

2021 Annual Inspection Report

for Compliance with the Coal
Combustion Residuals Rule
(40 CFR Part 257)

Pawnee Station – East Landfill

*14940 Morgan County Road 24
Brush, Colorado 80723*

January 15, 2022

Table of Contents

Certification	iv
1 Introduction	1
2 Site Inspection	1
3 Review of Available Information	2
4 Visual Inspection.....	2
5 Changes in Geometry	3
6 Approximate CCR Volume	4
7 Appearance of Structural Weakness	4
8 Changes Affecting Stability or Operation.....	4

Appendices

Appendix A:

- Landfill Site Map Figure 1

Certification

Pawnee Station - CCR Unit 2021 Annual Inspection for Compliance with the Federal Coal Combustion Residuals Rule

I hereby certify that the East Landfill, a Coal Combustion Residuals (CCR) unit at Pawnee Station meets the inspection and operation standards specified in 40 CFR Part 257.84(b) of the Federal CCR Rule. The Pawnee Station is owned by the Public Service Company of Colorado (PSCo), an Xcel Energy Company.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Brent Learch, PE

Colorado PE License 0056841

License renewal date October 31, 2023

1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published regulations under Subtitle D of the Resources Conservation and Control Act (RCRA) meant to control the safe disposal of coal combustion residuals (CCR) generated by coal fired electric utilities. The rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). As specified in 40 CFR 257.84(b), *“Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.”* Pawnee Station has two CCR landfills subject to the inspection requirements: the North CCR Landfill and the East CCR Landfill. The scope of this report covers only the East CCR Landfill; the North CCR Landfill inspection is documented in a separate report.

This is the 2021 annual inspection report for the Pawnee East CCR Landfill. This report must be completed and placed into the facility operating record no later than January 15, 2022.

The requirements of the annual inspection include:

- A review of available information regarding the status and condition of the CCR unit - §257.84 (B)(1)(i),
- A visual inspection of the CCR unit to identify signs of distress or malfunction - §257.84 (B)(1)(ii),
- An inspection report that includes the following:
 - Changes in geometry since the last inspection - §257.84 (B)(2)(i)
 - Approximate volume of CCR in unit at time of inspection - §257.84 (B)(2)(ii)
 - Appearance of actual or potential structural weakness of the CCR unit - §257.84 (B)(2)(iii)
 - Any other changes which may have affected the stability or operation of the CCR unit since the last inspection - §257.84 (B)(2)(iv)

2 Site Inspection

In accordance with §257.84(b)(ii) a site inspection of the Pawnee East CCR Landfill was conducted on November 9, 2021. The inspection was conducted by Brent Learch, a Colorado Professional Engineer of HDR Engineering Inc., and Richard Ferguson, an Xcel Energy Environmental Analyst at the Pawnee Station. Review of the associated paperwork and inspection reports were conducted by Brent Learch and Richard Ferguson.

The East CCR Landfill was constructed in 2018 and began taking receipt of CCR in July of 2019. The landfill's liner and leachate collection systems were designed to be compliant with the CCR Rule. The landfill was constructed in the footprint of a former incised surface impoundment that had been previously closed by removal of all waste and liner material. The base grade of

the East Landfill is at the bottom of the former impoundment which is approximately 20 feet below surrounding grades. The landfill is permitted to take receipt of CCR and lime sludge from the raw water treatment process. Lime sludge may be placed in the landfill directly or may be blended with fly ash prior to placement.

The weather during the site visit was partly cloudy with temperatures ranging from 45 to 55 degrees Fahrenheit. The site was free of snow cover.

3 Review of Available Information

Numerous documents pertaining to the site operation and structural integrity were reviewed including:

1. The Engineering Design and Operation Plan (EDOP) document, dated December 2017 and developed by HDR. The EDOP was not reviewed in 2021 as there were no changes in this year.
2. Available Weekly CCR Landfill Inspection Forms (per Section 257.84(a)).
3. Topographic survey with an issue date of August 25, 2021, by Flatirons, Inc. This topographic survey covered the northern portion of the site within the perimeter road and includes the contact water pond to the south of the CCR landfill area.
4. The latest CDPHE inspection of the landfill, which occurred in April of 2021.

Review of the above documents did not contain any indications of operation, safety, or structural concerns regarding the East CCR landfill.

4 Visual Inspection

Brent Learch, escorted by Richard Ferguson, completed a site inspection, driving and walking the perimeter of the landfill and observing all internal landfill cut slopes and the leachate collection equipment. As the CCR Rule pertains only to the CCR landfill itself, this report does not address existing topsoil stockpiles or earthwork outside of the landfill area.

