITE THROUGHOUT CONSTRUCTION.
2. BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE USED AS NECESSARY TO ADDRESS SEDIMENT AND DUST FROM SITE DISTURBANCE. ADDITIONAL MEASURES MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER.
3. BMP'S MAY INCLUDE, BUT ARE NOT LIMITED TO:
 - MINIMAL DISTURBANCE FOR MINIMAL TIME PERIODS
 - GRAVEL CONSTRUCTION ENTRIES
 - SILT FENCE, STRAW BALE OR SAND BAG BARRIERS, ROCK CHECK DAMS
 - STORM SEWER INLET PROTECTION
 - SEDIMENT CAPTURE PONDS
 - SITE WATERING FOR DUST SUPPRESSION

4. BMP'S SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THE PROJECT. THE CONTRACTOR SHALL INSPECT BMP'S WEEKLY AND AFTER SIGNIFICANT (GREATER THAN 0.1" PRECIPITATION) STORM EVENTS. THE MAINTENANCE AND REPAIR SHALL BE COMPLETED IN A TIMELY MANNER. SEDIMENT AND DEBRIS SHALL BE REMOVED WHEN THEY REACH HALF THE BMP HEIGHT OR IMPACT THE FUNCTION OF THE BMP.
5. SOIL STOCKPILES SHALL BE PROTECTED FROM SEDIMENT TRANSPORT BY SURFACE ROUGHENING, WATERING AND PERIMETER SILT FENCING. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE MULCHED AND SEEDDED WITH A GRASS COVER WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION.
6. THE CONTRACTOR SHALL INSURE THAT ALL LOADS OF CUT AND FILL SOILS IMPORTED TO OR EXPORTED FROM THE SITE ARE PROPERLY LOADED AND COVERED TO PREVENT LOSS DURING TRANSPORT.
7. THE CONTRACTOR SHALL REMOVE ALL SEDIMENT, MUD, AND CONSTRUCTION DEBRIS RESULTING FROM THIS PROJECT FROM FLOWLINES AND PAVEMENT OF PUBLIC STREETS IN A TIMELY MANNER.
8. SOILS EXPOSED DURING LAND DISTURBING ACTIVITY SHALL BE KEPT IN A ROUGHENED CONDITION BY RIPPING OR DISCING ALONG LAND CONTOURS UNTIL MULCH, VEGETATION OR OTHER PERMANENT EROSION CONTROL IS IN PLACE. NO SOILS SHALL REMAIN EXPOSED BY LAND DISTURBING ACTIVITY FOR MORE THAN THIRTY (30) DAYS BEFORE REQUIRED TEMPORARY OR PERMANENT EROSION CONTROL IS INSTALLED UNLESS OTHERWISE APPROVED.
9. ALL TEMPORARY SEDIMENT CONTROLS WILL BE REMOVED WITHIN 30 DAYS AFTER THE FINAL STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, WHICHEVER OCCURS FIRST.
10. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHENEVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME.



VICINITY MAP
SCALE 1" = 1000'



BROKEN ARROW INVESTMENTS
KELLY HODGE
801 8TH STREET, SUITE 130
GREELEY, CO 80631
970-566-5090

J&T Consulting, Inc.
J.C. York
305 Denver Ave., Ste. D
Fort Lupton, CO 80621
303-857-6222
Fax: 303-857-6224

American West Land Surveying Co.
331 South 4th Avenue
P.O. Box 129
Brighton, CO 80601
303-659-1532

CESARE, INC.
7108 SOUTH ALTON WAY, BLDG. B
CENTENNIAL, CO 80112
303-220-0300



1	Cover Sheet
2	Slurry Wall Horizontal Control & Key Map
3	Overall Plan
4	Platform Sections
5	Slurry Wall Plan and Profile Sta. 0+00 - 14+00
6	Slurry Wall Plan and Profile STA. 14+00 - 28+00
7	Slurry Wall Plan and Profile STA. 28+00 - 42+00
8	Slurry Wall Plan and Profile STA. 42+00 - 49+21.6
9	Geotechnical Bore Logs
10	Monitoring Well Bore Logs

	PROPERTY LINE
	SECTION LINE
	FENCE LINE
	OVERHEAD ELECTRIC LINES
	EXISTING TELEPHONE
	EXISTING GAS LINE
	EXISTING WATERLINE
	EXISTING POWER
	EXISTING ROW
	MINING LIMIT
	DIRT ROAD
	EXISTING WATER/DITCH
	EXISTING CONTOURS
	PROPOSED CONTOURS
	PROPOSED SLURRY WALL
	PERMIT BOUNDARY
	POWER POLE

I hereby certify that these plans for the construction of the Derr Pit Slurry Wall were prepared by me or under my direct supervision for Broken Arrow Investments, LLC.


