REGULAR MEETING AGENDA

City of Black Hawk City Council
211 Church Street, Black Hawk, CO

February 10, 2021
3:00 p.m.

The City of Black Hawk is hosting Virtual City Council meetings in Zoom in response to the Coronavirus COVID-19 until further notice. There are no physical meetings at this time.

Join from a PC, Mac, iPad, iPhone, or Android device:
Please click this URL to join: https://us02web.zoom.us/s/88272668426

Or join by phone:
877-853-5257 or 888-475-4499 (both Toll-Free)

Webinar ID: 882 7266 8426
International numbers available

Phone commands using your phone's dial pad while in a Zoom meeting:

*6 – Toggle mute/unmute
*9 – Raise your hand to make a public comment or to speak for or against a Public Hearing matter

Public Comment:
If you wish to make a public comment during the meeting, please go to:
https://www.cityofblackhawk.org/comment_signup
and provide your Name, Email address, and Telephone.
During the Public comment section of the meeting, the host will go to sign up to ask for comments from those who have signed up

1. CALL TO ORDER:
2. ROLL CALL & PLEDGE OF ALLEGIANCE:
3. AGENDA CHANGES:
4. CONFLICTS OF INTEREST: (Council disclosures are on file w/City Clerk & Sec. of State)
5. PUBLIC COMMENT: *Please limit comments to 5 minutes*
6. APPROVAL OF MINUTES: January 27, 2021
7. PUBLIC HEARINGS:
   - A. CB5, An Ordinance Approving the Intergovernmental Agreement with Douglas County, Colorado for Access to the County's Emergency Vehicle Operations Course
   - C. Resolution 8-2021, A Resolution Conditionally Approving the Black Hawk Park Preliminary and Final Plat
8. ACTION ITEMS:

   None
9. CITY MANAGER REPORTS: Introduction of New Employees
10. CITY ATTORNEY REPORTS:

11. EXECUTIVE SESSION:

12. ADJOURNMENT:

City of Black Hawk
City Council

January 27, 2021

MEETING MINUTES

1. CALL TO ORDER: Mayor Spellman called the regular meeting of the City Council to order on Wednesday, January 27, 2021, at 3:00 p.m.

2. ROLL CALL: Present were: Mayor Spellman, Aldermen Armbright, Bennett, Johnson, Midcap, Moates, and Torres.

Virtual/Present Staff: City Attorney Hoffmann, City Manager Cole, Police Chief Moriarty, Fire Chief Woolley, Finance Director Hillis, City Clerk/Administrative Services Director Greiner, Public Works Director Isbester, Water Manager Ford, Community Planning & Development Director Linker, IT Manager Muhammad, and Deputy City Clerk Martin.

PLEDGE OF ALLEGIANCE: Mayor Spellman led the meeting in the recitation of the Pledge of Allegiance.

3. AGENDA CHANGES: Deputy City Clerk Martin confirmed there were no changes to the agenda.

4. CONFLICTS OF INTEREST: City Attorney Hoffmann asked Council to declare any Conflicts of Interest on any issue appearing on the agenda this afternoon other than those previous disclosures and conflicts that have already been disclosed and are on file with the City Clerk and Secretary of State. City Council noted no conflicts.

City Attorney Hoffmann asked the virtual audience if there were any objections to any member of Council voting on any issue on the agenda this afternoon. There were no objections noted.

5. PUBLIC COMMENT: City Clerk Greiner confirmed that no one had signed up for public comment.

6. APPROVAL OF MINUTES: January 13, 2021

MOTION TO APPROVE Alderman Armbright **MOVED** and was **SECONDED** by Alderman Torres to approve the Minutes as presented.

MOTION PASSED There was no discussion, and the motion unanimously.

7. PUBLIC HEARINGS:

A. CB4, An Ordinance Approving an Amendment to the Water Storage Agreement Between the City of Black Hawk and the Town of Georgetown

Mayor Spellman read the title and opened the public hearing.

Water Manager Ford introduced this item. He said the City participated in a dredging operation two years ago, resulting in an additional 5.6 acre-foot of storage. He said this amendment allows Black Hawk to store this additional 5.6 acres in Georgetown Lake, giving Black Hawk a total of 160.1 acre-feet of water storage.

PUBLIC HEARING: Mayor Spellman declared a Public Hearing on CB4, an Ordinance approving an Amendment to the Water Storage Agreement between the City of Black Hawk and the Town of Georgetown open and invited anyone wanting to address the Board either "for" or "against" the proposed ordinance to come forward.

No one wished to speak, and Mayor Spellman declared the Public Hearing closed.

MOTION TO APPROVE Alderman Torres **MOVED** and was **SECONDED** by Alderman Johnson to approve CB4, an Ordinance approving an Amendment to the Water Storage Agreement between the City of Black Hawk and the Town of Georgetown.

MOTION PASSED There was no discussion, and the motion **PASSED** unanimously.

B. Local Liquor Licensing Authority Consideration to Approve a Change of Location for Chicago Dogs Eatery, Inc., dba Chicago Dogs Eatery, 488 Main Street, Unit A

Mayor Spellman read the title and opened the public hearing.

City Attorney Hoffmann introduced this item to City Council, acting as the Local Liquor Licensing Authority. He said that Chicago Dogs is physically moving their location a thousand feet or so due to the Monarch

construction; the address remains the same. He confirmed that the Public noticing requirements were met and reminded the Authority that they had waived the petitioning requirements at their last meeting since the neighborhood is the same.

Kirk Webb, on behalf of Chicago Dogs, was present to answer any questions.

PUBLIC HEARING: Mayor Spellman declared a Public Hearing on a Change of Location for Chicago Dogs Eatery, Inc., dba Chicago Dogs Eatery, 488 Main Street, Unit A open and invited anyone wanting to address the Board either "for" or "against" the proposal to come forward.

No one wished to speak, and Mayor Spellman declared the Public Hearing closed.

MOTION TO APPROVE Alderman Bennett **MOVED** and was **SECONDED** by Alderman Johnson to approve the Findings and Decision for a Change of Location for Chicago Dogs Eatery, Inc., dba Chicago Dogs Eatery, 488 Main Street, Unit A.

MOTION PASSED There was no discussion, and the motion **PASSED** unanimously.

8. ACTION ITEMS:

None

9. CITY MANAGER REPORTS: City Manager Cole had nothing to report.

10. CITY ATTORNEY: City Attorney Hoffmann had nothing to report.

11. EXECUTIVE SESSION: City Attorney Hoffmann recommended item number 5 only for Executive Session.

MOTION TO ADJOURN INTO EXECUTIVE SESSION Alderman Bennett **MOVED** and was **SECONDED** by Alderman Johnson to adjourn into Executive Session at 3:08 p.m. to hold a conference with the City's attorney to determine positions relative to matters that may be subject to negotiations, develop a strategy for

negotiations, and/or instruct negotiators, pursuant to C.R.S. § 24-6-402(4)(e).

MOTION PASSED There was no discussion, and the motion **PASSED** unanimously.

MOTION TO ADJOURN Alderman Bennett **MOVED** and was **SECONDED** by Alderman Johnson to adjourn the Executive Session at 3:14 p.m.

MOTION PASSED There was no discussion, and the motion **PASSED** unanimously.

12. ADJOURNMENT: Mayor Spellman declared the Regular Meeting of the City Council closed at 3:14 p.m.

_____
Melissa A. Greiner, CMC
City Clerk

_____
David D. Spellman
Mayor

DRAFT

COUNCIL BILL 5
ORDINANCE 2021-5
AN ORDINANCE APPROVING THE INTERGOVENMENTAL AGREEMENT WITH DOUGLAS COUNTY, COLORADO FOR ACCESS TO THE COUNTY'S EMERGENCY VEHICLE OPERATIONS COURSE

STATE OF COLORADO
COUNTY OF GILPIN
CITY OF BLACK HAWK

COUNCIL BILL NUMBER: CB5

ORDINANCE NUMBER: 2021-5

TITLE: AN ORDINANCE APPROVING THE INTERGOVENMENTAL AGREEMENT WITH DOUGLAS COUNTY, COLORADO FOR ACCESS TO THE COUNTY'S EMERGENCY VEHICLE OPERATIONS COURSE

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BLACK HAWK, GILPIN COUNTY:

Section 1. The Intergovernmental Agreement with Douglas County, Colorado for the use of the County's Emergency Vehicle Operations Course, attached hereto as **Exhibit A**, is hereby approved, and the Mayor is authorized to execute the same on behalf of the City.

Section 2. Safety Clause. The City Council hereby finds, determines, and declares that this Ordinance is promulgated under the general police power of the City of Black Hawk, that it is promulgated for the health, safety, and welfare of the public, and that this Ordinance is necessary for the preservation of health and safety and for the protection of public convenience and welfare. The City Council further determines that the Ordinance bears a rational relation to the proper legislative object sought to be attained.

Section 3. Severability. If any clause, sentence, paragraph, or part of this Ordinance or the application thereof to any person or circumstances shall for any reason be adjudged by a court of competent jurisdiction invalid, such judgment shall not affect application to other persons or circumstances.

Section 4. Effective Date. The City Clerk is directed to post the Ordinance as required by the Charter. This Ordinance shall become effective upon posting by the City Clerk.

READ, PASSED AND ORDERED POSTED this 10th day of February, 2021.

_____
David D. Spellman, Mayor

ATTEST:

_____
Melissa A. Greiner, CMC, City Clerk

CITY OF BLACK HAWK
REQUEST FOR COUNCIL ACTION

SUBJECT: IGA for Douglas County CODE 303 Driving Training

RECOMMENDATION: Staff recommends the following motion to the Mayor and Board of Aldermen:

MOTION TO APPROVE (or deny, etc.) Ordinance 2021-5, an Ordinance approving the Intergovernmental Agreement with Douglas County, Colorado for access to the County's Emergency Vehicle Operations Course.

SUMMARY AND BACKGROUND OF SUBJECT MATTER:
In the past, the Police Department has been able to use Miners Mesa parking lot for POST required driving training. However, the PD needs to locate a new area (facility) for training with the new construction area. The PD would like to sign an IGA with Douglas County CODE 303 to use their driving track. The CODE 303 facility would allow the department to conduct full training days and accommodate all the POST required hours.
Website link: https://hrletf.org/services/code-303/

AGENDA DATE: 2/10/21

WORKSHOP DATE: N/A

FUNDING SOURCE: **PD Training Funds**

DEPARTMENT DIRECTOR APPROVAL: [**X**]Yes [ ]No

STAFF PERSON RESPONSIBLE: Commander Troy Cooper (EVOC Driving Instructor)

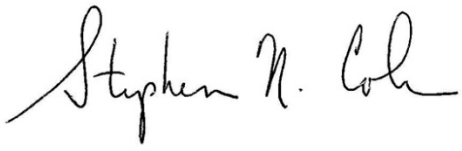
DOCUMENTS ATTACHED: Yes

RECORD: [ ]Yes [**X**]No

CITY ATTORNEY REVIEW: [X]Yes [ ]N/A

SUBMITTED BY: **REVIEWED BY:**





Michelle Moriarty, Chief of Police

Stephen N. Cole, City Manager

INTERGOVERNMENTAL TERMS OF USE FOR THE EMERGENCY VEHICLE OPERATIONS COURSE

This Intergovernmental Agreement, executed on this 14th day of Jan., 2021, is made and entered into by and between the Black Hawk Police Dept. (the "User"), and the COUNTY OF DOUGLAS, STATE OF COLORADO, for the use of certain improved property located at 8500 Moore Road in Douglas County, Colorado.

WHEREAS, Douglas County desires to allow User access to and use of the premises described on Exhibit A (the "EVOC") attached hereto and incorporated herein; and

WHEREAS, User desires to use the EVOC for their vehicle and/or public safety training purposes; and

WHEREAS, User understands that the Highlands Ranch Law Enforcement Training Foundation, Inc. (the "HRLETF") manages the EVOC for Douglas County.

NOW THEREFORE, the parties agree as follows:

I. TERMS AND CONDITIONS

A. User agrees to ensure that any of its employees, agents, officials, invitees or other persons associated in any way with User, abide by all of the policies, rules, and directions of Douglas County or HRLETF staff as a condition of being allowed on the premises of the EVOC. Failure to abide by any of those polices, rules or directions may result in forfeiture of any rights or privileges under this Agreement and/or expulsion from the EVOC at the sole discretion of Douglas County or HRLETF.

B. Release of Liability:

User, its successors and assigns shall forever release, waive, discharge, and relinquish any claim of liability against Douglas County, the Douglas County Sheriff's Office (DCSO), and the HRLETF or any of their principals, affiliates, sponsors, volunteers, agents, officials, employees, successors, and assigns from any and all actions, causes of action, claims, charges, demands, losses, damages, costs, attorney's fees, judgments, liens, indebtedness and liabilities of every kind and character, whether known or unknown, in any way connected to, related to, or arising out of User's presence or participation in any activity at the EVOC, regardless of any negligence of Douglas County, the DCSO, and/or the HRLETF.

C. Insurance:

1. User will ensure they have sufficient insurance to cover any and all hazards, damages, costs and liabilities associated with the use of the EVOC. The User shall provide

evidence that such requirements have been met and shall provide updated information to Douglas County in the event any changes are made to the User's insurance coverage prior to any use of the EVOC.

2. General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS ($1,000,000) each occurrence and ONE MILLION DOLLARS ($1,000,000) aggregate. The policy will be applicable to all premises and operations. The policy will include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy will include coverage for explosion, collapse and underground hazards. The policy will contain a severability of interests provision.

3. Automobile Liability insurance with minimum combined single limits for bodily injury and property damage of not less than ONE MILLION DOLLARS ($1,000,000) each occurrence with respect to each of User's owned, hired and non-owned vehicles on the premises at the EVOC. The policy will contain a severability of interests provision.

4. The required General Liability and Automobile Liability policies will be endorsed to include Douglas County and the HRLETF as a Certificate Holders and name both entities, their officers and employees as additional insureds. Douglas County reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

5. User hereby grants to Douglas County and HRLETF a waiver of subrogation which any insurer may acquire against either entity, their officers, officials, employees, and volunteers, from User by virtue of the payment of any loss. User agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation but this provision applies regardless of whether or not the Douglas County or HRLETF has received a waiver of subrogation endorsement from the insurer. This provision also applies to the User's Workers' Compensation policy.

6. If User maintains broader coverage and/or higher limits than the minimums shown above, Douglas County and HRLETF require and shall be entitled to the broader coverage and/or higher limits maintained by the User. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to Douglas County and HRLETF.

D. Fuel Provisions:

1. A fuel tank may be accessible by the User in the vicinity of the EVOC with sufficient prior coordination.

2. The amount per gallon to be charged for the fuel will be determined upon the prior coordination for its availability and will be no more than the costs to Douglas County to provide the fuel.

3. Prior to receiving any fuel from Douglas County, the User will provide the Colorado state issued gasoline tax exemption certificate and hereby certifies that any such fuel will be used exclusively by the User for its governmental functions and activities pursuant to Colorado Revised Statutes 39-27-102.

II. TERM OF AGREEMENT

A. This Agreement shall commence as of the execution of this Agreement and will continue to be in effect any time the User makes any use of the EVOC unless otherwise terminated.

B. Either party may terminate this Agreement by giving the other party not less than ninety (90) days prior written notice, such notice shall be sent to the party's address as listed on the signature page of this Agreement.

III. MISCELLANEOUS

A. Liability. Each party shall be fully responsible for its own employee(s) consistent with all applicable laws. Each party agrees to provide the other party written notice within sixty (60) days of the knowledge of any claim or controversy associated with any activity related to this Agreement.

B. Governmental Immunity. All activities performed under this Agreement are hereby declared to be governmental functions. The parties to this Agreement and their personnel complying with or reasonably attempting to comply with this Agreement or any ordinance, order, rule or regulation enacted or promulgated pursuant to the provisions of this Agreement shall be deemed to be operating within the scope of their duties and responsibilities and in furtherance of said governmental functions.

C. No Waiver Under CGIA. Nothing in this Agreement shall be construed as a waiver by either party of the protections afforded them pursuant to the Colorado Governmental Immunity Act, Sections 24-10-101 et seq., C.R.S. ("CGIA") as same may be amended from time to time. Specifically, neither party waives the monetary limitations or any other rights, immunities or protections afforded by the CGIA or otherwise available at law.

D. Third Parties. This Agreement does not and shall not be deemed to confer upon any third party any right to claim damages, to sue, or bring other proceedings against either User or Douglas County because of any terms contained in this Agreement.

E. Severability. In the event that any of the provisions of this Agreement shall be held to be invalid or unenforceable, the remaining provisions shall nevertheless continue to be valid and enforceable as though the invalid or unenforceable parts had not been included therein.

F. Entire Agreement. This Agreement constitutes the entire agreement and understanding between the parties and supersedes any prior agreement or understanding relating to the subject matter of this Agreement.

G. Modification. This Agreement may be modified or amended only by a duly authorized written instrument executed by the parties hereto.

H. Survival. The rights and obligations of the parties shall survive the term of this Agreement to the extent that any performance is required under this Agreement after the expiration or termination of this Agreement.

I. Notices. Any notice to be given hereunder by either party to the other may be effected in writing by personal delivery, or by mail, certified with postage prepaid, or by overnight delivery service. Notices sent by mail or by an overnight delivery service shall be addressed to the parties at the addresses appearing following their signatures below, but either party may change its address by written notice in accordance with this paragraph.

J. Governing Law and Venue. This Agreement shall be governed by and interpreted in accordance with the laws of the State of Colorado without regard to the conflict of laws of such State. Venue for any action hereunder shall be in the District Court, County of Douglas, State of Colorado. The User expressly waives the right to bring any action in or to remove any action to any other jurisdiction, whether state or federal.

K. Good Faith. The parties agree to work together in good faith in performing their obligations hereunder.

IN WITNESS WHEREOF, the User caused this Intergovernmental Agency Agreement to be executed by its duly authorized representatives:

Executed this 14th **day of** Jan. **,** 20 21.

BY: Michelle Morris (Chief)
(Insert Name & Position of Signatory)

Date: 01/14/2021

ATTEST:

By: _____

Date: _____

DOUGLAS COUNTY

CODE 303

DRIVERS TRAINING COURSE

Emergency Vehicle Operation Center
8500 Moore Rd.
Littleton, Colorado 80125 USA

Facility Safety Plan & User Rules

Effective: July 30, 2020



Managed By:

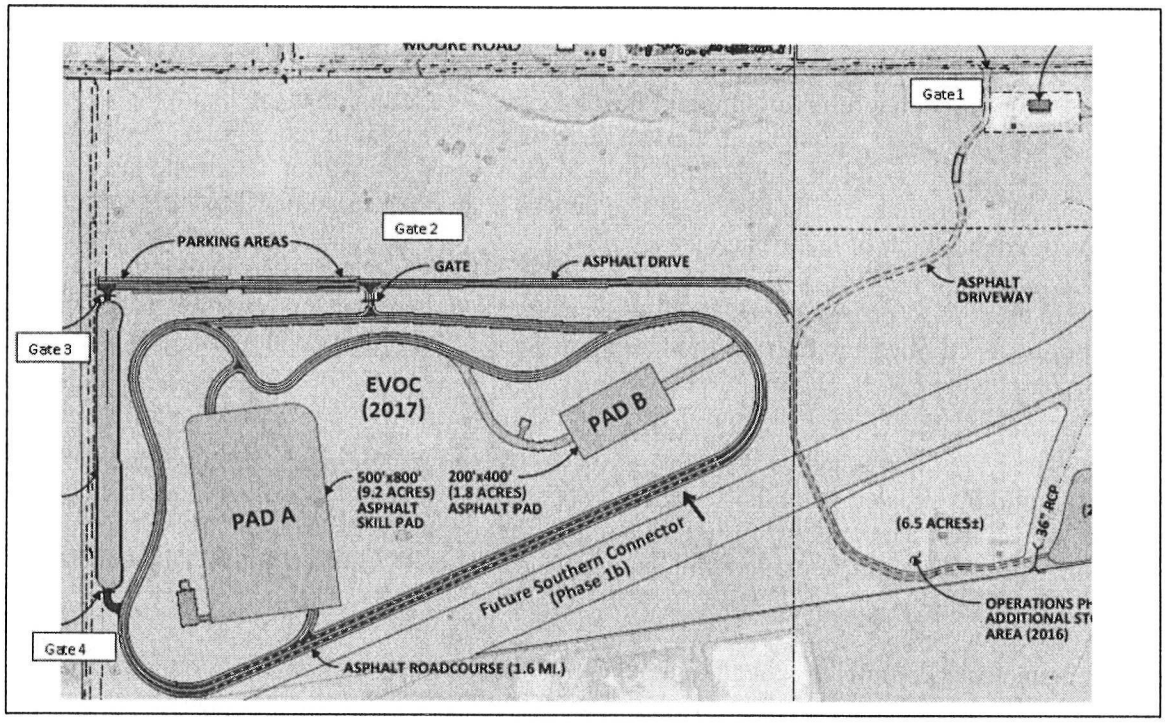
HIGHLANDS RANCH
LAW ENFORCEMENT
TRAINING FOUNDATION

HRLETF.org

Revised 7/30/2020

Driver Training Facility Details:

Perimeter Driving Course		1.6 miles asphalt paved with .5 mile 4-lane section
Pad A	Cones onsite	Skills Pad: 9.2 acres asphalt paved
Pad B	Cones onsite	Skills Pad: 1.8 acres asphalt paved
TIM Area		2.2 acres concrete roadway (shared with CDOT)
Student Parking		At south end of Liniger Way
Restrooms		Port-o-lets at Student Parking, Skill Pad-A, & Skill Pad-B
GPS Coordinates	Entrance at 8500 Moore Rd.	N 39 48 7986 W 105 02 5956



Scheduling: **EVOC usage must be specifically scheduled.** Users may only use the part(s) of the EVOC for which they are specifically scheduled. Users are required to be at the facility at least 30 minutes before their scheduled start time to complete a safety check before training begins. Users may forfeit scheduled use of the facility if they do not arrive by the noted times. Agencies that want to use a forfeited training area must contact the HRLETF director before doing so.

Check scheduling availability at www.HRLETF.org/evoc/. To schedule instructional time, the user/agency must email or call the EVOC facility director (noted above).

Cancellations: Government users and approved private users who cancel a scheduled reservation(s) with less than 30 days written notice, to the EVOC facility director, may be subject to a non-refundable cancellation fee equal to 25% of the cost of their initial scheduled reservation (except in cases of severe weather that reasonably compel cancellation). All cancellations shall be in writing and effective upon receipt by the EVOC facility director.

Hours of Operation:

Monday through Friday – Opens at 08:00 hours; Closes at 21:00 hours

Scheduling periods in 6 hour increments:

1. 08:00 hours till 14:00 hours
2. 14:30 hours till 20:30 hours

Saturday and Sunday – Opens at 08:00 hours; closes at 18:00 hours

Scheduling periods in 5 hour increments:

1. 08:00 hours- 13:00 hours
2. 13:00 hours- 18:00 hours

Safety Plan & Requirements: **The EVOC is secured by a series of four gates - # 1 – 4.**

Before the start of any training, the agency conducting the training will designate a **Lead Instructor** who will:

- Ensure all participating instructors and students have a working knowledge of this safety plan and rules.
- Ensure students park personal vehicles in the designated parking area, outside GATE 2. The only exceptions are if a personal vehicle(s) is authorized as part of an approved private teen/senior driver training class or approved special event.
- Ensure there is adequate telephone communication for emergency response on site, or assign two people to respond to a telephone to call 911 in the event of an emergency
- Ensure there is cell phone or agency radio communication between instructors to coordinate training activities and ensure safety.
- Appoint at least one person as a Safety Officer, with the responsibility for safety oversight, emergency notifications, and other tasks that ensure compliance to this plan.
- Appoint at least two persons to respond to the entry area to "guide in" emergency responders in the event of an emergency.
- Ensure that a first aid kit is readily available.
- Agency instructors are encouraged to share training cone configurations and driver training curriculum whenever possible and permissible, to help ensure training consistency and facility safety.

The EVOC has basic emergency first aid and other safety/training equipment available during operational hours only (fire extinguishers, AED, first-aid kit); however, it is encouraged that each agency be responsible for providing their own equipment for which they were trained.

It is not our intent to interfere in an agency's training, standard operating procedures, or policies, unless it affects the effectiveness of this safety plan or the overall safety of the EVOC. It is our intent to keep the EVOC as safe as possible for everyone. We may record the actions and movement of personnel, vehicles and any use of facilities via security camera locations. These cameras are for everyone's safety and security.

Each agency and student must make every reasonable effort to comply with the intent of this safety plan.

*** IMPORTANT Safety & Operational Rules *** All Users shall adhere to these rules and protocols, Failure to comply may result in the suspension or termination of EVOC use.

1. Personal use of the facility is PROHIBITED. Any prohibited uses of the facility may be excepted only by the express written authorization from the DCSO or EVOC facility director.
2. This is a NO SMOKING FACILITY and NO OVERNIGHT CAMPING.
3. Students and instructors should bring plenty of water and monitor themselves for signs of heat exhaustion.
4. Users shall perform a safety briefing covering facility safety rules and procedures before use of any program area or EVOC equipment.
5. The EVOC will accommodate most law enforcement vehicles including sedans, SUV's, pickup trucks, PIT cars, motorcycles, and bicycles. It will also accommodate some larger vehicles, weighing less than 35,000 pounds GVWR, such as fire agency vehicles, school buses, and unloaded commercial vehicles.
6. Any vehicle with a GVWR greater than 35,000 pounds must be approved by the EVOC facility director.
7. Prior to using the EVOC, government-agency users must agree to the conditions and provide a signed ***EVOC Intergovernmental Terms of Use Agreement.*** This is available at www.HRLETF.org/evoc/. Completed and signed agreements may be scanned and emailed to the EVOC facility director.
8. Prior to using the facility, every non-government user that is authorized to use the EVOC must first agree to the conditions and provide a signed ***EVOC Individual Release, Indemnity, and Assumption of Risk Agreement.*** This includes compliance with all insurance requirements as stated in the agreement. This is available at www.HRLETF.org/evoc/. Completed agreements may be emailed to the EVOC facility director.
9. Any user that accesses the EVOC after hours of operation must first notify the Douglas County Sheriff's Office Dispatch Center at 303-660-7500.
10. Parking will be in designated parking area(s) only. No parking on any access road at any time.
11. Personal vehicles are not allowed on the EVOC training roadways or skill pads, unless specifically permitted by the user's Lead Instructor. Any personal vehicle permitted by the Lead Instructor shall not be used as a training vehicle, with exception of teen/senior driving training classes.
12. Speed limits on entry roads must be adhered to, along with safe driving practices.
13. **The inner EVOC roadway that connects Pad A and Pad B is a required slow area, with a maximum speed limit of 35 MPH.**
14. An adequate number of instructors must be present during any training.
15. No student shall drive on the EVOC, or participate in any training activity, without a driving instructor present.
16. **On the EVOC section**, once training begins, and during the entire duration of any training, GATE 2 at the main entrance, must remain closed and locked to prevent accidents and injury.
17. **On the TIM area**, once training begins, and during the entire duration of any training, GATES 3 & 4 must remain closed to prevent accidents and injury.
18. Once training begins, students, instructors, or visitors who arrive after the gate(s) is closed are not permitted to enter (even if in a marked vehicle) without approval of an instructor.
19. For everyone's safety, students and instructors shall not play music or use a vehicle AM/FM radio while training is in session, unless that use is directed by an instructor.
20. Only one agency is permitted to train on the EVOC at any one time. The singular agency using the EVOC is permitted to simultaneously use all paved parts of the facility (Outer Perimeter Roadway, Skill Pad-A,

39. Simunitions©:

    a. Handguns or rifles that are designed or chambered to accept Simunitions© will be allowed for training at the EVOC. The Lead Instructor is required to establish safety protocols to ensure that there is no live ammunition or weapons that will fire live ammunition in the EVOC training area.

    b. A safety officer must be present at GATE # 2, the access point for the Simunitions© training exercise. GATE # 2 will remain closed during training.

    c. At a minimum one Simunitions© certified instructor is required at all times during the training, (HRLETF Shoot House Instructor Training or outside certification may be accepted).

    d. Personal protective equipment is **REQUIRED.**

    e. One-meter rule remains in effect, never engage a target that is within 1 meter of a teammate or which is with 1 meter of your gun-target line.

    f. Simunitions© training will only occur on "Pad A".

    g. All Simunitions© brass will be picked up at the end of training.

    h. All Simunitions© training will follow the Simunitions© training protocols.

40. All Instructors will be responsible for assuring that all firearms are managed in safe manner. This is not a firearms site and there will be no discharge of any firearm or use of any explosives or hazardous materials on this site. Weapons will not be left unattended or unsecured. *Remember,* we use inmate labor.

41. No student or cadet who is attending a Colorado P.O.S.T. Basic or Refresher Academy will be in personal possession of a firearm during any training while on the EVOC site.

42. Under no circumstances will anyone other than Colorado recognized law enforcement personnel be in possession of a firearm on the EVOC site. No firearms or live ammunition are allowed during training exercises. The Safety Officer is required to check every student to ensure that no live ammunition is present during training at the EVOC.

43. Loading or unloading of any firearm will only be done within the designated area.

44. Any discharge of a firearm whether intentional or unintentional will require a written report.

45. The use of this facility by anyone other than designated agencies/users must have prior approval of the EVOC facility director and have signed all necessary waivers.

46. Users shall not share gate or storage trailer codes with anyone not authorized to use the EV●C.

47. PIT or TVI training shall be performed on the four-lane EVOC perimeter roadway, or Skill Pad- A.

48. Use of the unimproved areas between designated training areas is strictly prohibited without approval.

49. Any person "on foot" shall be extremely aware of all activities and not place themselves in danger.

50. No equipment may be used by an individual if he/she has not been trained and authorized by their agency in the operation of that equipment.

51. Users may not alter the facility or do any plumbing, electrical, telecommunications, carpentry or mechanical work on any the part of the facility without prior written approval of EVOC facility director.

52. Absolutely no alcoholic beverages will be allowed on the facility, unless advance written approval is granted by the EVOC facility director or DCSO. Approval may be granted only after all facilities are closed and an authorized scheduled social event takes place.

53. No pets allowed on or adjacent to training areas and pets are discouraged in all other areas of this facility. Under no circumstances will pets be allowed off a leash without approval. This does not apply to "agency working dogs" under approval by the user agency.

54. There is no current user equipment storage or vehicle storage at the site.

Use & Fee Schedule

8500 N. Moore Rd. Littleton, CO 80125

L&L: N39.487889- W105.025988

Uses	Facility Use Specifics	Program Areas	Vehicles & Users
Public-safety skill and decision-making driver training facility available to law enforcement and other civil service agencies: (To include serpentine, PIT, skills pad- backing and parking maneuvers.) Facility will accommodate most all law enforcement type vehicles including Motorcycles, bicycles and ATV's - most Public works light vehicles- Some fire agencies, school buses and acceptable private driving and training programs. All vehicles will be provided by users and must have an adequate cadre of instructors supervising during their use of facility.	**Facility Hours & Scheduling Periods:** • **Monday through Friday: Opens at 08:00 hours; closes at 21:00 hours** **Scheduling periods in 6 hour increments:** 1. **08:00 hours till 14:00 hours** 2. **14:30 hours till 20:30 hours** • **Saturday and Sunday: Opens at 08:00 hours; closes at 18:00 hours** **Scheduling periods in 5 hour increments:** 1. **08:00 hours- 13:00 hours** 2. **13:00 hours- 18:00 hours** **Requests of less than the 4 hour period may be afforded a pro rata hourly rate per scheduling area but not less than and minimum of 2 hours.**	**Perimeter roadway: 1.6 miles and up to 4 lanes wide.** **Skill Pad A: Extremely large flat paved skills pad: 500 x 800 ft. equaling 9.2 acres.** **Skill Pad B: Large Paved skills pad: 200 x 400 ft. equaling 1.8 acres.**	**Vehicle (V)** - not to exceed 8000 GVRW. To include average PU trucks, ATV, bicycles and Motorcycles. **Large Vehicles (LV)** – not to exceed 35,000 GVRW. To include school buses- some fire trucks- MCP- 4x4 special use vehicles- Public Works equipment. **Private Use (P)** Authorized private driver's safety training. **Special Events (E)** Authorized use of the entire facility for larger training/show events, non-high speed manufacture testing, dealer demonstrations, and others as approved.

Revised 01/27/2020

HRLETF Members:

Nov – Feb Roadways & both skills pads	**Per ½ Day Period: $300 per period**	**Full-day Rate: $600**	**3 hour Rate – based on facility availability: (fewer than 4 people, i.e. short remedial session) $150**
March – October Roadways & both skills pads	**Per ½ Day Period: V- $400 per period**	**Full-day Rate: $800**	**3 hour Rate – based on facility availability: (fewer than 4 people, i.e. short remedial session) $200**
Off Road area	N/A	N/A	Planned for Phase 2
TIMS area (Traffic Incident Management)	**$300**	**$600**	**3 hour rate – based on facility availabity: (fewer than 4 people, i.e. short remedial session) $200**

Other Government Users (non HRLETF members):

Nov – Feb Roadway & both skills pads	**Per ½ Day Period: $500 per period**	**Full-day Rate: $1000**	**3 hour Rate – based on facility availability: (fewer than 4 people, i.e. short remedial session) $300**
March – October Roadway & both skills pads	**Per ½ Day Period: $600 per period**	**Full-day Rate: $1200**	**3 hour Rate – based on facility availability: (fewer than 4 people, i.e. short remedial session) $400**
Off Road area	N/A	N/A	Planned for Phase 2
TIMS area	**$400**	**$800**	**3 hour rate – based on facility availabity: (fewer than 4 people, i.e. short remedial session) $300**

Revised 01/27/2020

(P) Pre-Approved Private Driver-safety Programs:

Roadway & both skills pads	**Per ½ day period: $300**	**Full-day Rate: $600**	**By the hour, $100 (minimum of 2 hours)**

(E) Special Event Fees:

Special Events, private public relations events and other non-defined uses: will be made by a case by case basis as determined by requesting User's stated use and purpose and after evaluation by HRLETF facility management.

Roadway & both skills pad	**Per ½ Day Period: $750**	**Full-day Rate: $1500**
UAS (Unmanned Aircraft Systems) – Field use only	**Per ½ Day Period: $250**	**Full-day Rate: $500**

Use of Equipment:

- Cones: No Charge (All Users)
- Portable stop light system: No Charge (All Users)
- Portable radar speed sign: No Charge (All Users)

Fuel:

- Fuel is currently not available on site. Future plans include making fuel available for purchase, but to government entities only upon prior approval. Cost per gallon will be at rate as purchased by Douglas County, plus a small administrative fee.

Scheduling: **EVOC usage must be specifically scheduled.** Users may only use the part(s) of the EVOC for which they are specifically scheduled.

- **Check scheduling availability at www.HRLETF.org/evoc/.**
- **To schedule instructional time, the user/agency must email or call the EVOC facility director.**
- Once scheduled, the user must make payment electronically (purchase card, credit card, e-check) and enter the provided payment code, using the online "Payment" page at **www.HRLETF.org/evoc/.**
- All fees are payable in advance and go to the **Douglas County Treasurer.**
- Once the user/agency has completed scheduling, payment, and the required waiver (noted below), the EVOC facility director will provide the user/agency with the combination code for the entry gates/equipment trailer.
- User fees are established based on established scheduling periods. HRLETF public-safety agency members receive a discounted rate.
- User fees for other special events are established separately and available upon request by contacting the EVOC facility director.

Cancellations:

- Government users and approved private users who cancel a scheduled reservation(s) with less than 30 days written notice, to the EVOC facility director, may be subject to a non-refundable cancellation fee equal to 25% of the cost of their initial scheduled reservation (except in cases of severe weather that reasonably compel cancellation).
- All cancellations shall be in writing and effective upon receipt by the EVOC facility director.
- If Douglas County or the HRLETF cancels a scheduled reservation for any unforeseen reason or act of God, then all monies paid by the user shall be refunded. Any liability of Douglas County or the HRLETF shall be limited to the fees paid by the user.

Damages & Security Deposits:

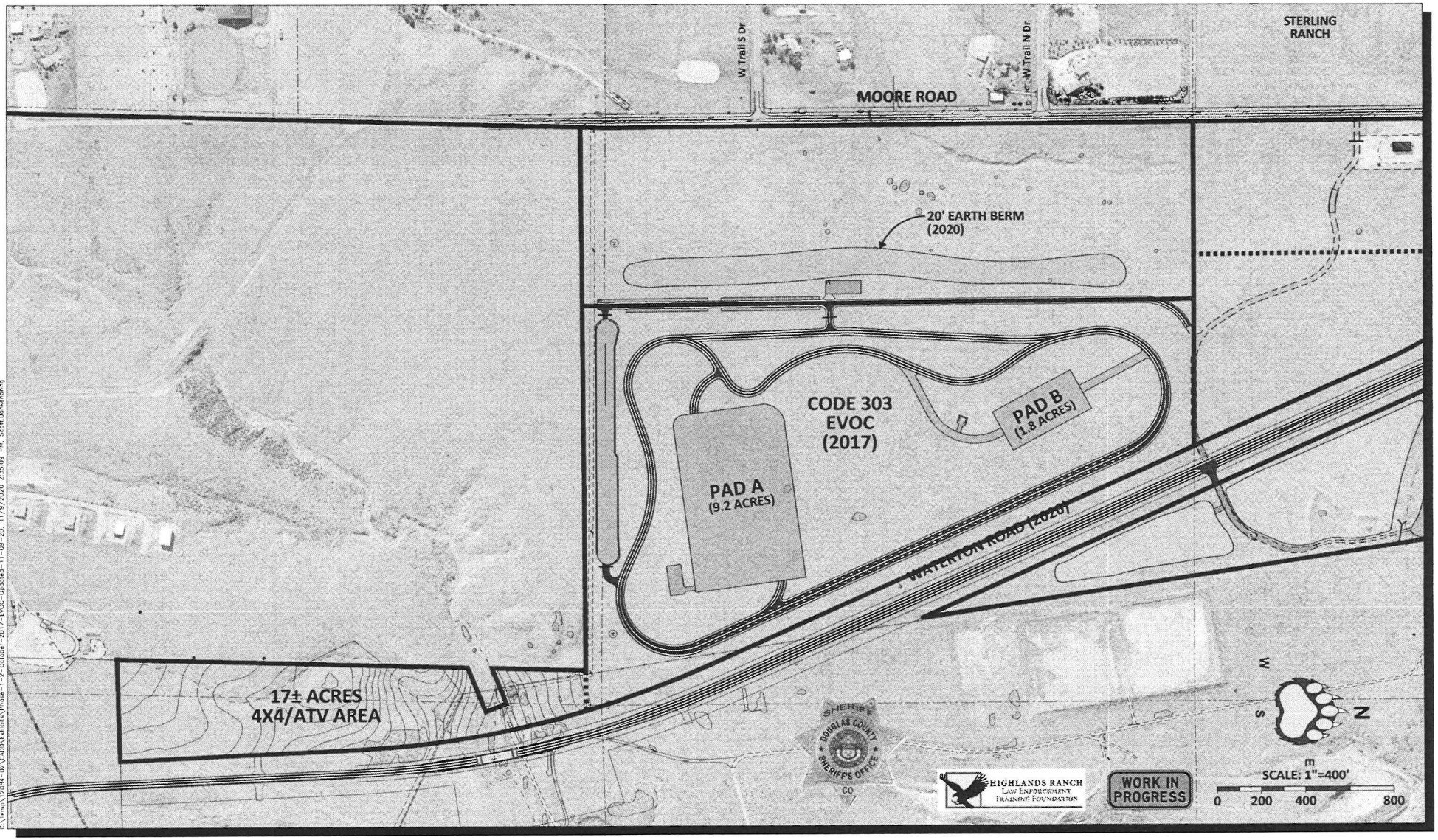
- Users will be held responsible for all damages/associated costs of any clean up and repair to the EVOC, its property, and equipment. All costs deemed necessary and incurred by Douglas County or the HRLETF for replacement and/or repairs caused by a user will be billed to the user.
- Payment for cleanup and damages must be made within thirty (30) days after receipt of billing.

Approved Private Event Users:

- Approved private users will be required to pay security deposit equal to 25% of their scheduled reservation fee. The deposit will be refunded if the facility is left in a clean state and there are no damages.
- The deposit shall be due and payable a minimum of two (2) weeks prior to the scheduled use. The deposit will be refunded, or applied to the user's reservation fee, if the facility and property are left in a clean state and there are no damages. The deposit shall be due and payable a minimum of two (2) weeks prior to commencement of the event.
- Approved private users must provide all hospitality, security, clean-up crew and other personnel necessary to conduct the approved activities and to leave the facility in a clean and orderly condition, unless otherwise agreed to in writing by the EVOC facility director.

Douglas County Moore Road Parcel

(November 2020)



C:\Temp\72084-02\CAD\Exhibits\Phase-1-2-October-2017-EVOC-Updated-11-09-20, 11/9/2020 2:35:09 PM, Scott Donsenbring

RESOLUTION 8-2021

A RESOLUTION CONDITIONALLY APPROVING THE BLACK HAWK PARK PRELIMINARY AND FINAL PLAT

STATE OF COLORADO
COUNTY OF GILPIN
CITY OF BLACK HAWK

Resolution No. 8-2021

TITLE: A RESOLUTION CONDITIONALLY APPROVING THE BLACK HAWK PARK PRELIMINARY AND FINAL PLAT

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF BLACK HAWK, COLORADO, THAT:

Section 1. Findings of Fact.

A. An application has been made by Ventana Capital, Inc. (the "Applicant") for approval of a preliminary plat and final plat for property to be known as the Black Hawk Park Subdivision (the "Property"), within the City of Black Hawk, Colorado; and

B. Notice of such proposed hearing was posted on the Property for fifteen (15) consecutive days prior to said hearing.

Section 2. The City Council hereby determines to conditionally approve the Black Hawk Park Subdivision Preliminary Plat and Final Plat, attached hereto as **Exhibits A** and **B** respectively, subject to satisfaction of the following conditions:

A. Final Engineering documents shall in the future be submitted with Site Development Plan (SDP) applications and be plans sufficient to constitute final Construction Documents for the permitting of such work needed to develop a proposed SDP;

B. The Final Plat shall not be recorded until all redlines and comments by Black Hawk staff are addressed (including the dedication certificate on the Final Plat indicating that Lot 6 is herein dedicated to the City upon signatures added to the plat and recordation in the Gilpin County Clerk and Recorders Office) to the satisfaction of the Director of Public Works and the Community Planning and Development Director;

C. The Final Plat shall not be recorded until financial obligations of the Applicant are provided to the City, in accordance with the fully executed Subdivision and Development Agreement as set forth in Section 3 of this Resolution; and

D. The Final Plat shall not be effective until it is certified by the appropriate parties and recorded at the Office of the Gilpin County Clerk and Recorder.

Section 3. The City Council further approves the Subdivision and Development Agreement attached hereto as **Exhibit C**, and incorporated herein by this reference, and authorizes the Mayor to execute the same on behalf of the City.

RESOLVED AND PASSED this 10th day of February, 2021.

_____
David D. Spellman, Mayor

ATTEST:

_____
Melissa A. Greiner, CMC, City Clerk

EXHIBIT A

BLACK HAWK PARK SUBDIVISION
PRELIMINARY PLAT

BLACK HAWK PARK

PRELIMINARY PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 1 OF 2

DEDICATION

KNOW ALL MEN BY THESE PRESENTS: CLUB VISTA PROPERTIES II, LLC, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE CITY OF BLACK HAWK, GILPIN COUNTY, AND THAT HAS CAUSED SAID REAL PROPERTY TO BE LAID OUT AND SURVEYED AS BLACK HAWK PARK, AND DOES HEREBY DEDICATE AND SET APART ALL THE STREETS, ALLEYS AND OTHER PUBLIC WAYS AND PLACES SHOWN ON THE ACCOMPANYING PLAT FOR THE USE OF THE PUBLIC FOREVER, AND DOES HEREBY GRANT TO THE CITY OF BLACK HAWK USE OF THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE INDICATED AS EASEMENTS ON THE ACCOMPANYING PLAT AS PERMANENT PUBLIC EASEMENTS. IN WITNESS WHEREOF, _____ HAS CAUSED HIS NAME TO BE HEREUNTO SUBSCRIBED THIS ____ DAY OF _____, 20___.

_____
OWNER SIGNATURE

NOTARY

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___,
BY_____ AS_____

WITNESS MY HAND AND SEAL _____

MY COMMISSION EXPIRES _____

LEGAL DESCRIPTION

A REPLAT OF LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4, RECORDED AT RECEPTION NUMBER R013116, A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 7, AND THE NORTH HALF OF SECTION 18, BOTH WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS:

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18, BEING ASSUMED TO BEAR NORTH 89°07'38" WEST, A DISTANCE OF 3189.53 FEET BETWEEN THE FOLLOWING DESCRIBED MONUMENTS:

–NORTHWEST CORNER OF SECTION 18, 3.25" ALUMINUM CAP, DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT "1979".