The site inspection included an evaluation of the following CCR landfill features:

1. Interior landfill and exterior landfill perimeter road side slopes;
2. Access roads;
3. North and Southeast Stormwater Ponds;
4. Active CCR fill area (CCR disposal, spreading, compaction), and;

5. Leachate Collection System.

The following are the findings of the site inspection:

-
- Similar to 2020, minor areas of shallow rilling were noted on the side slopes, which are awaiting temporary cover. The rilling did not pose structural or operational concerns and has been actively monitored and corrected on an as required basis at Xcel Energy's direction through tracking operations on the side slopes.
- The CCR and the fly ash-lime sludge mixture is placed as 18-inch lifts on the working surface area. After placement and initial compaction, the lifts are proof-rolled using a fully loaded articulating dump truck. Soft areas that are identified during the proof-roll are supplemented with additional fly ash to achieve a more favorable moisture content, and then the proof-roll is repeated. The fly ash-lime mixture was observed in the field and appears to be acceptably stable. As anticipated, the moisture within the lime sludge sets up with the fly ash to increase the strength of the mixture. Fill operations have begun to rise above the surrounding grades and no indication of stability concerns have been detected.
- There is a landfill access road that showed no signs of operational or structural concern.
- The perimeter roads showed no signs of operational or structural concern.
- The components of the leachate collection system that could be visually inspected showed no signs of degradation and the system has reportedly been functioning properly, with exception of the leachate extraction pump which was not operable but scheduled for repair at the time of the inspection.
- Wind-blown CCR was not observed during dumping operations.
- Although outside the footprint of the East CCR Landfill, the Southeast Stormwater Pond does collect non-contact stormwater run-off from the landfill. The pond has historically had recurring issues of soil erosion along its interior western side-slope. Stormwater run-off from an adjacent road enters the pond south of the existing rip rap channel which caused erosion rills that require repairs and maintenance. To prevent this, Xcel Energy widened the rip rap channel to collect the run-off from the area of the road that is causing the erosion. As the East CCR Landfill continues to gain elevation above surrounding grades, stormwater run-off flow into the Pond has increased. It was noted that the rip rap dissipation pad at the bottom of the inlet channel has experienced some erosion and will require maintenance. The rip rap dissipation pad will require continued monitoring and maintenance as stormwater run-off flow continues to increase. It is likely that a more robust erosion control measure will need to be implemented in the future.

5 Changes in Geometry

The Federal CCR Rule requires that site geometry changes be identified since the last inspection. At the time of last year's inspection, the grades were within a few feet of reaching the elevation of the perimeter road on the northern segment and approximately 10-feet below

the elevation on the southern edge. Grades within the landfill have steadily increased in elevation over the past year. Along the northern segment of Cell 1, the grades have surpassed surrounding grades and are approximately 10-feet above the elevation of the perimeter road. The grades gradually decrease from north to south at about a 1 percent grade and are approximately 2-feet above the elevation of the perimeter road on the southern edge.

6 Approximate CCR Volume

PSCo began placing CCR in the East CCR Landfill in July of 2019. The estimated total combined volume of CCR in the East CCR Landfill as of November 2020 is 269,100 CY. During 2021, an estimated 168,100 CY of material has been placed in the landfill, which includes a total of 103,200 CY of CCR, for a total in place waste volume of approximately 437,200 CY.

7 Appearance of Structural Weakness

Based on the site inspection, no apparent or potential structural weaknesses were observed. Continued monitoring and minor repairs should be completed to address rill and gully erosion as it occurs.

8 Changes Affecting Stability or Operation

There were no observed or reported operation changes that are anticipated to impact the site's near-term or long-term stability. No areas of severe rill or gully erosion were observed that had the potential to lead to long term stability concerns. There were no new stability concerns observed or reported at the time of inspection.