James C. York, P.E.
Colorado Registration No. 36846

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J&T Consulting, Inc.

305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-857-6222 Fax: 303-857-6224
www.j-tconsulting.com

Derr Pit Slurry Wall

Cover Sheet

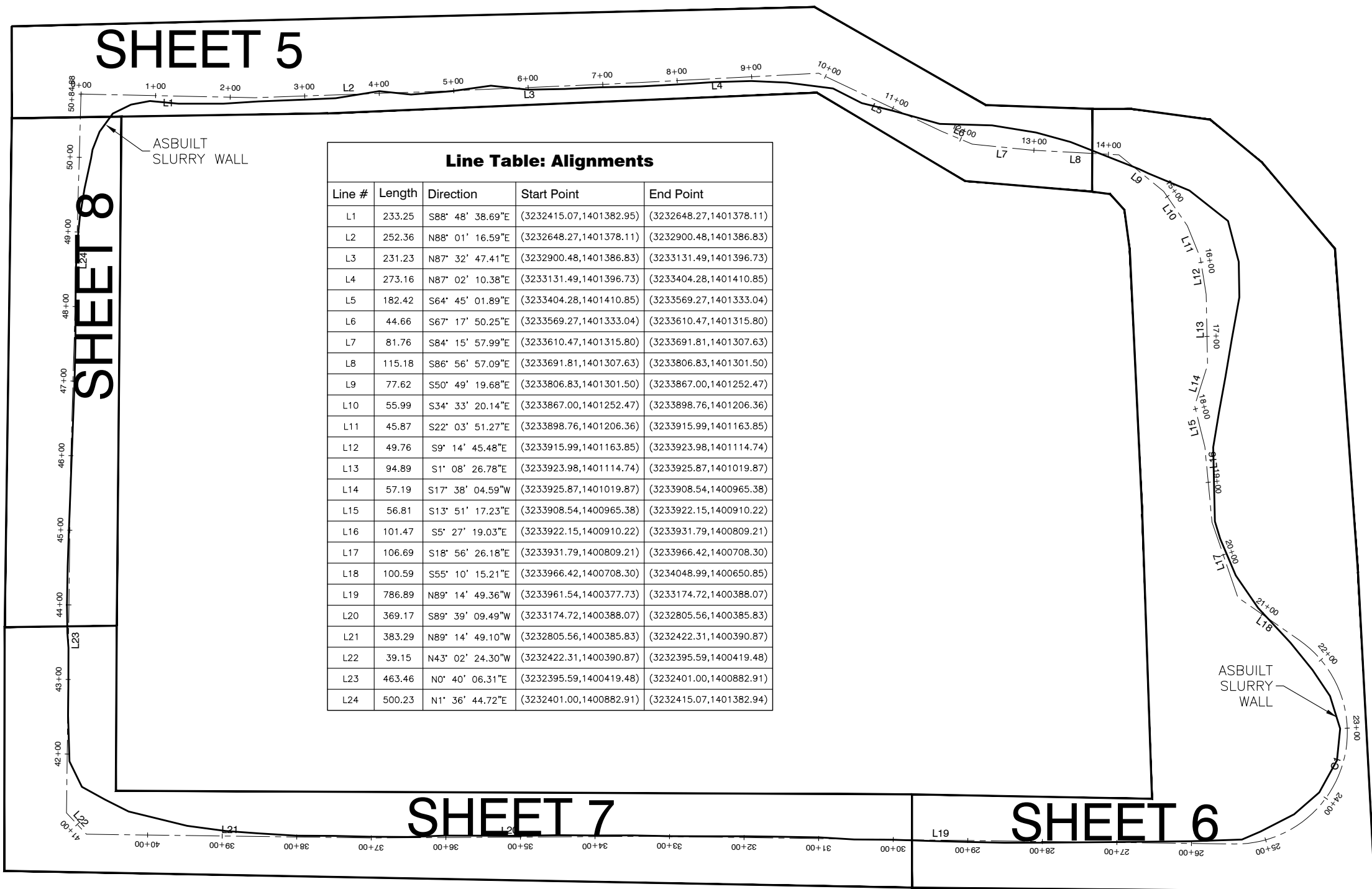
Broken Arrow Investments, LLC

Derr Pit

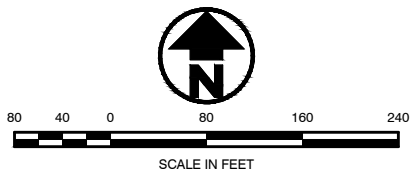
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Job #	07123
Date	5.04.20
Drawn By	TWT
Designed By	TPY
Checked By	JCY
File	Derr Slurry Wall Cover
Scale	As Shown

Sheet: **1** Of: **10**



Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C1	150.00	381.84	S17° 45' 16"W	(3234048.9928,1400650.8489)	(3233961.5429,1400377.7306)



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J&T Consulting, Inc.