–NORTH QUARTER CORNER OF SECTION 18, 3.25" ALUMINUM CAP, DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT "1979".

BEGINNING AT THE NORTH QUARTER CORNER OF SECTION 18, BEING ALSO THE NORTHEAST CORNER OF SAID LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4;

THENCE ALONG THE EASTERLY SIDE OF SAID LOT 1, BLOCK 1 THE FOLLOWING EIGHT (8) COURSES AND DISTANCES:

1. THENCE ALONG THE EAST LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ALSO THE EASTERLY LINE OF SAID LOT 1, BLOCK 1 SOUTH 00°43'40" EAST, A DISTANCE OF 627.36 FEET;
2. THENCE DEPARTING SAID EAST LINE SOUTH 21°11'02" EAST, A DISTANCE OF 84.74 FEET;
3. THENCE NORTH 68°30'00" EAST, A DISTANCE OF 348.31 FEET;
4. THENCE SOUTH 21°51'21" EAST, A DISTANCE OF 61.39 FEET;
5. THENCE SOUTH 67°50'00" WEST, A DISTANCE OF 191.40 FEET;
6. THENCE SOUTH 19°13'48" EAST, A DISTANCE OF 101.14 FEET;
7. THENCE SOUTH 64°28'07" WEST, A DISTANCE OF 82.20 FEET;
8. THENCE SOUTH 24°59'36" WEST, A DISTANCE OF 68.43 FEET TO THE NORTHERLY RIGHT–OF–WAY OF MINERS MESA ROAD;

THENCE CONTINUING ALONG THE SOUTHERLY BOUNDARY OF SAID LOT 1, BLOCK 1, THE FOLLOWING SEVEN (7) COURSES AND DISTANCES

1. THENCE ALONG SAID RIGHT–OF–WAY BEING ALONG A NON–TANGENT CURVE TO THE RIGHT, HAVING A RADIUS OF 440.16 FEET, A CENTRAL ANGLE OF 16°54'43", WHOSE CHORD BEARS NORTH 87°21'36" WEST A DISTANCE OF 129.45 FEET, FOR AN ARC DISTANCE OF 129.92 FEET;
2. THENCE CONTINUING ALONG SAID RIGHT–OF–WAY AND RIGHT–OF–WAY LINE EXTENDED NORTH 78°54'15" WEST, A DISTANCE OF 396.59 FEET;
3. THENCE ALONG A NON–TANGENT CURVE TO THE LEFT, HAVING A RADIUS OF 400.00 FEET, A CENTRAL ANGLE OF 31°17'25", WHOSE CHORD BEARS SOUTH 85°27'03" WEST A DISTANCE OF 215.74 FEET, FOR AN ARC DISTANCE OF 218.45 FEET;
4. THENCE ALONG A REVERSE CURVE, HAVING A RADIUS OF 500.00 FEET, A CENTRAL ANGLE OF 52°56'24", WHOSE CHORD BEARS NORTH 83°43'28" WEST A DISTANCE OF 445.73 FEET, FOR AN ARC DISTANCE OF 461.99 FEET;
5. NORTH 57°15'16" WEST, A DISTANCE OF 68.07 FEET;
6. THENCE ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 275.00 FEET, A CENTRAL ANGLE OF 21°09'31", WHOSE CHORD BEARS NORTH 67°50'01" WEST A DISTANCE OF 100.98 FEET, FOR AN ARC DISTANCE OF 101.55 FEET;
7. NORTH 75°07'40" WEST, A DISTANCE OF 1199.64 FEET TO THE SOUTHWESTERLY CORNER OF SAID LOT 1, BLOCK 1;

THENCE ALONG THE WESTERLY BOUNDARY OF LOT 1, BLOCK 1, THE FOLLOWING SIX (6) COURSES AND DISTANCES;

1. NORTH 10°55'57" EAST, A DISTANCE OF 663.89 FEET;
2. THENCE NORTH 54°39'54" EAST, A DISTANCE OF 719.57 FEET;
3. THENCE NORTH 53°04'00" WEST, A DISTANCE OF 171.33 FEET;
4. THENCE NORTH 71°30'03" EAST, A DISTANCE OF 148.55 FEET;
5. THENCE NORTH 18°30'03" WEST, A DISTANCE OF 40.00 FEET;
6. THENCE NORTH 54°15'00" EAST, A DISTANCE OF 300.00 FEET TO THE MOST NORTHERLY CORNER OF SAID LOT 1, BLOCK 1;

THENCE ALONG THE NORTHERLY BOUNDARY OF SAID LOT THE FOLLOWING THREE (3) COURSES AND DISTANCES:

1. SOUTH 07°42'11" WEST, A DISTANCE OF 838.29 FEET;
2. THENCE SOUTH 67°00'00" EAST, A DISTANCE OF 899.92 FEET;
3. THENCE NORTH 77°14'02" EAST, A DISTANCE OF 702.06 FEET, TO THE POINT OF BEGINNING.

CONTAINING 2,079,423 SQUARE FEET OR 47.737 ACRES, MORE OR LESS.

TRACT/LOT TABLE

LOT/TRACT	SQ. FT.	ACRES±	PURPOSE
LOT 1	560,268	12.862	*
LOT 2	44,272	1.016	*
LOT 3	45,423	1.043	*
LOT 4	46,785	1.074	*
LOT 5	44,579	1.023	*
LOT 6	172,609	3.963	*
LOT 7	99,428	2.283	*
LOT 8	46,626	1.070	*
ROW DEDICATION	101,438	2.329	DEDICATION
TRACT A	917,975	21.074	OPEN SPACE, UTILITIES, DRAINAGE

*USES CONFORMING TO C/BS ZONING INCLUDING SRU OF RV CAMPGROUND AND INDOOR SHOOTING FACILITIES

GENERAL NOTES

1.) THE PURPOSE OF THIS MINOR SUBDIVISION PLAT IS TO RECONFIGURE LOT AND TRACT LINES AS SHOWN HEREON, PURSUANT TO C.R.S. 31–23–201, ET SEQ., AND CHAPTER 17 OF THE CITY OF BLACK HAWK MUNICIPAL CODE. NOTHING IN THE APPROVAL OF THIS PLAT SHALL ALLOW, PERMIT, OR CAUSE TO BE ALLOWED OR PERMITTED ANY DEVELOPMENT OR CONSTRUCTION ON ANY LOT HEREON WITH OUT A SUBSEQUENT LAND DEVELOPMENT APPLICATION AND APPROVAL THAT INCLUDES, AT A MINIMUM, PROVISIONS FOR THE CONSTRUCTION OF NECESSARY PUBLIC IMPROVEMENTS AND OTHER CONDITIONS OF APPROVAL AS DETERMINED BY THE BOARD OF ALDERMAN, INCLUDING AT A MINIMUM THOSE PROVISIONS REQUIRED BY 17–63 AND 17–64 OF THE CITY OF BLACK HAWK MUNICIPAL CODE, AS THE SAME MAY BE AMENDED FROM TIME TO TIME. NO CONSTRUCTION OF ANY TYPE SHALL OCCUR ON THE PROPERTY THAT IS PLATTED HEREON UNTIL A SUBSEQUENT AGREEMENT HAS BEEN REACHED BETWEEN THE SUBDIVIDER, OR ITS SUCCESSOR ON IN INTEREST, AND THE CITY REGARDING, AT A MINIMUM, THE NECESSARY PUBLIC IMPROVEMENTS, AND A FINANCIAL GUARANTEE APPROVED BY THE CITY FOR SAID PUBLIC IMPROVEMENTS.

2.) DISTANCES ON THIS SITE ADJUSTMENT DEDICATION PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DEFINED AS EXACTLY 1220/3937 METERS. ALL BEARINGS SHOWN HERE ON ARE IN DEGREE–MINUTES–SECONDS.

3.) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND SURVEY BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUE 18–4–508, C.R.S.

4.) NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

5.) COMMONWEALTH LAND TITLE COMPANY COMMITMENT NUMBER 597–H0508532–023CNX, AMENDMENT NO. 1, EFFECTIVE DATE JULY 22, 2020 AT 7:00 A.M., WAS ENTIRELY RELIED UPON FOR RECORDED RIGHTS–OF–WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY.

6.) RICK ENGINEERING, HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR RECORDED/UNRECORDED EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

7.) BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ASSUMED TO BEAR N 89°07'38" W BETWEEN MONUMENTS AS SHOWN WITHIN THIS PLAT.

OWNER/DEVELOPER

IN WITNESS WHEREOF, DAVID D. SPELLMAN, AS MAYOR AND MELISSA GREINER AS CITY CLERK OF THE CITY OF BLACK HAWK. HAS CAUSED THEIR NAMES TO BE HEREUNTO SUBSCRIBED THIS ____ DAY OF _____, 2020

CITY OF BLACK HAWK

BY:_____
DAVID D. SPELLMAN, MAYOR

ATTEST:

_____
MELISSA GREINER, CITY CLERK

NOTARY PUBLIC

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___, BY DAVID D. SPELLMAN AS MAYOR AND MELISSA GREINER AS CITY CLERK OF THE CITY OF BLACK HAWK, FOR AND BEHALF OF THE CITY.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____

IN WITNESS WHEREOF, _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, HAS CAUSED _____ NAME TO BE HEREUNTO SUBSCRIBED THIS ____ DAY OF _____, 20___.

_____
BY:

NOTARY PUBLIC

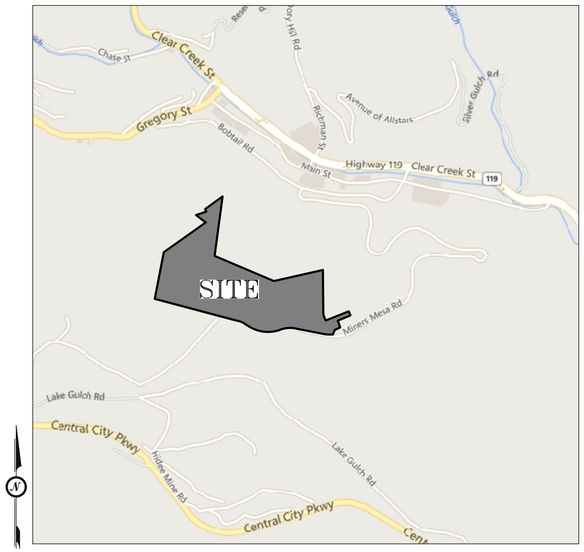
STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___, BY _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____



VICINITY MAP

SCALE: 1"=1000'

MAYOR'S CERTIFICATE

APPROVED AND ACCEPTED THIS _____ DAY OF _____, 2020 BY THE BOARD OF ALDERMEN OF THE CITY OF BLACK HAWK, SITUATED IN GILPIN COUNTY, COLORADO. THIS APPROVAL DOES NOT GUARANTEE THAT THE SIZE OR SOIL CONDITION OF ANY LOT SHOW HERE ON ARE SUCH THAT A BUILDING PERMIT CAN BE ISSUED.

CITY OF BLACK HAWK

ATTEST: BY:_____
DAVID D. SPELLMAN, MAYOR

_____
MELISSA GREINER, CITY CLERK

SURVEYOR'S CERTIFICATE

I ROBERT J. HENNESSY, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY OF BLACK HAWK PARK, WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THE ACCOMPANYING PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, C.R.S., AND THAT THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE SUBDIVISION ORDINANCE FOR THE CITY OF BLACK HAWK HAVE BEEN PLACED ON THE GROUND. THAT THE SURVEY ACCURATELY AND PROPERLY WITHIN APPLICABLE STANDARDS OF PRACTICE SHOWS SAID SURVEY BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF. THIS SURVEY IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

_____
ROBERT J. HENNESSY
REGISTERED COLORADO LAND SURVEYOR NO. 34580
FOR AND ON BEHALF OF RICK ENGINEERING

CLERK AND RECORDER'S CERTIFICATE

_____
RECEPTION NUMBER

ACCEPTING FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GILPIN COUNTY, AT CENTRAL CITY COLORADO ON THIS _____ DAY OF _____, 202__ AT _____ O'CLOCK.

_____
GILPIN COUNTY CLERK AND RECORDER

_____
BY: DEPUTY CLERK

FOR CLERK AND RECORDER USE ONLY

RICK ENGINEERING COMPANY
9801 E EASTER AVE,
CENTENNIAL, CO 80112
PH. (303) 537-8020

\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 11–23–20.DWG

BLACK HAWK PARK

PRELIMINARY PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 2 OF 2

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	77.79'	400.00'	011°08'33"	S75°22'37"W	77.67'
C2	140.66'	400.00'	020°08'51"	N88°58'41"W	139.93'

LINE TABLE		
LINE #	LENGTH	BEARING
L1	45.06'	S78°54'15"E

LEGEND

- SET #5X24" REBAR AND 1" YELLOW PLASTIC CAP PLS 34580
- FOUND #5 REBAR AND YELLOW PLASTIC CAP MARKED MOORE LS 10945
- FOUND #5 REBAR
- AC FOUND 2" ALUMINUM CAP CITY OF BLACK HAWK LS 26298
- FOUND SECTION CORNER AS DESCRIBED HEREON

LOT LINE
ACCESS EASEMENT
PUBLIC SERVICE CO. EASEMENT
POWER LINE EASEMENT
PROPOSED UTILITY EASEMENT
SECTION LINE
BOUNDARY LINE
TO BE VACATED

FOR CLERK AND RECORDER USE ONLY

RICK ENGINEERING COMPANY
9801 E EASTER AVE.
CENTENNIAL, CO 80112
PH. (303) 537-8020

ORIGINAL SCALE: 1"= 100' HORIZ.

\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 11-23-20.DWG

EXHIBIT B

BLACK HAWK PARK SUBDIVISION
FINAL PLAT

BLACK HAWK PARK

FINAL PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 1 OF 2

DEDICATION

KNOW ALL MEN BY THESE PRESENTS: CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE CITY OF BLACK HAWK, GILPIN COUNTY, AND HAS CAUSED SAID REAL PROPERTY TO BE LAID OUT AND SURVEYED AS BLACK HAWK PARK, AND DOES HEREBY DEDICATE AND SET APART ALL THE STREETS, ALLEYS AND OTHER PUBLIC WAYS AND PLACES SHOWN ON THE ACCOMPANYING PLAT FOR THE USE OF THE PUBLIC FOREVER, AND DOES HEREBY GRANT TO THE CITY OF BLACK HAWK USE OF THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE INDICATED AS EASEMENTS ON THE ACCOMPANYING PLAT AS PERMANENT PUBLIC EASEMENTS, AND DOES HEREBY GRANT AND CONVEY TO THE CITY OF BLACK HAWK, IN FEE SIMPLE, LOT 6.

LEGAL DESCRIPTION

A REPLAT OF LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4, RECORDED AT RECEPTION NUMBER 147815, A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 7, AND THE NORTH HALF OF SECTION 18, BOTH WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

LOT 1, BLOCK 1, MINER'S MESA SUBDIVISION FILING NO. 4, COUNTY OF GILPIN, STATE OF COLORADO, EXCEPT THAT PORTION CONVEYED IN THE DEED RECORDED AUGUST 7, 2020 AT RECEPTION NO. 166682 AND RE-RECORDED AUGUST 7, 2020 AT RECEPTION NO. 166800.

CONTAINING 1,977,984 SQUARE FEET OR 45.408 ACRES, MORE OR LESS.

TRACT/LOT TABLE

LOT/TRACT	SQ. FT.	ACRES±	PURPOSE
LOT 1	235,073	5.397	*
LOT 2	44,272	1.016	*
LOT 3	45,423	1.043	*
LOT 4	46,785	1.074	*
LOT 5	50,119	1.151	*
LOT 6	171,627	3.940	*
LOT 7	99,429	2.283	*
LOT 8	142,888	3.280	*
LOT 9	50,102	1.150	*
TRACT A	1,092,269	24.075	OPEN SPACE, UTILITIES, DRAINAGE HISTORIC PRESERVATION AND CONSERVATION EASEMENT

*USES CONFORMING TO C/BS ZONING INCLUDING SRU OF RV CAMPGROUND AND INDOOR SHOOTING FACILITIES

GENERAL NOTES

1.) THE PURPOSE OF THIS FINAL SUBDIVISION PLAT IS TO RECONFIGURE LOT AND TRACT LINES AS SHOWN HEREON, PURSUANT TO C.R.S. 31-23-201, ET SEQ., AND CHAPTER 17 OF THE CITY OF BLACK HAWK MUNICIPAL CODE. NOTHING IN THE APPROVAL OF THIS PLAT SHALL ALLOW, PERMIT, OR CAUSE TO BE ALLOWED OR PERMITTED ANY DEVELOPMENT OR CONSTRUCTION ON ANY LOT HEREON WITH OUT A SUBSEQUENT LAND DEVELOPMENT APPLICATION AND APPROVAL THAT INCLUDES, AT A MINIMUM, PROVISIONS FOR THE CONSTRUCTION OF NECESSARY PUBLIC IMPROVEMENTS AND OTHER CONDITIONS OF APPROVAL AS DETERMINED BY THE BOARD OF ALDERMAN, INCLUDING AT A MINIMUM THOSE PROVISIONS REQUIRED BY 17-63 AND 17-64 OF THE CITY OF BLACK HAWK MUNICIPAL CODE, AS THE SAME MAY BE AMENDED FROM TIME TO TIME. NO CONSTRUCTION OF ANY TYPE SHALL OCCUR ON THE PROPERTY THAT IS PLATTED HEREON UNTIL A SUBSEQUENT AGREEMENT HAS BEEN REACHED BETWEEN THE SUBDIVIDER, OR ITS SUCCESSOR ON IN INTEREST, AND THE CITY REGARDING, AT A MINIMUM, THE NECESSARY PUBLIC IMPROVEMENTS, AND A FINANCIAL GUARANTEE APPROVED BY THE CITY FOR SAID PUBLIC IMPROVEMENTS.

2.) DISTANCES ON THIS FINAL PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DEFINED AS EXACTLY 1220/3937 METERS. ALL BEARINGS SHOWN HERE ON ARE IN DEGREE-MINUTES-SECONDS.

3.) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND SURVEY BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUE 18-4-508, C.R.S.

4.) NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

5.) COMMONWEALTH LAND TITLE COMPANY COMMITMENT NUMBER 597-H0508532-023-CNX, AMENDMENT NO. 4, EFFECTIVE DATE DECEMBER 6, 2020 AT 7:00 A.M., WAS ENTIRELY RELIED UPON FOR RECORDED RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY.

6.) RICK ENGINEERING, HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR RECORDED/UNRECORDED EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

7.) BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ASSUMED TO BEAR N 89°07'38" W BETWEEN MONUMENTS AS SHOWN WITHIN THIS PLAT.

8.) LOT 6 IS DEDICATED TO THE CITY OF BLACK HAWK BY THIS PLAT.

OWNER/DEVELOPER

IN WITNESS WHEREOF, _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, HAS CAUSED _____ NAME TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF _____, 20__.

_____
BY:

NOTARY PUBLIC

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20__, BY _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____



VICINITY MAP

SCALE: 1"=1000'

MAYOR'S CERTIFICATE

APPROVED AND ACCEPTED THIS _____ DAY OF _____, 2021 BY THE BOARD OF ALDERMEN OF THE CITY OF BLACK HAWK, SITUATED IN GILPIN COUNTY, COLORADO. THIS APPROVAL DOES NOT GUARANTEE THAT THE SIZE OR SOIL CONDITION OF ANY LOT SHOW HERE ON ARE SUCH THAT A BUILDING PERMIT CAN BE ISSUED.

CITY OF BLACK HAWK

ATTEST: BY:_____
DAVID D. SPELLMAN, MAYOR

_____
MELISSA A. GREINER, CMC, CITY CLERK

SURVEYOR'S CERTIFICATE

I ROBERT J. HENNESSY, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY OF BLACK HAWK PARK, WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THE ACCOMPANYING PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, C.R.S., AND THAT THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE SUBDIVISION ORDINANCE FOR THE CITY OF BLACK HAWK HAVE BEEN PLACED ON THE GROUND. THAT THE SURVEY ACCURATELY AND PROPERLY WITHIN APPLICABLE STANDARDS OF PRACTICE SHOWS SAID SURVEY BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF. THIS SURVEY IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

_____
ROBERT J. HENNESSY
REGISTERED COLORADO LAND SURVEYOR NO. 34580
FOR AND ON BEHALF OF RICK ENGINEERING

FOR CLERK AND RECORDER USE ONLY

CLERK AND RECORDER'S CERTIFICATE

_____
RECEPTION NUMBER

ACCEPTING FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GILPIN COUNTY, AT CENTRAL CITY COLORADO ON THIS _____ DAY OF _____, 202__ AT _____ O'CLOCK.

_____
GILPIN COUNTY CLERK AND RECORDER

_____
BY: DEPUTY CLERK

RICK ENGINEERING COMPANY
9801 E EASTER AVE.
CENTENNIAL, CO 80112
PH. (303) 537-8020

\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 2-4-21.DWG

BLACK HAWK PARK

FINAL PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 2 OF 2

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	139.36'	200.00'	039°55'21"	S84°54'40"W	136.55'
C2	46.45'	200.00'	013°18'27"	S58°17'46"W	46.35'
C3	185.81'	200.00'	053°13'48"	S78°15'26"W	179.20'
C4	55.63'	100.00'	031°52'35"	S35°42'15"W	54.92'

LINE TABLE		
LINE #	LENGTH	BEARING
L1	45.06'	S78°54'15"E
L2	31.49'	S38°20'03"W
L3	168.57'	N14°52'20"E
L4	143.57'	N14°52'20"E

LEGEND

- SET #5X24" REBAR AND 1" YELLOW PLASTIC CAP PLS 34580
- FOUND #5 REBAR AND YELLOW PLASTIC CAP MARKED MOORE LS 10945
- FOUND #5 REBAR
- AC FOUND 2" ALUMINUM CAP CITY OF BLACK HAWK LS 26298
- FOUND SECTION CORNER AS DESCRIBED HEREON

RECORD DISTANCE OR BEARING IF DIFFERENT THAN SHOWN (XXX.XX') (XX°XX'XX")

*=DEDICATED BY THIS PLAT

LOT LINE
ACCESS EASEMENT
PUBLIC SERVICE CO. EASEMENT
POWER LINE EASEMENT
PROPOSED UTILITY EASEMENT
SECTION LINE
BOUNDARY LINE
VACATED BY THIS PLAT

FOR CLERK AND RECORDER USE ONLY

RICK ENGINEERING COMPANY
9801 E EASTER AVE,
CENTENNIAL, CO 80112
PH. (303) 537-8020

\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 2-4-21.DWG

EXHIBIT C

SUBDIVISION AND DEVELOPMENT AGREEMENT

AGREEMENT IS CURRENTLY UNDER NEGOTIATION
IT MAY BE AVAILABLE BY 3:00 P.M. FEBRUARY 10, 2021

NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Black Hawk Board of Aldermen shall hold a public hearing concerning a request for a Subdivision to create 7 Lots and a Tract on property described in Exhibit A and generally located at 830 Miners Mesa Road, Black Hawk, Colorado, pursuant to the City of Black Hawk subdivision ordinance.

The public hearing is to be held before the City of Black Hawk Board of Aldermen on Wednesday, February 10, 2021, at 3:00 p.m. or as soon as possible thereafter. The City of Black Hawk is hosting virtual City Council meetings via Zoom in response to the Coronavirus COVID-19 until further notice. There are no physical meetings at this time. This meeting will accommodate public engagement via a Zoom URL and/or phone number to join. Please go to the City of Black Hawk's website for further instructions prior to the meeting.

ALL INTERESTED PARTIES MAY ATTEND

Melissa A. Greiner, CMC
City Clerk

EXHIBIT A

LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4

CITY OF BLACK HAWK
REQUEST FOR COUNCIL ACTION

SUBJECT: Black Hawk Park Preliminary and Final Plat.

RECOMMENDATION: Staff recommends the following motion to the Mayor and Board of Aldermen:

MOTION TO APPROVE WITH CONDITIONS Resolution 8-2021, a Resolution approving the Black Hawk Park Final Plat with the following conditions:

1. Final Engineering documents shall in the future be submitted with Site Development Plan (SDP) applications and be plans worthy of being Construction Documents for permitting of such work needed to develop a proposed SDP.
2. The Final Plat shall not be recorded until all redlines and comments by Black Hawk staff are addressed (including the dedication certificate on the Final Plat indicating that Lot 6 is herein dedicated to the City upon signatures added to the plat and recordation in the Gilpin County Clerk & Recorders Office) to the satisfaction of the Director of Public Works and the Community Planning and Development Director;
3. The Final Plat shall not be recorded until financial and written guarantees of completion of required public improvements are fully executed in the form of a Subdivision Improvements Agreement.
4. The plat shall not be effective until it is certified by the appropriate parties and recorded at the Office of the Gilpin County Clerk and Recorder.

SUMMARY AND BACKGROUND OF SUBJECT MATTER:
The City of Black Hawk has received an application from Dalton Horan of Ventana Capital, Inc and Jason Krall of Rick Engineering on behalf of the property owner Club Vista Properties II, LLC, requesting review and approval of a Preliminary Plat and a Final Plat for the Black Hawk Park subdivision. The applicants request the subdivision of Lot 1 Block 1 Miners Mesa Subdivision Filing No. 4 into ten (10) commercial lots and one (1) tract for the purpose of developing the property with an Airstream RV Campground, a distillery, and other commercial uses. Refer to the Staff Report included with this Request for Council Action.

AGENDA DATE: February 10, 2021

WORKSHOP DATE: N/A

FUNDING SOURCE: N/A

DEPARTMENT DIRECTOR APPROVAL: [X]Yes [ ]No

STAFF PERSON RESPONSIBLE: Cynthia L. Linker
CP&D Director

DOCUMENTS ATTACHED:

1. Resolution 8-2021
2. Staff Report
3. Overall Miners Mesa Improvements Exhibit
4. Black Hawk Park Preliminary Plat
5. Black Hawk Park Final Plat (Required corrections noted in red)
6. Black Hawk Park Combined Application

RECORD: [X]Yes [ ]No

CITY ATTORNEY REVIEW: [X]Yes [ ]N/A

SUBMITTED BY:

Cynthia L. Linker, CP&D Director

REVIEWED BY:

Stephen N. Cole, City Manager

Vincent Harris, AICP, Baseline Corporation

Staff Report

CITY OF BLACK HAWK
PLANNING / LAND USE

Date prepared: January 28, 2021
Meeting Date: February 10, 2021

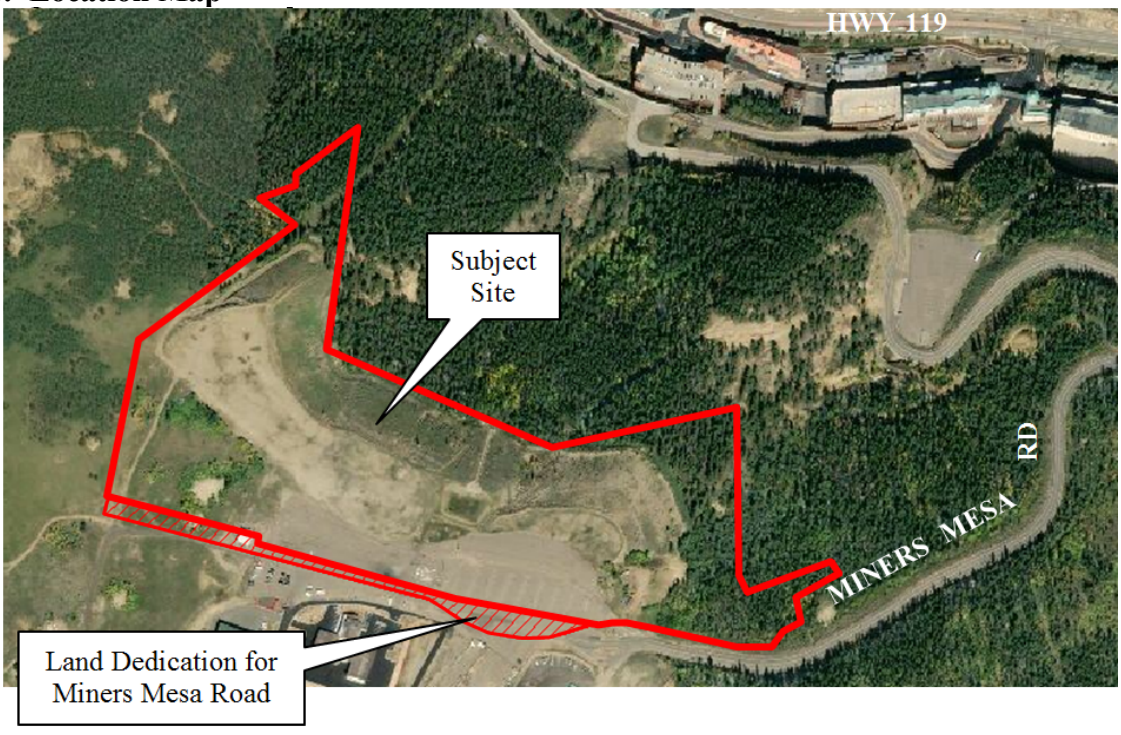
STAFF REPORT:	**Preliminary and Final Plat: Black Hawk Park**
For:	City Council
Project:	P-20-13a Black Hawk Park Plat
Property Address:	830 Miners Mesa Road, Black Hawk, CO 80422
Applicants:	Dalton Horan, Ventana Capital, Inc. Jason Krall, Rick Engineering
Zoning:	Commercial/Business Services (C/BS)
Prepared by:	Julie Esterl - Baseline Corporation
Approved by:	Vincent Harris, AICP - Baseline Corporation
Reviewed by:	Cynthia Linker, CP&D Director

BLACK HAWK

BASELINE Engineering · Planning · Surveying

BACKGROUND:
On December 1, 2020, the City of Black Hawk received an application request for a Preliminary and Final Plat from Dalton Horan of Ventana Capital, Inc. and Jason Krall of Rick Engineering. The applicants, on behalf of the property owner, Club Vista Properties II, LLC are requesting review and approval of a subdivision on Miners Mesa for the purpose of developing the property with an Airstream campground, distillery and other future commercial uses. The proposed Black Hawk Park Final Plat will subdivide the existing Lot 1, Block 1, Miners' Mesa Subdivision Filing No. 4 into nine (9) commercial lots and one (1) tract. A land dedication to the City of Black Hawk for future right-of-way improvements for Miners Mesa Road was executed in June 2020.

Figure 1: Location Map



ZONING AND EXISTING CONDITIONS:
The Black Hawk Park property is located at 830 Miners' Mesa Road within the City of Black Hawk. The property is approximately 49 acres in size and is currently zoned Commercial/Business Services (C/BS). A Special Review Use (SRU) permit has been approved for the site to allow for the uses of RV campground and indoor shooting range facilities.

The majority of the property is a plateau at the top of Miner's Mesa Road overlooking the City of Black Hawk. The plateau area generally falls west to east, with a low point near the existing detention pond. The ground falls steeply from the plateau to the north and northeast extending past the property boundary. The majority of the property is vacant, but a few abandoned structures exist in the southeast corner of the property and are located within a Historic Preservation and Conservation Easement.

REQUEST:
The proposed subdivision of land is requested for the purpose of providing nine (9) developable commercial lots, and one (1) tract. The proposed Tract A will include all remaining undevelopable lands including the area covered by a Historic Preservation and Conservation Easement, and will continue to be owned by Club Vista Properties II, LLC. In addition, a portion of the original Lot 1, Block 1 Miners' Mesa Subdivision Filing No. 4 was previously dedicated to the City of Black Hawk for use as public right-of-way on June 5, 2020 and is recorded at the Gilpin County Clerk and Recorder's Office at Reception No. 166800.

The proposed uses for the Black Hawk Park development are:

- Airstream RV park including a caretaker/check-in facility, Airstream bar and outdoor beer garden, and possibly an indoor shooting range facility
- Distillery facilities including tasting rooms

The proposed development will provide public utility infrastructure improvements in accordance with development code, including stormwater, sanitary sewer, water distribution and telecommunication facilities. The project proposes to connect to the City of Black Hawk's water system via a looped water main connecting to the existing water main along the west side of the property and connecting into Miners Mesa Road. The project proposes to connect stormwater to the existing detention basin and outfall structure currently installed on the site, and will verify capacity and any improvements if required. The proposed on-site sanitary sewer facilities will connect to the new sewer main to be installed down Miner's Mesa Road. The developer will continue to work with the Black Hawk/Central City Sanitation District and the City of Black Hawk to coordinate the improvements for this new development. The proposed plat provides adequate utility easements as well as an access easement that will be used for access to lots that do not front Miners Mesa Road.

Discussion between the applicant and City staff that occurred after final plat review resulted in the decision to include the Historic Preservation and Conservation Easement land with Tract A because this land will essentially function as open space. It was determined that it was more appropriate for this piece of land be included with the tract rather than appear on the Final Plat as a "developable" Lot. Refer to Figure 3.

Figure 2: Black Hawk Park Preliminary Plat

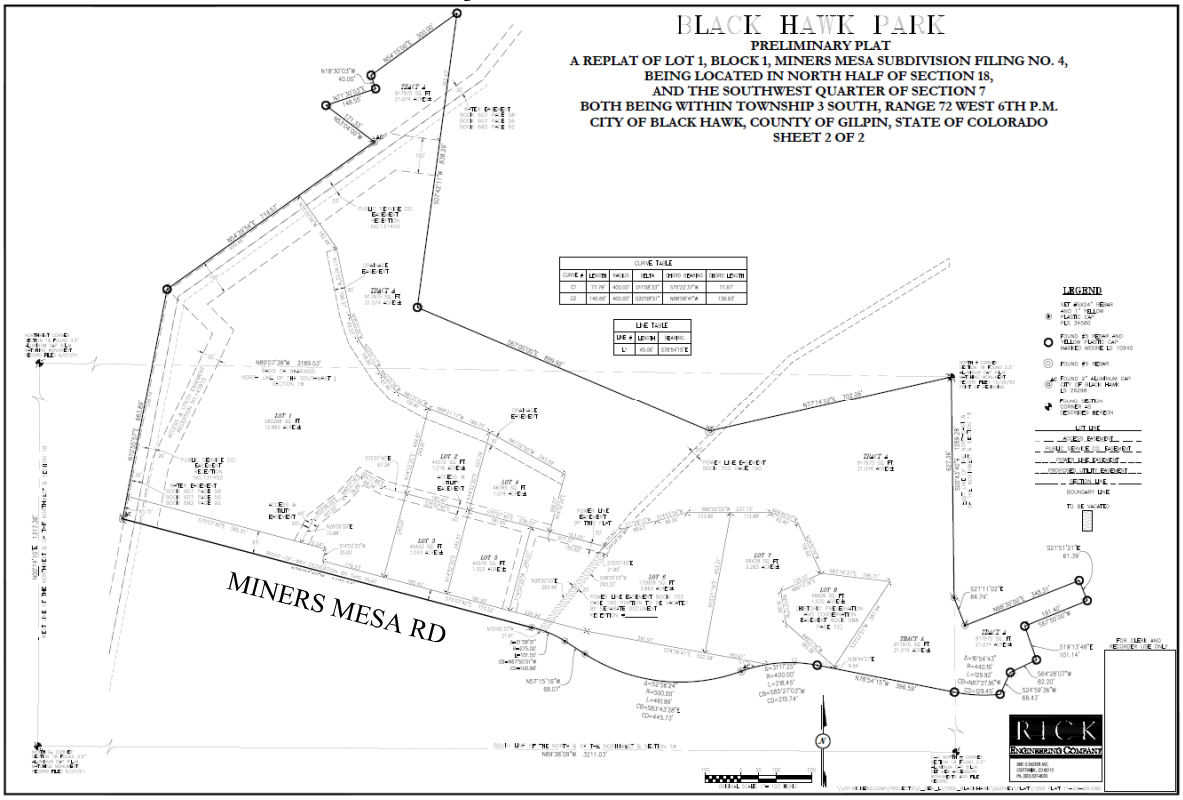
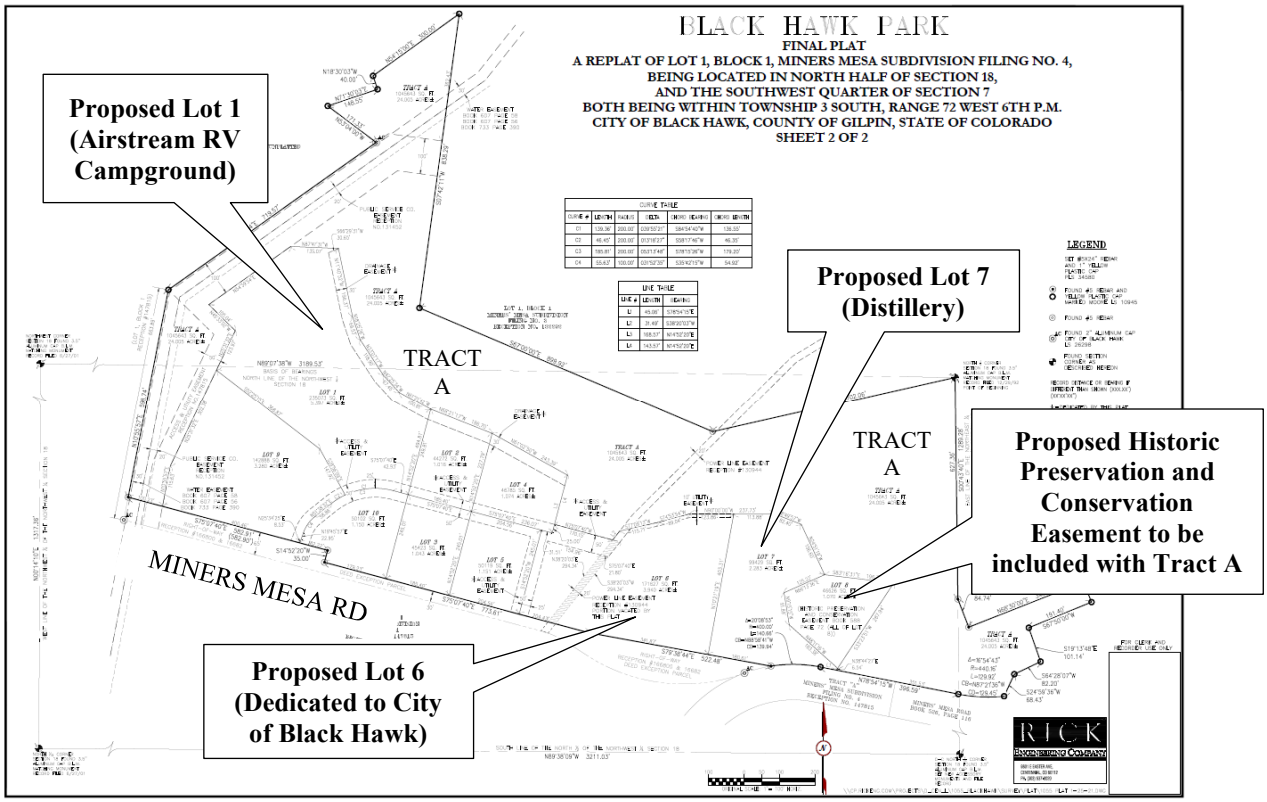


Figure 3: Black Hawk Park Final Plat



FUTURE SITE PLANS:
If approved, the applicant and property owner plan to develop Lot 1 with an Airstream RV campground with 50 permanent Airstream trailers for rent. The campground will include a check-in building, an Airstream bar, and common areas for outdoor recreation. Refer to Figure 4 for preliminary site plan concepts for the future campground. Plans are currently proceeding for Lot 8 to be provided to another entity for the development of a distillery. Refer to Figure 5 for preliminary site plan concepts for the proposed distillery. There are no immediate plans determined for the remaining commercial Lots 2-6 and 8-9. Lot 6, being 3.9 acres in size, is set aside herein to be dedicated to the City of Black Hawk with the approval and recordation of this Final Plat. All future and proposed development will require Site Development Plan (SDP) review and approval as well as the issuance of a Certificate of Architectural Compatibility (COAC) by the City Council prior to the commencement of any improvements being built on any of the platted lots, including Lot 6 that will be soon be owned by the City of Black Hawk.

Figure 4: Proposed Airstream Campground Concept (Proposed Lot 1)

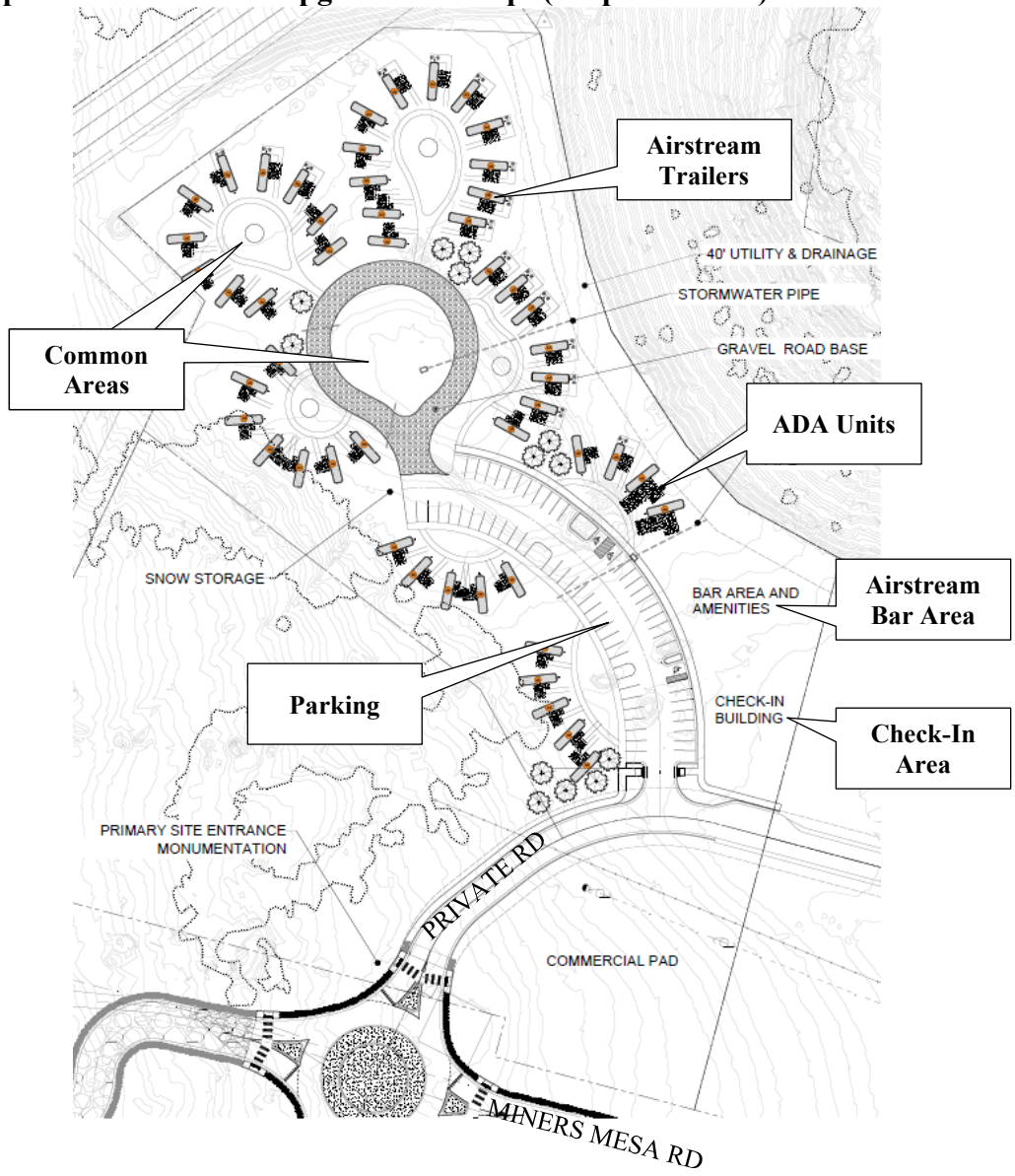
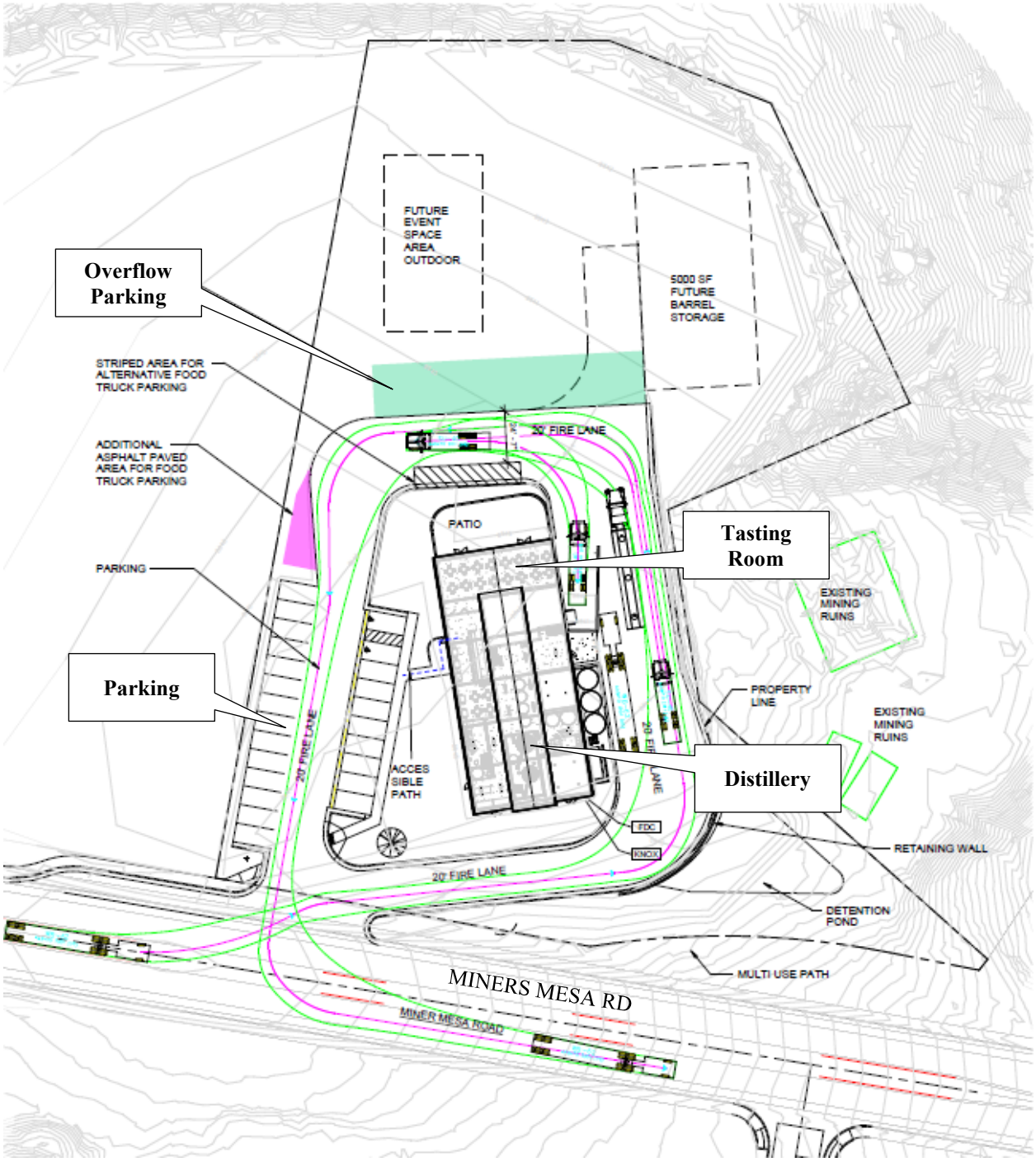


Figure 5: Proposed Distillery Concept (Proposed Lot 7)



Applicable City of Black Hawk Regulations

Excerpts from:

City of Black Hawk
Subdivision Code
Chapter 17 – Subdivisions

Sec. 17-28. - Control over platting.