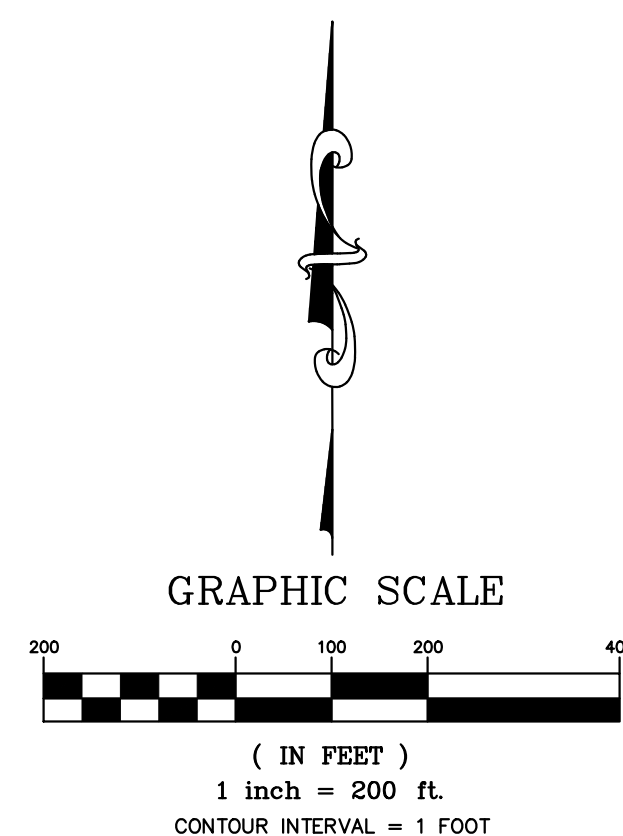
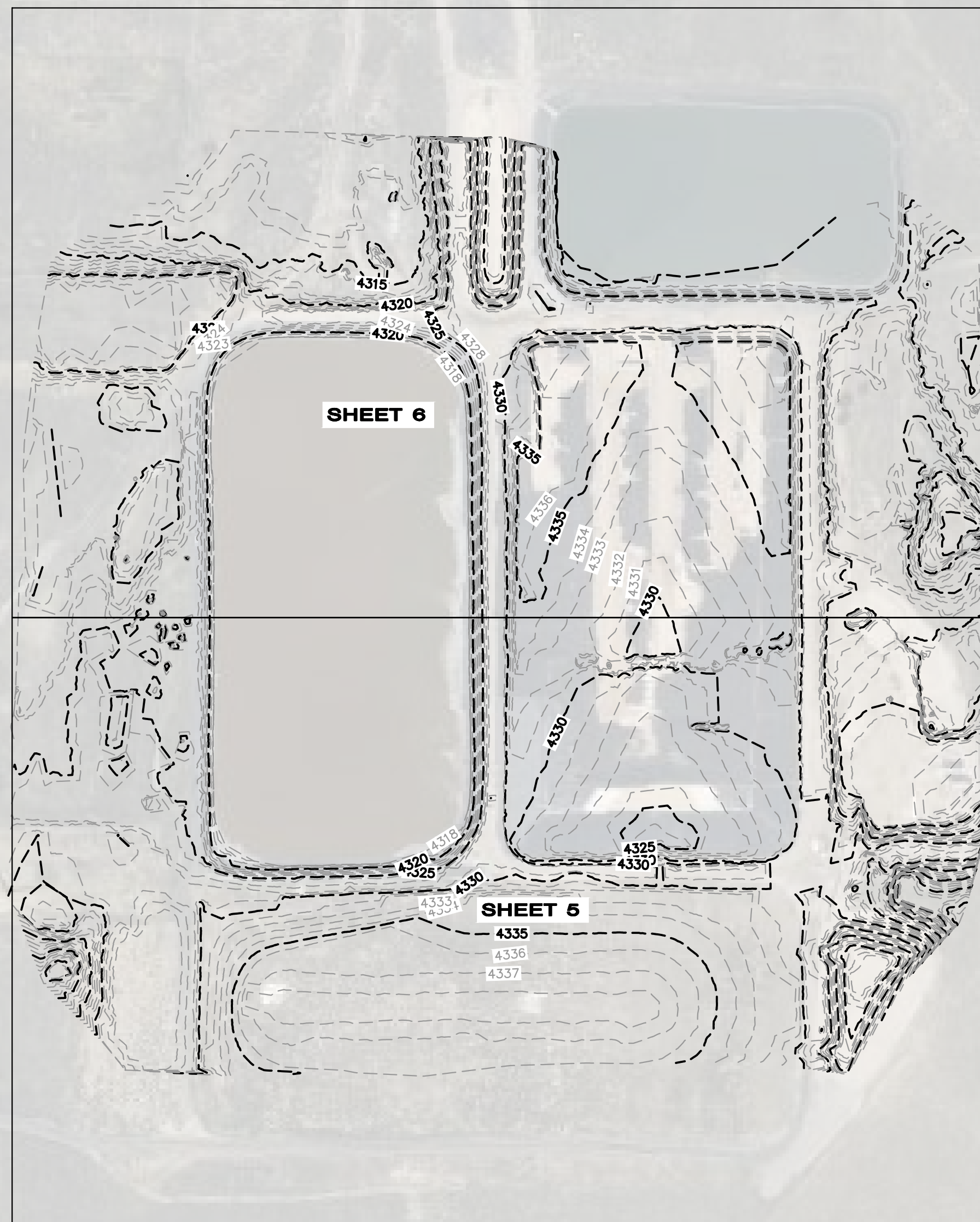
Appendix A – Facility Survey