305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-857-6222 Fax: 303-857-6224
www.j-tconsulting.com

Derr Pit Slurry Wall

Slurry Wall Key Map

Broken Arrow Investments, LLC

Derr Pit

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Job #	07123
Date	5.04.20
Drawn By	TWT
Designed By	TPY
Checked By	JCY
File	JT-Derr Slurry Wall
Scale	1" = 70'

Sheet: **2** Of: **10**

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305 Denver Avenue - Suite D
Fort Lupton, CO 80621
PH: 303-857-4222, Fax: 303-857-4224
www.jtconsulting.com

Derr Pit Slurry Wall

Slurry Wall Overall Plan

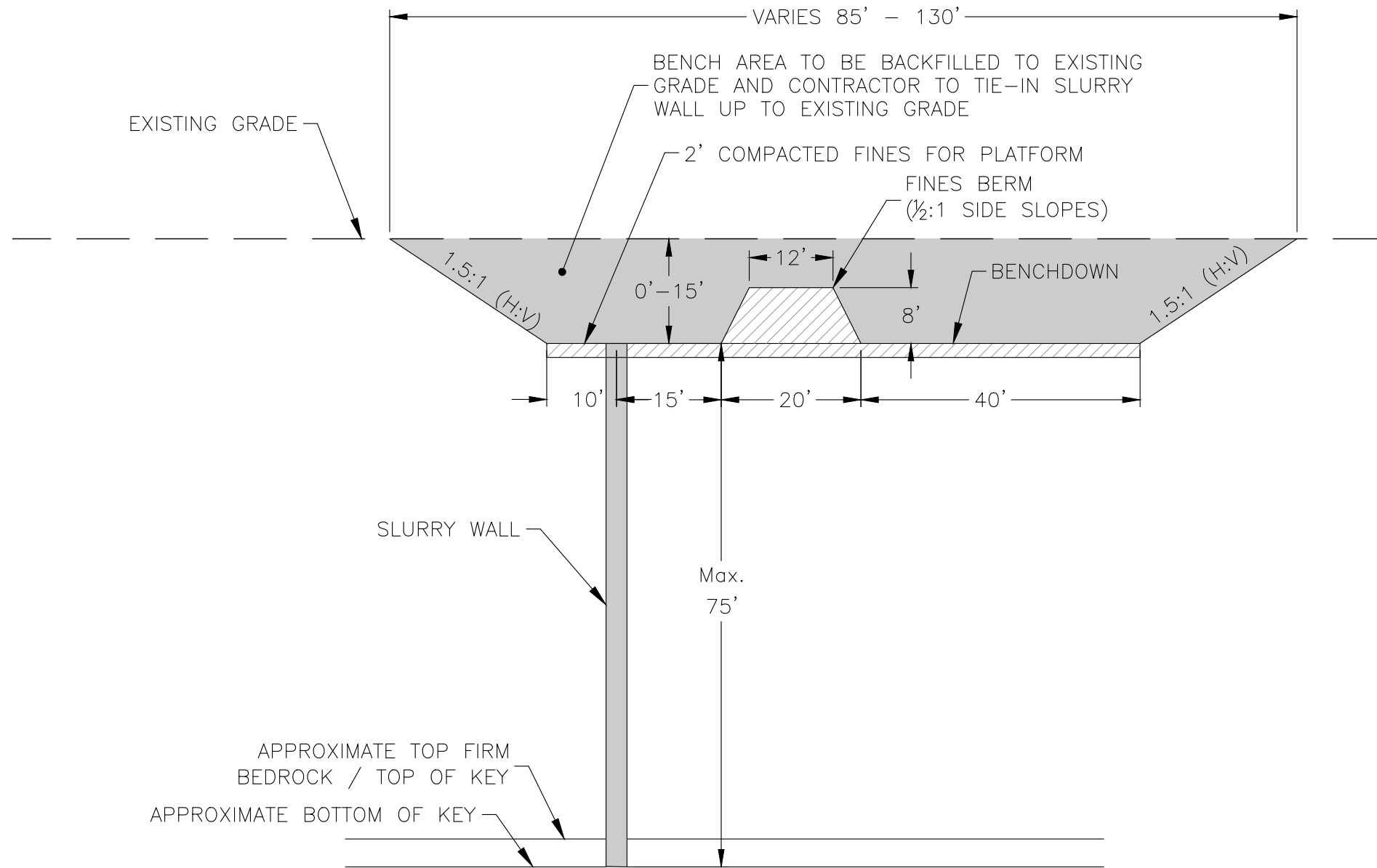
Broken Arrow Investments, LLC