(a) All plans of streets or highways for public use, and all plans, plats, plots and replats of land laid out in a subdivision or building lots, and the streets, highways, alleys or other portions of the same intended to be dedicated to a public use or the use of purchasers or owners of lots fronting thereon or adjacent thereto, shall be submitted to the Board of Aldermen for approval before they are recorded. All proposed dedications must have received the approval of the Board of Aldermen and the acceptance thereof noted in written form, duly executed by the Mayor.

Sec. 17-61. - Summary procedures.

(a) After the subdivider has reached preliminary conclusions concerning the feasibility and design of his or her proposed subdivision, he or she may prepare and submit a sketch plan as provided below for the approval of the Planning Director as to general layout, density, general location of buildings, parking, snow removal and open space for this proposed subdivision. The purpose of this review is to ensure that the proposed development is in accordance with the City Comprehensive Plan, that adequate utilities and access are available, and to ensure that the property on which the subdivision is proposed is at least apparently suitable for subdivision in the manner contemplated by the subdivider. After the approval, conditional approval or disapproval of the Planning Director, the subdivider or the Planning Director may, at the option of either, refer the sketch plan to the Board of Aldermen.

Staff Comment: The applicants and design team met with the City of Black Hawk Development Review Committee (DRC) to discuss the initial plans for the development on November 2, 2020. Feedback was provided to the applicant prior to the submittal of the preliminary plat.

(b) After the approval of the sketch plan, the subdivider shall prepare a preliminary plat and required supplemental material for presentation to the Board of Aldermen. The purpose of this preliminary review is to check the proposed subdivision against the design standards and improvement requirements and to be sure that the zoning standards have been met. After approval of the preliminary plat, the next step in the process is the final plat.

Staff Comment: The preliminary plat was reviewed by staff, and sent on referral to the DRC team. Referral comments were forwarded to the applicants and were incorporated into the final plat, hence the reason the internal roadway thru the property is configured slightly different than now shows on the final plat requested to be approved. The roadway alignment difference became better and addresses comments and standards necessary to create a safer and more effective street, easement, and lot layout. Referral comments that were not addressed with the latest Final Plat submittal or are related to the preparation of the current concept/layout for the soon-to-be submittal of Site Development Plan(s) have been included as conditions of final plat approval.

(c) *The final plat, together with required supplemental material, shall be a clear representation of the proposed subdivision. Financial guarantees of completion of required improvements will be necessary before the final plat will receive approval by the Board of Aldermen and be recorded with the County Clerk and Recorder.*

Staff Comment: The final plat has been prepared as a clear representation of the proposed subdivision including street, easement, and lot configurations acceptable to staff based on future allowed and currently planned development plans for some portions of the subject property. In addition, the submitted supplemental preliminary engineering documents related to grading, drainage, traffic engineering, and utilities are acceptable and Final Engineering documents shall in the future be submitted with Site Development Plan (SDP) applications and be plans worthy of being Construction Documents for permitting of such work needed to develop a proposed SDP. Financial guarantees of completion of required improvements will be included in a Subdivision Improvement Agreement (SIA) currently in process and evaluation by the City of Black Hawk and Club Vista Properties, LLC. The financial guarantee document is being prepared by the City Attorney and land owners' Attorney and needs to be executed prior to City Council adopting a Resolution of Approval as well as the signing and recordation of the final plat. It is recommended that this item be included as a condition of final plat approval.

(d) *Any persons seeking platting approvals pursuant to the provisions of these subdivision regulations are hereby advised that no preliminary approval is final, and no preliminary approval may be relied upon by a subdivider or anyone claiming thereunder, until a final plat is approved by the Board of Aldermen. Specifically, approval in concept of a sketch plan does not mandate approval of either a preliminary plat or a final plat by the Board of Aldermen. In addition, approval of a preliminary plat does not mandate approval of a final plat by the Board of Aldermen.*

Staff Comment: The applicant has prepared the final plat in accordance with the Municipal Code and seeks approval by the Board of Aldermen.

STAFF SUMMARY:

Staff from Baseline Corporation has evaluated the information provided by Dalton Horan and Jason Krall for this project. The City of Black Hawk Municipal Code allows for subdivision of property in accordance with the City of Black Hawk Municipal Code Chapter 17 – Subdivisions. Staff from Baseline Corporation suggests that the Black Hawk Park Final Plat has been prepared in accordance with the Municipal Code and recommends approval subject to some minor edits to the document that can easily be corrected, and the completion of the Subdivision Improvements Agreement (SIA) that is currently in negotiation including signatures of approval by the land owner.

In anticipation of the opportunity for the City Council to take action on the Final Plat, this project/plat application was scheduled to the City Council agenda, staff report prepared, notice posted on the property, and publication in the newspaper in anticipation that the SIA would be completed and signed by the landowner/applicant. If the SIA is not signed by 3:00 p.m. February 10, 2021, then staff recommends that the City Council 'adopt a motion to CONTINUE' the public hearing to a certain date that is acceptable to the City Attorney as well as the applicant, so that the signature of agreement with the proposed SIA document is complete.

If the SIA is signed before the 3:00 p.m. February 10, 2021 Public Hearing then City Council can open the public hearing and take input and conclude with a decision making the motion noted below after any/all testimony is heard.

In summary, Staff recommends that the Black Hawk Park Final Plat be approved, subject to the following conditions:

1. Final Engineering documents shall in the future be submitted with Site Development Plan (SDP) applications and be plans worthy of being Construction Documents for permitting of such work needed to develop a proposed SDP.
2. The Final Plat shall not be recorded until all redlines and comments by Black Hawk staff are addressed (including the dedication certificate on the Final Plat indicating that Lot 6 is herein dedicated to the City upon signatures added to the plat and recordation in the Gilpin County Clerk & Recorders Office) to the satisfaction of the Director of Public Works and the Community Planning and Development Director;
3. The Final Plat shall not be recorded until financial and written guarantees of completion of required public improvements are fully executed in the form of a Subdivision Improvements Agreement.
4. The plat shall not be effective until it is certified by the appropriate parties and recorded at the Office of the Gilpin County Clerk and Recorder.

FINDINGS:

City Council may *approve, conditionally approve, or deny* a Final Plat. To support this proposal, the following findings can be used:

The proposed Black Hawk Park Final Plat meets the intent of the criteria outlined in Chapter 17 of the Municipal Code as noted and evaluated in the staff report presented to City Council.

RECOMMENDATION:

Staff recommends the following motion to the Mayor and Board of Aldermen:

MOTION TO APPROVE Resolution No. 8-2021, a resolution approving the Black Hawk Park Final Plat with the following conditions:

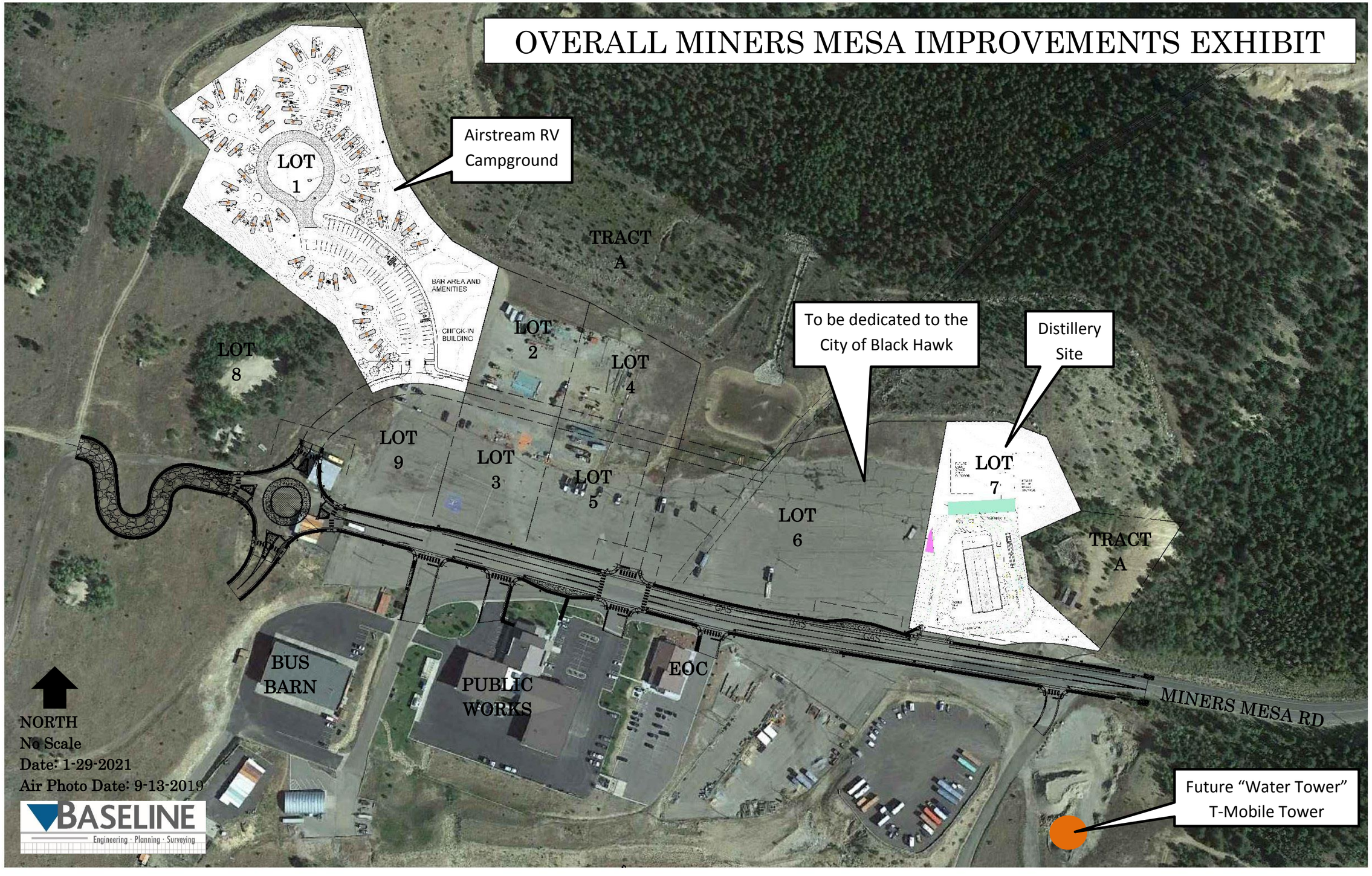
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3. The Final Plat shall not be recorded until financial and written guarantees of completion of required public improvements are fully executed in the form of a Subdivision Improvements Agreement.
4. The plat shall not be effective until it is certified by the appropriate parties and recorded at the Office of the Gilpin County Clerk and Recorder.

ATTACHMENTS:

1. Overall Miners Mesa Improvements Exhibit
2. Black Hawk Park Preliminary Plat
3. Black Hawk Park Final Plat (noting required corrections)
4. Black Hawk Park Combined Application

Applicant's Submittal

OVERALL MINERS MESA IMPROVEMENTS EXHIBIT



NORTH
No Scale
Date: 1-29-2021
Air Photo Date: 9-13-2019

BASELINE
Engineering · Planning · Surveying

FORMAL LAND USE APPLICATION

City of Black Hawk
Community Planning and Development
211 Church Street, P.O. Box 68, Black Hawk, CO 80422
Phone: 303-582-0615 or www.cityofblackhawk.org

COMPLETE ALL BOXES – Incomplete applications will not be processed

Applicant Name: **Dalton Horan**	Applicant Address & Zip Code: **9801 E. Easter Ave. Centennial, CO 80112**
Applicant Phone: **303-946-8012**	Applicant Email: **dahoran@ventanacap.com**
Property Owner Name: **Club Vista Properties II, LLC**	Property Owner Address & Zip Code: **9801 E. Easter Ave. Centennial, CO 80112**
Property Owner Phone:	Property Owner Email:
Project Name: **Black Hawk Park**	Project Description: **final plat for commercial development**
Project Address or Location: **Miners Mesa Rd, Black Hawk, CO 80422**	Project Parcel Number: **R013116**
Existing Subdivision, Lot & Block: **Miners Mesa Subdivision Filing #4**	Existing Planned Unit Development: **N/A**
Existing Property Size: **49** ☒ Acres ☐ Sq. Ft.	Existing Building Size in square feet: **N/A**
Existing Zoning: **C/BS**	Proposed Zoning: **C/BS**
Existing Use: **vacant land**	Proposed Use: **mixed low density commercial development**

ITEMS REQUIRED WITH FORMAL LAND USE APPLICATION SUBMITTAL:

- This completed & signed Formal Land Use Application form
- All Items indicated/checked on the Formal Land Use Application Checklist that is attached
- Formal Land Use Application Deposit in the amount of $ **5000** .

APPLICATION AND FEE AGREEMENT:

The Black Hawk Adopted Fee Schedule and Section 16-370 of the Black Hawk Municipal Code establishes the requirement for applicants to pay fees to cover the costs the City may incur by having City approved consultants evaluate and process applications.

I, as the applicant, hereby certify that I believe to the best of my knowledge that all information supplied with this application is true and accurate and that consent of the property owner listed above, without which the requested action cannot lawfully be accomplished, has been granted. Permission is also hereby granted to the City of Black Hawk staff and their consultants to physically enter upon and inspect the subject property and take photographs as necessary for preparation of the case. In addition, by signing this application I am agreeing that I am authorized to sign on behalf of the property owner, or business-owner and commit to deposit the sum of $ **5000** to be used to pay the City's expenses to review, evaluate and process the Application ("Deposit"), which funds may be used to pay the cost of third-party consultants plus fifteen percent (15%) of such actual costs for City staff administrative costs and supplies. **I understand that if Formal Land Use Application costs exceed the amount collected, the City will invoice me, as the applicant, for the additional consultant cost plus a 15% administrative fee.** I additionally agree that I am not acquiring any rights by virtue of the payment of the City's expenses.

Submit Pre-Land Use Applications and required submittal items to: cpdinquiry@cityofblackhawk.org

Applicant's Signature Dalton Horan Date 11/23/2020

FOR CITY USE ONLY: Received by: Julie Esterl Date: 12/1/2020

RICK
ENGINEERING COMPANY

November 30, 2020

City of Black Hawk
Community Planning & Development
211 Church Street
Black Hawk, CO 80422

SUBJECT: BLACK HAWK PARK – Plat Narrative

To whom it may concern:

Rick Engineering Company (RICK) is pleased to submit the attached Final Plat package for the Black Hawk Park development on behalf of Ventana Capital, Inc. (the Applicant). We have included the Applicant's and Owner's contact information below for your reference:

Applicant:
Ventana Capital, Inc.
9801 E. Easter Ave.
Centennial, CO 80112

Owner:
Club Vista Properties II, LLC
145 East Warm Springs Road
Las Vegas, NV 89119

The Black Hawk Park property is located within the City of Black Hawk off Miner's Mesa Road. The property is approximately 48 acres in area. The property is currently Zoned Commercial/Business Services (C/BS) and has an approved Special Review Use (SRU) permit to allow for a Recreational Campground and an Indoor Shooting Range. The City of Black Hawk comprehensive plan designates this property as Low Intensity Mixed Use and does not fall within a defined Overlay District.

The majority of the property is a plateau at the top of Miner's Mesa road overlooking the City of Black Hawk. The plateau area generally falls west to east, with a low point near the existing detention pond. The ground falls steeply from the plateau to the north and northeast extending past the property boundary.

This intention of this plat application is to subdivide the property into 8 lots and a tract to allow for further development by the end users. The Black Hawk Park property proposes the following uses for the subdivided land consistent with the requirements of the C/BS zoning and approved SRU uses:

- Lot 1: RV park consisting of a minimum of 50 airstream units, a check-in facility, an airstream bar and containerized indoor shooting lanes.
- Lots 2-5: micro-distillery or micro-brewery end users
- Lot 6: conveyed to the City of Black Hawk for distillery end users
- Lot 7: conveyed to Brian Watts for distillery use
- Lot 8: historical preservation property
- Tract A: open space, drainage and utility uses

Please refer to the Existing Conditions Plan and Rezone Plan for additional information. It is intended that Site Development Plans will be submitted in the future and associated technical documents such as Traffic and Drainage studies will be included in the Site Development process once specific land uses are further defined.

Included with this cover letter and written description our submittal includes the following documents for your review:

- Application Form
- LocationMap
- Title Commitment
- Warranty Deed
- Traffic Impact Analysis (TIA)
- Drainage Study
- Preliminary Civil Plans
- Final Plat and closure report

If you have any questions regarding the documents provided with this application, please contact us at 303-537-8020.

Sincerely,
RICK ENGINEERING COMPANY



Jason Krall, P.E.
Principal Project Engineer



N

1000 500 0 1000

GRAPHIC SCALE: 1"=1000'

PROJECT NO. 1055

RICK ENGINEERING COMPANY
9801 EAST EASTER AVE
CENTENNIAL, CO 80112
303.537.8020

BLACKHAWK PARK
AERIAL AND LOCATION MAP

BLACKHAWK

DATE:	07-26-19
DRAWN BY:	JK
CHECKED BY:	TB
SCALE:	1"=1000'
SHEET	1 OF 1

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\\cp-rickeng.com\projects\D_CEN_L\1055_Blackhawk\Civil\Exhibits\2019-0710-Site Plan\1055-EXB-Site Plan.dwg 2019-07-26 - 5:32PM - jkrall

Club Vista Properties II, LLC
1201 Page Drive, Suite 200
Fargo, ND 58103

LETTER OF AUTHORIZATION

January, 21, 2020

To Whom It May Concern:

This letter will serve as official notice that Dalton Horan of Ventana Capital Inc. is authorized to represent Club Vista Properties II, LLC, in the processing of all documents and activities related to the submittal and processing of land use entitlements for the Black Hawk Development, which is approximately 49 acres generally located at the top of Miners Mesa Road, Black Hawk, Colorado 80422. This authorization includes, but is not limited to, zoning amendment applications, submittal of a conceptual site plan, civil construction drawings, subdivision plats, developer agreements, development permits, architectural reviews, and building permit applications. This authorization will expire on December 23, 2021, unless otherwise rescinded earlier in writing.

Sincerely,

By: 

Darwin Horan
Authorized Signatory.

Club Vista Properties II, LLC.,
a Nevada limited liability company

Written Consent and Resolution of the Sole Member

The undersigned, being the sole member ("Member") of Club Vista Properties II, LLC., a Nevada limited liability company (the "Company"), acting pursuant to the Operating Agreement of the Company, hereby adopts, by this written consent, as of this ___ day of January, 2020, the following preambles and resolutions with the same force and effect as if they had been adopted at a duly convened meeting of the Member of the Company, and directs that this written consent be filed with the minutes of the proceedings of the Company.

WHEREAS, This authorization includes, but is not limited to, zoning amendment applications, submittal of a conceptual site plan, civil construction drawings, subdivision plats, developer agreements, development permits, architectural reviews, and building permit applications within Black Hawk Development which is approximately 49 acres generally located at the top of Miners Mesa Road, Black Hawk, Colorado 80422.

WHEREAS, Company is required to execute certain plats, improvement agreements, development agreements, easements and closing documents related to the Property, including conveyance and settlement documents (collectively referred to herein as the "Documents"); and

WHEREAS, the Member, having reviewed the foregoing and such other information as it deems necessary, and having determined that it is in the best interests of the Company to act upon the foregoing, desires to authorize the Company to take such actions herein specified.

NOW, THEREFORE, BE IT RESOLVED, that the Transaction is hereby authorized and approved in all respects; and

FURTHER RESOLVED, that the execution and delivery of the Documents by Company and the performance by Company under the Documents, are hereby authorized and approved in all respects; and

FURTHER RESOLVED, that Darwin Horan, as an "Authorized Signatory" ("Horan"), be and hereby is authorized and directed to execute and deliver, in the name and on behalf of Company, the Documents, on such forms as Horan shall deem proper, such execution by Horan to be conclusive evidence that Horan and the Company deem all of the terms and provisions of such Documents to be proper; and

FURTHER RESOLVED, that any acts of the Company or Horan, acting on behalf of the Company, which acts would have been authorized by the foregoing resolution are hereby severally ratified, confirmed, approved and adopted as the acts in the name and on behalf of each such entity that was a party to such acts.

This consent may be executed and delivered by facsimile or electronic signature, and a facsimile or electronic signature shall constitute an original signature.

IN WITNESS WHEREOF, the undersigned, being the sole Member of the Company, hereby consent to, approves and adopts the foregoing preambles and resolutions to be effective as of the date first set forth above.

SOLE MEMBER:

Club Vista Properties II, LLC

By: _____
Name: Gary Tharaldson
Title: President

State of Nevada)
)ss.
County of Clark)

Subscribed to and sworn before me this 21st day of January 2020 by Gary Tharaldson.

Witness my hand and official seal.

My commission expires on the date shown on my seal affixed hereto.

_____
Notary Public

CURTIS A. BUNCE
Notary Public State of Nevada
No. 09-9030-1
My appt. exp. Dec. 2, 2020

BLACK HAWK PARK

PRELIMINARY PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 1 OF 2

DEDICATION

KNOW ALL MEN BY THESE PRESENTS: CLUB VISTA PROPERTIES II, LLC, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE CITY OF BLACK HAWK, GILPIN COUNTY, AND THAT HAS CAUSED SAID REAL PROPERTY TO BE LAID OUT AND SURVEYED AS BLACK HAWK PARK, AND DOES HEREBY DEDICATE AND SET APART ALL THE STREETS, ALLEYS AND OTHER PUBLIC WAYS AND PLACES SHOWN ON THE ACCOMPANYING PLAT FOR THE USE OF THE PUBLIC FOREVER, AND DOES HEREBY GRANT TO THE CITY OF BLACK HAWK USE OF THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE INDICATED AS EASEMENTS ON THE ACCOMPANYING PLAT AS PERMANENT PUBLIC EASEMENTS. IN WITNESS WHEREOF, _____ HAS CAUSED HIS NAME TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF _____, 20___.

_____
OWNER SIGNATURE

NOTARY

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___,
BY_____ AS_____

WITNESS MY HAND AND SEAL _____

MY COMMISSION EXPIRES _____

LEGAL DESCRIPTION

A REPLAT OF LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4, RECORDED AT RECEPTION NUMBER R013116, A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 7, AND THE NORTH HALF OF SECTION 18, BOTH WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS:

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18, BEING ASSUMED TO BEAR NORTH 89°07'38" WEST, A DISTANCE OF 3189.53 FEET BETWEEN THE FOLLOWING DESCRIBED MONUMENTS:

–NORTHWEST CORNER OF SECTION 18, 3.25" ALUMINUM CAP, DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT "1979".

–NORTH QUARTER CORNER OF SECTION 18, 3.25" ALUMINUM CAP, DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT "1979".

BEGINNING AT THE NORTH QUARTER CORNER OF SECTION 18, BEING ALSO THE NORTHEAST CORNER OF SAID LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4;

THENCE ALONG THE EASTERLY SIDE OF SAID LOT 1, BLOCK 1 THE FOLLOWING EIGHT (8) COURSES AND DISTANCES:

1. THENCE ALONG THE EAST LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ALSO THE EASTERLY LINE OF SAID LOT 1, BLOCK 1 SOUTH 00°43'40" EAST, A DISTANCE OF 627.36 FEET;
2. THENCE DEPARTING SAID EAST LINE SOUTH 21°11'02" EAST, A DISTANCE OF 84.74 FEET;
3. THENCE NORTH 68°30'00" EAST, A DISTANCE OF 348.31 FEET;
4. THENCE SOUTH 21°51'21" EAST, A DISTANCE OF 61.39 FEET;
5. THENCE SOUTH 67°50'00" WEST, A DISTANCE OF 191.40 FEET;
6. THENCE SOUTH 19°13'48" EAST, A DISTANCE OF 101.14 FEET;
7. THENCE SOUTH 64°28'07" WEST, A DISTANCE OF 82.20 FEET;
8. THENCE SOUTH 24°59'36" WEST, A DISTANCE OF 68.43 FEET TO THE NORTHERLY RIGHT–OF–WAY OF MINERS MESA ROAD;

THENCE CONTINUING ALONG THE SOUTHERLY BOUNDARY OF SAID LOT 1, BLOCK 1, THE FOLLOWING SEVEN (7) COURSES AND DISTANCES

1. THENCE ALONG SAID RIGHT–OF–WAY BEING ALONG A NON–TANGENT CURVE TO THE RIGHT, HAVING A RADIUS OF 440.16 FEET, A CENTRAL ANGLE OF 16°54'43", WHOSE CHORD BEARS NORTH 87°21'36" WEST A DISTANCE OF 129.45 FEET, FOR AN ARC DISTANCE OF 129.92 FEET;
2. THENCE CONTINUING ALONG SAID RIGHT–OF–WAY AND RIGHT–OF–WAY LINE EXTENDED NORTH 78°54'15" WEST, A DISTANCE OF 396.59 FEET;
3. THENCE ALONG A NON–TANGENT CURVE TO THE LEFT, HAVING A RADIUS OF 400.00 FEET, A CENTRAL ANGLE OF 31°17'25", WHOSE CHORD BEARS SOUTH 85°27'03" WEST A DISTANCE OF 215.74 FEET, FOR AN ARC DISTANCE OF 218.45 FEET;
4. THENCE ALONG A REVERSE CURVE, HAVING A RADIUS OF 500.00 FEET, A CENTRAL ANGLE OF 52°56'24", WHOSE CHORD BEARS NORTH 83°43'28" WEST A DISTANCE OF 445.73 FEET, FOR AN ARC DISTANCE OF 461.99 FEET;
5. NORTH 57°15'16" WEST, A DISTANCE OF 68.07 FEET;
6. THENCE ALONG A CURVE TO THE LEFT, HAVING A RADIUS OF 275.00 FEET, A CENTRAL ANGLE OF 21°09'31", WHOSE CHORD BEARS NORTH 67°50'01" WEST A DISTANCE OF 100.98 FEET, FOR AN ARC DISTANCE OF 101.55 FEET;
7. NORTH 75°07'40" WEST, A DISTANCE OF 1199.64 FEET TO THE SOUTHWESTERLY CORNER OF SAID LOT 1, BLOCK 1;

THENCE ALONG THE WESTERLY BOUNDARY OF LOT 1, BLOCK 1, THE FOLLOWING SIX (6) COURSES AND DISTANCES;

1. NORTH 10°55'57" EAST, A DISTANCE OF 663.89 FEET;
2. THENCE NORTH 54°39'54" EAST, A DISTANCE OF 719.57 FEET;
3. THENCE NORTH 53°04'00" WEST, A DISTANCE OF 171.33 FEET;
4. THENCE NORTH 71°30'03" EAST, A DISTANCE OF 148.55 FEET;
5. THENCE NORTH 18°30'03" WEST, A DISTANCE OF 40.00 FEET;
6. THENCE NORTH 54°15'00" EAST, A DISTANCE OF 300.00 FEET TO THE MOST NORTHERLY CORNER OF SAID LOT 1, BLOCK 1;

THENCE ALONG THE NORTHERLY BOUNDARY OF SAID LOT THE FOLLOWING THREE (3) COURSES AND DISTANCES:

1. SOUTH 07°42'11" WEST, A DISTANCE OF 838.29 FEET;
2. THENCE SOUTH 67°00'00" EAST, A DISTANCE OF 899.92 FEET;
3. THENCE NORTH 77°14'02" EAST, A DISTANCE OF 702.06 FEET, TO THE POINT OF BEGINNING.

CONTAINING 2,079,423 SQUARE FEET OR 47.737 ACRES, MORE OR LESS.

TRACT/LOT TABLE

LOT/TRACT	SQ. FT.	ACRES±	PURPOSE
LOT 1	560,268	12.862	*
LOT 2	44,272	1.016	*
LOT 3	45,423	1.043	*
LOT 4	46,785	1.074	*
LOT 5	44,579	1.023	*
LOT 6	172,609	3.963	*
LOT 7	99,428	2.283	*
LOT 8	46,626	1.070	*
ROW DEDICATION	101,438	2.329	DEDICATION
TRACT A	917,975	21.074	OPEN SPACE, UTILITIES, DRAINAGE

*USES CONFORMING TO C/BS ZONING INCLUDING SRU OF RV CAMPGROUND AND INDOOR SHOOTING FACILITIES

GENERAL NOTES

1.) THE PURPOSE OF THIS MINOR SUBDIVISION PLAT IS TO RECONFIGURE LOT AND TRACT LINES AS SHOWN HEREON, PURSUANT TO C.R.S. 31–23–201, ET SEQ., AND CHAPTER 17 OF THE CITY OF BLACK HAWK MUNICIPAL CODE. NOTHING IN THE APPROVAL OF THIS PLAT SHALL ALLOW, PERMIT, OR CAUSE TO BE ALLOWED OR PERMITTED ANY DEVELOPMENT OR CONSTRUCTION ON ANY LOT HEREON WITH OUT A SUBSEQUENT LAND DEVELOPMENT APPLICATION AND APPROVAL THAT INCLUDES, AT A MINIMUM, PROVISIONS FOR THE CONSTRUCTION OF NECESSARY PUBLIC IMPROVEMENTS AND OTHER CONDITIONS OF APPROVAL AS DETERMINED BY THE BOARD OF ALDERMAN, INCLUDING AT A MINIMUM THOSE PROVISIONS REQUIRED BY 17–63 AND 17–64 OF THE CITY OF BLACK HAWK MUNICIPAL CODE, AS THE SAME MAY BE AMENDED FROM TIME TO TIME. NO CONSTRUCTION OF ANY TYPE SHALL OCCUR ON THE PROPERTY THAT IS PLATTED HEREON UNTIL A SUBSEQUENT AGREEMENT HAS BEEN REACHED BETWEEN THE SUBDIVIDER, OR ITS SUCCESSOR ON IN INTEREST, AND THE CITY REGARDING, AT A MINIMUM, THE NECESSARY PUBLIC IMPROVEMENTS, AND A FINANCIAL GUARANTEE APPROVED BY THE CITY FOR SAID PUBLIC IMPROVEMENTS.

2.) DISTANCES ON THIS SITE ADJUSTMENT DEDICATION PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DEFINED AS EXACTLY 1220/3937 METERS. ALL BEARINGS SHOWN HERE ON ARE IN DEGREE–MINUTES–SECONDS.

3.) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND SURVEY BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUE 18–4–508, C.R.S.

4.) NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

5.) COMMONWEALTH LAND TITLE COMPANY COMMITMENT NUMBER 597–H0508532–023CNX, AMENDMENT NO. 1, EFFECTIVE DATE JULY 22, 2020 AT 7:00 A.M., WAS ENTIRELY RELIED UPON FOR RECORDED RIGHTS–OF–WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY.

6.) RICK ENGINEERING, HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR RECORDED/UNRECORDED EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

7.) BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ASSUMED TO BEAR N 89°07'38" W BETWEEN MONUMENTS AS SHOWN WITHIN THIS PLAT.

OWNER/DEVELOPER

IN WITNESS WHEREOF, DAVID D. SPELLMAN, AS MAYOR AND MELISSA GREINER AS CITY CLERK OF THE CITY OF BLACK HAWK. HAS CAUSED THEIR NAMES TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF _____, 2020

CITY OF BLACK HAWK

BY:_____

ATTEST: DAVID D. SPELLMAN, MAYOR

_____
MELISSA GREINER, CITY CLERK

NOTARY PUBLIC

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___, BY DAVID D. SPELLMAN AS MAYOR AND MELISSA GREINER AS CITY CLERK OF THE CITY OF BLACK HAWK, FOR AND BEHALF OF THE CITY.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____

IN WITNESS WHEREOF, _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, HAS CAUSED _____ NAME TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF _____, 20___.

_____
BY:

NOTARY PUBLIC

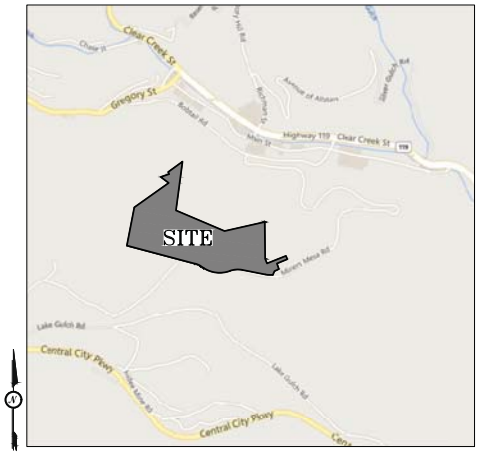
STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___, BY _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____



VICINITY MAP
SCALE: 1"=1000'

MAYOR'S CERTIFICATE

APPROVED AND ACCEPTED THIS _____ DAY OF _____, 2020 BY THE BOARD OF ALDERMEN OF THE CITY OF BLACK HAWK, SITUATED IN GILPIN COUNTY, COLORADO. THIS APPROVAL DOES NOT GUARANTEE THAT THE SIZE OR SOIL CONDITION OF ANY LOT SHOW HERE ON ARE SUCH THAT A BUILDING PERMIT CAN BE ISSUED.

CITY OF BLACK HAWK

ATTEST: BY:_____
DAVID D. SPELLMAN, MAYOR

_____
MELISSA GREINER, CITY CLERK

SURVEYOR'S CERTIFICATE

I ROBERT J. HENNESSY, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY OF BLACK HAWK PARK, WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THE ACCOMPANYING PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, C.R.S., AND THAT THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE SUBDIVISION ORDINANCE FOR THE CITY OF BLACK HAWK HAVE BEEN PLACED ON THE GROUND. THAT THE SURVEY ACCURATELY AND PROPERLY WITHIN APPLICABLE STANDARDS OF PRACTICE SHOWS SAID SURVEY BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF. THIS SURVEY IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

_____
ROBERT J. HENNESSY
REGISTERED COLORADO LAND SURVEYOR NO. 34580
FOR AND ON BEHALF OF RICK ENGINEERING

FOR CLERK AND RECORDER USE ONLY

CLERK AND RECORDER'S CERTIFICATE

_____
RECEPTION NUMBER

ACCEPTING FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GILPIN COUNTY, AT CENTRAL CITY COLORADO ON THIS _____ DAY OF _____, 202__ AT _____ O'CLOCK.

_____
GILPIN COUNTY CLERK AND RECORDER

_____
BY: DEPUTY CLERK

RICK ENGINEERING COMPANY
9801 E EASTER AVE.
CENTENNIAL, CO 80112
PH: (303) 537-6020

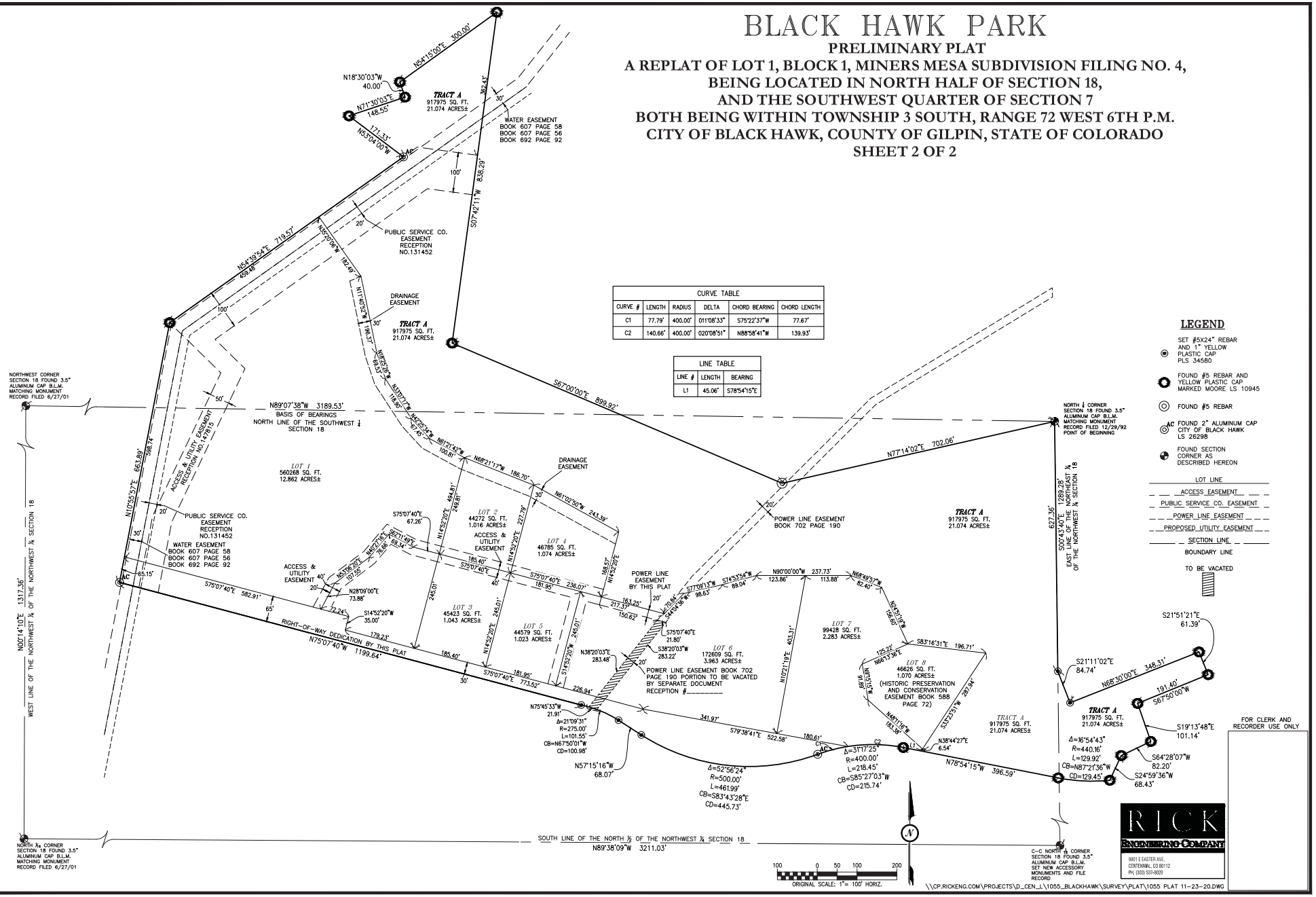
\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 11–23–20.DWG

BLACK HAWK PARK

PRELIMINARY PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 2 OF 2



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	77.79'	400.00'	011°08'33"	S75°22'37"W	77.67'
C2	140.66'	400.00'	020°08'51"	N88°58'41"W	139.93'

LINE TABLE		
LINE #	LENGTH	BEARING
L1	45.06'	S78°54'15"E

LEGEND

- SET #5X24" REBAR AND 1" YELLOW PLASTIC CAP PLS 34580
- FOUND #5 REBAR AND YELLOW PLASTIC CAP MARKED MOORE LS 10945
- FOUND #5 REBAR
- AC FOUND 2" ALUMINUM CAP CITY OF BLACK HAWK LS 26298
- FOUND SECTION CORNER AS DESCRIBED HEREON

LOT LINE
ACCESS EASEMENT
PUBLIC SERVICE CO. EASEMENT
POWER LINE EASEMENT
PROPOSED UTILITY EASEMENT
SECTION LINE
BOUNDARY LINE
TO BE VACATED

FOR CLERK AND RECORDER USE ONLY

RICK ENGINEERING COMPANY
9801 E EASTER AVE.
CENTENNIAL, CO 80112
PH. (303) 537-8020

DRAINAGE REPORT
FOR
BLACK HAWK PARK
GILPIN COUNTY, COLORADO

Job Number: D-1055

November 30, 2020

RICK ENGINEERING COMPANY
ENGINEERING COMPANY
RICK ENGINEERING CO

DRAINAGE REPORT
FOR
BLACK HAWK PARK
GILPIN COUNTY, COLORADO

Job Number: D-1055

Prepared for:
Ventana Capital
9801 East Easter Avenue
Centennial, Colorado 80112
(303) 346-7006

Prepared by:
RICK ENGINEERING COMPANY
9801 East Easter Avenue
Centennial, Colorado 80112
(303) 537-8020

November 30, 2020

CERTIFICATION

Professional Engineer:

"This report and plan for the drainage design of Black Hawk Park was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Black Hawk criteria and was designed to comply with the provisions thereof. I understand the City of Black Hawk does not and will not assume liability for drainage facilities designed by others."