(PROVIDED BY CLIENT)
PAWNEE POWER PLANT

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,

Notes

1. THIS EXHIBIT WAS PREPARED FOR THE BENEFIT OF A CURRENT TITLE COMMITMENT AND DOES NOT CONSTITUTE A TITLE SEARCH BY FLATIRON, INC. TO DETERMINE TITLE OR EASEMENTS OF RECORD. THIS EXHIBIT DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY BE APPLICABLE TO THE SUBJECT REAL ESTATE: EASEMENTS, OTHER THAN POSSIBLE EASEMENTS THAT WERE VISIBLE AT THE TIME OF MAKING THIS EXHIBIT; BUILDING SETBACK LINES; RESTRICTIVE COVENANTS; SUBDIVISION RESTRICTIONS; ZONING OR OTHER LAND-USE REGULATIONS; AND ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.
2. ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS EXHIBIT WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS EXHIBIT BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. THIS EXHIBIT WAS PREPARED FOR THE EXCLUSIVE USE OF HDR, NAMED IN THE STATEMENT HEREON. SAID STATEMENT DOES NOT EXTEND TO ANY UNNAMED PERSON WITHOUT AN EXPRESS STATEMENT BY THE SURVEYOR NAMING SAID PERSON.
4. THIS EXHIBIT IS VALID ONLY IF PRINT HAS SEAL AND SIGNATURE OF SURVEYOR.
5. NO UTILITIES ARE SHOWN HEREON. NO RESEARCH HAS BEEN DONE CONCERNING THE EXISTENCE, SIZE, DEPTH, CONDITION, CAPACITY OR LOCATION OF ANY UTILITY OR MUNICIPAL/PUBLIC SERVICE FACILITY. FOR INFORMATION REGARDING THESE UTILITIES, PLEASE CONTACT THE APPROPRIATE AGENCIES. ALL UNDERGROUND UTILITIES MUST BE FIELD LOCATED BY THE APPROPRIATE AGENCY OR UTILITY COMPANY PRIOR TO ANY EXCAVATION, PURSUANT TO C.R.S. SEC. 9-1.5-103.
6. THE DISTANCE MEASUREMENTS SHOWN HEREON ARE U.S. SURVEY FOOT.
7. THE CONTOURS REPRESENTED HEREON WERE INTERPOLATED BY AUTOCAD CIVIL 3D (DIGITAL TERRAIN MODELING) SOFTWARE BETWEEN ACTUAL MEASURED SPOT ELEVATIONS. DEPENDING ON THE DISTANCE FROM A MEASURED SPOT ELEVATION AND LOCAL VARIATIONS IN TOPOGRAPHY, THE CONTOUR SHOWN MAY NOT BE AN EXACT REPRESENTATION OF THE SITE TOPOGRAPHY. THE PURPOSE OF THIS TOPOGRAPHIC MAP IS FOR SITE EVALUATION AND TO SHOW SURFACE DRAINAGE FEATURES. ADDITIONAL TOPOGRAPHIC OBSERVATIONS MAY BE NECESSARY IN SPECIFIC AREAS OF DESIGN. TOPOGRAPHY SHOWN HEREON COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.
8. BENCHMARK INFORMATION: TRIMBLE VRS NOW CONTINUOUSLY OPERATING REFERENCE STATIONS (CORS) NETWORK WAS USED TO ESTABLISH A GPS DERIVED ELEVATION ON AN ON-SITE BENCHMARK AT THE NORTHEASTERLY CORNER OF THE NORTHWESTERLY POND, BEING A FOUND #5 REBAR WITH AN ELEVATION OF 4324.12 FEET (NAVD 88). NGS POINT TOWER ET, BEING A BENCHMARK DISK STAMPED "TOWER ET 1963" LOCATED 1.0 MILES FROM THE SITE, WITH A PUBLISHED ELEVATION OF 4410.21 FEET, WAS CHECKED WITH AN AS-MEASURED ELEVATION OF 4410.21 FEET. NO DIFFERENTIAL LEVELING WAS PERFORMED TO ESTABLISH THE ELEVATION OF THE ON-SITE BENCHMARK.
9. DATES OF FIELDWORK: AUGUST 25 & 26, 2021 (CREW CHIEF J. HANNAHOE)
10. BOUNDARY DETERMINATION IS NOT A PART OF THIS EXHIBIT. THIS IS NOT A "LAND SURVEY PLAT" OR "IMPROVEMENT SURVEY PLAT" AND THIS EXHIBIT IS NOT INTENDED FOR PURPOSES OF TRANSFER OF TITLE OR SUBDIVISIONS OF LAND AND THAT IT IS NOT TO BE RELIED UPON FOR THE ESTABLISHMENT OF A FENCE, BUILDING OR OTHER FUTURE IMPROVEMENT LINES. PARCEL LINES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE DRAWN FROM RECORD INFORMATION AVAILABLE DURING THE PREPARATION OF THIS EXHIBIT. AN IMPROVEMENT SURVEY PLAT IS RECOMMENDED TO CHECK MORE PRECISELY THE LOCATIONS OF THE IMPROVEMENTS SHOWN HEREON.



I, EDGAR T. BRISTOW, A LAND SURVEYOR LICENSED IN THE STATE OF COLORADO, HEREBY STATE FOR AND ON BEHALF OF FLATIRON, INC., TO HDR, THAT THIS TOPOGRAPHIC EXHIBIT WAS PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, IS IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS NOT A WARRANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED. SAID EXHIBIT AND THE RELATIVE ELEVATIONS SHOWN HEREON ARE ACCURATE TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF.

EDGAR T. BRISTOW COLORADO P.L.S. #19588
PRESIDENT, FLATIRONS, INC.

REVISION	DATE
1	—
2	—
3	—
4	—
5	—
6	—
7	—
8	—
9	—

TOPOGRAPHIC EXHIBIT

HDR

COPYRIGHT 2021 FLATIRON, INC.

Flatirons, Inc.