Derr Pit

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Job #	07123
Date	5.04.20
Drawn By	TWT
Designed By	TPY
Checked By	JCY
File	JT-Derr Slurry Wall
Scale	1" = 60'

Sheet: **3** Of: **10**

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SECTION A-A
TYPICAL BENCH-DOWN SECTION

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305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-857-6222 Fax: 303-857-6224
www.jtconsulting.com

**Derr Pit
Slurry Wall**
Platform Sections

Broken Arrow Investments, LLC

Derr Pit

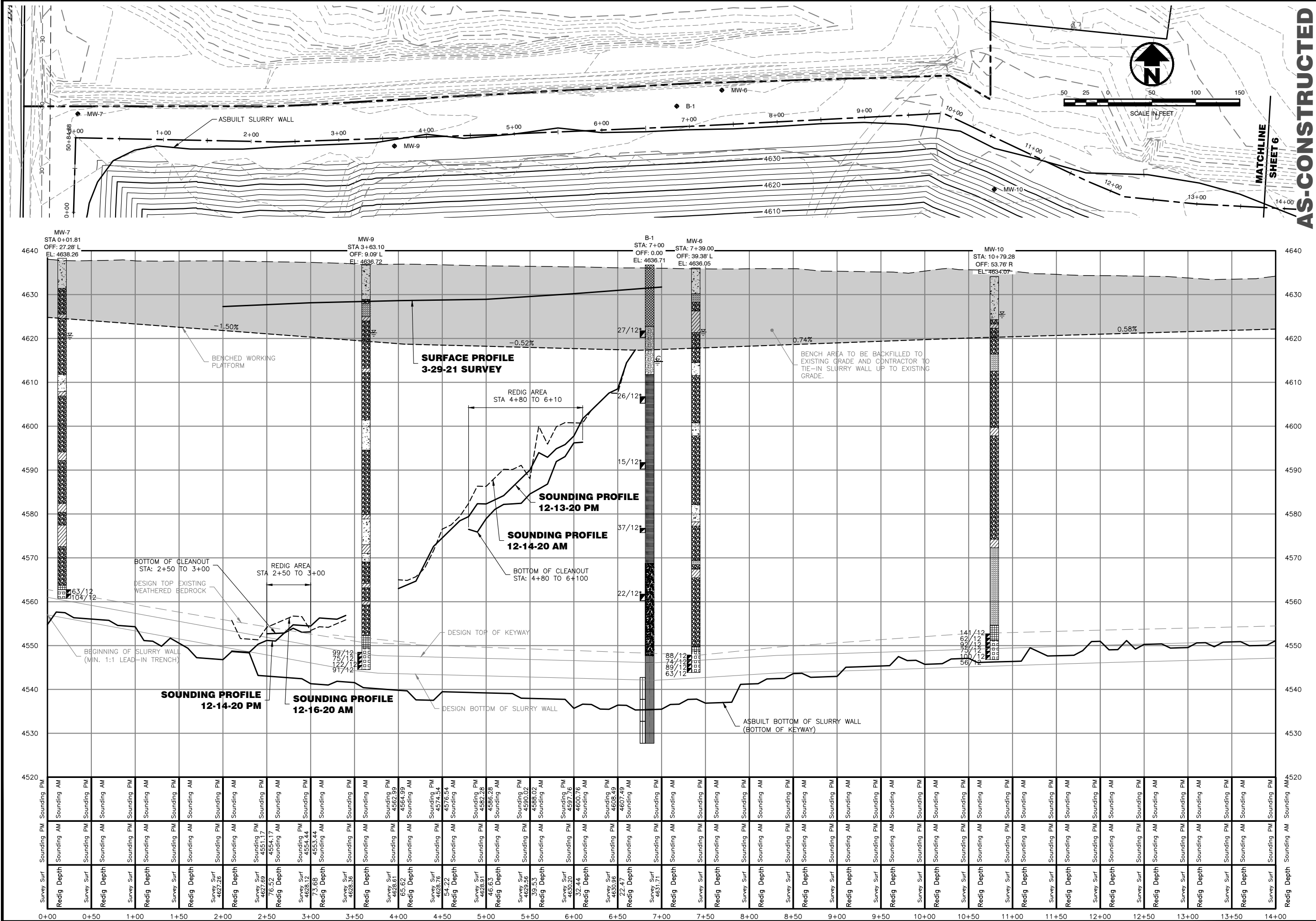
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No	Date	By	Chk	TPY	JCY
1	10.6.21				