_____

Robert K. Fitch, P.E.
Registered Professional Engineer State of Colorado #48704

Company: Rick Engineering Company

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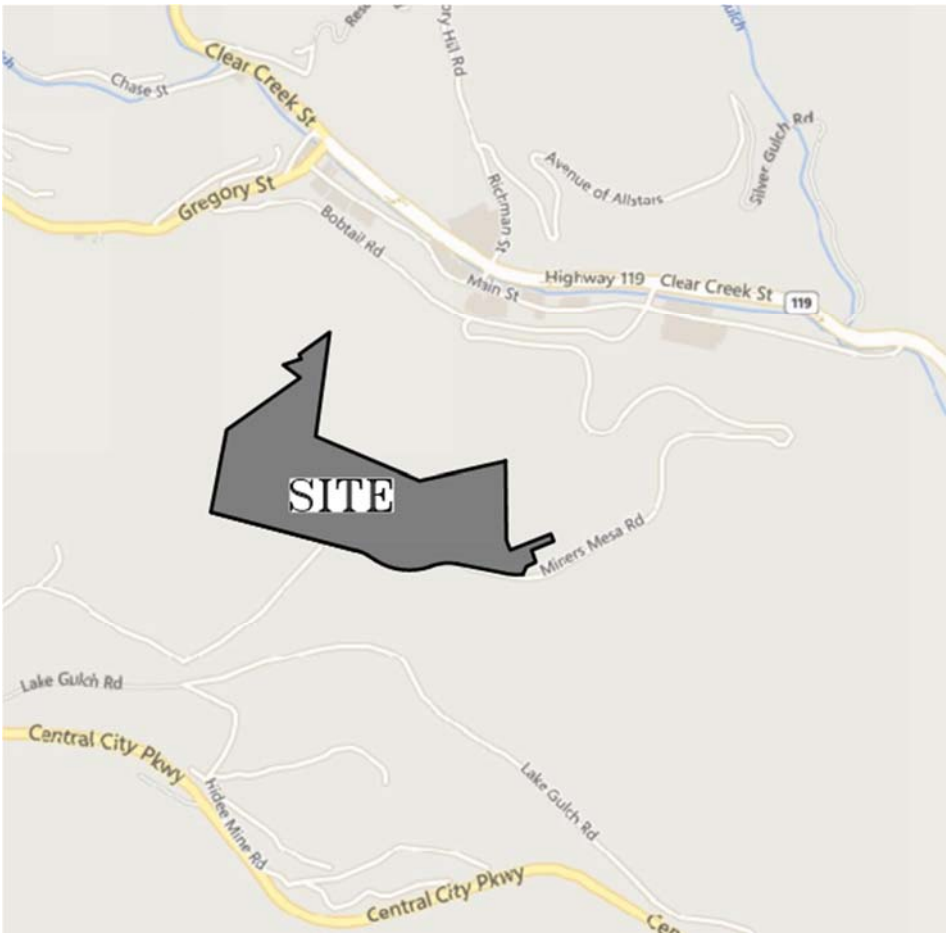
APPENDICES
- A. Site Information
- B. Calculations
- C. Drainage Map

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location:

The Black Hawk Park property is located within the City of Black Hawk off Miner's Mesa Road. The property is approximately 48 acres in area. The property is located in the North Half of Section 18 and the Southwest Quarter of Section 7 within Township 3 South, Range 72 West of the 6th Principal Meridian, in the City of Black Hawk, County of Gilpin and State of Colorado.

A majority of the Black Hawk Park site flows north towards an unnamed tributary to North Clear Creek. A small southern portion of the project drains south towards Russell Gulch which is also part of the North Clear Creek Watershed.



Vicinity Map
(Not to scale)

B. Description of Property:

Black Hawk Park is approximately 43 acres and is currently zoned as Commercial/Business Services (C/BS). In existing conditions, the property consists of open space with short grass, small shrubs, trees and slopes ranging from minor, around 2%, to steep, around 50% towards the northern edge of the site. There is an existing asphalt parking lot approximately 8.5 acres in size. There are two existing buildings onsite that are due to be demolished, along with three historical structures; there is an existing detention pond with its associated outlet structure, pipe outfall and rip-rap run-down with energy dissipation.

Per the Natural Resources Conservation Service Web Soil Survey, the property contains Hydrologic Group Type "D" soils, predominantly "Resort very gravelly sandy loam" soil type. Type "D" soils are described to having a very slow infiltration rate when thoroughly wet and a very slow rate of water transmission.

According to the FEMA Flood Insurance Rate Map 0800760001B, effective on 10/16/1984, there are no mapped floodplains within the site.

There are no irrigation canals or geological features on the site.

The proposed development consists of eight (8) commercial lots and one (1) tract. Lot 1 will contain 50 permanent airstream trailer pads, with associated check in building, shooting range, and bar. Lots 2-7 will contain development consistent with the C/BS zoning including distillery and micro-brewery facilities. Lot 8 consists of a historical preservation easement containing the existing historical structures. Tract A contains steep hillside slope on the northern portion of the site that will remain in its current condition. Tract A also contains the existing detention pond EDB-1 and outfall infrastructure that will remain in place. An additional detention pond EDB-2 will be located within Lot 7 to serve that lot only. The development will include all necessary infrastructures, inclusive to wet and dry utilities, parking facilities, and storm drainage and drainage control facilities.

II. DRAINAGE BASINS

The Black Hawk Park development is located in the North Clear Creek watershed. In existing conditions, a large majority of the project's runoff drains south to north across the site and is consolidated in channels and unnamed tributaries running down the steep hillside slopes towards North Clear Creek. A small portion of the southeast property drains south Russell Gulch, which is a tributary to North Clear Creek. Offsite areas flowing into the site consist of a portion of Basin B that is undeveloped land to the southwest.

In proposed conditions, the drainage characteristics will remain similar as compared to the pre-project condition. Lots 1-6 on the top of the mesa which comprises most of the developable site will be routed to the improved extended detention basin (EDB-1) and will utilize the existing single barrel 24-inch CMP (Design Point B) location as the outfall. A small portion of the site, Lot 7, will drain to a second extended detention basin (EDB-2) and will outfall to the existing natural drainage draw on the north side of Miners Mesa road. The northern hillside slopes within Tract A will remain pervious as in their current condition and continue to flow north to North Clear Creek.

It is noted that Miners Mesa Road will be improved and extended along the southern boundary of the site at approximately the same time as the initial development of Black Hawk Park. In the post project condition, Miners mesa Road will be a delineation point for the on/off-site basin along the southern boundary. The portion of the property along the southern boundary that is to be dedicated as ROW to the City of Black Hawk will be captured within the ROW and directed to the existing detention pond south of the Public Works building; the design and construction of the road extension shall be completed by others and is not discussed in detail in this report.

Please refer to Appendix C for the Pre-Project and Post-Project Drainage Study Maps for the precise locations of the Design Points.

A. Drainage Basins:

Pre-Project:

Basin A consists of undeveloped and forested mountain hillside and is approximately 53.7 acres that typically drains from south to north. Runoff flows down the steep hillside slope towards Bobtail Rd, and outfalls to North Clear Creek.

Basin B is approximately 24.8 acres and drains from offsite to the southwest of the site and through the site to an existing 18-inch RCP that flows into the existing extended detention basin EDB-1. Basin B contains a large portion of the asphalt parking lot onsite and the majority of the developable land. The outfall from EDB-1 is a 24" RCP (Design Point #3) that discharges to the north into Basin C.

Basin C is approximately 47.2 acres and drains from the top of the mesa onsite and down undeveloped and forested mountain hillside towards Miners Mesa Road, and outfalls to North Clear Creek.

Basin D is approximately 39.6 acres and is located south of the site, including a small southeastern portion of the site. The basin drains to the south and outfalls to Russell Gulch, a tributary of North Clear Creek.

Basin E is approximately 81.5 acres and contains the remainder of the asphalt parking lot onsite and the historical preservation easement in the upper reaches of the basin, and consists largely of undeveloped forested mountain hillside. The basin drains north to Miners Mesa Road and outfalls to North Clear Creek.

Post-Project:

Basin A will remain similar in size at approximately 52.9 acres, with the reduction in size due to shifting a portion of area at the top of the mesa into Basin B to allow for attenuation of developed land and water quality treatment. The remainder of the basin will continue to be undeveloped forested mountain hillside and will continue to drain in the same pattern as pre-project condition.

Basin B will remain similar in size, increasing to 26.7 acres with an increase in area redirected from Basin A and a loss of area along the ROW corridor for Miners Mesa Road to Basin D. The slight increases in area and imperviousness through development will require improvements to the existing extended detention basin (EDB-1) to modify the outfall structure and increase the capacity of the pond.

Basin C will remain similar in size at approximately 45.6 acres, with the with the reduction in size due to shifting a portion of area at the top of the mesa into Basin B to allow for attenuation of developed land and water quality treatment. Basin C will remain undeveloped forested mountain hillside and will continue to drain in the same pattern as pre-project condition.

Basin D will remain similar in size at approximately 40.2 acres, with the increase in size attributed to the Miners Mesa Road ROW corridor and a decrease in contributing area from onsite in Basin B to allow for attenuation of developed land and water quality treatment. Other than the improvement of Miners Mesa Road, Basin D will remain as existing and will continue to drain in the same pattern as pre-project condition.

Basin E will remain similar in size at approximately 81.4 acres. The developed land at the top of the basin, Lot 7, will require an extended detention basin to provide for attenuation and water quality of the developed land. The exact location and geometry of the pond will be determined during the site development phase for Lot 7; however, for the purposes of this report the detention pond has been assumed to have a volume of 0.122 acre-ft with an approximate footprint of 2,500 sf. This attenuation volume may be achieved by one or more ponds depending on site layout, but has been assumed to be a single pond for the purpose of this report. Refer to the calculations in Appendix B for

further detail. The remainder of Basin E will remain as undeveloped forested mountain hillside, and will continue to drain in the same pattern as the pre-project condition.

III. DRAINAGE DESIGN CRITERIA

A. Regulations:

- Urban Storm Drainage Criteria Manual (USDCM) – Urban Drainage and Flood Control District (UDFCD), August 2018.

No deviation in criteria is requested from any criteria listed above. There are no previous drainage studies that influence the drainage design of the Black Hawk Park development.

B. Hydrology:

Rational Method

This drainage study is prepared in accordance with the current UDFCD, Urban Storm Drainage Criteria Manual dated August 2018. In accordance with the USDCM, Rational Method is used to calculate runoff for basins with area less than 90 acres and Colorado Urban Hydrograph Procedure (CUHP) is used to calculate runoff for basins more than 90 acres. All basins in project site are less than 90 acres; therefore, rational method is used to calculate runoff from all the on-site basins. The rational formula is as follows:

$Q = CIA$

Where,
Q = Peak runoff in cubic feet/sec
C = Composite Runoff Coefficient for either 5 year or 100-year storm
I = Intensity of rainfall (inches per hour) at calculated time of concentration
A= Area of basin in acres

Time of Concentration

The time of concentration is calculated by the following equation (equation 6-2 per USDCM, Jan 2016 edition):

$t_c = t_i + t_t$

Where,
t_c – Computed time of concentration (minutes)
t_i – Overland (initial) flow time (minutes)
t_t – Channelized flow time (minutes)

Initial or Overland Flow time is calculated by the following equation (equation 6-3 per USDCM, August 2018 edition):

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_0^{0.33}}$$

Where,

t_i – Overland (initial) flow time (minutes)

C_5 – Runoff coefficient for 5-year frequency

L - Length of overland flow (ft)

S_0 - Average slope along the overland path (ft/ft)

Channelized Flow time is calculated by the following equation (equation 6-4 per USDCM, August 2018 edition):

$$t_t = \frac{L_t}{60K\sqrt{S_0}} = \frac{L_t}{60V_t}$$

Where,

t_t– Channelized flow time (travel time, min.)

L_t – Waterway Length (ft)

S_0 – Waterway Slope (ft/ft)

V_t – Travel time velocity (ft/s) = $K\sqrt{S_0}$

K – NRCS Conveyance factor

Time of concentration is also calculated based on the following equation (equation 6-5 per USDCM, August 2018 edition):

$$t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$$

Where,

t_c – Minimum time of concentration for first design point when less than t_c from equation 6-1

L_t – Length of flow path (ft)

i – Imperviousness (expressed as decimal)

S_t – Slope of channelized flow path (ft/ft)

Refer to Appendix B for Time of Concentration Calculations.

Rainfall Intensity

The 5-year and 100-year storms are the minor and major storm events for this property. The rainfall intensities were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2 for point precipitation frequency estimates. Below is a summary table for the 1-Hour point rainfall; refer to Appendix A for further detail.

1-Hour Point Rainfall Values (inches)					
Event	2-Year	5-Year	10-Year	50-Year	100-Year
Zone 1	0.689	0.881	1.25	1.42	1.58

Composite C-Value

RUNOFF COEFFICIENT CALCULATIONS
PRE-PROJECT CONDITION

DESIGNED BY: JP — JOB NO 1055
CHECKED BY: — DATE: 12/1/2020

Design Point	Basin	Total Area		Impervious Cover					Composite		
		sq-ft	acres	sq-ft	acres	% Impervious	C_5	C_{100}	% Impervious	C_5	C_{100}
A	A	2,339,022	53.7	0	0.00	0.0%	0.04	0.48	0.0%	0.04	0.48
B	B	1,078,148	24.8	225,678	5.18	20.9%	0.21	0.57	4.4%	0.21	0.57
C	C	2,056,661	47.2	0	0.00	0.0%	0.04	0.48	0.0%	0.04	0.48
D	D	1,724,067	39.6	636,841	14.62	36.9%	0.34	0.64	13.6%	0.34	0.64
E	E	3,548,450	81.5	59,933	1.38	1.7%	0.05	0.49	0.0%	0.05	0.49

RUNOFF COEFFICIENT CALCULATIONS
POST-PROJECT CONDITION

DESIGNED BY: JP — JOB NO. 1055
CHECKED BY: — DATE: 12/1/2020

Design Point	Basin	Total Area		Impervious Cover					Composite		
		sq-ft	acres	sq-ft	acres	% Impervious	C_5	C_{100}	% Impervious	C_5	C_{100}
A	A	2,302,703	52.9	0	0.00	0.0%	0.04	0.48	0.0%	0.04	0.48
B	B	1,162,300	26.7	262,793	6.03	22.6%	0.22	0.58	22.6%	0.22	0.58
C	C	1,986,575	45.6	0	0.00	0.0%	0.04	0.48	0.0%	0.04	0.48
D	D	1,749,179	40.2	664,088	15.25	38.0%	0.35	0.64	38.0%	0.35	0.64
E	E	3,546,023	81.4	45,316	1.04	1.3%	0.05	0.49	1.3%	0.05	0.49

Runoff Summary Table – Existing and Proposed Peak Flows

5-YR POST-PROJECT RUNOFF $P_{5\ Year}$ = 0.88 inch						
DESIGNED BY: JP					JOB NO.	1055
CHECKED BY:					DATE:	12/1/2020
Design Point	Basin	Area acres	C_5	t_c min	I in/hr	Q_5 cfs
A	A	52.9	0.04	21.84	1.65	3.06
B	B	26.7	0.22	20.43	1.71	10.07
C	C	45.6	0.04	16.06	1.93	3.09
D	D	40.2	0.35	18.39	1.81	25.14
E	E	81.4	0.05	16.03	1.94	7.16

100-YR POST-PROJECT RUNOFF $P_{100\ Year}$ = 1.58 inch						
DESIGNED BY: JP					JOB NO.	1055
CHECKED BY:					DATE:	12/1/2020
Design Point	Basin	Area acres	C_{100}	t_c min	I in/hr	Q_{100} cfs
A	A	52.9	0.48	21.84	2.97	75.9
B	B	26.7	0.58	20.43	3.07	47.3
C	C	45.6	0.48	16.06	3.47	76.6
D	D	40.2	0.64	18.39	3.25	83.4
E	E	81.4	0.49	16.03	3.47	138.4

C. Stormwater Storage Facilities:

The project proposes two (2) detention basins, EDB-1 and EDB- 2. The detention basins are designed at 3:1 side slope and a micropool is provided at the bottom. Per USDCM, freeboard of 1 foot is provided. The emergency spillway for the proposed detention basins have been designed to convey the post-project un-detained 100-year runoff while maintaining the minimum freeboard.

In accordance with the USDCM, the detention basins will provide detention of the Water Quality Capture Volume (WQCV), Excess Urban Runoff Volume (EURV), and the 100-Year storm event. The post-project flow rates for the 100-year storm event will be detained back to the predevelopment peak flow rates.

Detention basins were designed utilizing the UDFCD Detention Basin Design Workbook spreadsheet (MHDF-Detention Version 4.02) for all return periods to mitigate for the additional impervious area in the proposed condition. The design maximum allowable release rate for these detention basins will match the overall pre-project development flow rate for the 100-year storm, as stipulated by USDCM. Please refer to Appendix B for supporting detention calculations.

The detention basins were designed to provide detention for all of their respective tributary areas. EDB-1 and EDB-2 were sized to reduce peak flows prior to discharge offsite.

Emergency overflow structure shall be sized for EDB-1 and EDB-2 to convey the un-detained Q100 safely through the proposed outfall pipes without flooding or impacting the adjacent roads or pads. The un-detained Q100 will be conveyed through a conventional emergency spillway for both basins. Riprap for pipe outlets into the extended detention basin has been designed per Chapter 8 and Chapter 9 of the UDFCD's Urban Storm Drainage Criteria Manual (USDCM). Emergency overflow spillway riprap has been designed per Chapter 12 of the USDCM.

D. Stormwater Conveyance Facilities:

The project site has been designed to convey runoff from the proposed site in accordance with the design criteria. The commercial pads, parking lots, and drive lanes will be graded to reflect existing drainage patterns. Extended detention basins are proposed to reduce peak flows to pre-project conditions and to satisfy water quality treatment. Inlets shall be sized for ultimate conditions and will serve as connection points for future storm drain connections. The storm sewer system shall be designed to ensure the hydraulic grade line of the system is below the ground elevation during the major storm.

Full hydraulic calculations shall be provided within individual lots once the detailed grading and drainage of those lots is well defined, during the Site Development Plan Phase.

Swales have been sized for major conveyance to EDB-1. Refer to the calculations provided in Appendix B for further information.

Street Capacity, Pipes and Inlets

Street capacity and CDOT Type R inlets along the proposed streets shall be designed utilizing the UDFCD Street and Inlet Hydraulics spreadsheet (UD-Inlet Version 4.05). Type C inlets, where required, shall be designed utilizing the weir equation and assuming 50% clogging to account for the grate and debris build up. The inlet calculations shall include the interception rates for both the minor and major storm events.

Standard CDOT Type R curb-opening and Type C grate inlets shall be used for all proposed inlets. Storm sewers are sized to convey the minor design storm in a "just full" condition, generally without surcharging for the most part. The major storm event hydraulic grade lines are allowed to rise above the top of the storm sewer pipe and

surcharge the system. However, a minimum clearance of 1-foot below the manhole lid, inlet grate or inlet curb opening elevation has been maintained.

The minimum pipe size for storm sewers is 18-inch Reinforced Concrete Pipes (RCP) per the standard. Maximum manhole spacing is as follows:

Pipe Diameter	Maximum Distance Between Manholes
18-inch to 36-inch	400 feet
>36-inch	500 feet

Storm sewer sizing, confluence analysis, hydraulic grade lines and energy grade line analyses shall be performed using Hydraflow Storm Sewers Extension for Autodesk Civil 3D. Applicable storm sewer losses will be calculated, and hydraulic grade lines will be computed for the proposed storm sewer per criteria set forth in the USDCM Volume 1, August 2018 condition. Tailwater conditions will also be accounted for when applicable.

Open Channel Design

Open channels and swales shall be designed in accordance with USDCM Volume 2, Chapter 8, Section 6. Swales shall be grass lined and designed to convey the 100-year peak flows with a minimum of 1.0' of freeboard and shall not exceed channel velocities of 7 fps. Swales shall have maximum of 3:1 side slopes and trapezoidal channels shall have a minimum bottom width of 2.0'.

Refer to the preliminary engineering drawings for locations and details of the proposed swales on site and refer to Appendix B for hydraulic calculations for the different swale types on site. A summary of the peak flows for each swale is as follows:

5-YR POST-PROJECT CHANNEL RUNOFF

$P_{5\ Year} = 0.88$ inch

DESIGNED BY: JP JOB NO. 1055

CHECKED BY: DATE: 12/1/2020

Channel	Area	C_5	t_c	I	Q_5
	acres		min	in/hr	cfs
1	1.66	0.09	29.18	1.40	0.20
2	17.3	0.13	21.77	1.65	3.78
3A	3.02	0.28	16.22	1.92	1.63
3B	0.91	0.47	15.26	1.98	0.85

100-YR POST-PROJECT CHANNEL RUNOFF

$P_{100\ Year} = 1.58$ inch

DESIGNED BY: JP JOB NO. 1055

CHECKED BY: DATE: 12/1/2020

Channel	Area	C_{100}	t_c	I	Q_{100}
	acres		min	in/hr	cfs
1	1.7	0.51	29.18	2.52	2.1
2	17.3	0.53	21.77	2.97	27.4
3A	3.0	0.61	16.22	3.45	6.3
3B	0.9	0.70	15.26	3.56	2.3

Riprap

Riprap at pipe outlets and into the pond will be designed per USDCM Volume 2, Chapter 9, Section 3. The detention basin emergency spillways have been designed per UDFCD Volume 2, Chapter 12, Section 5.

E. Floodplain Modifications:

This project does not propose to modify any floodplain. Proposed improvements associated with this project will provide full conveyance of the 100-year storm event. There is no proposed encroachment into any floodplain and there are no Floodplain Development Permit applications associated with this project.

F. Water Quality Enhancement BMPs:

Non-Structural Best Management Practices (BMPs) focus on preserving open space, protecting natural systems and incorporating existing landscape into the site plan to manage stormwater at its source. Non-structural BMPs are incorporated into the site plan by the including grassed trapezoidal swales for treatment and conveyance throughout the development. The development minimizes impervious areas where applicable and incorporates preventative maintenance measures during construction to minimize storm water contamination.

Structural BMPs are incorporated to improve water quality and runoff leaving the site. Structural BMPs include ditches and EDB with low flow channels, micropools, forebays and outlet control systems to control sediment in the stormwater and attenuate the peak flows. Two (2) EDB are proposed as part of the project.

G. Additional Permitting Requirements:

- City of Black Hawk Storm Water Management Plan (SWMP)
- Colorado Department of Public Health & Environment – General Permit for Stormwater Discharges Associated with Construction Activity (NPDES)

IV. CONCLUSIONS

A. Compliance with Standards:

This drainage report meets criteria set forth by the Urban Storm Drainage Criteria Manual (USDCM) – Urban Drainage and Flood Control District (UDFCD), August 2018.

B. Variances:

No variances from design criteria are requested at this time.

C. Drainage Concept:

The Black Hawk Park development will provide full conveyance of stormwater flow from the project site during the minor and major storm events. All stormwater flow from the project site will be treated for water quality and full-spectrum detention will be provided. The improvements associated with this project are not anticipated to have downstream impacts or impacts to any wetlands or floodplains.

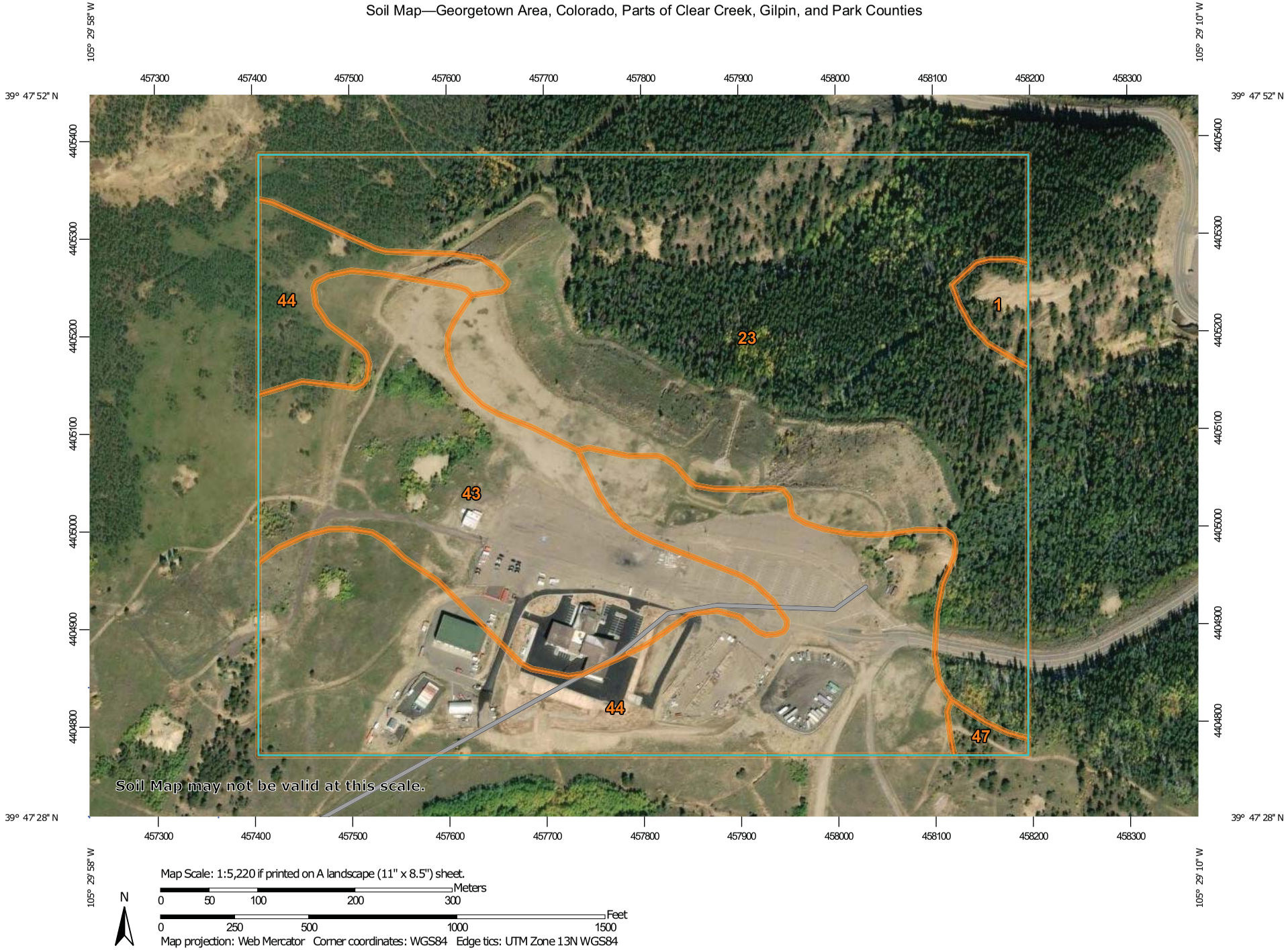
V. REFERENCES

Urban Storm Drainage Criteria Manual (USDCM) – Urban Drainage and Flood Control District (UDFCD), August 2018.

Appendix A

Site Information

NRCS Soil Classification Map
FEMA FIRM Map
NOAA Atlas 14
NOAA Vicinity Map



Map Scale: 1:5,220 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Georgetown Area, Colorado, Parts of Clear Creek, Gilpin, and Park Counties
Survey Area Data: Version 14, Jun 10, 2020

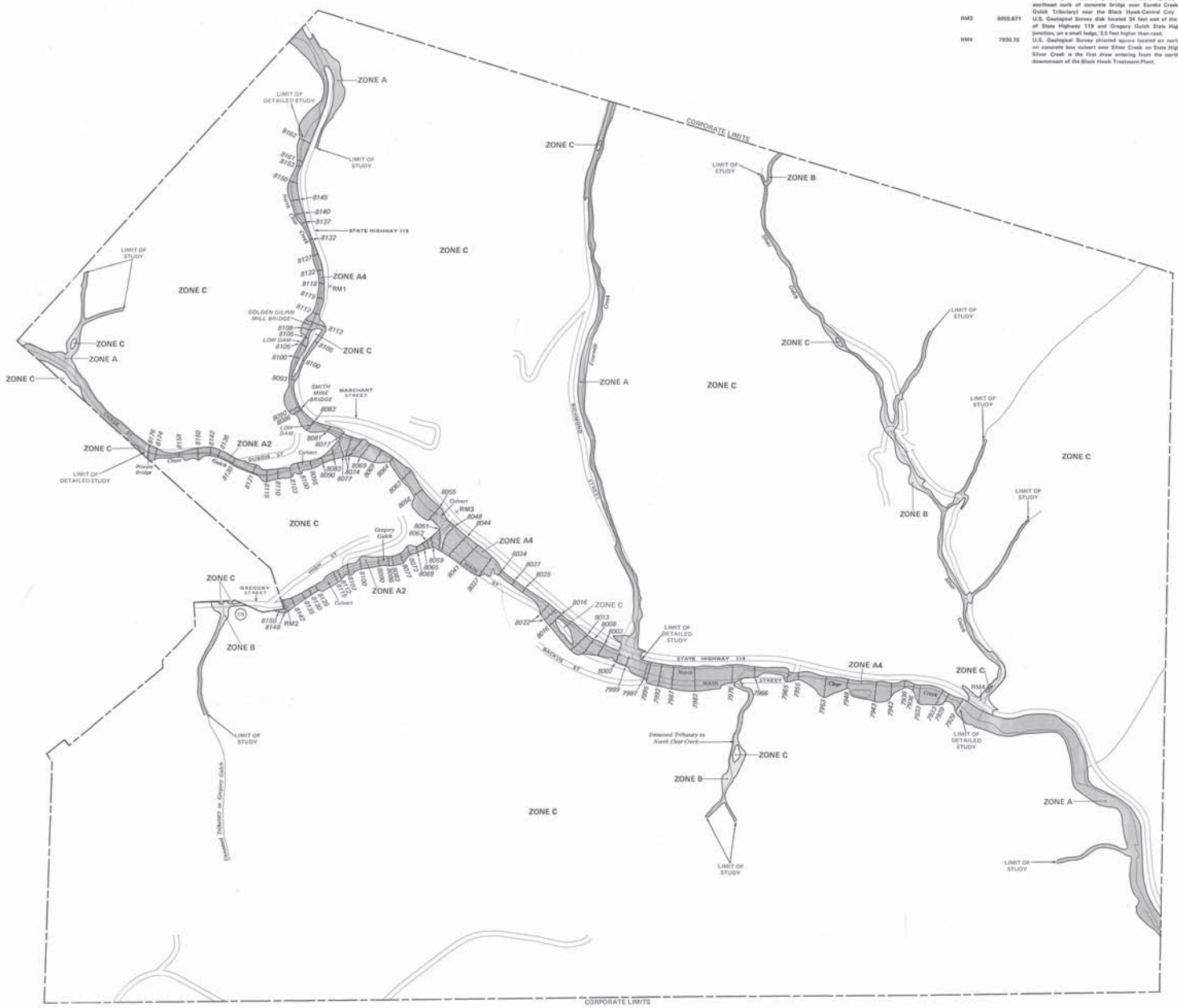
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2010—Nov 1, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Arents-Dumps, mine complex, 5 to 80 percent slopes	1.5	1.2%
23	Legault-Rock outcrop complex, 30 to 80 percent slopes	56.0	46.3%
43	Resort very gravelly sandy loam, 3 to 10 percent slopes	23.8	19.7%
44	Resort very gravelly sandy loam, 10 to 30 percent slopes	39.0	32.2%
47	Resort-Cathedral complex, 30 to 60 percent slopes	0.7	0.6%
Totals for Area of Interest		**120.9**	**100.0%**



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM1	8100.522	U.S. Coast and Geodetic Survey disk, located 0.3 mile west along State Highway 119 from State Highway 279 junction at Gregory Gulch, 10 feet southeast of centerline, 7 feet southwest of prominent vertical ridge, in the top of the southwest face of large sloping rock, 2 feet higher than road.
RM2	8341.749	U.S. Coast and Geodetic Survey disk located at Central City, on road leading from State Highway 279 to State Highway 119; in the southeast curb of concrete bridge over Eureka Creek (Gregory Gulch Tributary) near the Black Hawk-Central City boundary.
RM3	8059.871	U.S. Geological Survey disk located 34 feet east of the centerline of State Highway 119 and Gregory Gulch State Highway 279 junction, on a small ledge, 3.5 feet higher than road.
RM4	7930.76	U.S. Geological Survey chiseled square located on northwest end on concrete box culvert over Silver Creek on State Highway 119, Silver Creek is the first draw entering from the north and just downstream of the Black Hawk Treatment Plant.

KEY TO MAP

- 500-Year Flood Boundary
- 100-Year Flood Boundary
- Zone Designations*
- 100-Year Flood Boundary
- 100-Year Flood Boundary
- Base Flood Elevation Line With Elevation In Feet**
- Base Flood Elevation in Feet Where Uniform Within Zone**
- Elevation Reference Mark
- Zone D Boundary
- River Mile

ZONE B
ZONE A1
ZONE A5
ZONE B
513
(EL 987)
RM7×
•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

***EXPLANATION OF ZONE DESIGNATIONS**

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
AUGUST 30, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
AUGUST 13, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
OCTOBER 16, 1984

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
BLACK HAWK,
COLORADO
GILPIN COUNTY

ONLY PANEL PRINTED

COMMUNITY-PANEL NUMBER
080076 0001 B

EFFECTIVE DATE:
OCTOBER 16, 1984

Federal Emergency Management Agency

NOAA Atlas 14, Volume 8, Version 2
Location name: Black Hawk, Colorado, USA*
Latitude: 39.7946°, Longitude: -105.4936°
Elevation: 8648.45 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.187 (0.144-0.243)	0.228 (0.175-0.297)	0.296 (0.227-0.386)	0.354 (0.270-0.463)	0.434 (0.321-0.591)	0.497 (0.359-0.687)	0.561 (0.393-0.798)	0.628 (0.422-0.919)	0.716 (0.465-1.08)	0.785 (0.497-1.21)
10-min	0.274 (0.211-0.356)	0.334 (0.257-0.434)	0.434 (0.332-0.566)	0.518 (0.395-0.679)	0.636 (0.469-0.865)	0.728 (0.526-1.01)	0.822 (0.575-1.17)	0.919 (0.618-1.35)	1.05 (0.680-1.59)	1.15 (0.727-1.77)
15-min	0.334 (0.257-0.434)	0.407 (0.313-0.530)	0.529 (0.405-0.690)	0.631 (0.481-0.828)	0.775 (0.573-1.06)	0.888 (0.641-1.23)	1.00 (0.701-1.43)	1.12 (0.754-1.64)	1.28 (0.830-1.93)	1.40 (0.887-2.15)
30-min	0.450 (0.346-0.585)	0.552 (0.424-0.717)	0.718 (0.551-0.937)	0.857 (0.653-1.12)	1.05 (0.773-1.42)	1.20 (0.864-1.65)	1.35 (0.941-1.91)	1.50 (1.01-2.19)	1.70 (1.10-2.56)	1.85 (1.17-2.84)
60-min	0.571 (0.440-0.742)	0.689 (0.530-0.897)	0.881 (0.675-1.15)	1.04 (0.791-1.36)	1.25 (0.922-1.70)	1.42 (1.02-1.95)	1.58 (1.10-2.23)	1.74 (1.17-2.54)	1.95 (1.26-2.94)	2.11 (1.34-3.24)
2-hr	0.693 (0.539-0.892)	0.827 (0.642-1.07)	1.04 (0.807-1.35)	1.22 (0.938-1.58)	1.46 (1.08-1.95)	1.63 (1.19-2.23)	1.81 (1.27-2.53)	1.98 (1.34-2.86)	2.21 (1.44-3.29)	2.37 (1.52-3.61)
3-hr	0.778 (0.608-0.996)	0.918 (0.717-1.18)	1.14 (0.890-1.47)	1.33 (1.03-1.71)	1.57 (1.17-2.09)	1.75 (1.28-2.38)	1.93 (1.37-2.69)	2.11 (1.44-3.03)	2.34 (1.54-3.47)	2.51 (1.61-3.80)
6-hr	0.967 (0.764-1.23)	1.12 (0.884-1.42)	1.38 (1.08-1.75)	1.59 (1.25-2.04)	1.90 (1.44-2.53)	2.15 (1.59-2.90)	2.39 (1.72-3.33)	2.65 (1.83-3.80)	3.00 (2.00-4.44)	3.27 (2.13-4.92)
12-hr	1.22 (0.975-1.54)	1.40 (1.11-1.76)	1.72 (1.37-2.17)	2.02 (1.59-2.56)	2.47 (1.92-3.31)	2.86 (2.16-3.88)	3.28 (2.40-4.58)	3.74 (2.63-5.38)	4.40 (2.98-6.51)	4.94 (3.25-7.38)
24-hr	1.50 (1.21-1.87)	1.72 (1.38-2.14)	2.14 (1.72-2.68)	2.56 (2.04-3.22)	3.22 (2.54-4.31)	3.80 (2.91-5.14)	4.44 (3.29-6.17)	5.15 (3.67-7.37)	6.19 (4.25-9.12)	7.05 (4.68-10.4)
2-day	1.76 (1.44-2.18)	2.04 (1.66-2.52)	2.59 (2.10-3.20)	3.12 (2.52-3.88)	3.97 (3.17-5.29)	4.72 (3.66-6.35)	5.56 (4.17-7.68)	6.50 (4.68-9.24)	7.87 (5.46-11.5)	9.00 (6.04-13.2)
3-day	1.94 (1.59-2.38)	2.23 (1.82-2.74)	2.80 (2.28-3.45)	3.37 (2.73-4.17)	4.29 (3.45-5.70)	5.12 (4.00-6.86)	6.04 (4.56-8.31)	7.08 (5.14-10.0)	8.61 (6.01-12.5)	9.88 (6.67-14.4)
4-day	2.09 (1.72-2.56)	2.37 (1.95-2.91)	2.95 (2.42-3.62)	3.53 (2.88-4.36)	4.49 (3.63-5.94)	5.35 (4.20-7.14)	6.31 (4.79-8.66)	7.40 (5.40-10.5)	9.01 (6.32-13.1)	10.4 (7.02-15.1)
7-day	2.48 (2.06-3.01)	2.76 (2.29-3.36)	3.34 (2.76-4.07)	3.93 (3.23-4.81)	4.90 (3.99-6.43)	5.77 (4.57-7.65)	6.76 (5.18-9.20)	7.88 (5.79-11.0)	9.53 (6.75-13.7)	10.9 (7.47-15.8)
10-day	2.82 (2.35-3.40)	3.11 (2.60-3.76)	3.70 (3.08-4.49)	4.30 (3.55-5.24)	5.26 (4.30-6.83)	6.12 (4.86-8.04)	7.08 (5.45-9.57)	8.17 (6.04-11.4)	9.76 (6.95-14.0)	11.1 (7.63-16.0)
20-day	3.72 (3.14-4.45)	4.11 (3.47-4.92)	4.82 (4.05-5.79)	5.46 (4.57-6.60)	6.44 (5.27-8.16)	7.26 (5.80-9.34)	8.14 (6.30-10.8)	9.10 (6.77-12.4)	10.5 (7.50-14.8)	11.6 (8.05-16.5)
30-day	4.47 (3.80-5.32)	4.98 (4.22-5.93)	5.83 (4.93-6.96)	6.57 (5.53-7.88)	7.62 (6.24-9.52)	8.46 (6.77-10.7)	9.33 (7.23-12.2)	10.2 (7.64-13.8)	11.5 (8.26-16.1)	12.5 (8.73-17.7)
45-day	5.45 (4.66-6.44)	6.11 (5.22-7.24)	7.20 (6.13-8.55)	8.09 (6.86-9.66)	9.31 (7.64-11.5)	10.2 (8.23-12.9)	11.2 (8.70-14.5)	12.1 (9.07-16.2)	13.3 (9.64-18.5)	14.3 (10.1-20.2)
60-day	6.30 (5.41-7.41)	7.11 (6.11-8.39)	8.42 (7.21-9.96)	9.48 (8.07-11.3)	10.9 (8.97-13.4)	12.0 (9.64-15.0)	13.0 (10.2-16.7)	14.0 (10.5-18.7)	15.3 (11.1-21.1)	16.3 (11.6-23.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

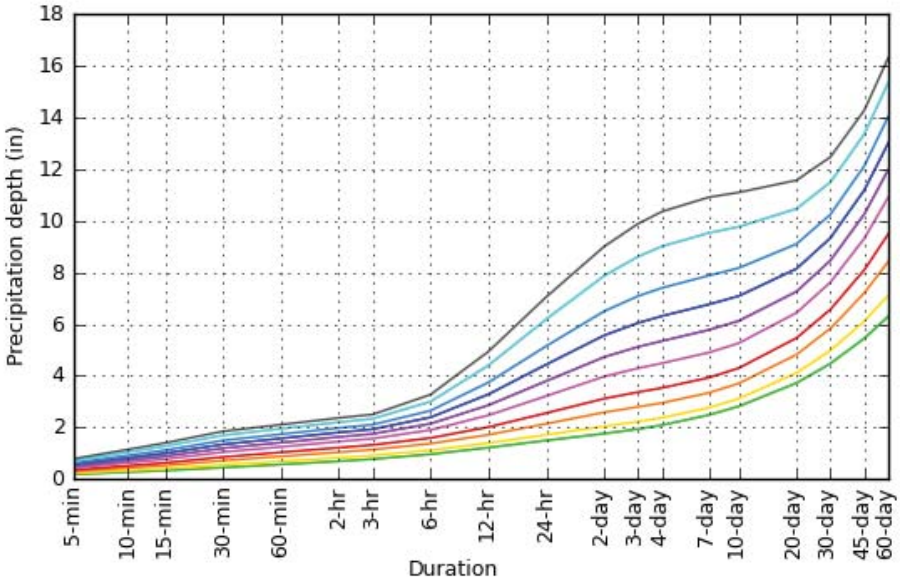
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

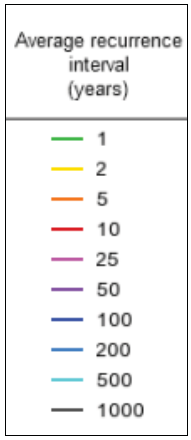
Please refer to NOAA Atlas 14 document for more information.