Land Surveying Services
www.FlatironsInc.com

655 FOURTH AVE
LONGMONT, CO 80501
PH: (303) 776-1733
FAX: (303) 776-4355

3825 IRIS AVE, STE 395
BOULDER, CO 80301
PH: (303) 443-7001
FAX: (303) 443-9830

4501 LOGAN ST.
DENVER, CO 80216
PH: (303) 936-6997
FAX: (303) 923-3180



JOB NUMBER:
21-76,879

DATE: _____

09-08-2021

DRAWN BY:

M. LUND

CHECKED BY:

JS/JZG/ETB

SHEET 1 OF 6

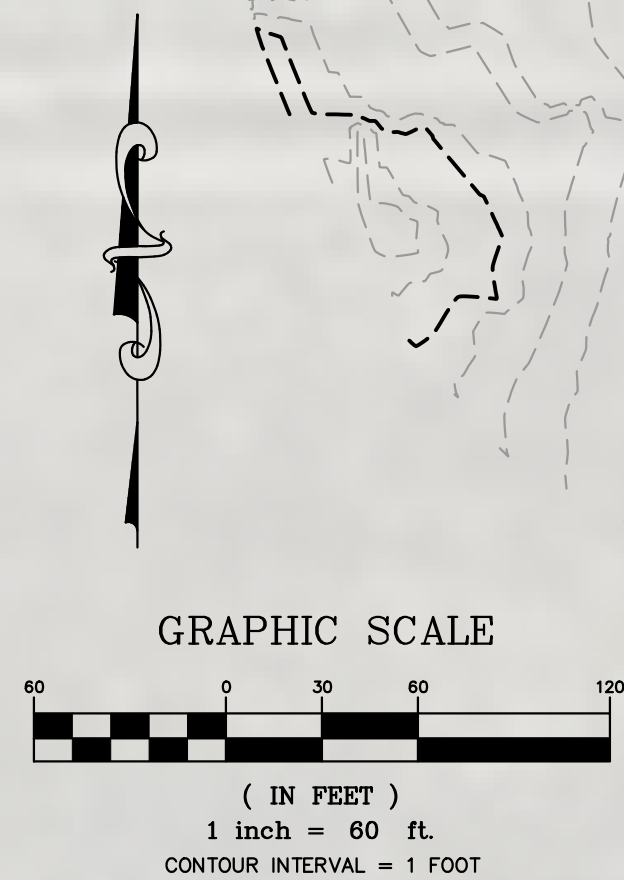
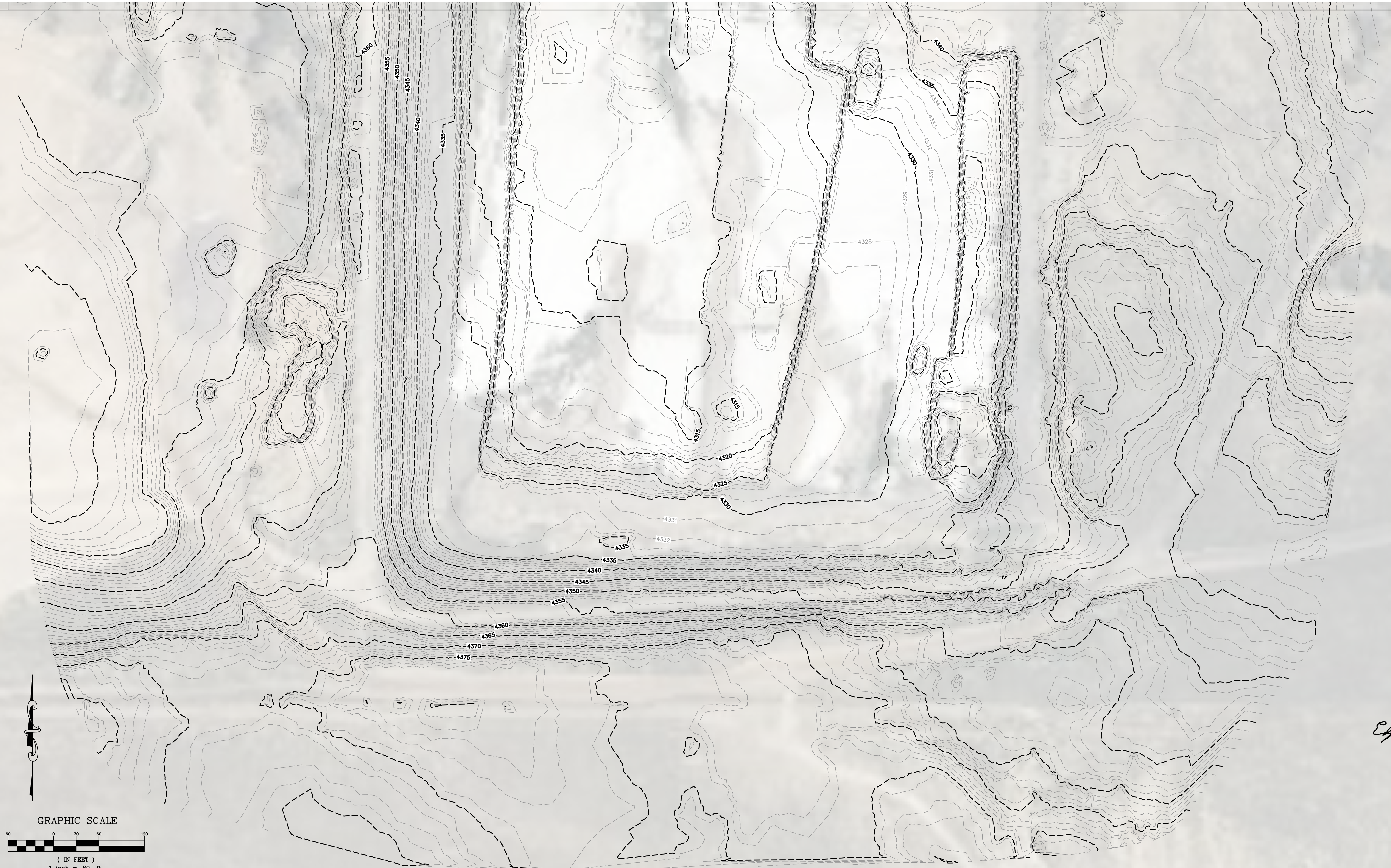
TOPOGRAPHIC EXHIBIT