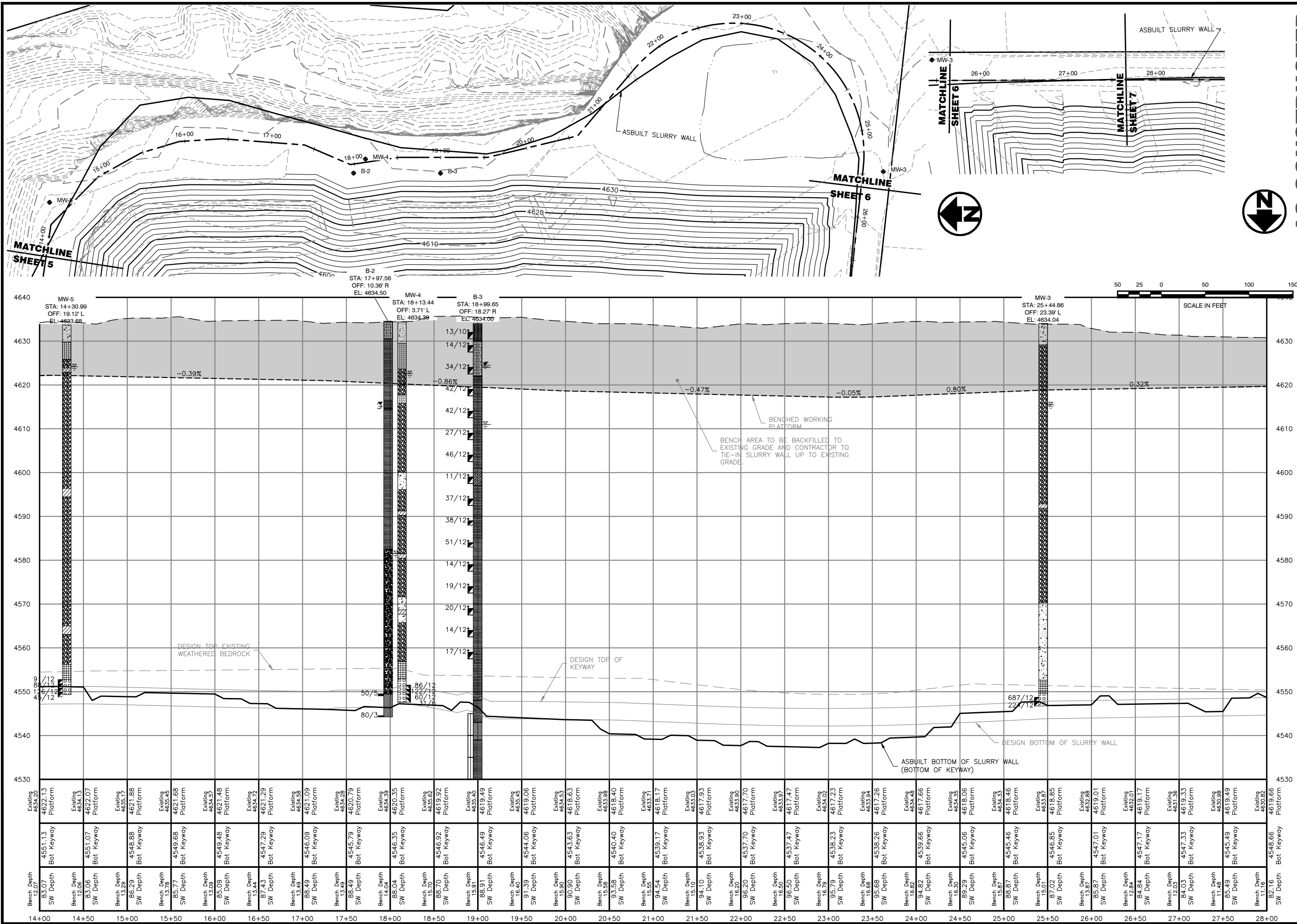
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Drawn By TWT
Designed By TPY
Checked By JCY
File JT-Derr Slurry Wall
Scale 1" = 60'

Sheet: 4 of 10

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Derr Pit
Slurry Wall
Slurry Wall Plan & Profile
Sta: 14+00 to 28+00

J&T Consulting, Inc.