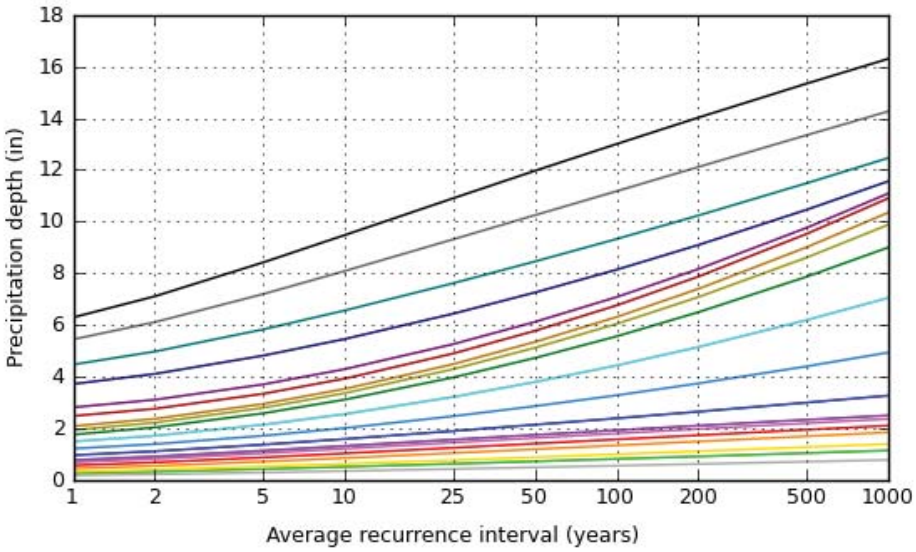
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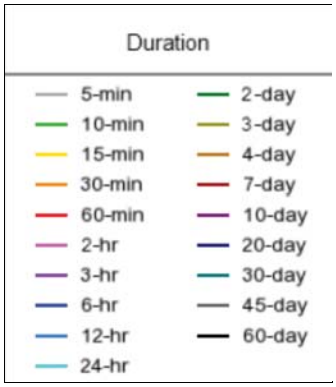
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 39.7946°, Longitude: -105.4936°







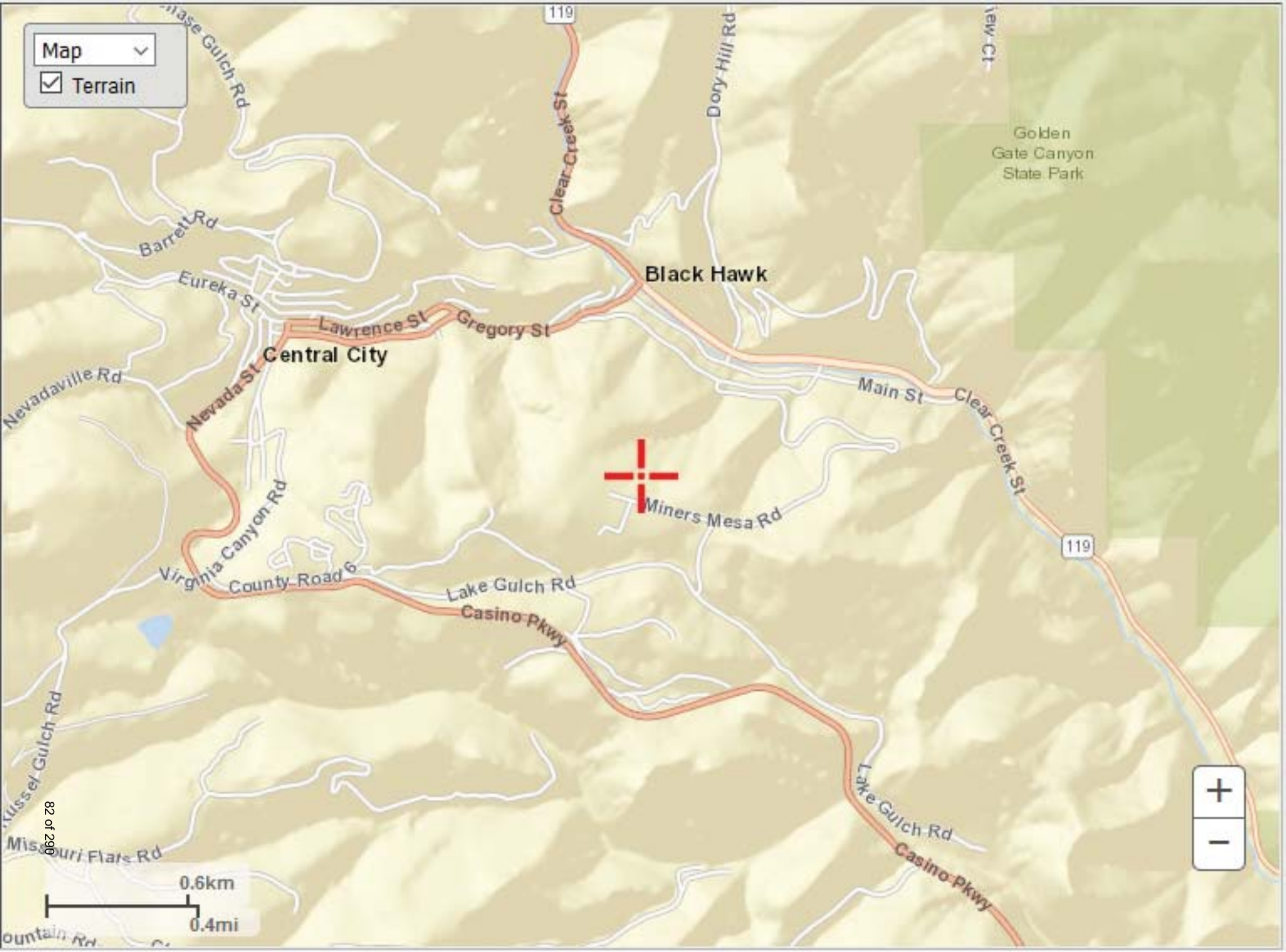


NOAA Atlas 14, Volume 8, Version 2 Created (GMT): Wed Nov 25 21:49:45 2020

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Maps & aerials

Small scale terrain


Map
Terrain
Black Hawk
Central City
Golden Gate Canyon State Park
Clear Creek St
Dory Hill Rd
Barrett Rd
Eureka St
Lawrence St
Gregory St
Nevadaville Rd
Nevada St
Main St
Miners Mesa Rd
Virginia Canyon Rd
County Road 6
Lake Gulch Rd
Casino Pkwy
Missouri Flats Rd
119
0.6km
0.4mi

Appendix B

Calculations

Time of Concentration Calculations
MHDF-Detention Calculations
Stormwater Channel Conveyance Calculations

TIME OF CONCENTRATION
PRE-PROJECT CONDITION

DESIGNED BY: JP
CHECKED BY:

JOB NO. 1055
DATE: 12/1/2020

Design Point	Basin	Total Area	Imperviousness	C_5[1]	C_{100}[1]	Initial Overland Flow Time (t_i)					Travel/Channelized Time of Flow (t_t)							Time of Concentration (t_c)	t_c check	Final Time of Concentration (t_c)	Comments
						Starting Elevation	Ending Elevation	Length	Slope	t_i[2]	Starting Elevation	Ending Elevation	Length	Slope	K	Channel velocity[3]	t_t[4]	t_c[5] $=t_i+t_t$	t_c[6]	Final t_c[7] (If <5 min., use 5 min.)	
		acres				*ft*	*ft*	*ft*	*ft/ft*	*min*	*ft*	*ft*	*ft*	*ft/ft*		*ft/s*	*min*	*min*	min	*min*	
A	A	53.7	0.00	0.04	0.48	8,733.0	8,686.9	300.0	0.15	13.6	8,686.9	7,993.3	3,369.8	0.21	15	6.8	8.3	21.8	39.8	21.8	
B	B	24.8	0.04	0.21	0.57	8,768.1	8,740.5	300.0	0.09	13.5	8,740.5	8,632.0	2,108.0	0.05	15	3.4	10.3	23.8	41.4	23.8	
C	C	47.2	0.00	0.04	0.48	8,668.9	8,645.0	300.0	0.08	16.9	8,645.0	7,977.7	2,602.6	0.26	15	7.6	5.7	22.6	35.5	22.6	
D	D	39.6	0.14	0.34	0.64	8,768.1	8,728.2	300.0	0.13	10.2	8,728.2	8,519.0	2,268.3	0.09	15	4.6	8.3	18.5	35.1	18.5	
E	E	81.5	0.00	0.05	0.49	8,803.3	8,697.9	300.0	0.35	10.2	8,697.9	7,977.7	2,701.0	0.27	15	7.7	5.8	16.0	35.7	16.0	

RICK ENGINEERING COMPANY

TIME OF CONCENTRATION
POST-PROJECT CONDITION

DESIGNED BY: JP
CHECKED BY:

JOB NO. 1055
DATE: 12/1/2020

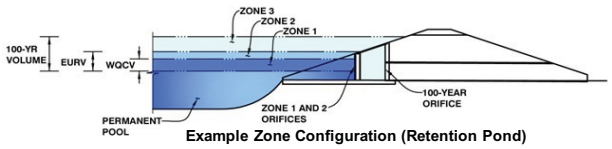
Design Point	Basin	Total Area	Imperviousness	C_5[1]	C_{100}[1]	Initial Overland Flow Time (t_i)					Travel/Channelized Time of Flow (t_t)							Time of Concentration (t_c)	t_c check	Final Time of Concentration (t_c)	Comments
						Starting Elevation	Ending Elevation	Length	Slope	t_i[2]	Starting Elevation	Ending Elevation	Length	Slope	K	Channel velocity[3]	t_t[4]	t_c[5] $=t_i+t_t$	t_c[6]	Final t_c[7] (If <5 min., use 5 min.)	
		acres				*ft*	*ft*	*ft*	*ft/ft*	*min*	*ft*	*ft*	*ft*	*ft/ft*		*ft/s*	*min*	*min*	min	*min*	
A	A	52.9	0.00	0.04	0.48	8,733.0	8,686.9	300.0	0.15	13.59	8,686.9	7,993.3	3,369.8	0.21	15	6.8	8.3	21.84	39.76	21.84	
B	B	26.7	0.23	0.22	0.58	8,768.1	8,740.5	300.00	0.09	13.31	8,740.5	8,632.0	1,992.79	0.05	20	4.7	7.1	20.43	33.86	20.43	
C	C	45.6	0.00	0.04	0.48	8,663.0	8,564.5	300.00	0.33	10.56	8,564.5	7,977.7	2,432.69	0.24	15	7.4	5.5	16.06	35.17	16.06	
D	D	40.2	0.38	0.35	0.64	8,768.1	8,728.2	300.0	0.13	10.09	8,728.2	8,519.0	2,268.3	0.09	15	4.6	8.3	18.39	28.24	18.39	
E	E	81.4	0.01	0.05	0.49	8,803.3	8,697.9	300.0	0.35	10.22	8,697.9	7,977.7	2,701.00	0.27	15	7.7	5.8	16.03	35.28	16.03	

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.02 (February 2020)

Project: _____

Basin ID: _____



Example Zone Configuration (Retention Pond)

EDB-1

Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft²)	Optional Override Area (ft²)	Area (acre)	Volume (ft³)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	0	0.000		
8632	--	0.31	--	--	--	6,866	0.158	1,063	0.024
8633	--	1.31	--	--	--	8,633	0.198	8,813	0.202
8634	--	2.31	--	--	--	9,760	0.224	18,009	0.413
8635	--	3.31	--	--	--	11,358	0.261	28,568	0.656
8636	--	4.31	--	--	--	13,046	0.299	40,770	0.936
8637	--	5.31	--	--	--	14,919	0.342	54,753	1.257

Watershed Information

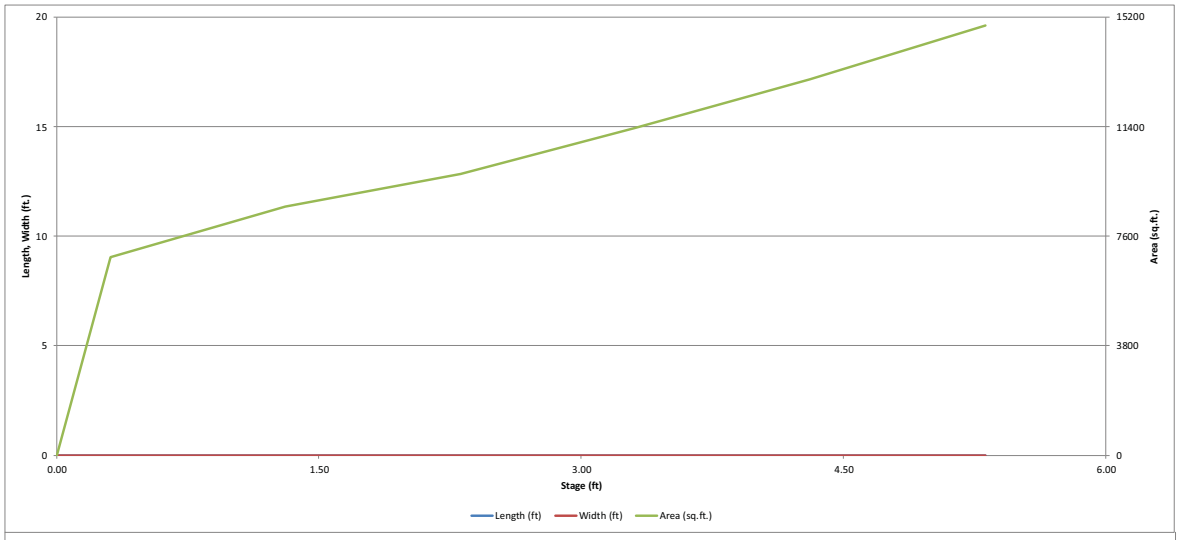
Selected BMP Type =	**EDB**		
Watershed Area =	28.71	acres	
Watershed Length =	2,293	ft	
Watershed Length to Centroid =	949	ft	
Watershed Slope =	0.110	ft/ft	**Steep Slope > 0.06 ft/ft**
Watershed Imperviousness =	21.01%	percent	
Percentage Hydrologic Soil Group A =	0.0%	percent	
Percentage Hydrologic Soil Group B =	0.0%	percent	
Percentage Hydrologic Soil Groups C/D =	100.0%	percent	
Target WQCV Drain Time =	40.0	hours	
Location for 1-hr Rainfall Depths =	User Input		

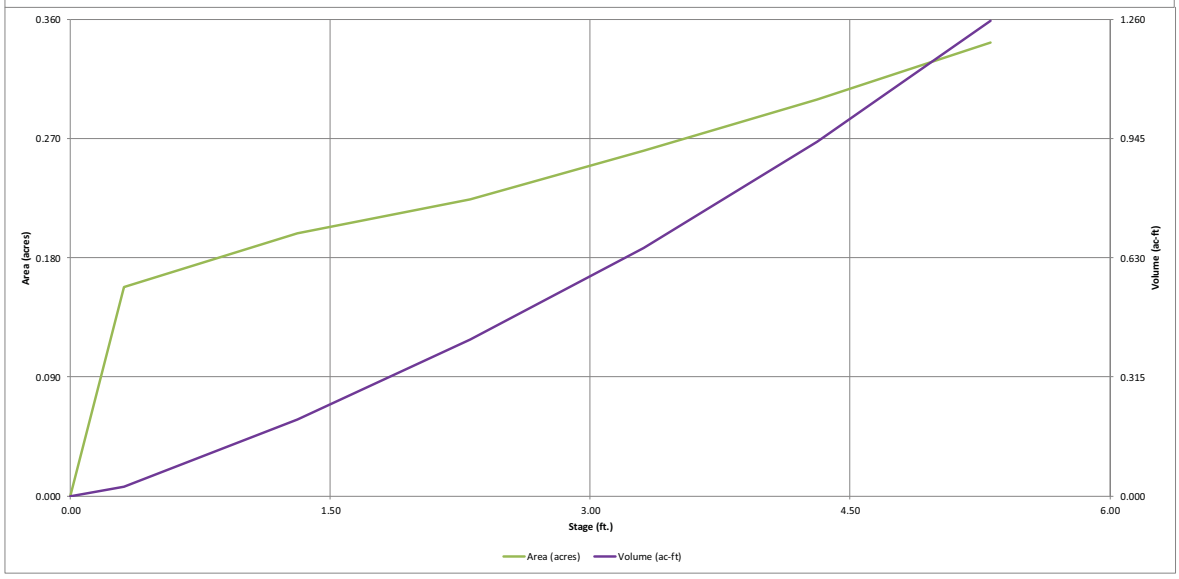
After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.287	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.532	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 0.69 in.) =	0.222	acre-feet	0.69	inches
5-yr Runoff Volume (P1 = 0.88 in.) =	0.348	acre-feet	0.88	inches
10-yr Runoff Volume (P1 = 1.04 in.) =	0.486	acre-feet	1.04	inches
25-yr Runoff Volume (P1 = 1.25 in.) =	1.065	acre-feet	1.25	inches
50-yr Runoff Volume (P1 = 1.42 in.) =	1.427	acre-feet	1.42	inches
100-yr Runoff Volume (P1 = 1.58 in.) =	1.914	acre-feet	1.58	inches
500-yr Runoff Volume (P1 = 1.95 in.) =	2.772	acre-feet	1.95	inches
Approximate 2-yr Detention Volume =	0.260	acre-feet		
Approximate 5-yr Detention Volume =	0.484	acre-feet		
Approximate 10-yr Detention Volume =	0.587	acre-feet		
Approximate 25-yr Detention Volume =	0.714	acre-feet		
Approximate 50-yr Detention Volume =	0.755	acre-feet		
Approximate 100-yr Detention Volume =	0.961	acre-feet		

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.287	acre-feet
Zone 2 Volume (10-year - Zone 1) =	0.300	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.375	acre-feet
Total Detention Basin Volume =	0.961	acre-feet
Initial Surcharge Volume (ISV) =	user	ft³
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft²
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft²
Volume of Basin Floor (V_{FLOOR}) =	user	ft³
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft²
Volume of Main Basin (V_{MAIN}) =	user	ft³
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet


20
15
10
5
0
Length, Width (ft.)
15200
11400
7600
3800
0
Area (sq.ft.)
0.00
1.50
3.00
4.50
6.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)


0.360
0.270
0.180
0.090
0.000
Area (acres)
1.260
0.945
0.630
0.315
0.000
Volume (ac-ft)
0.00
1.50
3.00
4.50
6.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

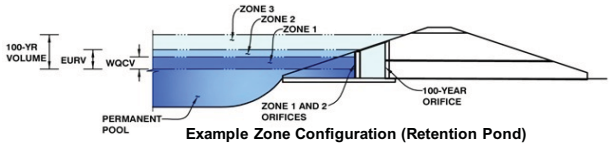
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.02 (February 2020)

Project: _____

Basin ID: _____

EDB-2



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	2.28	acres
Watershed Length =	534	ft
Watershed Length to Centroid =	179	ft
Watershed Slope =	0.008	ft/ft
Watershed Imperviousness =	46.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	0.0%	percent
Percentage Hydrologic Soil Groups C/D =	100.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

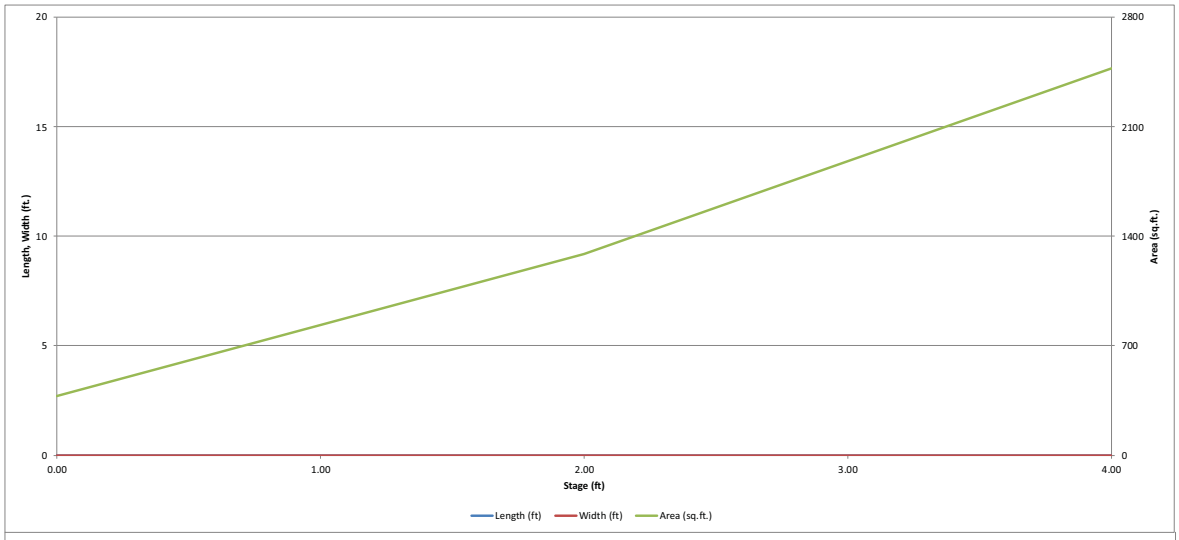
			Optional User Overrides	
Water Quality Capture Volume (WQCV) =	0.037	acre-feet		acre-feet
Excess Urban Runoff Volume (EURV) =	0.099	acre-feet		acre-feet
2-yr Runoff Volume (P1 = 0.69 in.) =	0.049	acre-feet	0.69	inches
5-yr Runoff Volume (P1 = 0.88 in.) =	0.068	acre-feet	0.88	inches
10-yr Runoff Volume (P1 = 1.04 in.) =	0.086	acre-feet	1.04	inches
25-yr Runoff Volume (P1 = 1.25 in.) =	0.130	acre-feet	1.25	inches
50-yr Runoff Volume (P1 = 1.42 in.) =	0.160	acre-feet	1.42	inches
100-yr Runoff Volume (P1 = 1.58 in.) =	0.196	acre-feet	1.58	inches
500-yr Runoff Volume (P1 = 1.95 in.) =	0.264	acre-feet	1.95	inches
Approximate 2-yr Detention Volume =	0.050	acre-feet		
Approximate 5-yr Detention Volume =	0.077	acre-feet		
Approximate 10-yr Detention Volume =	0.089	acre-feet		
Approximate 25-yr Detention Volume =	0.102	acre-feet		
Approximate 50-yr Detention Volume =	0.107	acre-feet		
Approximate 100-yr Detention Volume =	0.122	acre-feet		

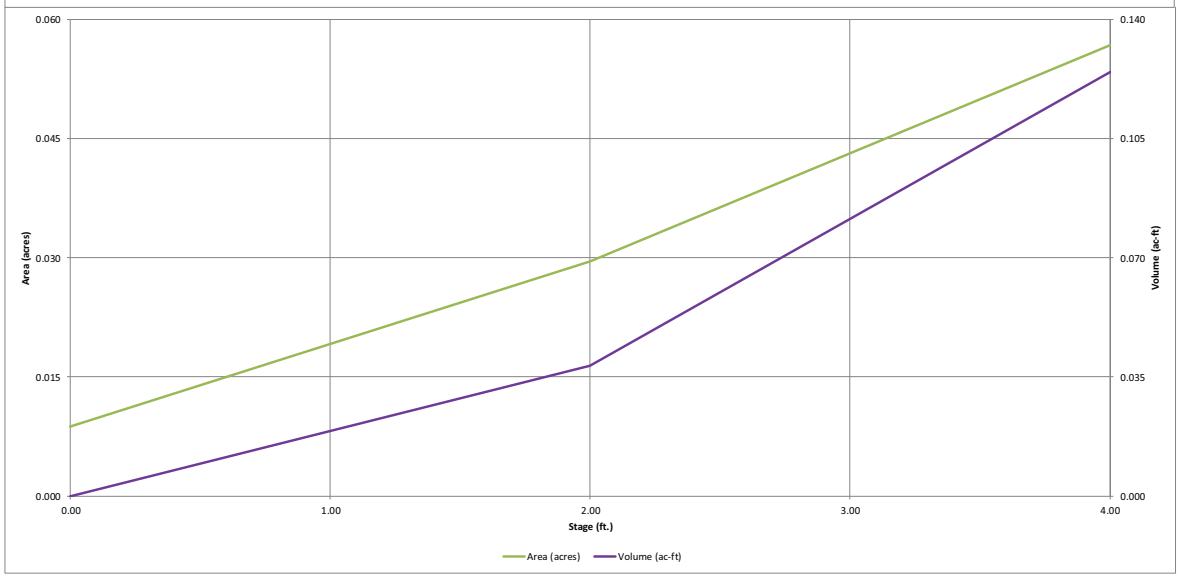
Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.037	acre-feet
Zone 2 Volume (10-year - Zone 1) =	0.052	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.033	acre-feet
Total Detention Basin Volume =	0.122	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	381	0.009		
	--	2.00	--	--	--	1,285	0.029	1,666	0.038
	--	4.00	--	--	--	2,474	0.057	5,425	0.125


20
15
10
5
0
2800
2100
1400
700
0
Length, Width (ft.)
Area (sq.ft.)
0.00
1.00
2.00
3.00
4.00
Stage (ft)
Length (ft)
Width (ft)
Area (sq.ft.)


0.060
0.045
0.030
0.015
0.000
0.140
0.105
0.070
0.035
0.000
Area (acres)
Volume (ac-ft)
0.00
1.00
2.00
3.00
4.00
Stage (ft.)
Area (acres)
Volume (ac-ft)

Channel 1 (Top of Pond channel)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.014
Left Side Slope	3.000
Right Side Slope	3.000
Bottom Width	2.00
Discharge	2.10

Results	
Normal Depth	3.8
Flow Area	0.9
Wetted Perimeter	4.0
Hydraulic Radius	2.8
Top Width	3.92
Critical Depth	3.4
Critical Slope	0.023
Velocity	2.21
Velocity Head	0.08
Specific Energy	0.40
Froude Number	0.793
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0
Length	0.0
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0
Profile Description	N/A
Profile Headloss	0.00
Downstream Velocity	0.00
Upstream Velocity	0.00
Normal Depth	3.8
Critical Depth	3.4
Channel Slope	0.014
Critical Slope	0.023

Channel 2 (Pond Channel After Culvert)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.027
Left Side Slope	3.000
Right Side Slope	3.000
Bottom Width	2.00
Discharge	27.40

Results	
Normal Depth	11.7
Flow Area	4.8
Wetted Perimeter	8.2
Hydraulic Radius	7.1
Top Width	7.85
Critical Depth	13.2
Critical Slope	0.016
Velocity	5.70
Velocity Head	0.51
Specific Energy	1.48
Froude Number	1.285
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0
Length	0.0
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0
Profile Description	N/A
Profile Headloss	0.00
Downstream Velocity	Infinity
Upstream Velocity	Infinity
Normal Depth	11.7
Critical Depth	13.2
Channel Slope	0.027
Critical Slope	0.016

Channel 3A (Central E-W Road)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.032
Left Side Slope	3.000
Right Side Slope	3.000
Discharge	6.30

Results	
Normal Depth	8.4
Flow Area	1.5
Wetted Perimeter	4.4
Hydraulic Radius	4.0
Top Width	4.21
Critical Depth	9.3
Critical Slope	0.019
Velocity	4.26
Velocity Head	0.28
Specific Energy	0.98
Froude Number	1.269
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0
Length	0.0
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0
Profile Description	N/A
Profile Headloss	0.00
Downstream Velocity	Infinity
Upstream Velocity	Infinity
Normal Depth	8.4
Critical Depth	9.3
Channel Slope	0.032
Critical Slope	0.019

Channel 3B (Connection Road N-S)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.015
Left Side Slope	3.000
Right Side Slope	3.000
Discharge	2.30

Results	
Normal Depth	6.7
Flow Area	0.9
Wetted Perimeter	3.5
Hydraulic Radius	3.2
Top Width	3.33
Critical Depth	6.2
Critical Slope	0.022
Velocity	2.50
Velocity Head	0.10
Specific Energy	0.65
Froude Number	0.836
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0
Length	0.0
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0
Profile Description	N/A
Profile Headloss	0.00
Downstream Velocity	0.00
Upstream Velocity	0.00
Normal Depth	6.7
Critical Depth	6.2
Channel Slope	0.015
Critical Slope	0.022

Appendix C

Drainage Maps

Pre-Development Conditions
Post-Development Conditions



DRAINAGE STUDY MAP
CITY OF BLACKHAWK

PRE-PROJECT

DATE: 11/20/2020
REVISED: –

1055 SHEET 1 OF 1

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LEGEND

- MAJOR BASIN BOUNDARY
- MINOR BASIN BOUNDARY
- SURFACE FLOW PATH
- PROPERTY LINE

BASIN DESIGNATION
5-YEAR RUNOFF COEFFICIENT
100-YEAR RUNOFF COEFFICIENT
BASIN AREA IN ACRES
DESIGN POINT DESIGNATION

GRAPHIC SCALE: 1"=200'

DRAINAGE STUDY MAP
CITY OF BLACKHAWK

POST-PROJECT

DATE: 11/20/2020
REVISED: –

1055 SHEET 1 OF 1

NOT FOR CONSTRUCTION – EXHIBIT FOR DRAINAGE STUDY REPORT ONLY

BLACK HAWK PARK
TRAFFIC IMPACT ANALYSIS
NOVEMBER 12, 2020
JOB NUMBER: 19094 (1055)

RICK ENGINEERING COMPANY

RICK ENGINEERING COMPANY

rickengineering.com

Black Hawk Park

Traffic Impact Analysis

November 12, 2020

Prepared for:

Ventana Capital, Inc.
9801 East Easter Avenue
Centennial, CO 80112

Prepared by:

RICK
ENGINEERING COMPANY

Job Number 19094 (1055)

RICK ENGINEERING COMPANY

EXECUTIVE SUMMARY

Black Hawk Park
Traffic Impact Analysis

November 12, 2020

INTRODUCTION

The following study has been prepared to determine the future intersection improvement needs associated with the proposed Black Hawk Park project located on a 47.67-acre site at the terminus of Miners Mesa Road in the City of Black Hawk, Colorado.

PROJECT DESCRIPTION

The project proposes to construct a campground/RV park and a distillery use on a 47.67-acre site, of which 23.35 acres would be developed on seven (7) lots. The project site is located at the terminus of Miners Mesa Road in the City of Black Hawk, Colorado. The project would be developed in two (2) phases.

The first phase would include a total of 50 RV campsites and an indoor shooting range on Lot 1, and a proposed distillery use on Lot 7. Each of the 50 RV campsites would be provided with a permanent Airstream trailer for campers. The indoor shooting range would include a total of three (3) lanes for shooting. The proposed distillery use on Lot 7 would consist of a 5,611 square-foot main distillery building that includes 3,864 square-feet for manufacturing/operations, a 743 square-feet tasting room, and a 1,004 square-foot outdoor patio. Lot 7 also includes a 5,000 square-foot barrel storage building. According to information provided by the developer, the proposed distillery is estimated to have a total of 6 employees on a typical weekday or weekend day.

The second phase would include development of six (6) additional distilleries on Lots 2 through 6. Lots 2 through 5 would have one (1) distillery on each lot, while Lot 6 is proposed to have two (2) distilleries. Below are the estimated building sizes and number of employees for Lots 2 through 6 based on the lot sizes:

- Lots 2-5: 2,800 sq. ft. distillery building and 2,500 sq. ft. barrel storage building on each lot, with approximately 3 employees per distillery building. Each lot in Lots 2-5 is approximately half the size of Lot 7.
- Lot 6: Two 5,600 sq. ft. distillery buildings and two 5,000 barrel storage buildings, with approximately 6 employees per distillery building. Lot 6 is approximately twice the size of Lot 7.

The project also plans to provide tours of the proposed distilleries in Lots 2 through 7. The tours will initially only be provided for the proposed distillery in Lot 7 in the first development phase, and the proposed distilleries in Lots 2 through 6 will be included in the tours in the second development phase. It is estimated that one tour per hour will be provided, with a total of eight (8) tours per day. A total of 20 patrons per tour is estimated, for a total of 160 tour patrons per day.

Transit shuttle service between the project site and the casinos/hotels in downtown Black Hawk is being considered, which would reduce vehicular trips to and from the project site. However, this study conservatively assumes that shuttle service would not be provided.

Access to the project site will be provided from Miners Mesa Road. An internal road will be constructed in Lot 1 to provide access to the RV campsites and indoor shooting range, and a second internal road will be constructed from Lot 1 to Miners Mesa Road to provide access to the proposed distilleries in Lots 2 through 6.

A separate access driveway and parking lot will be constructed for the distillery use in Lot 7. A one-way internal loop road will be constructed for delivery trucks to access the barrel storage building and grain silo dock on outside of main distillery building.

PROJECT TRAFFIC VOLUMES

The project trip generation for the proposed uses was developed based on the peak Friday afternoon and Saturday afternoon demand, which was determined to be the days of the week and time periods when the highest number of trips would be generated by the project and also when the City of Black Hawk experiences the highest traffic volumes.

Where available, the proposed project trip generation was calculated based on the ITE *Trip Generation Manual* (10th Edition, 2017) trip rates for a Campground/RV Park use (ITE Land Use Code 416) and the trip rates for a Manufacturing use (ITE Land Use Code 140) for the proposed distillery operations.

However, the *ITE Trip Generation Manual* 10th Edition does not have weekend trip generation rates for a Campground/RV Park use (Land Use Code 416). The weekday PM peak hour of generator was used for both the Friday PM and Saturday PM peak hour trip rates (0.41 trips per occupied campsite), which is higher than the weekday PM peak hour of adjacent street traffic trip rate (0.27 trips per occupied campsite).

The *ITE Trip Generation Manual* 10th Edition also does not have daily trip rates for a Campground/RV Park use (ITE Land Use Code 416) for either weekdays or weekends, as only peak hour trips rates are provided. The Friday and Saturday daily trip rates for the Campground/RV Park use were derived from the San Diego Association of Governments (SANDAG) weekday daily trip generation rate for a campground use (4 trips per campsite). The SANDAG weekday daily trip rate of 4 trips per campsite was multiplied by the ratio of the of the ITE Land Use Code 416 weekday PM peak hour of generator trip rate and the weekday PM peak hour of adjacent street traffic trip rate ((4 * 0.41/0.27) to derive the Friday and Saturday daily trip rate for the campground/RV park use.

The trip generation rates for the indoor shooting range were developed based on the Friday and Saturday daily and peak hour trip rates for a Golf Driving Range (Land Use Code 432) from the ITE *Trip Generation Manual* (10th Edition, 2017). It was determined that the individual tee positions at a golf driving range would yield a similar trip generation rate to an indoor shooting range, and such an example is provided in the *Gun Range Development Traffic Impact Analysis*, 2350 Franklin Road, Lawrence, Kansas (CFS Engineers, December 2016).

The ITE Manufacturing trip rate used for the proposed distillery use (ITE Land Use Code 140) is based on the number of employees to be consistent with the trip generation used for the distillery use in the *Lake Gulch Whiskey Resort Traffic Impact Study* (Kimley Horn & Associates, March 2020).

According to information provided by the developer, the proposed distillery in Phase One (Opening Year 2022) was estimated to have a total of 6 employees on a typical weekday or weekend day. Based on estimated sizes of the proposed distilleries in Lots 2 through 6, it was estimated that in Phase Two (Buildout Year 2025), the proposed distilleries in Lots 2 through 7 would have a total of 30 employees.

It was estimated that there would be 2 delivery trucks per day for the Phase One (Opening Year 2022) distillery use, with 4 truck trips per weekday and weekend day, and with 2 truck trips occurring during both the Friday PM peak hour and Saturday PM peak hour. At project buildout in Phase Two (Buildout Year 2025) with the proposed 6 distilleries on Lots 2 through 7, a total of 10 delivery trucks were estimated with 20 truck trips per weekday and weekend day and with 4 truck trips occurring during both the Friday PM peak hour and Saturday PM peak hour.

Based on information from the applicant, it was assumed that tours would be provided for the proposed distilleries in Lots 2 through 7. The tours will initially only be provided for the proposed distillery in Lot 7 in Phase One (Opening Year 2022), and the proposed distilleries in Lots 2 through 6 will be included in the tours in Phase Two (Buildout Year 2025). It was estimated that one tour per hour will be provided, with a total of eight (8) tours per day. A total of 20 patrons per tour was estimated, for a total of 160 tour patrons per day. An occupancy rate of 2 persons per vehicle was estimated for the trip generation of the distillery tours.

Due to the close proximity between the proposed 50 RV campsites and the indoor shooting range and distilleries, it was estimated that at least 10% of the trips generated by the indoor shooting range and distilleries would be internal to the site and would primarily be non-vehicular trips between these uses. A 10% internal trip reduction factor was applied to the indoor shooting range and distilleries (including tours) to reflect the estimated non-vehicular trips between uses within the project site.

Transit shuttle service between the project site and the casinos/hotels in downtown Black Hawk is being considered, which would reduce vehicular trips to and from the project site. However, this study conservatively assumes that shuttle service would not be provided.

The proposed Phase One project was estimated to generate approximately 557 daily trips and 55 PM peak hour trips on a typical Friday. The project was estimated to generate approximately 643 daily trips and 70 PM peak hour trips on a typical Saturday.

The buildout of the proposed project (Phase Two) was estimated to generate approximately 849 daily trips and 98 PM peak hour trips on a typical Friday. The project was estimated to generate approximately 1,233 daily trips and 175 PM peak hour trips on a typical Saturday.

TRAFFIC IMPACT ANALYSIS RESULTS

The following intersections were assessed as part of this analysis:

1. Miners Mesa Road / Bobtail Road (two-way stop-controlled)
2. Miners Mesa Road / Main Street (signalized)
3. Highway 119 / Mill Street-Miners Mesa Road (signalized)

The project area intersections were analyzed for the following analysis scenarios:

- Existing Conditions: This scenario reflects the conditions on the ground today with the traffic volume data from the *Lake Gulch Whiskey Resort Traffic Impact Study,* which were collected in in July 2014 and January 2020, then grown and seasonally adjusted to reflect mid-summer 2020 peak conditions.

- Opening Year (2022) Without Project Conditions: This scenario reflects the short-range future traffic conditions without the project based on a background growth factor of 3.6% applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2022, consistent with the growth rate used in the *Lake Gulch Whiskey Resort Traffic Impact Study*.

- Opening Year (2022) With Phase One Project Conditions: This scenario reflects the short-range future traffic conditions based on a background growth factor of 3.6% applied to the existing traffic volumes, plus the traffic generated by Phase One of the proposed project.

- Buildout Year (2025) Without Project Conditions: This scenario reflects the mid-range future traffic conditions without the project that includes the completion of the adjacent Lake Gulch Whiskey Resort as a background project. In addition, a background growth factor of 9.0% applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2025.

- Buildout Year (2025) With Phase Two Project Conditions: This scenario reflects the mid-range future traffic conditions based on the completion of the Lake Gulch Whiskey Resort background project plus a background growth factor of 9.0% applied to the existing traffic volumes, plus the traffic generated by the buildout of the proposed project.

The Existing (2020) Conditions analysis results showed that the study intersections are currently operating at an acceptable LOS B or better during the Friday PM peak hour and Saturday PM peak hour.

The Opening Year (2022) Conditions analysis results showed that the study intersections are expected to continue operating at an acceptable LOS B or better during the Friday PM and Saturday PM peak hours both without and with the Phase One project.

The Buildout Year (2025) Conditions analysis results showed that the study intersections are expected to continue operating at an acceptable LOS C or better during the Friday PM and Saturday PM peak hours both without and with the Phase Two project.

The queuing analysis results showed that the future queues under the Opening Year (2022) With Phase One Project and Buildout Year (2025) With Phase Two Project scenarios can be accommodated within the existing storage lengths at the study intersections.

Based on the results of the level of service operations and queuing analyses, no project-related traffic or queuing impacts were identified at the study intersections, and no roadway or intersection improvements are recommended based on the analysis findings.

However, it is recommended that the project install a stop sign on the westbound approach to provide all-way stop control at the Miners Mesa Road / Bobtail Road intersection, which would provide improved operations with the forecast increase in traffic at the intersection. All-way stop control was used to analyze the Miners Mesa Road / Bobtail Road intersection in this study due to the atypical existing stop control at two out of the three approaches of the intersection, which was not accepted by the HCM analysis software.

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INTRODUCTION

The following study has been prepared to determine the future intersection improvement needs associated with the proposed Black Hawk Park project located on a 47.67-acre site at the terminus of Miners Mesa Road in the City of Black Hawk, Colorado. **Exhibit 1** shows the project vicinity map.

Project Description

The project proposes to construct a campground/RV park and a distillery use on a 47.67-acre site, of which 23.35 acres would be developed on seven (7) lots. The project site is located at the terminus of Miners Mesa Road in the City of Black Hawk, Colorado. The project would be developed in two (2) phases.

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The project also plans to provide tours of the proposed distilleries in Lots 2 through 7. The tours will initially only be provided for the proposed distillery in Lot 7 in the first development phase, and the proposed distilleries in Lots 2 through 6 will be included in the tours in the second development phase. It is estimated that one tour per hour will be provided, with a total of eight (8) tours per day. A total of 20 patrons per tour is estimated, for a total of 160 tour patrons per day.

Access to the project site will be provided from Miners Mesa Road. An internal road will be constructed in Lot 1 to provide access to the RV campsites and indoor shooting range, and a second internal road will be constructed from Lot 1 to Miners Mesa Road to provide access to the proposed distilleries in Lots 2 through 6.

A separate access driveway and parking lot will be constructed for the distillery use in Lot 7. A one-way internal loop road will be constructed for delivery trucks to access the barrel storage building and grain silo dock on outside of main distillery building. **Exhibit 2** shows the overall project site plan, and **Exhibit 3** shows the specific site plan for the proposed distillery use on Lot 7.



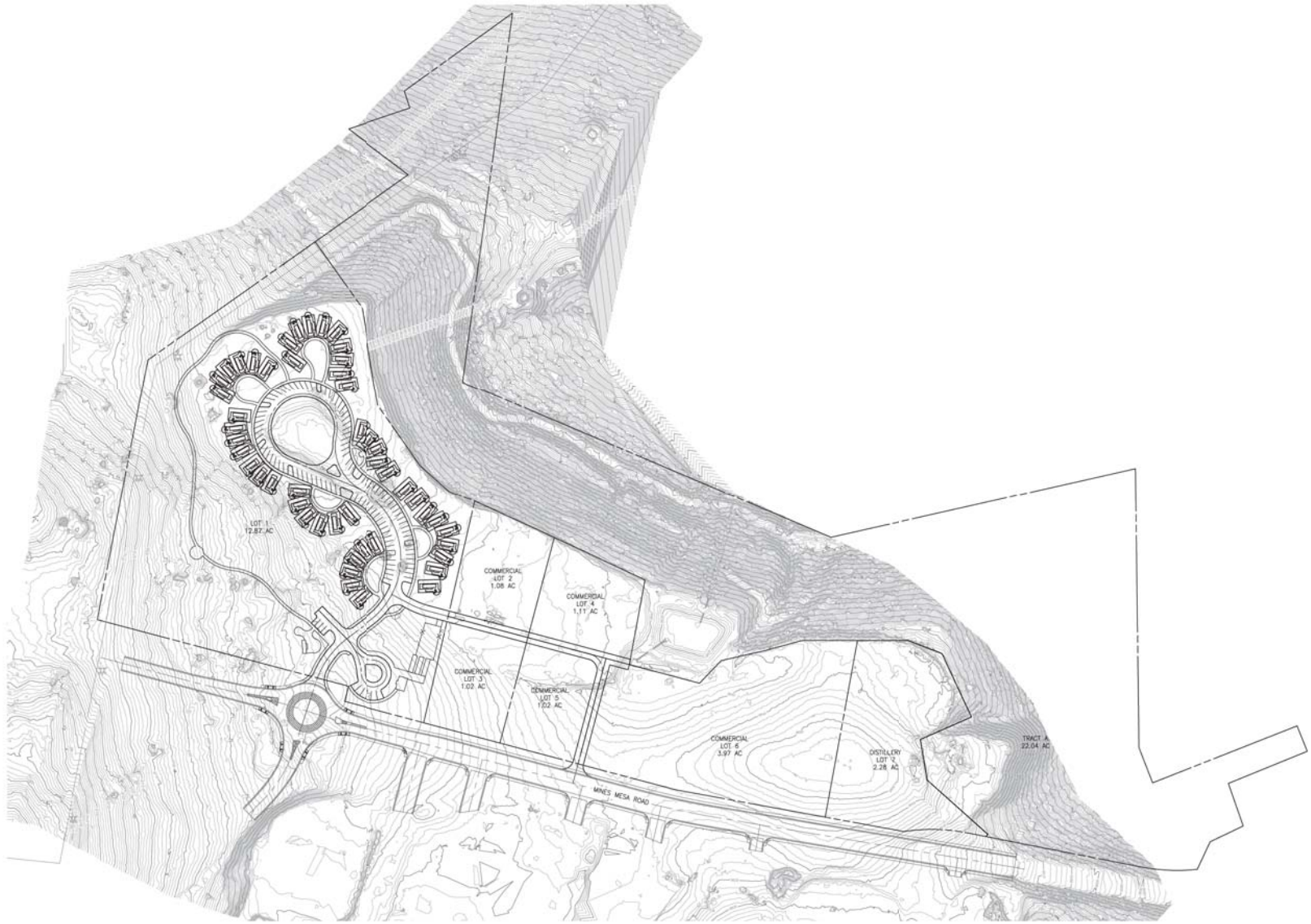
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VICINITY MAP

BLACK HAWK

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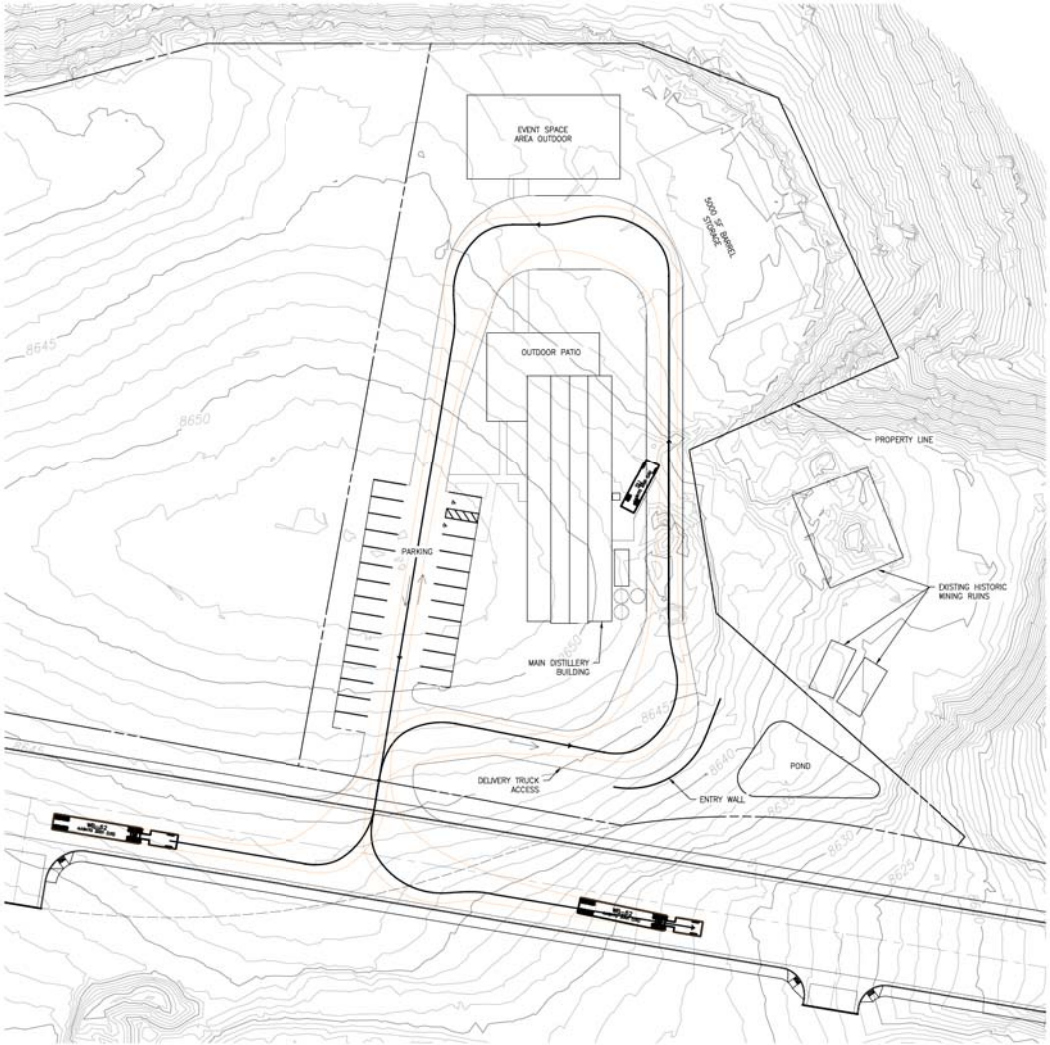
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OVERALL PROJECT SITE PLAN

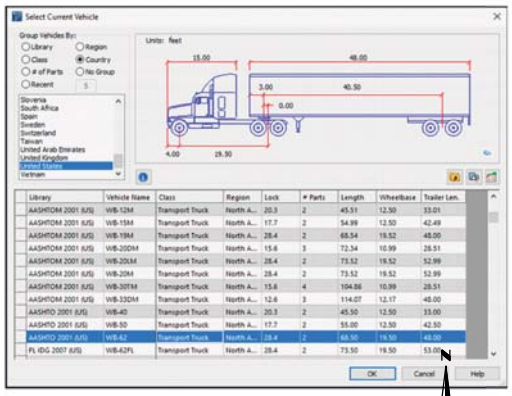
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EXHIBIT 3

LOT 7 DISTILLERY SITE PLAN

BLACK HAWK

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Study Area

The study area was determined based on consultation with City of Black Hawk staff, the existing roadway network that would provide access to the project site, and the proximity of major highways and existing land uses that may attract trips to the project site. The study area consists of the following intersections:

1. Miners Mesa Road / Bobtail Road (two-way stop-controlled)
2. Miners Mesa Road / Main Street (signalized)
3. Highway 119 / Mill Street-Miners Mesa Road (signalized)

Exhibit 4 illustrates the location of the project and the project study area.