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,
COUNTY OF MORGAN, STATE OF COLORADO

SHEET 2 OF 6

SEE SHEET 3

SEE SHEET 3



REVISION	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

TOPOGRAPHIC EXHIBIT

PREPARED FOR

HDR

COPYRIGHT 2021 FLATIRONS, INC.

Flatirons, Inc.

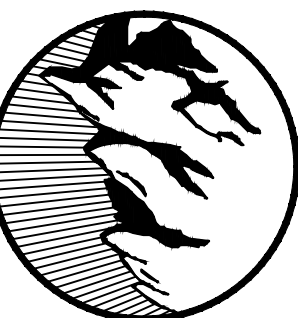
Land Surveying Services

www.flatironsinc.com

655 FOURTH AVE
LONGMONT, CO 80501
PH: (303) 776-1733
FAX: (303) 776-4355

3825 IRIS AVE, STE. 395
BOULDER, CO 80301
PH: (303) 443-7001
FAX: (303) 443-9830

4501 LOGAN ST.
DENVER, CO 80216
PH: (303) 936-6987
FAX: (303) 923-3180



JOB NUMBER:
21-76,879

DATE:
09-08-2021

DRAWN BY:
M. LUND

CHECKED BY:
JS/JZG/ETB

SHEET 2 OF 6

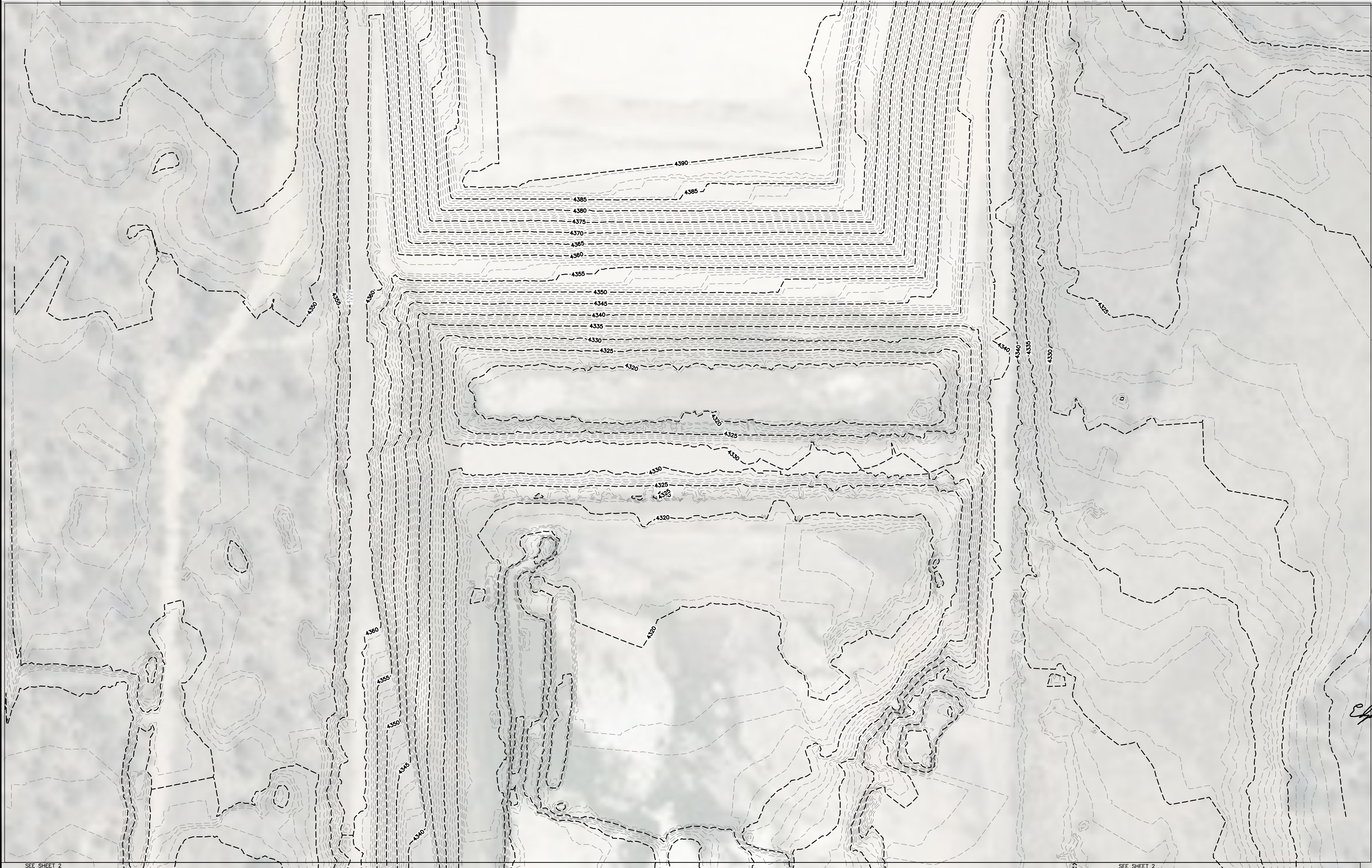
TOPOGRAPHIC EXHIBIT

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,
COUNTY OF MORGAN, STATE OF COLORADO

SHEET 3 OF 6

SEE SHEET 4

SEE SHEET 4



SEE SHEET 2

SEE SHEET 2

REVISION	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