305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-857-6222 Fax: 303-857-6224
www.jtconsulting.com

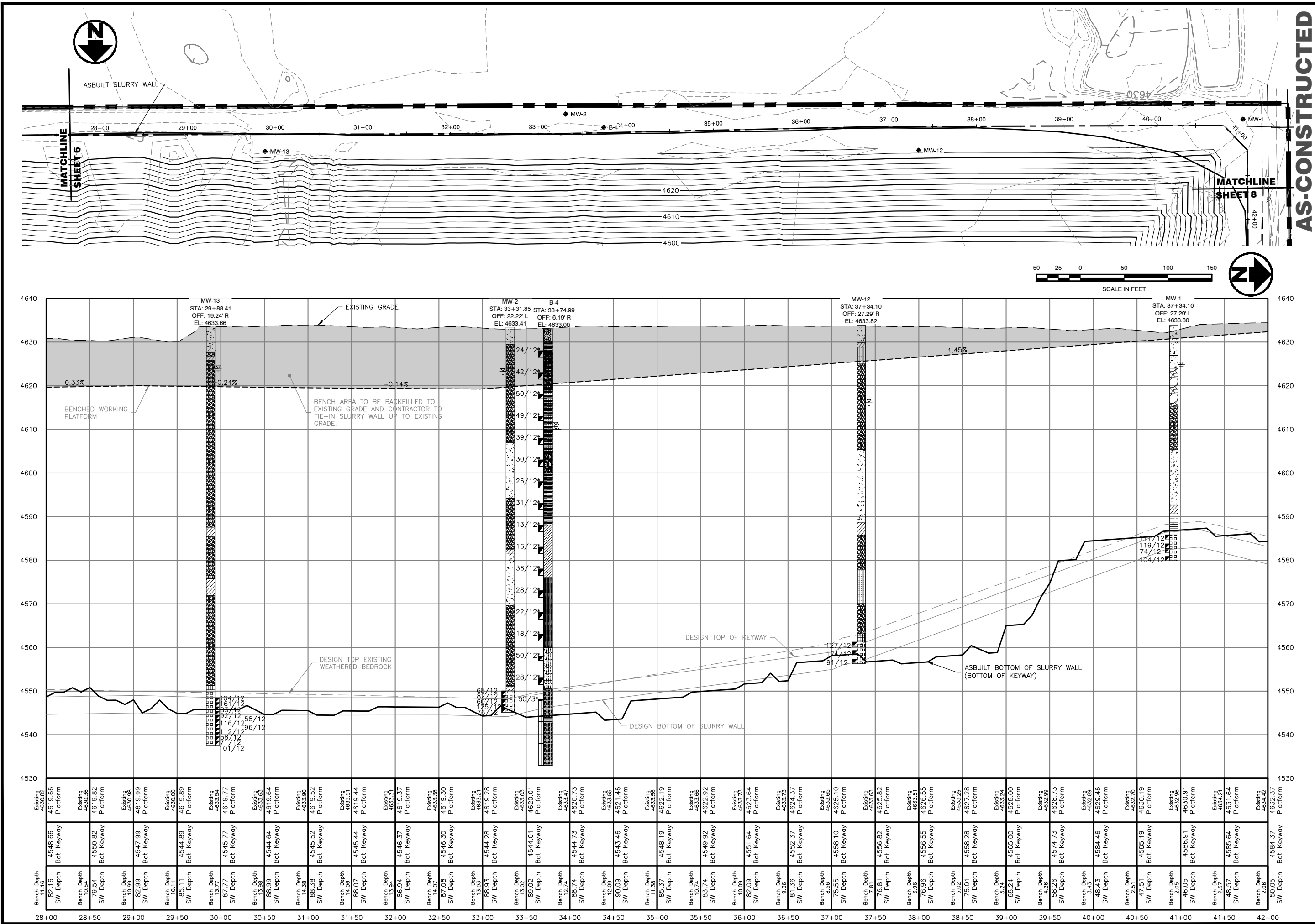
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		1	10.6.21	TWT	JCY	As-Constructed