ANALYSIS APPROACH AND METHODOLOGY

This section summarizes the analysis approach and methodology used to evaluate the study intersections associated with the proposed project. The analysis approach, methodology and study intersections in this traffic study are consistent with the approved *Lake Gulch Whiskey Resort Traffic Impact Study* (Kimley Horn & Associates, March 2020) at the direction of City of Black Hawk staff.

Analysis Scenarios

The following scenarios are evaluated in this traffic study:

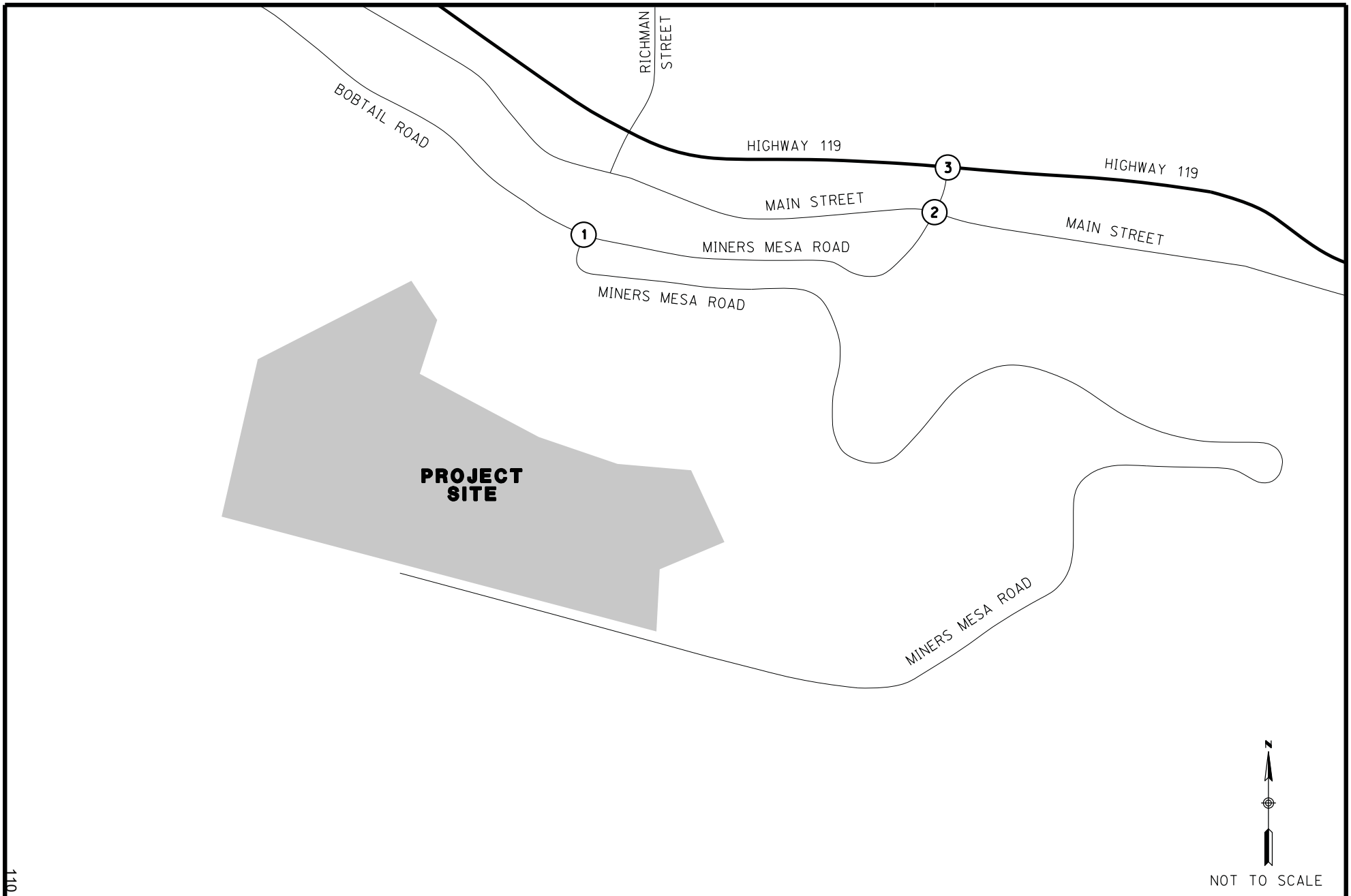
- Existing Conditions: This scenario reflects the conditions on the ground today with the traffic volume data from the *Lake Gulch Whiskey Resort Traffic Impact Study,* which were collected in in July 2014 and January 2020, then grown and seasonally adjusted to reflect mid-summer 2020 peak conditions.

- Opening Year (2022) Without Project Conditions: This scenario reflects the short-range future traffic conditions without the project based on a background growth factor of 3.6% applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2022, consistent with the growth rate used in the *Lake Gulch Whiskey Resort Traffic Impact Study*.

- Opening Year (2022) With Phase One Project Conditions: This scenario reflects the short-range future traffic conditions based on a background growth factor of 3.6% applied to the existing traffic volumes, plus the traffic generated by Phase One of the proposed project.

- Buildout Year (2025) Without Project Conditions: This scenario reflects the mid-range future traffic conditions without the project that includes the completion of the adjacent Lake Gulch Whiskey Resort as a background project. In addition, a background growth factor of 9.0% applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2025.

- Buildout Year (2025) With Phase Two Project Conditions: This scenario reflects the mid-range future traffic conditions based on the completion of the Lake Gulch Whiskey Resort background project plus a background growth factor of 9.0% applied to the existing traffic volumes, plus the traffic generated by the buildout of the proposed project.



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EXHIBIT 4

PROJECT STUDY AREA

BLACK HAWK

LEGEND (X) =STUDY INTERSECTION

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Analysis Methodology

Intersection LOS Analysis

Levels of service (LOS) were determined at the study area intersections on a peak summer Friday afternoon between 4:00 PM and 6:00 PM, and on a peak summer Saturday afternoon between 4:00 PM and 6:00 PM, consistent with the time periods analyzed in the *Lake Gulch Whiskey Resort Traffic Impact Study*. Intersection operations were analyzed with Synchro 10 software (Trafficware) utilizing the methodologies outlined in the *Highway Capacity Manual 6th Edition (HCM 6)*. Synchro reports delays, which correspond to a particular LOS, to describe the overall operation of an intersection.

LOS provides a quick overview of how well an intersection is performing. The criteria for the LOS grade designations are provided in **Table 1**.

Table 1
LOS Criteria for Intersections

LOS	Control Delay (sec/veh)		Description
	Signalized Intersections	Unsignalized Intersections	
A	≤10	≤10	Operations with very low delay and most vehicles do not stop.
B	>10 and ≤20	>10 and ≤15	Operations with good progression but with some restricted movements.
C	>20 and ≤35	>15 and ≤25	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35 and ≤55	>25 and ≤35	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines.
E	>55 and ≤80	>35 and ≤50	Operations where there is significant delay, extensive queuing, and poor progression.
F	>80	>50	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

Source: *Highway Capacity Manual 6th Edition (HCM 6)*.

EXISTING CONDITIONS

This section summarizes the existing roadway network, peak hour and daily traffic volumes, and operations at the study area intersections.

Existing Roadway Network

Highway 119 is currently built as a four-lane highway though the project study area, which narrows to two lanes west of Black Hawk Street. Highway 119 is oriented in a general east-west direction. On-street parking is not permitted and the posted speed limit is 35 miles per hour (mph) within the study area. There are no bicycle or pedestrian facilities along Highway 119.

Main Street is currently built as a two-lane roadway oriented in a general east-west direction and provides access to several hotels and casinos within the City of Black Hawk. On-street parking is not permitted and the posted speed limit is 15 miles per hour (mph) within the study area. Sidewalks are provided along both sides of the street but there are no bicycle facilities along Main Street.

Mill Street/Miners Mesa Road is currently built as a two-lane roadway extending from Highway 119 to its terminus at the proposed project site. The roadway is oriented in a north-south direction near Highway 119 and Main Street and transitions to a general east-west direction south of Main Street. The 100-foot roadway segment between Highway 119 and Main Street is known as Mill Street, and becomes Miners Mesa Road south of Main Street. Miners Mesa Road transitions to a north-south orientation at the intersection with Bobtail Road, and meanders uphill for slightly over one mile to the proposed project site. There is no posted speed limit on Miners Mesa Road between Main Street and Bobtail Road. South of Bobtail Road, the posted speed limit is 25 miles per hour (mph) on Miners Mesa Road. On-street parking is not permitted. Miners Mesa Road is designated as a bike route from Main Street to Bobtail Road. Sidewalks are only provided on Miners Mesa Road along the hotel/casino frontages near Main Street.

Bobtail Road is currently built as a two-lane roadway from Miners Mesa Road to Gregory Street, and is oriented in an east-west direction. On-street parking is not permitted and the posted speed limit is 20 miles per hour (mph) within the study area. A sidewalk is currently provided along the north side of the road, but there are no bicycle or pedestrian facilities along Bobtail Road.

Exhibit 5 illustrates the lane geometrics at the existing study intersections.

Existing Traffic Volumes

Intersection turning movement volumes were obtained from the *Lake Gulch Whiskey Resort Traffic Impact Study,* which were collected in July 2014 and January 2020, and were grown and seasonally adjusted to reflect peak mid-summer 2020 conditions. The existing traffic volumes reflect counts that were collected during the Friday PM peak hour (4:00-5:00 PM) and the Saturday PM peak hour (4:00-5:00 PM). Existing average daily traffic (ADT) counts were also obtained from the *Lake Gulch Whiskey Resort Traffic Impact Study*, which are also based on seasonally adjusted volumes to reflect peak mid-summer 2020 conditions. **Exhibit 6** illustrates the existing study area peak hour and daily traffic volumes. **Appendix A** contains the existing traffic volumes from the *Lake Gulch Whiskey Resort Traffic Impact Study.*

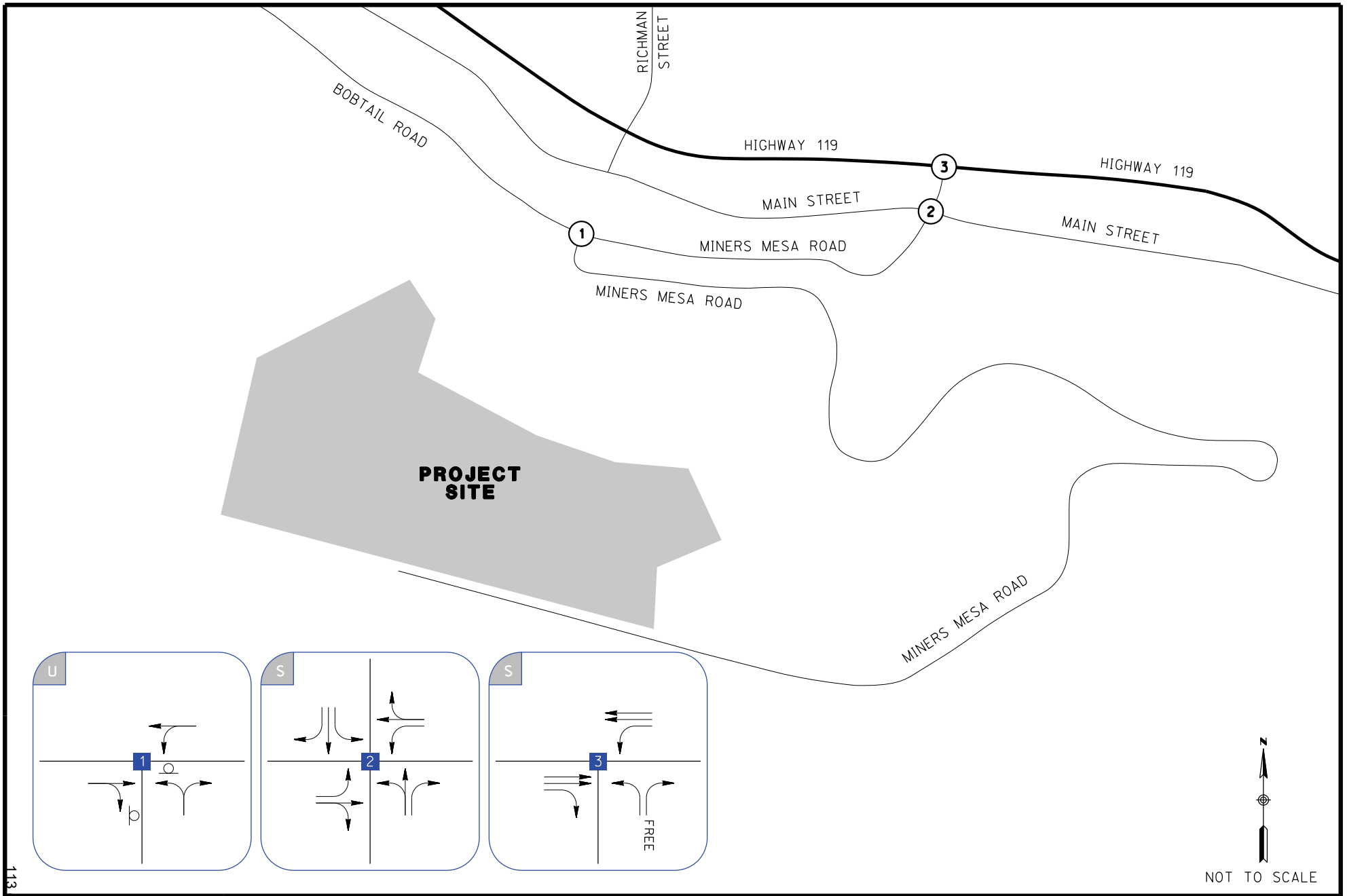


EXHIBIT 5

EXISTING INTERSECTION LANE GEOMETRICS

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LEGEND

U =UNSIGNALIZED FREE =FREE RIGHT TURN

S =SIGNALIZED

=STOP CONTROLLED

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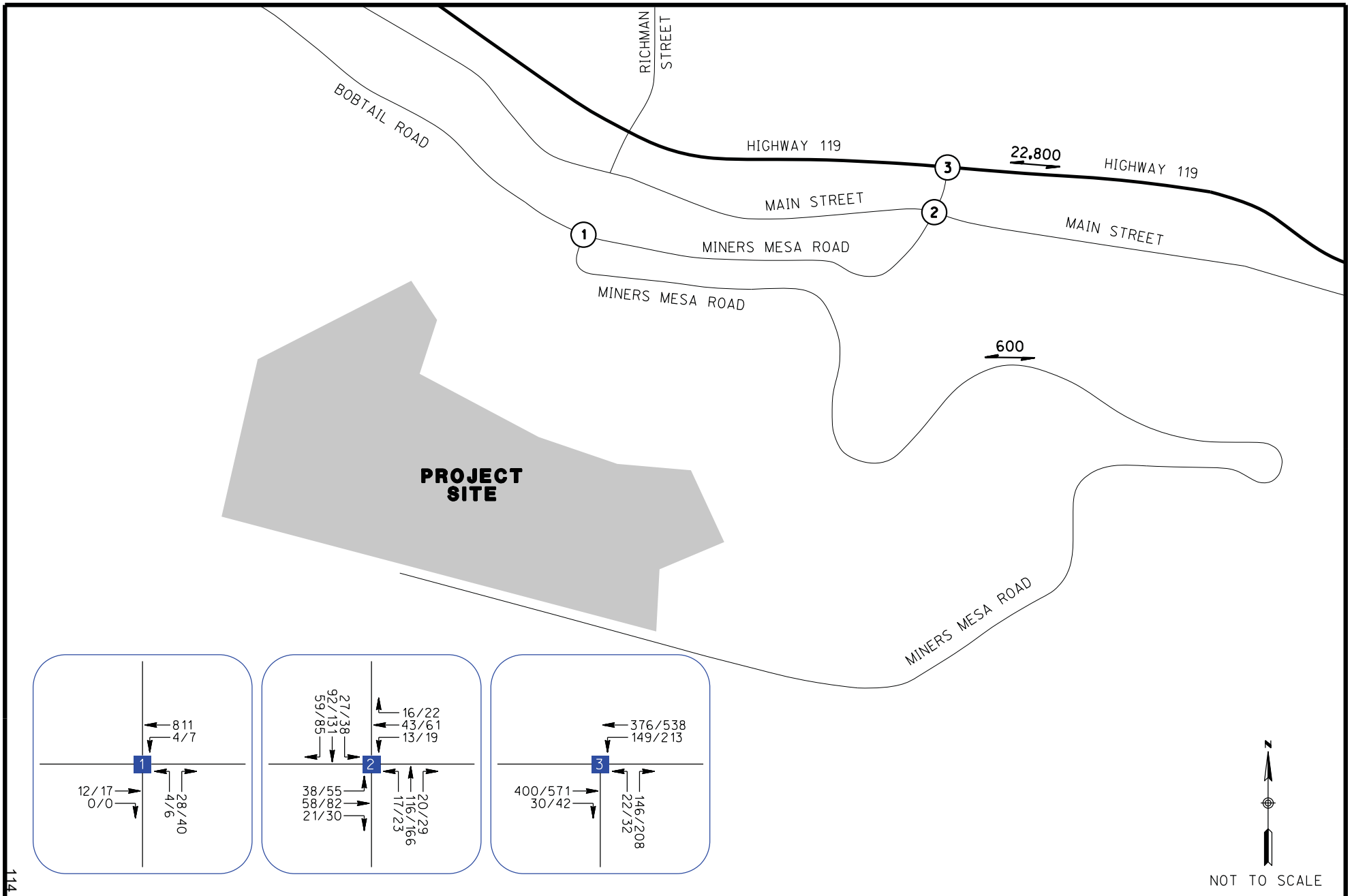


EXHIBIT 6

EXISTING (2020) TRAFFIC VOLUMES

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LEGEND

X,XXX =SATURDAY ADT

XX/XX=FRIDAY/SATURDAY PEAK HOUR VOLUMES

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Existing Intersection Analysis

Table 2 displays the LOS analysis results for the existing study intersection under existing conditions. **Appendix B** contains the intersection LOS worksheets.

As shown in the table, the existing study intersections currently operate at an acceptable LOS B or better during the Friday and Saturday PM peak hours.

Table 2
Existing Peak Hour Intersection LOS Summary

#	Intersection	Traffic Control	Peak Hour	Delay	LOS
1	Miners Mesa Road / Bobtail Road	AWSC [(a)]	Fri. PM	6.8	A
			Sat. PM	6.9	A
2	Miners Mesa Road-Mill Street / Main Street	Signal	Fri. PM	19.1	B
			Sat. PM	19.4	B
3	Mill Street / Highway 119	Signal	Fri. PM	3.6	A
			Sat. PM	16.9	B

Notes:
AWSC = All-Way-Stop Controlled

(a) The *Highway Capacity Manual* 6th Edition (HCM 6) does not report level of service (LOS) for a "T" intersection with stop control at two of the three approaches; therefore, the Miners Mesa Road/Bobtail Road intersection was analyzed with All-Way-Stop Control so that LOS can be reported for the intersection. This analysis methodology was also used in the Lake Gulch Whiskey Resort Traffic Impact Study (Kimley Horn & Associates, March 2020) for the Miners Mesa Road/Bobtail Road intersection.

PROJECT TRAFFIC

This section describes the forecast trip generation, trip distribution, and assignment of trips on the adjacent roadway network.

Project Trip Generation

At the direction of the City of Black Hawk, the project trip generation for the proposed uses was developed based on the Friday PM and Saturday PM peak periods (4:00-6:00 PM both days), which were determined to be the days and time periods when the highest number of trips would be generated by the project and also when the City of Black Hawk experiences the highest traffic volumes.

Where available, the proposed project trip generation was calculated based on the ITE *Trip Generation Manual* (10th Edition, 2017) trip rates for a Campground/RV Park use (ITE Land Use Code 416) and the trip rates for a Manufacturing use (ITE Land Use Code 140) for the proposed distillery operations.

However, the *ITE Trip Generation Manual* 10th Edition does not have weekend trip generation rates for a Campground/RV Park use (Land Use Code 416). The weekday PM peak hour of generator was used for both the Friday PM and Saturday PM peak hour trip rates (0.41 trips per occupied campsite), which is higher than the weekday PM peak hour of adjacent street traffic trip rate (0.27 trips per occupied campsite).

The *ITE Trip Generation Manual* 10th Edition also does not have daily trip rates for a Campground/RV Park use (ITE Land Use Code 416) for either weekdays or weekends, as only peak hour trips rates are provided. The Friday and Saturday daily trip rates for the Campground/RV Park use were derived from the San Diego Association of Governments (SANDAG) weekday daily trip generation rate for a campground use (4 trips per campsite). The SANDAG weekday daily trip rate of 4 trips per campsite was multiplied by the ratio of the of the ITE Land Use Code 416 weekday PM peak hour of generator trip rate and the weekday PM peak hour of adjacent street traffic trip rate ((4 * 0.41/0.27) to derive the Friday and Saturday daily trip rate for the campground/RV park use.

The trip generation rates for the indoor shooting range were developed based on the Friday and Saturday daily and peak hour trip rates for a Golf Driving Range (Land Use Code 432) from the ITE *Trip Generation Manual* (10th Edition, 2017). It was determined that the individual tee positions at a golf driving range would yield a similar trip generation rate to an indoor shooting range, and such an example is provided in the *Gun Range Development Traffic Impact Analysis*, 2350 Franklin Road, Lawrence, Kansas (CFS Engineers, December 2016).

The ITE Manufacturing trip rate used for the proposed distillery use (ITE Land Use Code 140) is based on the number of employees to be consistent with the trip generation used for the distillery use in the *Lake Gulch Whiskey Resort Traffic Impact Study* (Kimley Horn & Associates, March 2020). According to information provided by the developer, the proposed distillery in Phase One (Opening Year 2022) is estimated to have a total of 6 employees on a typical weekday or weekend day. Based on estimated sizes of the proposed distilleries in Lots 2 through 6, it is estimated that in Phase Two (Buildout Year 2025), the proposed distilleries in Lots 2 through 7 would have a total of 30 employees.

It is estimated that there would be 2 delivery trucks per day for the Phase One (Opening Year 2022) distillery use, with 4 truck trips per weekday and weekend day, and with 2 truck trips occurring during both the Friday PM peak hour and Saturday PM peak hour. At project buildout in Phase Two (Buildout Year 2025) with the proposed 6 distilleries on Lots 2 through 7, a total of 10 delivery trucks are estimated with 20 truck trips per weekday and weekend day and with 4 truck trips occurring during both the Friday PM peak hour and Saturday PM peak hour.

Based on information from the applicant, it was assumed that tours would be provided for the proposed distilleries in Lots 2 through 7. The tours will initially only be provided for the proposed distillery in Lot 7 in Phase One (Opening Year 2022), and the proposed distilleries in Lots 2 through 6 will be included in the tours in Phase Two (Buildout Year 2025). It is estimated that one tour per hour will be provided, with a total of eight (8) tours per day. A total of 20 patrons per tour is estimated, for a total of 160 tour patrons per day. An occupancy rate of 2 persons per vehicle was estimated for the trip generation of the distillery tours.

Due to the close proximity between the proposed 50 RV campsites and the indoor shooting range and distilleries, it was estimated that at least 10% of the trips generated by the indoor shooting range and distilleries would be internal to the site and would primarily be non-vehicular trips between these uses. A 10% internal trip reduction factor was applied to the indoor shooting range and distilleries (including tours) to reflect the estimated non-vehicular trips between uses within the project site.

Transit shuttle service between the project site and the casinos/hotels in downtown Black Hawk is being considered, which would reduce vehicular trips to and from the project site. However, this study conservatively assumes that shuttle service would not be provided.

Table 3 summarizes the trip generation for the Phase One project in Opening Year 2022. As shown, the Phase One project is estimated to generate approximately 557 daily trips on a Friday and approximately 643 daily trips on a Saturday. Table 3 also shows that the project is estimated to generate approximately 55 trips during the Friday PM peak hour, and approximately 70 trips during the Saturday PM peak hour.

Table 4 summarizes the trip generation for project buildout (Phase Two) in Buildout Year 2025. As shown, the proposed project at buildout is estimated to generate approximately 849 daily trips and 98 PM peak hour trips on a typical Friday. The project is estimated to generate approximately 1,233 daily trips and 175 PM peak hour trips on a typical Saturday.

The trip generation sources as described above are provided in **Appendix C**.

Project Trip Distribution

The trip distribution for the proposed project is based on the trip distribution used in the *Lake Gulch Whiskey Resort Traffic Impact Study* due to the similar uses and close proximity of the two project sites. However, because the proposed project site is located north of the Lake Gulch Whiskey Resort project site, no project trips are assumed on Lake Gulch Road, which is unpaved. It is assumed that 100% of project trips would use Miners Mesa Road north of the project site to travel to and from the surrounding area. **Exhibit 7** displays the trip distribution for the proposed project.

Project Trip Assignment

Based on the project trip distribution and trip generation, Friday and Saturday daily and peak hour project trips were assigned to the study area intersections. **Exhibit 8** displays the trip assignment for the Phase One project, and the trip assignment for the Phase Two project (project buildout) is shown in **Exhibit 9**.

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Table 3
Phase One Project Trip Generation Summary
Opening Year 2022

Land Use	Quantity		Fri. Daily Rate	Fri. ADT	Friday PM Peak Hour							Sat. Daily Rate	Sat. ADT	Saturday PM Peak Hour						
					Pk Hr Rate	In : Out Split			Volumes					Pk Hr Rate	In : Out Split			Volumes		
									In	Out	Total							In	Out	Total
Lot 1 Campground (ITE LU Code 416) [a]	50	sites	6.07	304	0.41	62%	:	38%	13	8	21	6.07	304	0.41	62%	:	38%	13	8	21
Lot 1 Indoor Shooting Range [b]	3	lanes	13.65	41	1.25	45%	:	55%	1	3	4	17.68	53	1.30	50%	:	50%	2	2	4
Lot 7 Distillery Manufacturing (ITE LU Code 140) [c]	6	employees [d]	2.47	15	0.45	44%	:	56%	1	2	3	1.24	7	0.18	50%	:	50%	1	1	2
Lot 7 Distillery Tasting Room (ITE LU Code 970) [e]	0.743	thousand-square-feet	80.73	60	10.93	30%	:	70%	2	6	8	203.48	151	36.50	47%	:	53%	13	14	27
Lot 7 Delivery Trucks [f]	2	trucks		4					1	1	2		4					1	1	2
Lot 7 Distillery Tours [g]	160	patrons per day		160					10	10	20		160					10	10	20
Subtotal Project Trips				***583***					***28***	***30***	***58***		***679***					***40***	***36***	***76***
Internal Trip Reduction (10%) [h]				-26					-1	-2	-3		-36					-3	-3	-6
NET PROJECT TRIPS				**557**					**27**	**28**	**55**		**643**					**37**	**33**	**70**

Footnotes:

[a] Source: The ITE Trip Generation Manual 10th Edition does not have weekend trip generation rates for a campground/RV park use (Land Use Code 416). The weekday PM peak hour of generator was used for both the Friday PM and Saturday PM peak hour trip rates (0.41 trips per occupied campsite), which is significantly higher than the weeekday PM peak hour of adjacent street traffic trip rate (0.27 trips per occupied campsite). The ITE Trip Generation Manual 10th Edition also does not have daily trip rates for either weekdays or weekends, as only peak hour trips rates are provided. Friday and Saturday daily trip rates in this table were derived from the San Diego Association of Governments (SANDAG) weekday daily trip generation rate for a campground use (4 trips per campsite). This weekday daily trip rate of 4 trips per campsite was multiplied by the ratio of the of the Friday/Saturday PM peak hour trip rate and the weekday PM peak hour of adjacent street traffic trip rate ((4 * 0.41/0.27) to derive the Friday and Saturday daily trip rate for the campground/RV park use.

[b] Source: The Saturday daily and peak hour trip rate for a Golf Driving Range (Land Use 432) from the ITE Trip Generation Manual 10th Edition, 2017 was used to estimate the trip generation for an indoor shooting range. It was determined that the individual tee positions at a golf driving range would yield a similar trip generation rate to an indoor shooting range, and such an example is provided in the Traffic Impact Analysis prepared for the Gun Range Development, 2350 Franklin Road, Lawrence, Kansas (CFS Engineers, December 2016).

[c] Source: ITE Trip Generation Manual 10th Edition, 2017 for a Manufacturing use (ITE Land Use Code 140).

[d] Source: Based on information provided by client.

[e] Source: ITE Trip Generation Manual 10th Edition, 2017 for a Winery Tasting Room use (ITE Land Use Code 970).

[f] Source: Based on information provided by client.

[g] Assumes one tour per hour with 20 patrons per hour, with total of 8 tours per day for a total of 160 patrons per day. Assumes 2 patrons per vehicle and each vehicle would generate 2 trips (arrive and depart).

[h] Conservatively assumes that 10% of trips generated by the indoor shooting range, distillery tasting room, and distillery tours will be internal to the site, specifically from the 50 RV campground sites.

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Table 4
Phase Two (Project Buildout) Trip Generation Summary
Buildout Year 2025

Land Use	Quantity		Fri. Daily Rate	Fri. ADT	Friday PM Peak Hour							Sat. Daily Rate	Sat. ADT	Saturday PM Peak Hour						
					Pk Hr Rate	In : Out Split			Volumes In	Volumes Out	Volumes Total			Pk Hr Rate	In : Out Split			Volumes In	Volumes Out	Volumes Total
Lot 1 Campground (ITE LU Code 416) [a]	50	sites	6.07	304	0.41	62%	:	38%	13	8	21	6.07	304	0.41	62%	:	38%	13	8	21
Lot 1 Indoor Shooting Range [b]	3	lanes	13.65	41	1.25	45%	:	55%	1	3	4	17.68	53	1.30	50%	:	50%	2	2	4
Lot 7 Distillery Manufacturing (ITE LU Code 140) [c]	30	employees [d]	2.47	74	0.45	44%	:	56%	6	8	14	1.24	37	0.18	50%	:	50%	3	3	6
Lot 7 Distillery Tasting Room (ITE LU Code 970) [e]	3.715	thousand-square-feet	80.73	300	10.93	30%	:	70%	12	29	41	203.48	756	36.50	47%	:	53%	64	72	136
Lot 7 Delivery Trucks [f]	10	trucks		20					2	2	4		20					2	2	4
Lot 7 Distillery Tours [g]	160	patrons per day		160					10	10	20		160					10	10	20
Subtotal Project Trips				***899***					***44***	***60***	***104***		***1,330***					***94***	***97***	***191***
Internal Trip Reduction (10%) [h]				-50					-2	-4	-6		-97					-8	-8	-16
NET PROJECT TRIPS				**849**					**42**	**56**	**98**		**1,233**					**86**	**89**	**175**

Footnotes:

[a] Source: The ITE Trip Generation Manual 10th Edition does not have weekend trip generation rates for a campground/RV park use (Land Use Code 416). The weekday PM peak hour of generator was used for both the Friday PM and Saturday PM peak hour trip rates (0.41 trips per occupied campsite), which is significantly higher than the weeekday PM peak hour of adjacent street traffic trip rate (0.27 trips per occupied campsite). The ITE Trip Generation Manual 10th Edition also does not have daily trip rates for either weekdays or weekends, as only peak hour trips rates are provided. Friday and Saturday daily trip rates in this table were derived from the San Diego Association of Governments (SANDAG) weekday daily trip generation rate for a campground use (4 trips per campsite). This weekday daily trip rate of 4 trips per campsite was multiplied by the ratio of the of the Friday/Saturday PM peak hour trip rate and the weekday PM peak hour of adjacent street traffic trip rate ((4 * 0.41/0.27) to derive the Friday and Saturday daily trip rate for the campground/RV park use.

[b] Source: The Saturday daily and peak hour trip rate for a Golf Driving Range (Land Use 432) from the ITE Trip Generation Manual 10th Edition, 2017 was used to estimate the trip generation for an indoor shooting range. It was determined that the individual tee positions at a golf driving range would yield a similar trip generation rate to an indoor shooting range, and such an example is provided in the Traffic Impact Analysis prepared for the Gun Range Development, 2350 Franklin Road, Lawrence, Kansas (CFS Engineers, December 2016).

[c] Source: ITE Trip Generation Manual 10th Edition, 2017 for a Manufacturing use (ITE Land Use Code 140).

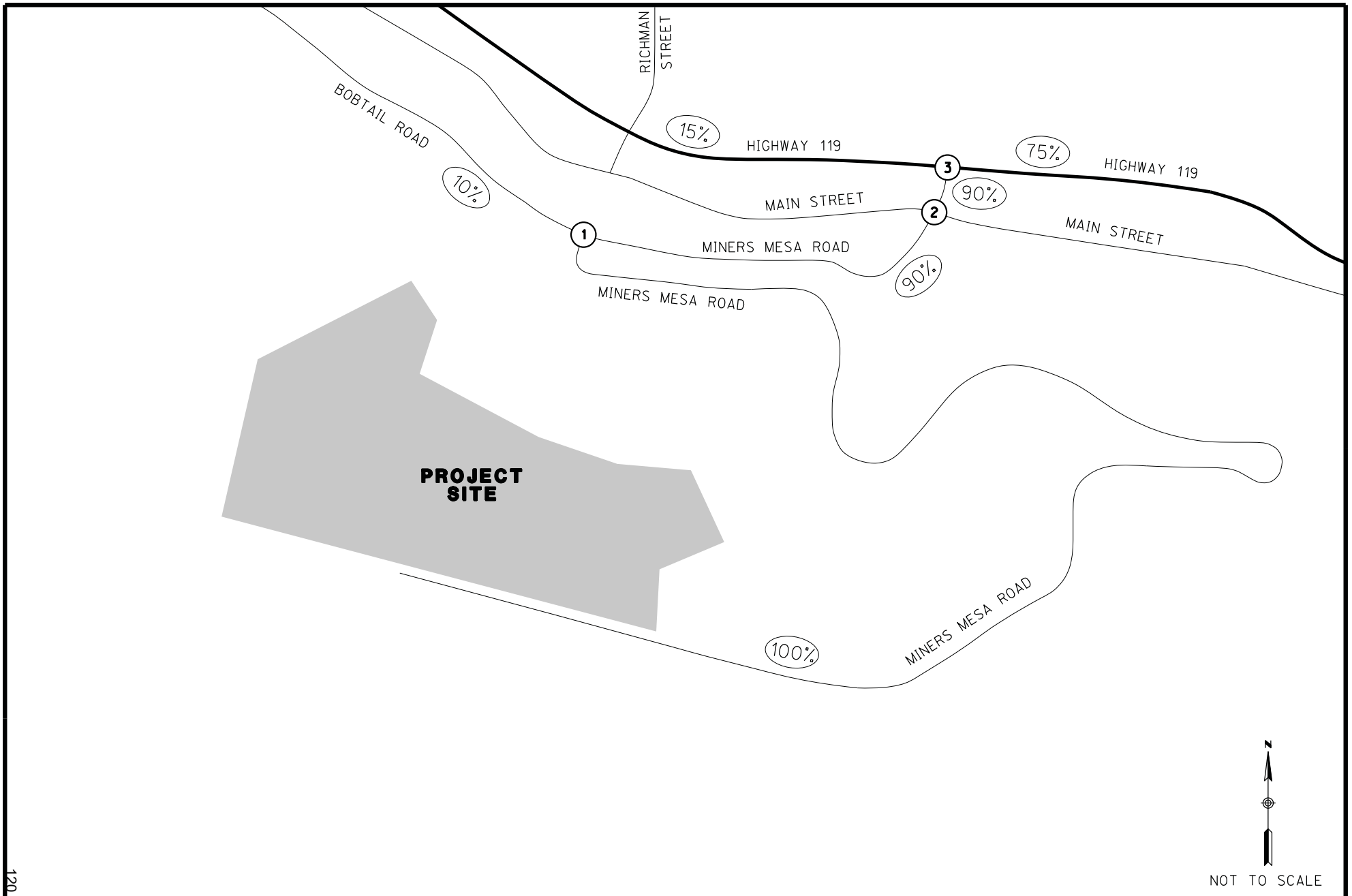
[d] Source: Based on information provided by client.

[e] Source: ITE Trip Generation Manual 10th Edition, 2017 for a Winery Tasting Room use (ITE Land Use Code 970).

[f] Source: Based on information provided by client.

[g] Assumes one tour per hour with 20 patrons per hour, with total of 8 tours per day for a total of 160 patrons per day. Assumes 2 patrons per vehicle and each vehicle would generate 2 trips (arrive and depart).

[h] Conservatively assumes that 10% of trips generated by the indoor shooting range, distillery tasting room, and distillery tours will be internal to the site, specifically from the 50 RV campground sites.



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EXHIBIT 7

PROJECT TRIP DISTRIBUTION PERCENTAGES

BLACK HAWK

LEGEND XX% =DISTRIBUTION PERCENTAGE

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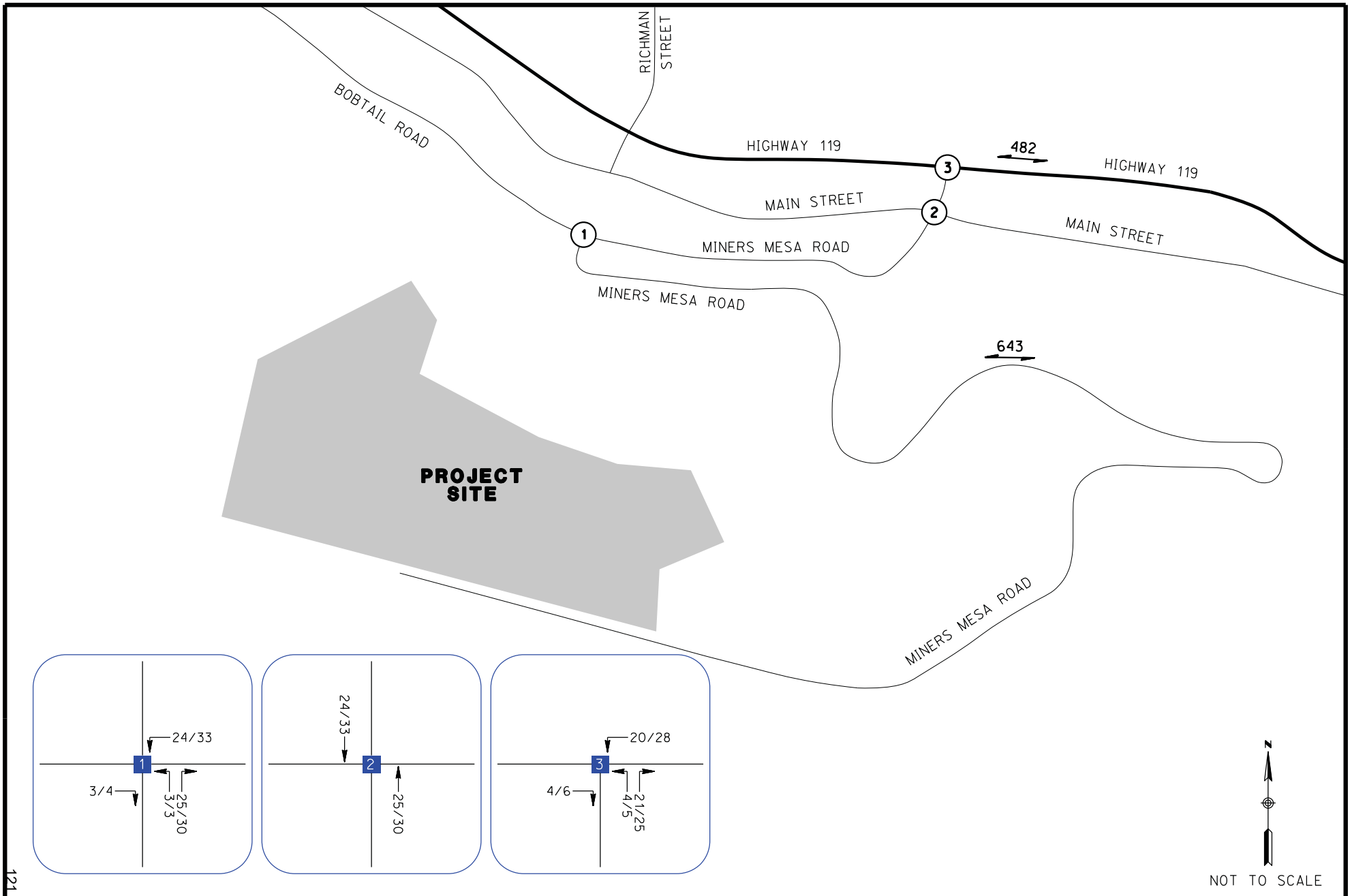


EXHIBIT 8

PHASE ONE PROJECT TRIP ASSIGNMENT

BLACK HAWK

LEGEND

X,XXX =SATURDAY ADT

XX/XX=FRIDAY/SATURDAY PEAK HOUR VOLUMES

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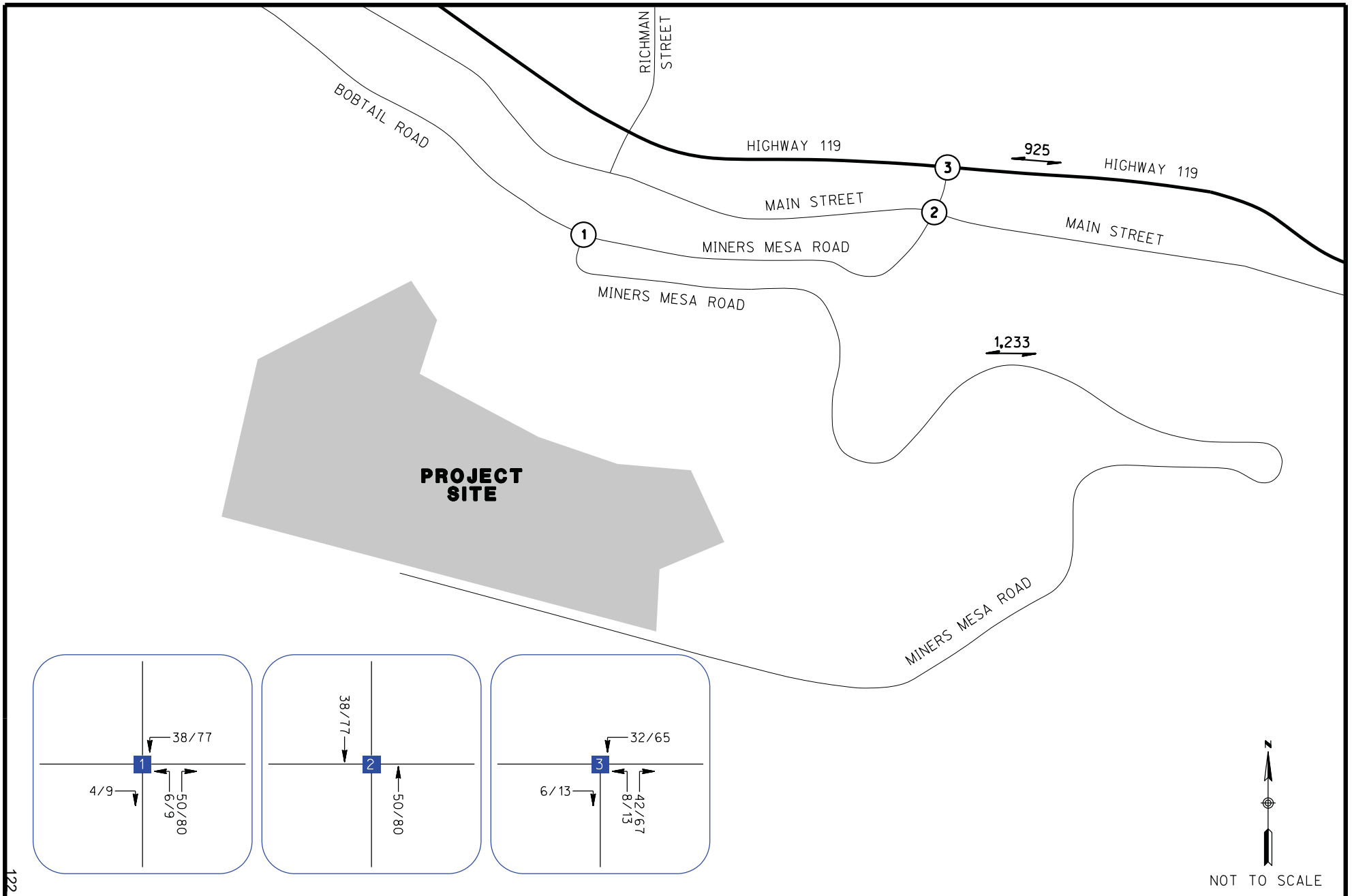


EXHIBIT 9

PHASE TWO PROJECT TRIP ASSIGNMENT

BLACK HAWK

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LEGEND

X,XXX =SATURDAY ADT

XX/XX =FRIDAY/SATURDAY PEAK HOUR VOLUMES

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OPENING YEAR (2022) CONDITIONS WITHOUT AND WITH PHASE ONE PROJECT

This section summarizes the development of the Opening Year (2022) traffic volumes and operations of the study intersections without and with the proposed Phase One project. A background growth factor of 3.6% applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2022, which is consistent with the growth rate used in the *Lake Gulch Whiskey Resort Traffic Impact Study*.