TOPOGRAPHIC EXHIBIT

PREPARED FOR

HDR

COPYRIGHT 2021 FLATIRONS, INC.

Flatirons, Inc.

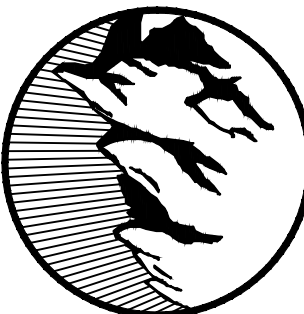
Land Surveying Services

www.FlatironsInc.com

655 FOURTH AVE
LONGMONT, CO 80501
PH: (303) 776-1733
FAX: (303) 776-4355

3825 IRIS AVE, STE. 395
BOULDER, CO 80301
PH: (303) 443-7001
FAX: (303) 443-9830

4501 LOGAN ST.
DENVER, CO 80216
PH: (303) 936-6987
FAX: (303) 923-3180



JOB NUMBER:
21-76,879
DATE:
09-08-2021
DRAWN BY:
M. LUND
CHECKED BY:
JS/JZG/ETB

SHEET 3 OF 6

TOPOGRAPHIC EXHIBIT

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,
COUNTY OF MORGAN, STATE OF COLORADO

SHEET 4 OF 6



BY:MJLUND FILE:76879-XCEL PANNEE TOPO.DWG DATE:9/9/2021 8:37 AM

SEE SHEET 3

SEE SHEET 3

REVISION	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

TOPOGRAPHIC EXHIBIT

PREPARED FOR

HDR

COPYRIGHT 2021 FLATIRON, INC.

Flatirons, Inc.

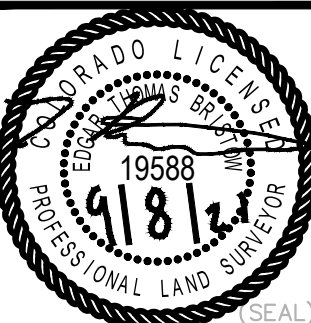
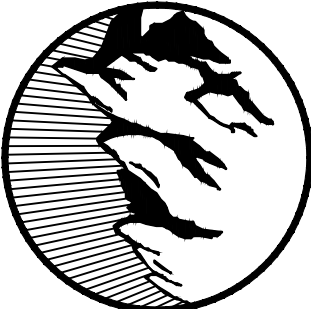
Land Surveying Services