Job #	07123
Date	5.04.20
Drawn By	WSS
Designed By	TPY
Checked By	JCY
File	JT-Derr Slurry Wall
Scale	1" = 50'H/10'V

Sheet: 6 of 10

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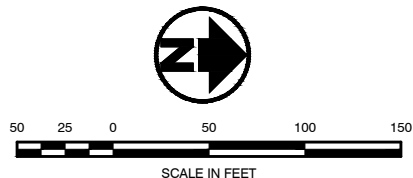
J&T Consulting, Inc.
305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-857-6222 Fax: 303-857-6224
www.jtconsulting.com

Broken Arrow Investments, LLC
Derr Pit

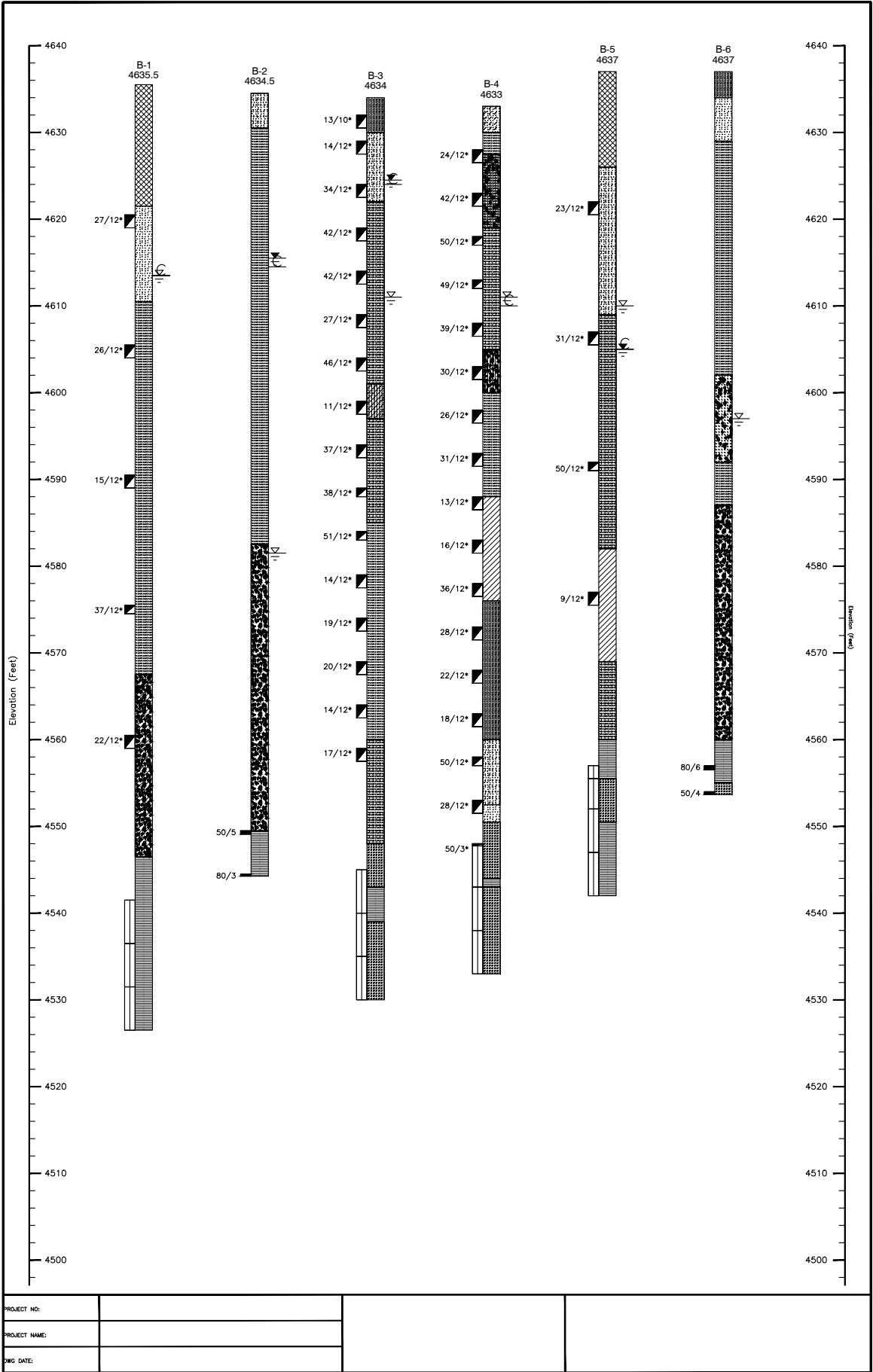
No.	Date	By	Chk	Description
1	10.06.21	TWT	JCY	As Constructed

Job # 07123
Date 5.04.20
Drawn By WSS
Designed By TPY
Checked By JCY
File JT-Derr Slurry Wall
Scale 1" = 50'H/10'V

Sheet: 7 of 10



Sheet: **8** Of: **10**



Symbol

Description

Strata symbols

FILL: SAND, relatively clean to silty, medium dense, slightly moist to moist, brown (SP, SP-SM, SM, A-1-b, A-2-4); CLAY, sandy, stiff, slightly moist to moist, brown (CL, A-6).