Opening Year (2022) Traffic Volumes

The Opening Year (2022) background traffic volumes without the project are illustrated in **Exhibit 10**. The proposed Phase One project trips were added to the year 2022 background traffic volumes to derive the Opening Year (2022) traffic volumes with the Phase One project, which are illustrated in **Exhibit 11**.

Opening Year (2022) Intersection Analysis

Table 5 displays the LOS analysis results for the study intersections under Opening Year (2022) conditions without and with the Phase One project. **Appendix B** contains the intersection LOS worksheets for Opening Year (2022) conditions.

Table 5
Opening Year (2022) Peak Hour Intersection LOS Summary

#	Intersection	Traffic Control	Peak Hour	Without Project		With Project	
				Delay (a)	LOS (b)	Delay (a)	LOS (b)
1	Miners Mesa Road / Bobtail Road	AWSC	Fri. PM	6.8	A	7.0	A
			Sat. PM	6.9	A	7.2	A
2	Miners Mesa Road-Mill Street / Main Street	Signal	Fri. PM	19.1	B	19.3	B
			Sat. PM	19.5	B	19.7	B
3	Mill Street / Highway 119	Signal	Fri. PM	3.6	A	3.9	A
			Sat. PM	16.9	B	16.9	B

Notes:
AWSC = All-Way-Stop Controlled

(a) The *Highway Capacity Manual* 6th Edition (HCM 6) does not report level of service (LOS) for a "T" intersection with stop control at two of the three approaches; therefore, the Miners Mesa Road/Bobtail Road intersection was analyzed with All-Way-Stop Control so that LOS can be reported for the intersection. This analysis methodology was also used in the Lake Gulch Whiskey Resort Traffic Impact Study (Kimley Horn & Associates, March 2020) for the Miners Mesa Road/Bobtail Road intersection.

As shown in the table, the study intersections are forecast to continue operating at an acceptable LOS B or better under Opening Year (2022) conditions both without and with the Phase Two project.

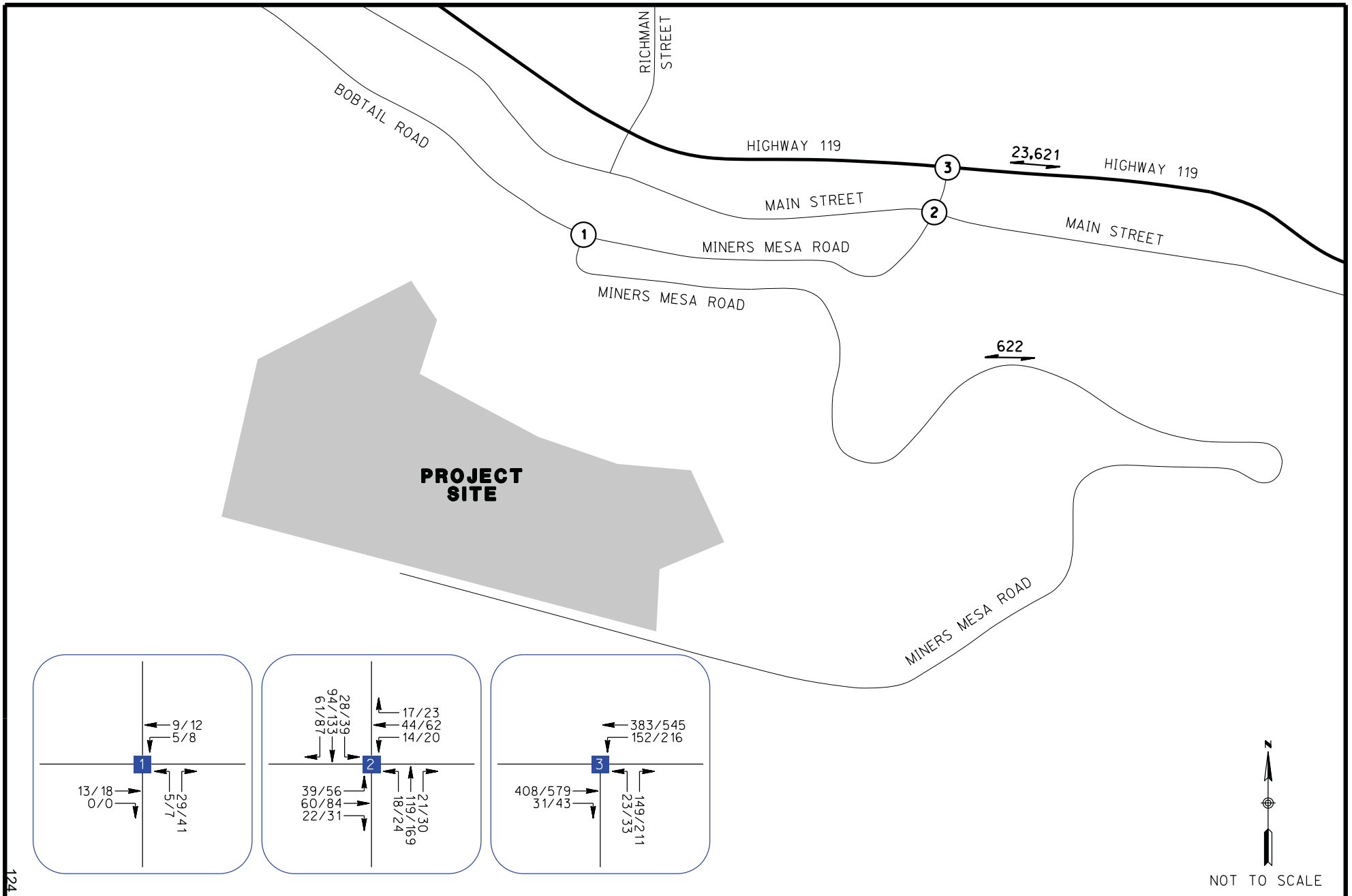


EXHIBIT 10

OPENING YEAR (2022) BACKGROUND TRAFFIC VOLUMES

BLACK HAWK

RICK ENGINEERING COMPANY

LEGEND

X,XXX =SATURDAY ADT

XX/XX =FRIDAY/SATURDAY PEAK HOUR VOLUMES

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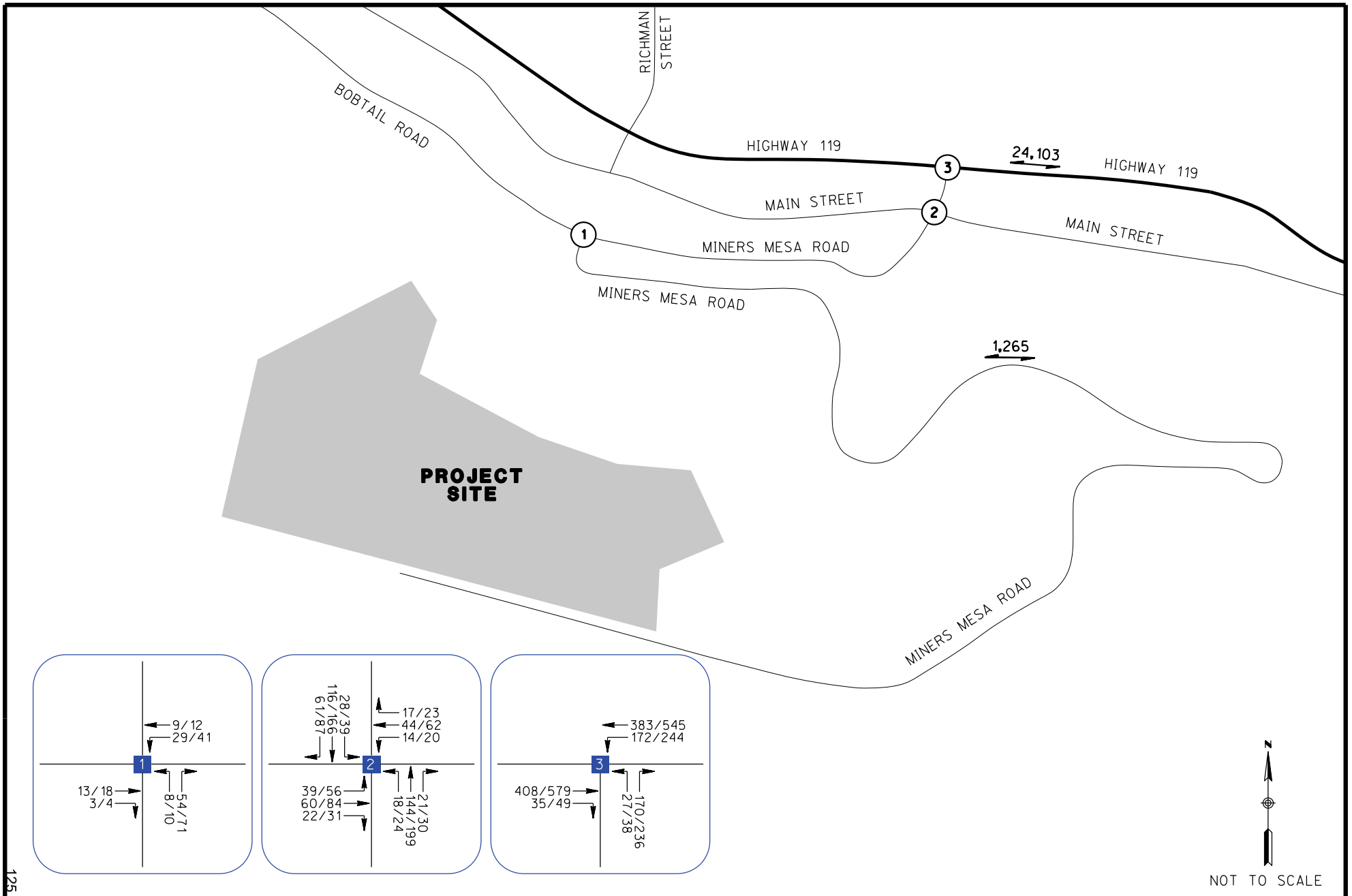


EXHIBIT 11

OPENING YEAR (2022) BACKGROUND PLUS PHASE ONE PROJECT TRAFFIC VOLUMES

BLACK HAWK

RICK ENGINEERING COMPANY

LEGEND

X,XXX =SATURDAY ADT

XX/XX=FRIDAY/SATURDAY PEAK HOUR VOLUMES

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BUILDOUT YEAR (2025) CONDITIONS WITHOUT AND WITH PHASE TWO PROJECT

This section summarizes the development of the Buildout Year (2025) traffic volumes and operations of the study intersections without and with the buildout of the project under Phase Two. Buildout Year (2025) assumes the completion of the Lake Gulch Whiskey Resort Project located south of the project site. The Year 2025 Background Plus Project traffic volumes from the *Lake Gulch Whiskey Resort Traffic Impact Study* were used as the background volumes for Buildout Year (2025). These traffic volumes include the trips generated by the Lake Gulch Whiskey Resort Project, and the 2025 background volumes also include a background growth factor of 9.0% that was applied to the existing traffic volumes to reflect a 1.8% annual growth rate from 2020 to 2025.

Buildout Year (2025) Traffic Volumes

The Buildout Year (2025) traffic volumes without the project are illustrated in **Exhibit 12**. The proposed Phase Two project trips were added to the year 2025 background traffic volumes to derive the Buildout Year (2025) traffic volumes with the Phase Two project, which are illustrated in **Exhibit 13**.

Buildout Year (2025) Intersection Analysis

Table 6 displays the LOS analysis results for the study intersections under Buildout Year (2025) conditions without and with the Phase Two project. **Appendix B** contains the intersection LOS worksheets for Buildout Year (2025) conditions.

Table 6
Buildout Year (2025) Peak Hour Intersection LOS Summary

#	Intersection	Traffic Control	Peak Hour	Without Project		With Project	
				Delay (a)	LOS (b)	Delay (a)	LOS (b)
1	Miners Mesa Road / Bobtail Road	AWSC	Fri. PM	9.9	A	10.9	B
			Sat. PM	10.5	B	13.2	B
2	Miners Mesa Road-Mill Street / Main Street	Signal	Fri. PM	20.1	C	20.8	C
			Sat. PM	20.7	C	22.4	C
3	Mill Street / Highway 119	Signal	Fri. PM	4.6	A	5.2	A
			Sat. PM	15.7	B	16.0	B

Notes:
AWSC = All-Way-Stop Controlled

(a) The *Highway Capacity Manual* 6th Edition (HCM 6) does not report level of service (LOS) for a "T" intersection with stop control at two of the three approaches; therefore, the Miners Mesa Road/Bobtail Road intersection was analyzed with All-Way-Stop Control so that LOS can be reported for the intersection. This analysis methodology was also used in the Lake Gulch Whiskey Resort Traffic Impact Study (Kimley Horn & Associates, March 2020) for the Miners Mesa Road/Bobtail Road intersection.

As shown in the table, the study intersections are forecast to continue operating at an acceptable LOS C or better under Buildout Year (2025) conditions both without and with the Phase Two project.

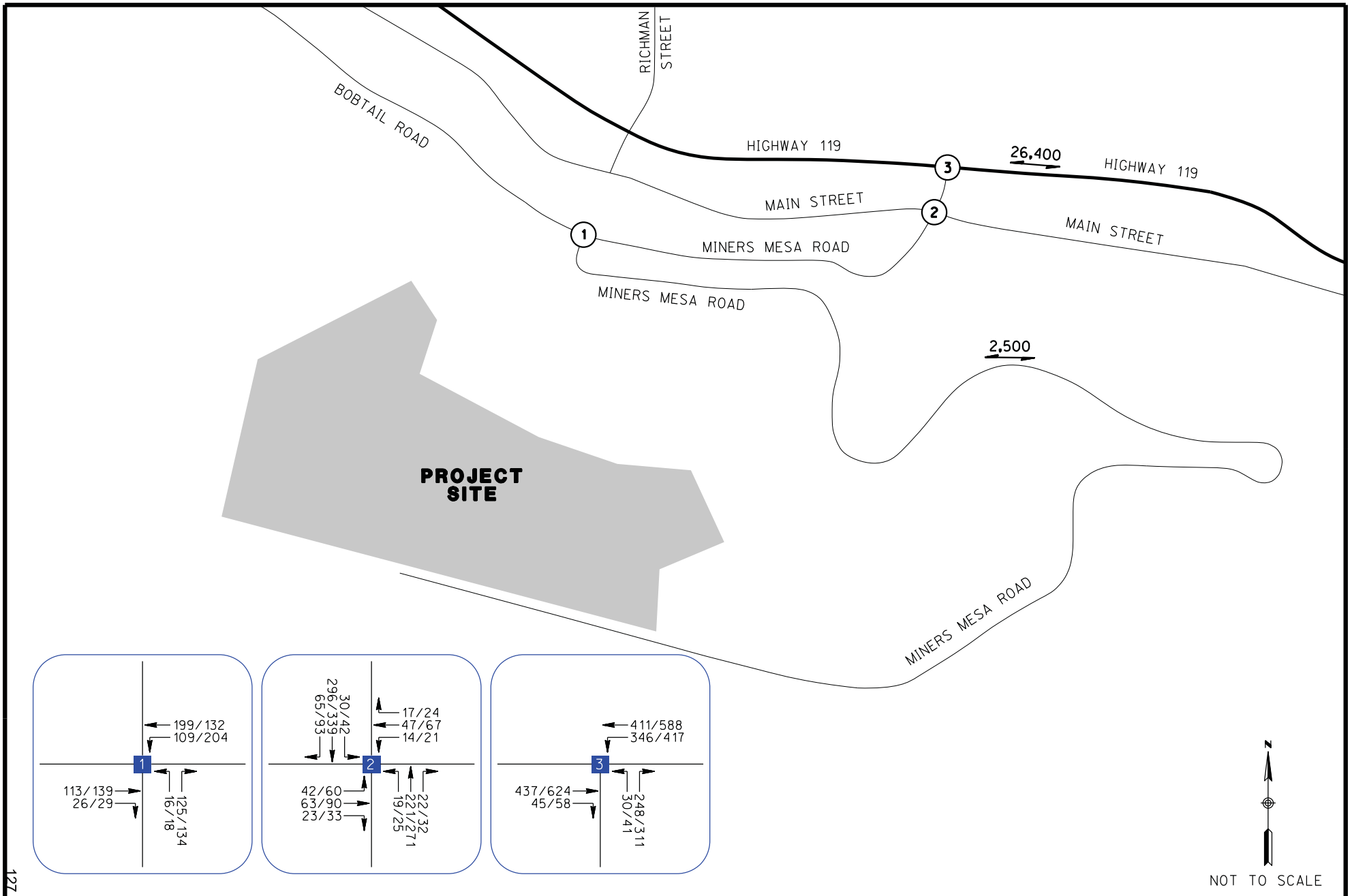


EXHIBIT 12

BUILDOUT YEAR (2025) BACKGROUND TRAFFIC VOLUMES

BLACK HAWK

LEGEND

X,XXX =SATURDAY ADT

XX/XX =FRIDAY/SATURDAY PEAK HOUR VOLUMES

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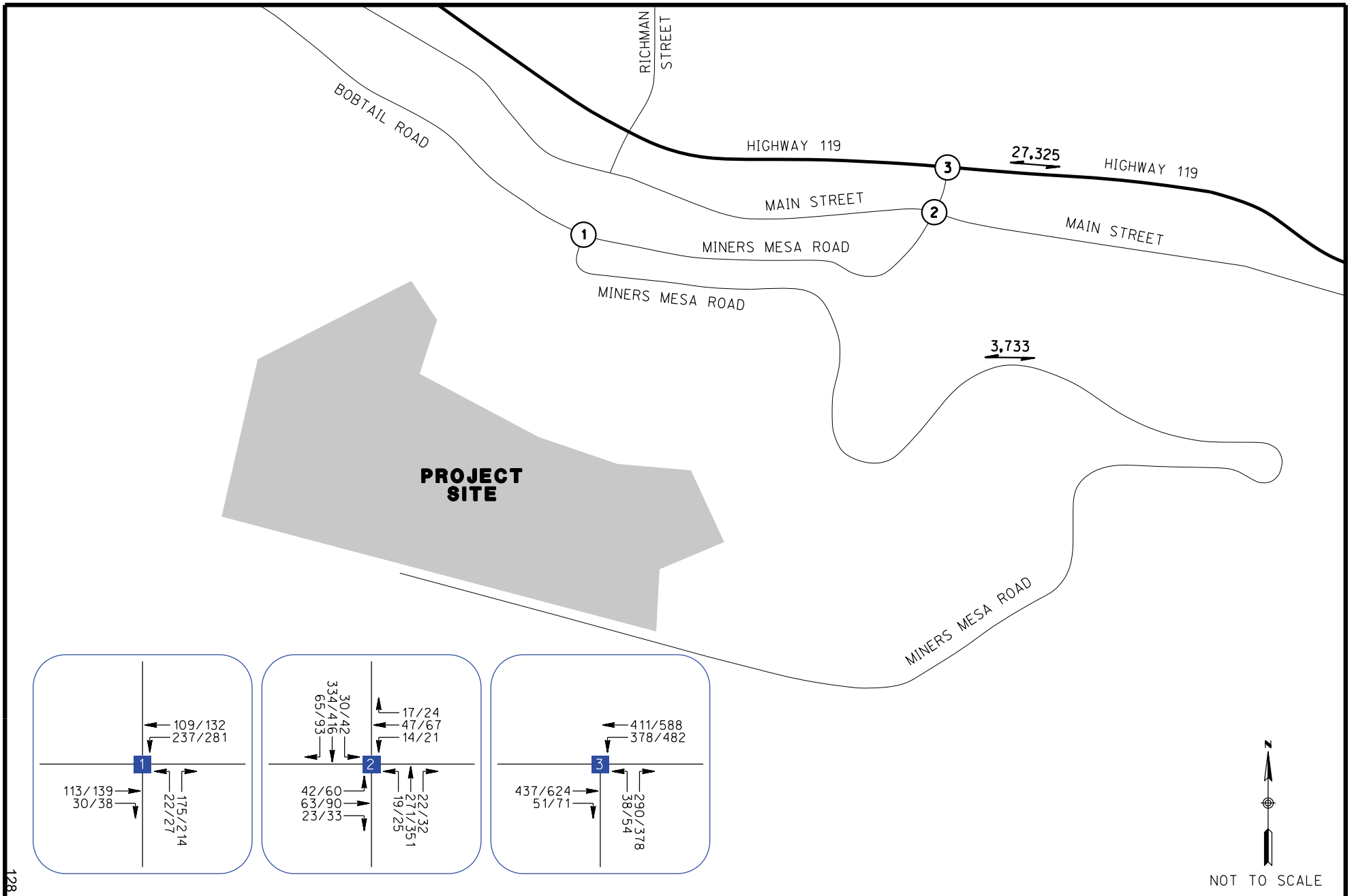


EXHIBIT 13

BUILDOUT YEAR (2025) BACKGROUND PLUS PHASE TWO PROJECT TRAFFIC VOLUMES

BLACK HAWK

RICK ENGINEERING COMPANY

LEGEND

X,XXX =SATURDAY ADT

XX/XX =FRIDAY/SATURDAY PEAK HOUR VOLUMES

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QUEUING ANALYSIS

A queuing analysis was performed for the study intersections during the Friday and Saturday peak hours under all analysis scenarios to determine if existing and future vehicular queues can be accommodated within the existing storage lengths of the turn lanes. The queuing assessment was performed both without and with the proposed project. The Synchro software program was used to perform the queuing analysis at the signalized intersections, and the SimTraffic application within Synchro was used to conduct the queuing analysis for the unsignalized study intersection of Miners Mesa Road / Bobtail Road. The queuing analysis results are based on the 95th percentile queue lengths in feet for each turning movement.

The Friday PM peak hour and Saturday PM peak hour queue lengths at the study intersections under Existing, Opening Year (2022) and Buildout Year (2025) conditions without and with the proposed project are shown in **Table 7** and **Table 8**, respectively.

The Synchro/SimTraffic queuing worksheets are provided in **Appendix D.**

Table 7
Friday PM Peak Hour Queuing Analysis Summary

#	Intersection	Control	Approach/ Movement	Existing Storage Length (feet)	Queue Lengths (feet)				
					EX (2020)	OY (2022)	OY (2022) + P	BY (2025)	BY (2025) + P
1	Miners Mesa Road / Bobtail Road	AWSC	NB	-	47'	35'	53'	51'	64'
			EB	-	35'	26'	42'	52'	59'
			WB	-	34'	40'	43'	95'	150'
2	Miners Mesa Road - Mill Street / Main Street	Signal	NBT/L	-	71'	73'	86'	126'	154'
			NBR	50’	0'	0'	0'	0'	0'
			SBL	100’	8'	8'	6'	5'	5'
			SBT	100’	27'	27'	30'	54'	57'
			SBR	50’	6'	6'	2'	0'	0'
			EBL	75’	44'	44'	44'	48'	48'
			WBL	90’	25'	26'	26'	26'	26'
3	Mill Street / Highway 119	Signal	NBL	100’	34'	35'	40'	46'	54'
			EBR	240’	23'	23'	24'	27'	28'
			WBL	375’	25'	26'	30'	64'	74'

Notes:
AWSC = All-Way Stop Control
EX = Existing
OY = Opening Year
BY = Buildout Year
P = Project

Table 8
Saturday PM Peak Hour Queuing Analysis Summary

#	Intersection	Control	Approach/ Movement	Existing Storage Length (feet)	Queue Lengths (feet)				
					EX (2020)	OY (2022)	OY (2022) + P	BY (2025)	BY (2025) + P
1	Miners Mesa Road / Bobtail Road	AWSC	NB	-	48'	44'	32'	59'	101'
			EB	-	34'	43'	45'	69'	65'
			WB	-	36'	27'	58'	105'	199'
2	Miners Mesa Road - Mill Street / Main Street	Signal	NBT/L	-	104'	107'	123'	169'	222'
			NBR	50’	0'	0'	0'	0'	0'
			SBL	100’	10'	10'	9'	7'	6'
			SBT	100’	24'	25'	28'	35'	39'
			SBR	50’	0'	0'	0'	0'	0'
			EBL	75’	57'	58'	58'	60'	60'
			WBL	90’	32'	33'	33'	34'	34'
3	Mill Street / Highway 119	Signal	NBL	100’	45'	45'	52'	60'	74'
			EBR	240’	24'	23'	25'	26'	29'
			WBL	375’	38'	39'	52'	187'	253'

Notes:
AWSC = All-Way Stop Control
EX = Existing
OY = Opening Year
BY = Buildout Year
P = Project

Based on the findings of the queuing analysis shown in Tables 7 and 8, the existing and future queues during the Friday and Saturday peak hours do not exceed the storage lengths provided for the turning movements at the study intersections.

SIGNAL WARRANT ANALYSIS

A signal warrant analysis was conducted for the unsignalized intersection of Miners Mesa Road / Bobtail Road under all analysis scenarios to determine if existing and/or future traffic volumes would justify installation of a traffic signal. The signal warrant analysis was performed in accordance with the 2014 Manual on Uniform Traffic Devices (MUTCD) published by the Federal Highway Administration (FHWA). The signal warrants, if satisfied, provide justification for the installation of a traffic signal, but would not require the installation of a signal. The following individual signal warrants from Chapter 4C (Traffic Control Signal Needs Studies) of the 2014 MUTCD were performed in this study:

- Warrant 3: Peak Hour (Part A and Part B)

Satisfaction of either Part A or Part B satisfies the Peak Hour Warrant.

The findings of the traffic signal warrant analysis are summarized in **Table 9**. **Appendix E** contains the signal warrant analysis worksheets.

As shown, the Peak Hour Warrant (Warrant 3) was not satisfied at the Miners Mesa Road / Bobtail Road intersection under any of the analysis scenarios without or with the proposed project.

Table 9
Peak Hour Signal Warrant Summary

Intersection	Existing 2020 (YES/NO)	Opening Year 2022 (YES/NO)	Opening Year 2022 + Project (YES/NO)	Buildout Year 2025 (YES/NO)	Buildout Year 2025 + Project (YES/NO)
Miners Mesa Road / Bobtail Road	NO	NO	NO	NO	NO

Source: 2014 *Manual on Uniform Traffic Devices* (MUTCD).

CONCLUSIONS AND RECOMMENDATIONS

The Existing (2020) Conditions analysis results showed that the study intersections are currently operating at an acceptable LOS B or better during the Friday PM peak hour and Saturday PM peak hour.

The Opening Year (2022) Conditions analysis results showed that the study intersections are expected to continue operating at an acceptable LOS B or better during the Friday PM and Saturday PM peak hours both without and with the proposed Phase One project.

The Buildout Year (2025) Conditions analysis results showed that the study intersections are expected to continue operating at an acceptable LOS C or better during the Friday PM and Saturday PM peak hours both without and with the proposed Phase Two project.

The queuing analysis results showed that the future queues under the Opening Year (2022) With Phase One Project and Buildout Year (2025) With Phase Two Project scenarios can be accommodated within the existing storage lengths at the study intersections.

Based on the results of the level of service operations and queuing analyses, no project-related traffic or queuing impacts were identified at the study intersections, and no roadway or intersection improvements are recommended based on the analysis findings.

However, it is recommended that the project install a stop sign on the westbound approach to provide all-way stop control at the Miners Mesa Road / Bobtail Road intersection, which would provide improved operations with the forecast increase in traffic at the intersection. All-way stop control was used to analyze the Miners Mesa Road / Bobtail Road intersection in this study due to the atypical existing stop control at two out of the three approaches of the intersection, which was not accepted by the HCM analysis software.

REFERENCES

1. Institute of Transportation Engineers, Trip Generation, 10th Edition, Washington, D.C., 2017.

2. Trafficware LLC, Synchro, Version 10.3, Build 28, Sugar Land, Texas, 2017.

3. Trafficware LLC, SimTraffic, Version 10.3, Build 28, Sugar Land, Texas, 2017.

4. Transportation Research Board, Highway Capacity Manual 6th Edition, Washington, D.C., 2016.

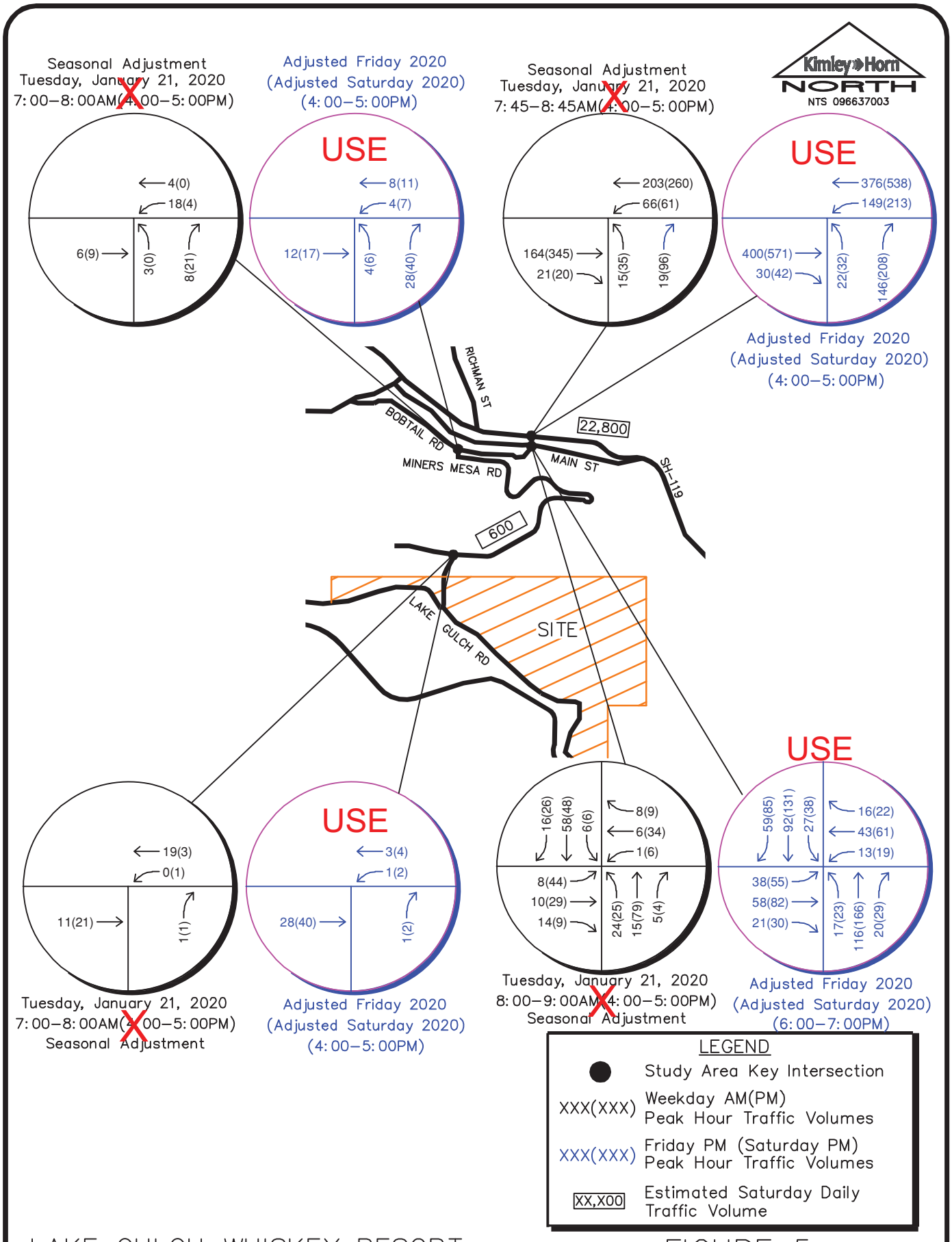
5. Kimley Horn & Associates, Lake Gulch Whiskey Resort Traffic Impact Study, March 2020.

6. CFS Engineers, Gun Range Development Traffic Impact Analysis, Lawrence, Kansas, December 2016.

7. Federal Highway Administration (FHWA), Manual on Uniform Traffic Devices (MUTCD), 2014.

APPENDIX A

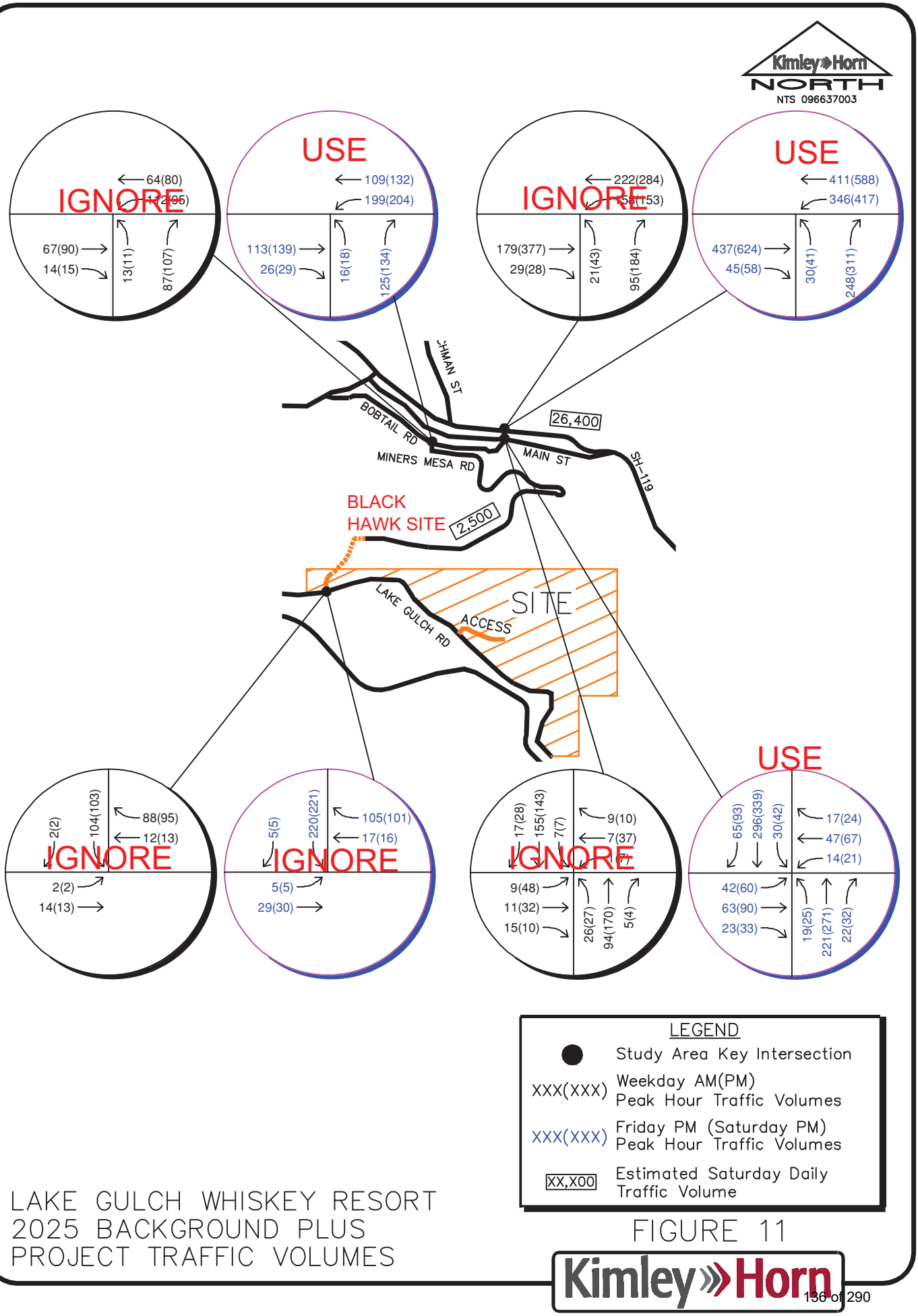
TRAFFIC VOLUME DATA



LAKE GULCH WHISKEY RESORT
EXISTING ADJUSTED TRAFFIC VOLUMES

FIGURE 5

Kimley»Horn



LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) Friday PM (Saturday PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Saturday Daily Traffic Volume

LAKE GULCH WHISKEY RESORT
2025 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES

FIGURE 11

Kimley»Horn

APPENDIX B

INTERSECTION LOS WORKSHEETS

EXISTING (2020) CONDITIONS

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	12	0	4	8	4	28
Future Vol, veh/h	12	0	4	8	4	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	0	4	9	4	30
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.1	7.1	6.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	12%	0%	33%
Vol Thru, %	0%	100%	67%
Vol Right, %	88%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	32	12	12
LT Vol	4	0	4
Through Vol	0	12	8
RT Vol	28	0	0
Lane Flow Rate	35	13	13
Geometry Grp	1	1	1
Degree of Util (X)	0.034	0.015	0.015
Departure Headway (Hd)	3.481	4.005	4.072
Convergence, Y/N	Yes	Yes	Yes
Cap	1031	897	882
Service Time	1.492	2.014	2.081
HCM Lane V/C Ratio	0.034	0.014	0.015
HCM Control Delay	6.6	7.1	7.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	58	21	13	43	16	17	116	20	27	92	59
Future Volume (veh/h)	38	58	21	13	43	16	17	116	20	27	92	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.89		0.93	0.91		0.89	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	63	23	14	47	17	18	126	22	29	100	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	468	171	412	362	131	88	552	471	503	821	694
Arrive On Green	0.04	0.37	0.37	0.28	0.28	0.28	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1269	463	1174	1282	464	129	1655	1412	1781	1870	1453
Grp Volume(v), veh/h	41	0	86	14	0	64	144	0	22	29	100	64
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1174	0	1745	1783	0	1412	1781	1870	1453
Q Serve(g_s), s	1.4	0.0	3.0	0.8	0.0	2.5	0.0	0.0	0.9	0.9	2.9	2.2
Cycle Q Clear(g_c), s	1.4	0.0	3.0	0.8	0.0	2.5	5.0	0.0	0.9	0.9	2.9	2.2
Prop In Lane	1.00		0.27	1.00		0.27	0.12		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	0	638	412	0	494	640	0	471	503	821	694
V/C Ratio(X)	0.09	0.00	0.13	0.03	0.00	0.13	0.22	0.00	0.05	0.06	0.12	0.09
Avail Cap(c_a), veh/h	532	0	799	478	0	591	640	0	471	533	821	694
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	18.9	23.4	0.0	24.0	21.6	0.0	20.3	16.1	15.0	13.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.2	0.2	0.0	1.0	2.2	0.0	0.3	0.4	1.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	19.0	23.5	0.0	24.1	21.8	0.0	20.3	16.2	15.3	13.3
LnGrp LOS	C	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		127			78			166			193	
Approach Delay, s/veh		19.4			24.0			21.6			14.7	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		37.7		44.0	7.7	30.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	2.9	7.0		5.0		4.9	3.4	4.5
Green Ext Time (p_c), s	0.0	0.9		0.5		0.8	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	400	30	149	376	22	146
Future Volume (veh/h)	400	30	149	376	22	146
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	435	33	162	409	24	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2659	1186	816	3070	45	
Arrive On Green	0.75	0.75	0.05	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	435	33	162	409	24	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	3.2	0.5	0.0	1.6	1.2	0.0
Cycle Q Clear(g_c), s	3.2	0.5	0.0	1.6	1.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2659	1186	816	3070	45	
V/C Ratio(X)	0.16	0.03	0.20	0.13	0.54	
Avail Cap(c_a), veh/h	2659	1186	1184	3070	287	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.3	2.9	3.5	0.9	43.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	9.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.6	0.0	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.3	2.9	3.7	1.0	53.0	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	468			571	24	A
Approach Delay, s/veh	3.3			1.7	53.0	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.4	72.8				83.2	6.8
Change Period (Y+Rc), s	5.5	* 5.5				5.5	4.5
Max Green Setting (Gmax), s	23.5	* 38				65.5	14.5
Max Q Clear Time (g_c+I1), s	12.0	5.2				3.6	3.2
Green Ext Time (p_c), s	0.4	2.8				2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	3.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	0	7	11	6	40
Future Vol, veh/h	17	0	7	11	6	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	8	12	7	43
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.1	7.2	6.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	13%	0%	39%
Vol Thru, %	0%	100%	61%
Vol Right, %	87%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	46	17	18
LT Vol	6	0	7
Through Vol	0	17	11
RT Vol	40	0	0
Lane Flow Rate	50	18	20
Geometry Grp	1	1	1
Degree of Util (X)	0.049	0.021	0.022
Departure Headway (Hd)	3.502	4.035	4.112
Convergence, Y/N	Yes	Yes	Yes
Cap	1023	889	873
Service Time	1.522	2.049	2.126
HCM Lane V/C Ratio	0.049	0.02	0.023
HCM Control Delay	6.7	7.1	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	82	30	19	61	22	23	166	29	38	131	85
Future Volume (veh/h)	55	82	30	19	61	22	23	166	29	38	131	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.92		0.89	0.95		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	60	89	33	21	66	24	25	180	32	41	142	92
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	478	177	406	365	133	86	551	471	459	821	706
Arrive On Green	0.04	0.38	0.38	0.29	0.29	0.29	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1264	469	1143	1280	465	123	1653	1412	1781	1870	1453
Grp Volume(v), veh/h	60	0	122	21	0	90	205	0	32	41	142	92
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1143	0	1745	1776	0	1412	1781	1870	1453
Q Serve(g_s), s	2.0	0.0	4.2	1.2	0.0	3.5	0.0	0.0	1.4	1.2	4.1	3.2
Cycle Q Clear(g_c), s	2.0	0.0	4.2	1.2	0.0	3.5	7.4	0.0	1.4	1.2	4.1	3.2
Prop In Lane	1.00		0.27	1.00		0.27	0.12		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	0	655	406	0	497	637	0	471	459	821	706
V/C Ratio(X)	0.13	0.00	0.19	0.05	0.00	0.18	0.32	0.00	0.07	0.09	0.17	0.13
Avail Cap(c_a), veh/h	514	0	799	467	0	591	637	0	471	489	821	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	19.8	0.0	18.7	23.4	0.0	24.3	22.5	0.0	20.5	16.5	15.3	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.2	0.3	0.0	0.1	0.1	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.7	0.3	0.0	1.5	3.3	0.0	0.5	0.5	1.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	18.8	23.5	0.0	24.4	22.7	0.0	20.5	16.6	15.8	13.3
LnGrp LOS	B	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		182			111			237			275	
Approach Delay, s/veh		19.2			24.2			22.4			15.1	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	9.5	34.5		38.5		44.0	8.4	30.2				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5				
Max Q Clear Time (g_c+I1), s	3.2	9.4		6.2		6.1	4.0	5.5				
Green Ext Time (p_c), s	0.0	1.3		0.8		1.2	0.0	0.5				

Intersection Summary			
HCM 6th Ctrl Delay		19.4	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	571	42	213	538	32	208
Future Volume (veh/h)	571	42	213	538	32	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	621	46	232	585	35	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	814	363	1159	3044	58	
Arrive On Green	0.23	0.23	0.58	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	621	46	232	585	35	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	14.7	2.1	2.3	2.5	1.7	0.0
Cycle Q Clear(g_c), s	14.7	2.1	2.3	2.5	1.7	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	814	363	1159	3044	58	
V/C Ratio(X)	0.76	0.13	0.20	0.19	0.61	
Avail Cap(c_a), veh/h	1481	660	1159	3044	208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.00
Uniform Delay (d), s/veh	32.4	27.6	3.7	1.1	43.0	0.0
Incr Delay (d2), s/veh	1.5	0.2	0.1	0.0	9.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.8	0.4	0.0	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.9	27.7	3.8	1.1	52.7	0.0
LnGrp LOS	C	C	A	A	D	
Approach Vol, veh/h	667			817	35	A
Approach Delay, s/veh	33.5			1.9	52.7	
Approach LOS	C			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	56.5	26.1				82.6	7.4
Change Period (Y+Rc), s	4.5	5.5				5.5	4.5
Max Green Setting (Gmax), s	27.5	37.5				69.5	10.5
Max Q Clear Time (g_c+I1), s	4.3	16.7				4.5	3.7
Green Ext Time (p_c), s	0.6	3.9				4.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