www.FlatironsInc.com

655 FOURTH AVE
LONGMONT, CO 80501
PH: (303) 776-1733
FAX: (303) 776-4355

3825 IRIS AVE, STE. 395
BOULDER, CO 80301
PH: (303) 443-7001
FAX: (303) 443-9830

4501 LOGAN ST.
DENVER, CO 80216
PH: (303) 936-6987
FAX: (303) 923-3180



JOB NUMBER:
21-76,879

DATE:
09-08-2021

DRAWN BY:
M. LUND

CHECKED BY:
JS/JZG/ETB

SHEET 4 OF 6

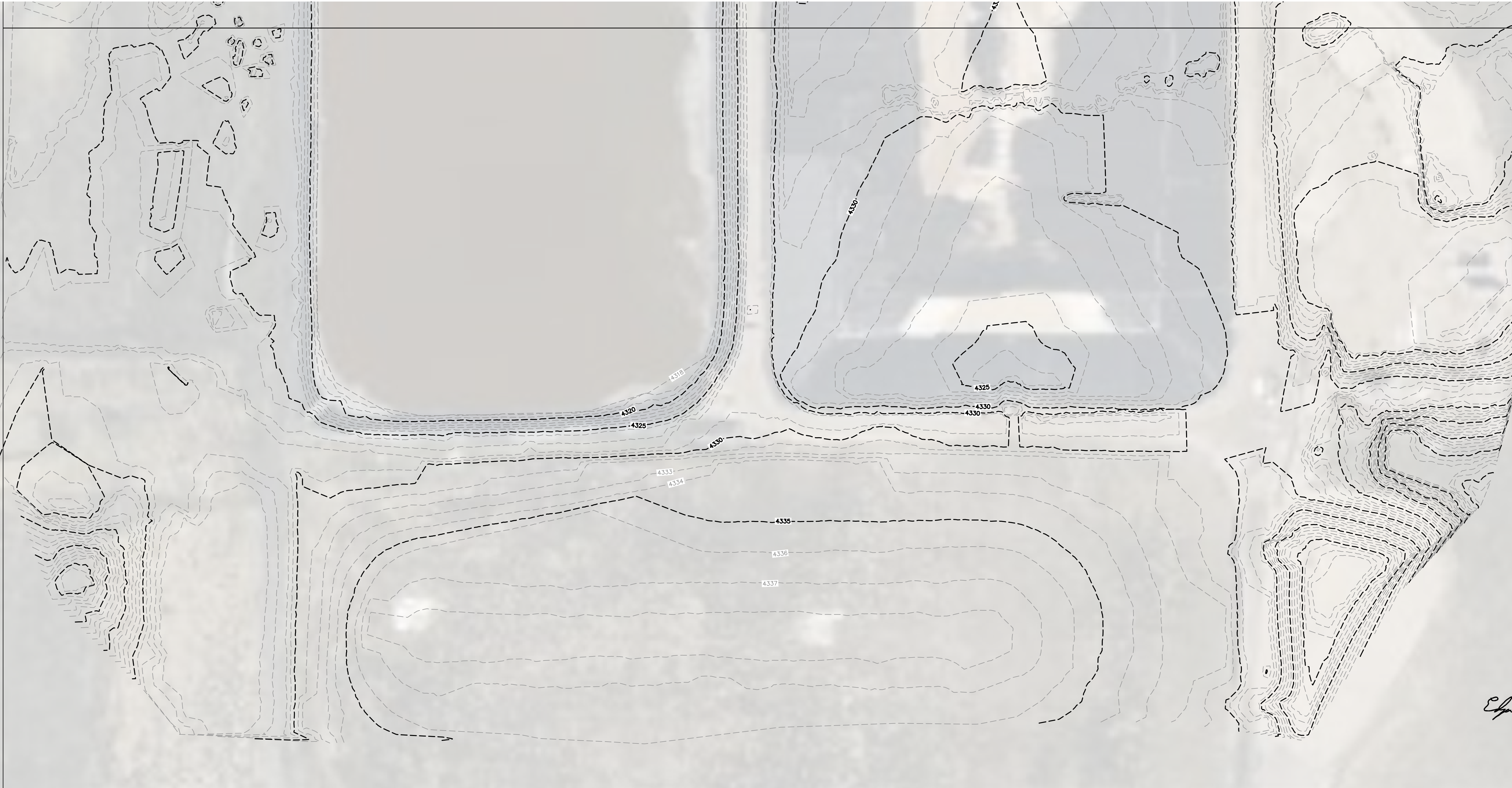
TOPOGRAPHIC EXHIBIT

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,
COUNTY OF MORGAN, STATE OF COLORADO

SHEET 5 OF 6

SEE SHEET 6

SEE SHEET 6



TOPOGRAPHIC EXHIBIT

PREPARED FOR

HDR

COPYRIGHT 2021 FLATIRON, INC.

Flatiron, Inc.

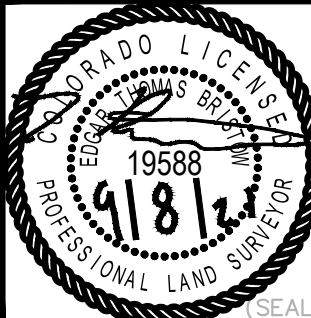
Land Surveying Services

www.FlatironInc.com

655 FOURTH AVE
LONGMONT, CO 80501
PH: (303) 776-1733
FAX: (303) 776-4355

3825 IRIS AVE, STE. 395
BOULDER, CO 80301
PH: (303) 443-7001
FAX: (303) 443-9830

4501 LOGAN ST.
DENVER, CO 80216
PH: (303) 936-6987
FAX: (303) 923-3180



JOB NUMBER:

21-76,879

DATE:

09-08-2021

DRAWN BY:

M. LUND

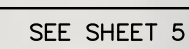
CHECKED BY:

JS/JZG/ETB

SHEET 5 OF 6

A PARCEL OF LAND LOCATED IN SECTIONS 19 & 20, TOWNSHIP 3 NORTH, RANGE
56 WEST OF THE 6TH P.M.,
COUNTY OF MORGAN, STATE OF COLORADO

SHEET 6 OF 6

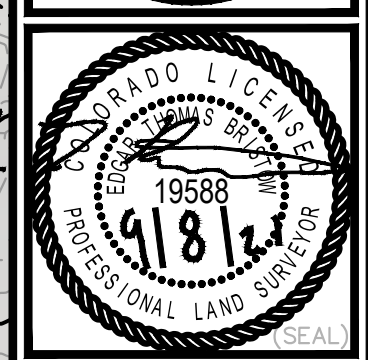


SEE SHEET 5

TOPOGRAPHIC EXHIBIT
PREPARED FOR

HDR

COPYRIGHT 2021 FLATRONS, INC.



SHEET 6 OF 6