SAND, poorly graded, medium dense, slightly moist to wet, brown (SP, A-1-a).

SAND, well graded, medium dense to very dense, slightly moist to wet, brown (SW, A-1-a).

GRAVEL, well graded, with clay, medium dense to dense, wet, brown (GW-GC, A-2-4).

SILT, poorly graded, with silt, medium dense to dense, slightly moist, to wet, brown (AP-SM, A-1-a, A-1-b).

GRAVEL, well graded, with sand, medium dense to dense, wet, brown (GW, A-1-a).

SAND, silty, medium dense, slightly moist to wet, brown (SM, A-2-4).

SAND, well graded, with silt, medium dense to dense, moist to wet, brown (SW-SM, A-1-a, A-1-b).

SAND, silty, clayey, medium dense, wet, brown (SM-SC, A-2-4).

Symbol

Description

SAND, poorly graded, with clay, loose, slightly moist, brown (SC, A-2-4).

GRAVEL, Poorly graded, with silt and sand, dense, slightly moist, brown (GP-GM, A-1-a).

GRAVEL, Well graded, with silt, medium dense to dense, wet, brown (GW-GC, A-1-b).

CLAY, grades to with sand to sandy, fat, stiff to hard, wet to moist, brown (CH, A-7-6).

GRAVEL, poorly graded, dense, wet, brown (GP, A-1-b).

CLAYSTONE, hard to very hard, slightly moist, gray.

SANDSTONE, thickly bedded, hard to very hard, slightly moist to wet, gray.

Misc. Symbols

Water level during drilling

Water level 1, 3, or 9 days after drilling

Depth to caving

Modified California sample

Standard penetration test

Rock core

Notes:

1. 27/12* indicates 27 blows with a 140-pound hammer falling 30 inches were required to drive a split spoon sampler 12 inches. 50/5 indicates 50 blows with a 140-pound hammer falling 30 inches were required to drive a modified California barrel sampler 5 inches.

2. Exploratory borings B-1 through B-6 were drilled on December 11, 13 and 16 through 19, 2019 using a CME-55 truck mounted drill rig equipped with 8-1/4-inch diameter continuous flight hollow stem auger.

3. Relative elevations of borings B-1 through B-6 were estimated determined by Cesare, Inc. interpolating from a topographic map of the site provide to us by J&T Consulting, Inc.

4. Groundwater was encountered at depths of 20 to 53 feet below ground surface in all borings during drilling. Groundwater was measured at depths of 9-1/2 to 32 feet below ground surface in borings B-2 B-3 and B-5, when checked 9, 3, and 1 day after drilling, respectively, where not obstructed by caving. Borings were backfilled at the completion of the latter measurement.

5. Contacts between soil units are approximate and may be gradational.

6. These logs are subject to the limitations, conclusions, and recommendations in this report.

Project No. 19.3069.

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J&T Consulting, Inc.

305 Denver Avenue - Suite D
Fort Lupton, CO 80621
Ph: 303-567-6222 Fax: 303-857-6224
www.jtconsulting.com

**Derr Pit
Slurry Wall**

Geotechnical Soil Borings

Broken Arrow Investments, LLC

Derr Pit

REVISIONS				Description
No	Date	By	Chk	Description
1	10.6.21	TPY	JCY	AS-Constructed



Job #	07123
Date	5.04.20
Drawn By	TWT
Designed By	TPY
Checked By	JCY
File	JT-Derr Slurry Wall
Scale	NTS

LEGEND

	SILTY SAND WITH GRAVEL
	SILTY SAND
	GRAVEL WITH COBBLE
	SILTY SAND & GRAVEL WITH COBBLE
	SANDY SILTY CLAY
	SILTSTONE (WEATHERED—ORANGE/RUST)
	SILTSTONE (GREY)
	CLAYSTONE (WEATHERED—BROWN/RUST)
	CLAYSTONE

Sheet: **10** Of: **10**