OPENING YEAR (2022) WITHOUT PROJECT

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	0	5	9	5	29
Future Vol, veh/h	13	0	5	9	5	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	0	5	10	5	32
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.1	7.2	6.6
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	15%	0%	36%
Vol Thru, %	0%	100%	64%
Vol Right, %	85%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	34	13	14
LT Vol	5	0	5
Through Vol	0	13	9
RT Vol	29	0	0
Lane Flow Rate	37	14	15
Geometry Grp	1	1	1
Degree of Util (X)	0.036	0.016	0.017
Departure Headway (Hd)	3.504	4.011	4.082
Convergence, Y/N	Yes	Yes	Yes
Cap	1024	896	880
Service Time	1.516	2.019	2.09
HCM Lane V/C Ratio	0.036	0.016	0.017
HCM Control Delay	6.6	7.1	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	60	22	14	44	17	18	119	21	28	94	61
Future Volume (veh/h)	39	60	22	14	44	17	18	119	21	28	94	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.90		0.93	0.91		0.89	0.94		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	65	24	15	48	18	20	129	23	30	102	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	467	172	411	358	134	93	544	471	499	821	695
Arrive On Green	0.04	0.37	0.37	0.28	0.28	0.28	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1264	467	1171	1267	475	143	1631	1412	1781	1870	1453
Grp Volume(v), veh/h	42	0	89	15	0	66	149	0	23	30	102	66
Grp Sat Flow(s),veh/h/ln	1781	0	1731	1171	0	1742	1773	0	1412	1781	1870	1453
Q Serve(g_s), s	1.4	0.0	3.1	0.8	0.0	2.5	0.0	0.0	1.0	0.9	2.9	2.2
Cycle Q Clear(g_c), s	1.4	0.0	3.1	0.8	0.0	2.5	5.2	0.0	1.0	0.9	2.9	2.2
Prop In Lane	1.00		0.27	1.00		0.27	0.13		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	0	639	411	0	493	637	0	471	499	821	695
V/C Ratio(X)	0.09	0.00	0.14	0.04	0.00	0.13	0.23	0.00	0.05	0.06	0.12	0.09
Avail Cap(c_a), veh/h	530	0	798	477	0	590	637	0	471	530	821	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	18.9	23.4	0.0	24.1	21.7	0.0	20.3	16.2	15.0	13.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.2	0.2	0.0	1.1	2.3	0.0	0.3	0.4	1.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	19.0	23.5	0.0	24.2	21.9	0.0	20.3	16.2	15.3	13.3
LnGrp LOS	C	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		131			81			172			198	
Approach Delay, s/veh		19.4			24.0			21.7			14.8	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	9.5	34.5		37.7		44.0	7.8	30.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5				
Max Q Clear Time (g_c+I1), s	2.9	7.2		5.1		4.9	3.4	4.5				
Green Ext Time (p_c), s	0.0	0.9		0.5		0.9	0.0	0.4				

Intersection Summary			
HCM 6th Ctrl Delay		19.1	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	408	31	152	383	23	149
Future Volume (veh/h)	408	31	152	383	23	149
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	443	34	165	416	25	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2656	1185	809	3067	46	
Arrive On Green	0.75	0.75	0.05	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	443	34	165	416	25	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	3.2	0.5	0.0	1.6	1.2	0.0
Cycle Q Clear(g_c), s	3.2	0.5	0.0	1.6	1.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2656	1185	809	3067	46	
V/C Ratio(X)	0.17	0.03	0.20	0.14	0.54	
Avail Cap(c_a), veh/h	2656	1185	1177	3067	287	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.3	2.9	3.6	1.0	43.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	9.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.6	0.0	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.3	2.9	3.7	1.0	52.9	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	477			581	25	A
Approach Delay, s/veh	3.3			1.8	52.9	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.4	72.8				83.2	6.8
Change Period (Y+Rc), s	5.5	* 5.5				5.5	4.5
Max Green Setting (Gmax), s	23.5	* 38				65.5	14.5
Max Q Clear Time (g_c+I1), s	2.0	5.2				3.6	3.2
Green Ext Time (p_c), s	0.4	2.9				2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	3.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	18	0	8	12	7	41
Future Vol, veh/h	18	0	8	12	7	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	0	9	13	8	45
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.1	7.2	6.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	15%	0%	40%
Vol Thru, %	0%	100%	60%
Vol Right, %	85%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	48	18	20
LT Vol	7	0	8
Through Vol	0	18	12
RT Vol	41	0	0
Lane Flow Rate	52	20	22
Geometry Grp	1	1	1
Degree of Util (X)	0.051	0.022	0.025
Departure Headway (Hd)	3.521	4.041	4.119
Convergence, Y/N	Yes	Yes	Yes
Cap	1017	888	871
Service Time	1.542	2.056	2.134
HCM Lane V/C Ratio	0.051	0.023	0.025
HCM Control Delay	6.7	7.1	7.2
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	84	31	20	62	23	24	169	30	39	133	87
Future Volume (veh/h)	56	84	31	20	62	23	24	169	30	39	133	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.92		0.89	0.95		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	91	34	22	67	25	26	184	33	42	145	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	477	178	406	362	135	87	549	471	456	821	707
Arrive On Green	0.04	0.38	0.38	0.29	0.29	0.29	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1261	471	1141	1269	474	125	1647	1412	1781	1870	1453
Grp Volume(v), veh/h	61	0	125	22	0	92	210	0	33	42	145	95
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1141	0	1743	1773	0	1412	1781	1870	1453
Q Serve(g_s), s	2.1	0.0	4.3	1.3	0.0	3.6	0.0	0.0	1.4	1.3	4.2	3.3
Cycle Q Clear(g_c), s	2.1	0.0	4.3	1.3	0.0	3.6	7.6	0.0	1.4	1.3	4.2	3.3
Prop In Lane	1.00		0.27	1.00		0.27	0.12		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	0	656	406	0	497	636	0	471	456	821	707
V/C Ratio(X)	0.13	0.00	0.19	0.05	0.00	0.19	0.33	0.00	0.07	0.09	0.18	0.13
Avail Cap(c_a), veh/h	512	0	798	467	0	591	636	0	471	485	821	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	19.8	0.0	18.7	23.4	0.0	24.3	22.5	0.0	20.5	16.5	15.4	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.2	0.3	0.0	0.1	0.1	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.8	0.3	0.0	1.5	3.4	0.0	0.5	0.5	1.9	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	18.9	23.5	0.0	24.4	22.8	0.0	20.5	16.6	15.8	13.3
LnGrp LOS	B	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		186			114			243			282	
Approach Delay, s/veh		19.2			24.3			22.5			15.1	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		38.6		44.0	8.4	30.2
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.3	9.6		6.3		6.2	4.1	5.6
Green Ext Time (p_c), s	0.0	1.3		0.8		1.3	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	19.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	579	43	216	545	33	211
Future Volume (veh/h)	579	43	216	545	33	211
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	629	47	235	592	36	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	823	367	1154	3042	59	
Arrive On Green	0.23	0.23	0.57	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	629	47	235	592	36	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	14.9	2.1	2.4	2.6	1.8	0.0
Cycle Q Clear(g_c), s	14.9	2.1	2.4	2.6	1.8	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	823	367	1154	3042	59	
V/C Ratio(X)	0.76	0.13	0.20	0.19	0.61	
Avail Cap(c_a), veh/h	1481	660	1154	3042	208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.00
Uniform Delay (d), s/veh	32.3	27.4	3.8	1.1	42.9	0.0
Incr Delay (d2), s/veh	1.5	0.2	0.1	0.0	9.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.8	0.4	0.0	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.8	27.5	3.9	1.2	52.8	0.0
LnGrp LOS	C	C	A	A	D	
Approach Vol, veh/h	676			827	36	A
Approach Delay, s/veh	33.4			1.9	52.8	
Approach LOS	C			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	56.2	26.3				82.5	7.5
Change Period (Y+Rc), s	4.5	5.5				5.5	4.5
Max Green Setting (Gmax), s	27.5	37.5				69.5	10.5
Max Q Clear Time (g_c+I1), s	14.4	16.9				4.6	3.8
Green Ext Time (p_c), s	0.6	4.0				4.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

OPENING YEAR (2022) WITH PROJECT

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	3	29	9	8	54
Future Vol, veh/h	13	3	29	9	8	54
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	3	32	10	9	59
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.1	7.4	6.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	13%	0%	76%
Vol Thru, %	0%	81%	24%
Vol Right, %	87%	19%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	62	16	38
LT Vol	8	0	29
Through Vol	0	13	9
RT Vol	54	3	0
Lane Flow Rate	67	17	41
Geometry Grp	1	1	1
Degree of Util (X)	0.066	0.019	0.048
Departure Headway (Hd)	3.538	3.971	4.218
Convergence, Y/N	Yes	Yes	Yes
Cap	1010	902	851
Service Time	1.567	1.993	2.233
HCM Lane V/C Ratio	0.066	0.019	0.048
HCM Control Delay	6.8	7.1	7.4
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.2	0.1	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	60	22	14	44	17	18	144	21	28	118	61
Future Volume (veh/h)	39	60	22	14	44	17	18	144	21	28	118	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.91	0.90		0.93	0.92		0.89	0.95		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	65	24	15	48	18	20	157	23	30	128	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	467	172	411	358	134	81	561	471	480	821	695
Arrive On Green	0.04	0.37	0.37	0.28	0.28	0.28	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1264	467	1171	1267	475	110	1681	1412	1781	1870	1453
Grp Volume(v), veh/h	42	0	89	15	0	66	177	0	23	30	128	66
Grp Sat Flow(s),veh/h/ln	1781	0	1731	1171	0	1742	1791	0	1412	1781	1870	1453
Q Serve(g_s), s	1.4	0.0	3.1	0.8	0.0	2.5	0.0	0.0	1.0	0.9	3.7	2.2
Cycle Q Clear(g_c), s	1.4	0.0	3.1	0.8	0.0	2.5	6.3	0.0	1.0	0.9	3.7	2.2
Prop In Lane	1.00		0.27	1.00		0.27	0.11		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	0	639	411	0	493	642	0	471	480	821	695
V/C Ratio(X)	0.09	0.00	0.14	0.04	0.00	0.13	0.28	0.00	0.05	0.06	0.16	0.09
Avail Cap(c_a), veh/h	530	0	798	477	0	590	642	0	471	510	821	695
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	18.9	23.4	0.0	24.1	22.1	0.0	20.3	16.3	15.2	13.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.2	0.2	0.0	1.1	2.8	0.0	0.3	0.4	1.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	0.0	19.0	23.5	0.0	24.2	22.3	0.0	20.4	16.3	15.6	13.3
LnGrp LOS	C	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		131			81			200			224	
Approach Delay, s/veh		19.4			24.0			22.1			15.0	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	9.5	34.5		37.7		44.0	7.8	30.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5				
Max Q Clear Time (g_c+I1), s	2.9	8.3		5.1		5.7	3.4	4.5				
Green Ext Time (p_c), s	0.0	1.1		0.5		1.0	0.0	0.4				

Intersection Summary			
HCM 6th Ctrl Delay		19.3	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	408	35	172	383	27	170
Future Volume (veh/h)	408	35	172	383	27	170
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	443	38	187	416	29	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2644	1179	804	3057	51	
Arrive On Green	0.74	0.74	0.06	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	443	38	187	416	29	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	3.3	0.6	0.0	1.7	1.4	0.0
Cycle Q Clear(g_c), s	3.3	0.6	0.0	1.7	1.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2644	1179	804	3057	51	
V/C Ratio(X)	0.17	0.03	0.23	0.14	0.57	
Avail Cap(c_a), veh/h	2644	1179	1172	3057	287	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.00
Uniform Delay (d), s/veh	3.4	3.0	3.8	1.0	43.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.0	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	0.7	0.0	0.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.4	3.0	4.0	1.0	52.6	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	481			603	29	A
Approach Delay, s/veh	3.4			1.9	52.6	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.5	72.5				82.9	7.1
Change Period (Y+Rc), s	5.5	* 5.5				5.5	4.5
Max Green Setting (Gmax), s	23.5	* 38				65.5	14.5
Max Q Clear Time (g_c+I1), s	2.0	5.3				3.7	3.4
Green Ext Time (p_c), s	0.5	2.9				2.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	3.9
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	18	4	41	12	10	71
Future Vol, veh/h	18	4	41	12	10	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	4	45	13	11	77
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.2	7.6	7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	12%	0%	77%
Vol Thru, %	0%	82%	23%
Vol Right, %	88%	18%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	81	22	53
LT Vol	10	0	41
Through Vol	0	18	12
RT Vol	71	4	0
Lane Flow Rate	88	24	58
Geometry Grp	1	1	1
Degree of Util (X)	0.087	0.027	0.068
Departure Headway (Hd)	3.572	4.023	4.261
Convergence, Y/N	Yes	Yes	Yes
Cap	997	888	841
Service Time	1.616	2.055	2.284
HCM Lane V/C Ratio	0.088	0.027	0.069
HCM Control Delay	7	7.2	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.3	0.1	0.2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	84	31	20	62	23	24	199	30	39	166	87
Future Volume (veh/h)	56	84	31	20	62	23	24	199	30	39	166	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.93		0.89	0.96		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	91	34	22	67	25	26	216	33	42	180	95
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	477	178	406	362	135	78	562	471	433	821	707
Arrive On Green	0.04	0.38	0.38	0.29	0.29	0.29	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1261	471	1141	1269	474	101	1686	1411	1781	1870	1453
Grp Volume(v), veh/h	61	0	125	22	0	92	242	0	33	42	180	95
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1141	0	1743	1787	0	1411	1781	1870	1453
Q Serve(g_s), s	2.1	0.0	4.3	1.3	0.0	3.6	0.0	0.0	1.4	1.3	5.4	3.3
Cycle Q Clear(g_c), s	2.1	0.0	4.3	1.3	0.0	3.6	8.9	0.0	1.4	1.3	5.4	3.3
Prop In Lane	1.00		0.27	1.00		0.27	0.11		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	461	0	656	406	0	497	640	0	471	433	821	707
V/C Ratio(X)	0.13	0.00	0.19	0.05	0.00	0.19	0.38	0.00	0.07	0.10	0.22	0.13
Avail Cap(c_a), veh/h	512	0	798	467	0	591	640	0	471	463	821	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	19.8	0.0	18.7	23.4	0.0	24.3	23.0	0.0	20.5	16.7	15.7	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	0.2	0.4	0.0	0.1	0.1	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.8	0.3	0.0	1.5	4.0	0.0	0.5	0.5	2.4	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	18.9	23.5	0.0	24.4	23.3	0.0	20.5	16.8	16.3	13.3
LnGrp LOS	B	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		186			114			275			317	
Approach Delay, s/veh		19.2			24.3			23.0			15.4	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		38.6		44.0	8.4	30.2
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.3	10.9		6.3		7.4	4.1	5.6
Green Ext Time (p_c), s	0.0	1.5		0.8		1.5	0.0	0.6

Intersection Summary		
HCM 6th Ctrl Delay		19.7
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	579	49	244	545	38	236
Future Volume (veh/h)	579	49	244	545	38	236
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	629	53	265	592	41	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	823	367	1149	3032	63	
Arrive On Green	0.23	0.23	0.57	0.85	0.04	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	629	53	265	592	41	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	14.9	2.4	2.7	2.6	2.0	0.0
Cycle Q Clear(g_c), s	14.9	2.4	2.7	2.6	2.0	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	823	367	1149	3032	63	
V/C Ratio(X)	0.76	0.14	0.23	0.20	0.65	
Avail Cap(c_a), veh/h	1481	660	1149	3032	208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.00
Uniform Delay (d), s/veh	32.3	27.5	3.9	1.2	42.8	0.0
Incr Delay (d2), s/veh	1.5	0.2	0.1	0.0	10.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.9	0.5	0.1	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.8	27.7	4.0	1.2	53.1	0.0
LnGrp LOS	C	C	A	A	D	
Approach Vol, veh/h	682			857	41	A
Approach Delay, s/veh	33.3			2.1	53.1	
Approach LOS	C			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	15.9	26.3				82.3	7.7
Change Period (Y+Rc), s	4.5	5.5				5.5	4.5
Max Green Setting (Gmax), s	27.5	37.5				69.5	10.5
Max Q Clear Time (g_c+I1), s	11.7	16.9				4.6	4.0
Green Ext Time (p_c), s	0.7	4.0				4.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

BUILDOUT YEAR (2025) WITHOUT PROJECT

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	113	26	199	109	16	125
Future Vol, veh/h	113	26	199	109	16	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	28	216	118	17	136
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.7	11	8.7
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	11%	0%	65%
Vol Thru, %	0%	81%	35%
Vol Right, %	89%	19%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	141	139	308
LT Vol	16	0	199
Through Vol	0	113	109
RT Vol	125	26	0
Lane Flow Rate	153	151	335
Geometry Grp	1	1	1
Degree of Util (X)	0.193	0.191	0.426
Departure Headway (Hd)	4.535	4.553	4.585
Convergence, Y/N	Yes	Yes	Yes
Cap	789	787	783
Service Time	2.57	2.591	2.619
HCM Lane V/C Ratio	0.194	0.192	0.428
HCM Control Delay	8.7	8.7	11
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.7	0.7	2.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	63	23	14	47	17	19	221	22	30	296	65
Future Volume (veh/h)	42	63	23	14	47	17	19	221	22	30	296	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.94		0.89	0.96		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	68	25	15	51	18	21	240	24	33	322	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	467	470	173	410	365	129	66	577	470	421	821	698
Arrive On Green	0.04	0.37	0.37	0.28	0.28	0.28	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1266	466	1168	1291	456	69	1732	1411	1781	1870	1453
Grp Volume(v), veh/h	46	0	93	15	0	69	261	0	24	33	322	71
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1168	0	1747	1801	0	1411	1781	1870	1453
Q Serve(g_s), s	1.6	0.0	3.2	0.8	0.0	2.7	0.0	0.0	1.0	1.0	10.5	2.4
Cycle Q Clear(g_c), s	1.6	0.0	3.2	0.8	0.0	2.7	9.7	0.0	1.0	1.0	10.5	2.4
Prop In Lane	1.00		0.27	1.00		0.26	0.08		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	467	0	642	410	0	494	644	0	470	421	821	698
V/C Ratio(X)	0.10	0.00	0.14	0.04	0.00	0.14	0.41	0.00	0.05	0.08	0.39	0.10
Avail Cap(c_a), veh/h	528	0	799	476	0	592	644	0	470	451	821	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.97	0.97	0.97
Uniform Delay (d), s/veh	20.1	0.0	18.8	23.4	0.0	24.1	23.2	0.0	20.3	16.7	17.1	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.1	0.4	0.0	0.0	0.1	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.3	0.2	0.0	1.1	4.3	0.0	0.3	0.4	4.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	18.9	23.5	0.0	24.2	23.7	0.0	20.4	16.8	18.5	13.2
LnGrp LOS	C	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		139			84			285			426	
Approach Delay, s/veh		19.3			24.1			23.4			17.5	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		37.9		44.0	7.9	30.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.0	11.7		5.2		12.5	3.6	4.7
Green Ext Time (p_c), s	0.0	1.5		0.6		2.4	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	20.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	437	45	346	411	30	248
Future Volume (veh/h)	437	45	346	411	30	248
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	475	49	376	447	33	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2633	1175	775	3048	56	
Arrive On Green	0.74	0.74	0.06	0.86	0.03	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	475	49	376	447	33	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	3.6	0.7	0.0	1.8	1.6	0.0
Cycle Q Clear(g_c), s	3.6	0.7	0.0	1.8	1.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2633	1175	775	3048	56	
V/C Ratio(X)	0.18	0.04	0.49	0.15	0.59	
Avail Cap(c_a), veh/h	2633	1175	1141	3048	287	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.00
Uniform Delay (d), s/veh	3.5	3.1	5.6	1.0	43.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.5	0.0	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	2.1	0.0	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.5	3.1	6.0	1.1	52.6	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	524			823	33	A
Approach Delay, s/veh	3.5			3.3	52.6	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.5	72.2				82.7	7.3
Change Period (Y+Rc), s	5.5	* 5.5				5.5	4.5
Max Green Setting (Gmax), s	23.5	* 38				65.5	14.5
Max Q Clear Time (g_c+I1), s	12.0	5.6				3.8	3.6
Green Ext Time (p_c), s	1.1	3.2				2.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	4.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	139	29	204	132	18	134
Future Vol, veh/h	139	29	204	132	18	134
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	32	222	143	20	146
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.1	11.8	9
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	12%	0%	61%
Vol Thru, %	0%	83%	39%
Vol Right, %	88%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	152	168	336
LT Vol	18	0	204
Through Vol	0	139	132
RT Vol	134	29	0
Lane Flow Rate	165	183	365
Geometry Grp	1	1	1
Degree of Util (X)	0.215	0.235	0.472
Departure Headway (Hd)	4.682	4.641	4.654
Convergence, Y/N	Yes	Yes	Yes
Cap	763	771	771
Service Time	2.729	2.69	2.698
HCM Lane V/C Ratio	0.216	0.237	0.473
HCM Control Delay	9	9.1	11.8
HCM Lane LOS	A	A	B
HCM 95th-tile Q	0.8	0.9	2.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	33	21	67	24	25	271	32	42	339	93
Future Volume (veh/h)	60	90	33	21	67	24	25	271	32	42	339	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.95		0.89	0.98		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	98	36	23	73	26	27	295	35	46	368	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	458	482	177	404	368	131	70	567	470	378	821	709
Arrive On Green	0.04	0.38	0.38	0.29	0.29	0.29	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1268	466	1133	1288	459	79	1701	1411	1781	1870	1453
Grp Volume(v), veh/h	65	0	134	23	0	99	322	0	35	46	368	101
Grp Sat Flow(s),veh/h/ln	1781	0	1733	1133	0	1747	1781	0	1411	1781	1870	1453
Q Serve(g_s), s	2.2	0.0	4.7	1.3	0.0	3.9	0.0	0.0	1.5	1.4	12.4	3.5
Cycle Q Clear(g_c), s	2.2	0.0	4.7	1.3	0.0	3.9	12.5	0.0	1.5	1.4	12.4	3.5
Prop In Lane	1.00		0.27	1.00		0.26	0.08		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	458	0	660	404	0	500	637	0	470	378	821	709
V/C Ratio(X)	0.14	0.00	0.20	0.06	0.00	0.20	0.51	0.00	0.07	0.12	0.45	0.14
Avail Cap(c_a), veh/h	508	0	799	464	0	592	637	0	470	408	821	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.93	0.93	0.93
Uniform Delay (d), s/veh	19.8	0.0	18.7	23.4	0.0	24.3	24.2	0.0	20.5	17.2	17.6	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.1	0.0	0.2	0.6	0.0	0.1	0.1	1.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.9	0.4	0.0	1.6	5.6	0.0	0.5	0.6	5.6	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	18.9	23.5	0.0	24.5	24.8	0.0	20.6	17.4	19.3	13.3
LnGrp LOS	B	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		199			122			357			515	
Approach Delay, s/veh		19.2			24.3			24.4			17.9	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		38.8		44.0	8.5	30.2
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.4	14.5		6.7		14.4	4.2	5.9
Green Ext Time (p_c), s	0.0	1.9		0.8		2.8	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	624	58	417	588	41	311
Future Volume (veh/h)	624	58	417	588	41	311
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	678	63	453	639	45	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	879	392	1117	3025	67	
Arrive On Green	0.25	0.25	0.55	0.85	0.04	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	678	63	453	639	45	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	16.0	2.8	5.4	2.9	2.2	0.0
Cycle Q Clear(g_c), s	16.0	2.8	5.4	2.9	2.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	879	392	1117	3025	67	
V/C Ratio(X)	0.77	0.16	0.41	0.21	0.67	
Avail Cap(c_a), veh/h	1481	660	1117	3025	208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.97	0.00
Uniform Delay (d), s/veh	31.5	26.6	4.8	1.2	42.8	0.0
Incr Delay (d2), s/veh	1.5	0.2	0.2	0.0	10.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.0	1.5	0.1	1.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.0	26.7	5.0	1.2	53.6	0.0
LnGrp LOS	C	C	A	A	D	
Approach Vol, veh/h	741			1092	45	A
Approach Delay, s/veh	32.4			2.8	53.6	
Approach LOS	C			A	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	14.4	27.8				82.1	7.9
Change Period (Y+Rc), s	4.5	5.5				5.5	4.5
Max Green Setting (Gmax), s	27.5	37.5				69.5	10.5
Max Q Clear Time (g_c+I1), s	7.4	18.0				4.9	4.2
Green Ext Time (p_c), s	1.3	4.3				4.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

BUILDOUT YEAR (2025) WITH PROJECT

Intersection	
Intersection Delay, s/veh	10.9
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	113	30	237	109	22	175
Future Vol, veh/h	113	30	237	109	22	175
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	33	258	118	24	190
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.1	12.5	9.5
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	11%	0%	68%
Vol Thru, %	0%	79%	32%
Vol Right, %	89%	21%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	197	143	346
LT Vol	22	0	237
Through Vol	0	113	109
RT Vol	175	30	0
Lane Flow Rate	214	155	376
Geometry Grp	1	1	1
Degree of Util (X)	0.278	0.206	0.497
Departure Headway (Hd)	4.667	4.762	4.76
Convergence, Y/N	Yes	Yes	Yes
Cap	767	748	752
Service Time	2.721	2.828	2.816
HCM Lane V/C Ratio	0.279	0.207	0.5
HCM Control Delay	9.5	9.1	12.5
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.1	0.8	2.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	63	23	14	47	17	19	271	22	30	334	65
Future Volume (veh/h)	42	63	23	14	47	17	19	271	22	30	334	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.95		0.89	0.97		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	68	25	15	51	18	21	295	24	33	363	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	467	470	173	410	365	129	62	584	470	383	821	698
Arrive On Green	0.04	0.37	0.37	0.28	0.28	0.28	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1266	466	1168	1291	456	57	1752	1411	1781	1870	1453
Grp Volume(v), veh/h	46	0	93	15	0	69	316	0	24	33	363	71
Grp Sat Flow(s),veh/h/ln	1781	0	1732	1168	0	1747	1809	0	1411	1781	1870	1453
Q Serve(g_s), s	1.6	0.0	3.2	0.8	0.0	2.7	0.0	0.0	1.0	1.0	12.2	2.4
Cycle Q Clear(g_c), s	1.6	0.0	3.2	0.8	0.0	2.7	12.2	0.0	1.0	1.0	12.2	2.4
Prop In Lane	1.00		0.27	1.00		0.26	0.07		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	467	0	642	410	0	494	646	0	470	383	821	698
V/C Ratio(X)	0.10	0.00	0.14	0.04	0.00	0.14	0.49	0.00	0.05	0.09	0.44	0.10
Avail Cap(c_a), veh/h	528	0	799	476	0	592	646	0	470	413	821	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	20.1	0.0	18.8	23.4	0.0	24.1	24.1	0.0	20.3	17.1	17.6	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.0	0.0	0.1	0.6	0.0	0.0	0.1	1.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.3	0.2	0.0	1.1	5.4	0.0	0.3	0.4	5.5	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	18.9	23.5	0.0	24.2	24.6	0.0	20.4	17.1	19.2	13.2
LnGrp LOS	C	A	B	C	A	C	C	A	C	B	B	B
Approach Vol, veh/h		139			84			340			467	
Approach Delay, s/veh		19.3			24.1			24.3			18.2	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		37.9		44.0	7.9	30.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.0	14.2		5.2		14.2	3.6	4.7
Green Ext Time (p_c), s	0.0	1.8		0.6		2.7	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	437	51	378	411	38	290
Future Volume (veh/h)	437	51	378	411	38	290
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	475	55	411	447	41	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2618	1168	768	3032	63	
Arrive On Green	0.74	0.74	0.06	0.85	0.04	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	475	55	411	447	41	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	3.7	0.9	0.0	1.9	2.0	0.0
Cycle Q Clear(g_c), s	3.7	0.9	0.0	1.9	2.0	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2618	1168	768	3032	63	
V/C Ratio(X)	0.18	0.05	0.54	0.15	0.65	
Avail Cap(c_a), veh/h	2618	1168	1134	3032	287	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.00
Uniform Delay (d), s/veh	3.6	3.2	6.2	1.1	42.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	10.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.2	2.6	0.0	1.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.6	3.3	6.8	1.1	53.1	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h	530			858	41	A
Approach Delay, s/veh	3.6			3.9	53.1	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.5	71.8			82.3	7.7
Change Period (Y+Rc), s	5.5	* 5.5			5.5	4.5
Max Green Setting (Gmax), s	23.5	* 38			65.5	14.5
Max Q Clear Time (g_c+I1), s	12.0	5.7			3.9	4.0
Green Ext Time (p_c), s	1.2	3.2			2.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	139	38	281	132	27	214
Future Vol, veh/h	139	38	281	132	27	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	41	305	143	29	233
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	10	15.9	10.9
HCM LOS	A	C	B

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	11%	0%	68%
Vol Thru, %	0%	79%	32%
Vol Right, %	89%	21%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	241	177	413
LT Vol	27	0	281
Through Vol	0	139	132
RT Vol	214	38	0
Lane Flow Rate	262	192	449
Geometry Grp	1	1	1
Degree of Util (X)	0.36	0.274	0.618
Departure Headway (Hd)	4.945	5.123	4.955
Convergence, Y/N	Yes	Yes	Yes
Cap	718	706	718
Service Time	3.043	3.123	3.052
HCM Lane V/C Ratio	0.365	0.272	0.625
HCM Control Delay	10.9	10	15.9
HCM Lane LOS	B	A	C
HCM 95th-tile Q	1.6	1.1	4.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	90	33	21	67	24	25	351	32	42	416	93
Future Volume (veh/h)	60	90	33	21	67	24	25	351	32	42	416	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.91	0.90		0.93	0.96		0.89	0.99		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	98	36	23	73	26	27	382	35	46	452	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	458	482	177	404	368	131	64	576	470	316	821	709
Arrive On Green	0.04	0.38	0.38	0.29	0.29	0.29	0.33	0.33	0.33	0.06	0.44	0.44
Sat Flow, veh/h	1781	1268	466	1133	1288	459	63	1727	1411	1781	1870	1453
Grp Volume(v), veh/h	65	0	134	23	0	99	409	0	35	46	452	101
Grp Sat Flow(s),veh/h/ln	1781	0	1733	1133	0	1747	1790	0	1411	1781	1870	1453
Q Serve(g_s), s	2.2	0.0	4.7	1.3	0.0	3.9	3.7	0.0	1.5	1.4	16.1	3.5
Cycle Q Clear(g_c), s	2.2	0.0	4.7	1.3	0.0	3.9	17.2	0.0	1.5	1.4	16.1	3.5
Prop In Lane	1.00		0.27	1.00		0.26	0.07		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	458	0	660	404	0	500	639	0	470	316	821	709
V/C Ratio(X)	0.14	0.00	0.20	0.06	0.00	0.20	0.64	0.00	0.07	0.15	0.55	0.14
Avail Cap(c_a), veh/h	508	0	799	464	0	592	639	0	470	346	821	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	19.8	0.0	18.7	23.4	0.0	24.3	25.6	0.0	20.5	18.2	18.7	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.1	0.0	0.2	2.1	0.0	0.1	0.2	2.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.9	0.4	0.0	1.6	7.7	0.0	0.5	0.6	7.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	18.9	23.5	0.0	24.5	27.8	0.0	20.6	18.3	21.0	13.3
LnGrp LOS	B	A	B	C	A	C	C	A	C	B	C	B
Approach Vol, veh/h		199			122			444			599	
Approach Delay, s/veh		19.2			24.3			27.2			19.5	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4		6	7	8
Phs Duration (G+Y+Rc), s	9.5	34.5		38.8		44.0	8.5	30.2
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	28.5		41.5		39.5	6.5	30.5
Max Q Clear Time (g_c+I1), s	3.4	19.2		6.7		18.1	4.2	5.9
Green Ext Time (p_c), s	0.0	2.0		0.8		3.4	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	22.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	624	71	482	588	54	378
Future Volume (veh/h)	624	71	482	588	54	378
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	678	77	524	639	59	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	880	393	1107	3007	76	
Arrive On Green	0.25	0.25	0.55	0.85	0.04	0.00
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	678	77	524	639	59	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	16.0	3.5	7.6	3.0	3.0	0.0
Cycle Q Clear(g_c), s	16.0	3.5	7.6	3.0	3.0	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	880	393	1107	3007	76	
V/C Ratio(X)	0.77	0.20	0.47	0.21	0.77	
Avail Cap(c_a), veh/h	1481	660	1107	3007	208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.94	0.00
Uniform Delay (d), s/veh	31.5	26.8	5.6	1.3	42.6	0.0
Incr Delay (d2), s/veh	1.5	0.2	0.3	0.0	14.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	1.3	1.8	0.1	1.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.9	27.0	5.9	1.3	56.9	0.0
LnGrp LOS	C	C	A	A	E	
Approach Vol, veh/h	755			1163	59	A
Approach Delay, s/veh	32.3			3.4	56.9	
Approach LOS	C			A	E	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	13.8	27.8				81.6	8.4
Change Period (Y+Rc), s	4.5	5.5				5.5	4.5
Max Green Setting (Gmax), s	27.5	37.5				69.5	10.5
Max Q Clear Time (g_c+I1), s	9.6	18.0				5.0	5.0
Green Ext Time (p_c), s	1.5	4.3				4.5	0.0

Intersection Summary		
HCM 6th Ctrl Delay		16.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

APPENDIX C

TRIP GENERATION SOURCES

Graph Look Up

Query Filter

DATA SOURCE:
Trip Gen Manual, 10th Ed
New data edition is available. Click here to upgrade.

SEARCH BY LAND USE CODE:
416

LAND USE GROUP:
(400-499) Recreational

LAND USE :
416 - Campground/Recreational Vehicle Park

LAND USE SUBCATEGORY:
All Sites

INDEPENDENT VARIABLE (IV):
Occupied Campsites

TIME PERIOD:
Weekday, PM Peak Hour of Generator

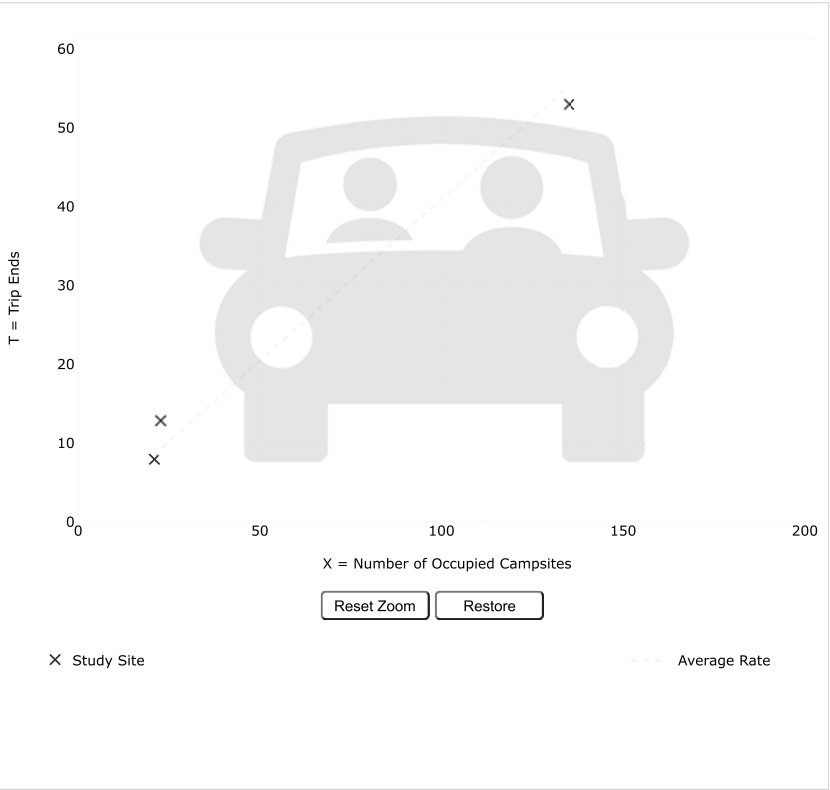
SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
Calculate

Data Plot and Equation

Caution – Small Sample Size



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Campground/Recreational Vehicle Park (416) Click for more details

Independent Variable:
Occupied Campsites

Time Period:
Weekday
PM Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
3

Avg. Num. of Occupied Campsites:
60

Average Rate:
0.41

Range of Rates:
0.38 - 0.57

Standard Deviation:
0.07

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
62% entering, 38% exiting

VERSION: 5.0 (UPDATES) | DATA: TRIP GEN MANUAL, 10TH EDITION + SUPPLEMENT | TERMS AND CONDITIONS | PRIVACY | ITE MARKETPLACE © COPYRIGHT 2020 | DEVELOPED IN COLLABORATION WITH TRANSOFT SOLUTIONS INC.

(NOT SO)

BRIEF GUIDE OF VEHICULAR TRAFFIC GENERATION RATES FOR THE SAN DIEGO REGION

APRIL 2002

SANDAG
401 B Street, Suite 800
San Diego, California 92101
(619) 699-1900 • Fax (619) 699-1950

NOTE: This listing only represents a ***guide*** of average, or estimated, traffic generation "driveway" rates and some very general trip data for land uses (emphasis on acreage and building square footage) in the San Diego region. These rates (both local and national) are subject to change as future documentation becomes available, or as regional sources are updated. For more specific information regarding traffic data and trip rates, please refer to the San Diego Traffic Generators manual. ***Always check with local jurisdictions for their preferred or applicable rates.***

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio) Between 6:00-9:30 A.M.	Between 3:00-6:30 P.M.	TRIP LENGTH (Miles)[L]
AGRICULTURE (Open Space)	[80:18:2]	2/acre**			10.8
AIRPORT	[78:20:2]				12.5
Commercial		60/acre, 100/flight, 70/1000 sq. ft.* **	5% (6:4)	6% (5:5)	
General Aviation		6/acre, 2/flight, 6/based aircraft* **	9% (7:3)	15% (5:5)	
Heliports		100/acre**			
AUTOMOBILE[S]					
Car Wash					
Automatic		900/site, 600/acre**	4% (5:5)	9% (5:5)	
Self-serve		100/wash stall**	4% (5:5)	8% (5:5)	
Gasoline	[21:51:28]				2.8
with/Food Mart		160/vehicle fueling space**	7% (5:5)	8% (5:5)	
with/Food Mart & Car Wash		155/vehicle fueling space**	8% (5:5)	9% (5:5)	
Older Service Station Design		150/vehicle fueling space, 900/station**	7% (5:5)	9% (5:5)	
Sales (Dealer & Repair)		50/1000 sq. ft., 300/acre, 60/service stall* **	5% (7:3)	8% (4:6)	
Auto Repair Center		20/1000 sq. ft., 400/acre, 20/service stall*	8% (7:3)	11% (4:6)	
Auto Parts Sales		60/1000 sq. ft. **	4%	10%	
Quick Lube		40/service stall**	7% (6:4)	10% (5:5)	
Tire Store		25/1000 sq. ft., 30/service stall**	7% (6:4)	11% (5:5)	
CEMETERY		5/acre*			
CHURCH (or Synagogue)	[64:25:11]	9/1000 sq. ft., 30/acre** (quadruple rates for Sunday, or days of assembly)	5% (6:4)	8% (5:5)	5.1
COMMERCIAL/RETAIL[S]					
Super Regional Shopping Center (More than 80 acres, more than 800,000 sq. ft., w/usually 3+ major stores)		35/1000 sq. ft.,[C] 400/acre*	4% (7:3)	10% (5:5)	
Regional Shopping Center (40-80acres, 400,000-800,000 sq. ft., w/usually 2+ major stores)	[54:35:11]	50/1000 sq. ft.,[C] 500/acre*	4% (7:3)	9% (5:5)	5.2
Community Shopping Center (15-40 acres, 125,000-400,000 sq. ft., w/usually 1 major store, detached restaurant(s), grocery and drugstore)	[47:31:22]	80/1000 sq. ft., 700/acre* **	4% (6:4)	10% (5:5)	3.6
Neighborhood Shopping Center (Less than 15 acres, less than 125,000 sq. ft., w/usually grocery & drugstore, cleaners, beauty & barber shop, & fast food services)		120/1000 sq. ft., 1200/acre* **	4% (6:4)	10% (5:5)	
Commercial Shops	[45:40:15]				
Specialty Retail/Strip Commercial		40/1000 sq. ft., 400/acre*	3% (6:4)	9% (5:5)	4.3
Electronics Superstore		50/1000 sq. ft**		10% (5:5)	
Factory Outlet		40/1000 sq. ft.**	3% (7:3)	9% (5:5)	
Supermarket		150/1000 sq. ft., 2000/acre* **	4% (7:3)	10% (5:5)	
Drugstore		90/1000 sq. ft.**	4% (6:4)	10% (5:5)	
Convenience Market (15-16 hours)		500/1000 sq. ft.**	8% (5:5)	8% (5:5)	
Convenience Market (24 hours)		700/1000 sq. ft.**	9% (5:5)	7% (5:5)	
Convenience Market (w/gasoline pumps)		850/1000 sq. ft., 550/vehicle fueling space**	6% (5:5)	7% (5:5)	
Discount Club		60/1000 sq. ft., 600/acre* **	1% (7:3)	9% (5:5)	
Discount Store		60/1000 sq. ft., 600/acre**	3% (6:4)	8% (5:5)	
Furniture Store		6/1000 sq. ft., 100/acre**	4% (7:3)	9% (5:5)	
Lumber Store		30/1000 sq. ft., 150/acre**	7% (6:4)	9% (5:5)	
Home Improvement Superstore		40/1000 sq. ft.**	5% (6:4)	8% (5:5)	
Hardware/Paint Store		60/1000 sq. ft., 600/acre**	2% (6:4)	9% (5:5)	
Garden Nursery		40/1000 sq. ft., 90/acre**	3% (6:4)	10% (5:5)	
Mixed Use: Commercial (w/supermarket)/Residential		{110/1000 sq. ft., 2000/acre* (commercial only) 5/dwelling unit, 200/acre* (residential only)	3% (6:4) 9% (3:7)	9% (5:5) 13% (6:4)	
EDUCATION					
University (4 years)	[91:9:0]	2.4/student, 100 acre*	10% (8:2)	9% (3:7)	8.9
Junior College (2 years)	[92:7:1]	1.2/student, 24/1000 sq. ft., 120/acre* **	12% (8:2)	9% (6:4)	9.0
High School	[75:19:6]	1.3/student, 15/1000 sq. ft., 60/acre* **	20% (7:3)	10% (4:6)	4.8
Middle/Junior High	[63:25:12]	1.4/student, 12/1000 sq. ft. 50/acre**	30% (6:4)	9% (4:6)	5.0
Elementary	[57:25:10]	1.6/student, 14/1000 sq. ft., 90/acre* **	32% (6:4)	9% (4:6)	3.4
Day Care	[28:58:14]	5/child, 80/1000 sq. ft.**	17% (5:5)	18% (5:5)	3.7
FINANCIAL[S]	[35:42:23]				3.4
Bank (Walk-In only)		150/1000 sq. ft., 1000/acre* **	4% (7:3)	8% (4:6)	
with Drive-Through		200/1000 sq. ft., 1500/acre*	5% (6:4)	10% (5:5)	
Drive-Through only		250 (125 one-way)/lane*	3% (5:5)	13% (5:5)	
Savings & Loan		60/1000 sq. ft., 600/acre**	2%	9%	
Drive-Through only		100 (50 one-way)/lane**	4%	15%	
HOSPITAL	[73:25:2]				8.3
General		20/bed, 25/1000 sq. ft., 250/acre*	8% (7:3)	10% (4:6)	
Convalescent/Nursing		3/bed**	7% (6:4)	7% (4:6)	
INDUSTRIAL					
Industrial/Business Park (commercial included)	[79:19:2]	16/1000 sq. ft., 200/acre* **	12% (8:2)	12% (2:8)	9.0
Industrial Park (no commercial)		8/1000 sq. ft., 90/acre**	11% (9:1)	12% (2:8)	
Industrial Plant (multiple shifts)	[92:5:3]	10/1000 sq. ft., 120/acre*	14% (8:2)	15% (3:7)	11.7
Manufacturing/Assembly		4/1000 sq. ft., 50/acre**	19% (9:1)	20% (2:8)	
Warehousing		5/1000 sq. ft., 60/acre**	13% (7:3)	15% (4:6)	
Storage		2/1000 sq. ft., 0.2/vault, 30/acre*	6% (5:5)	9% (5:5)	
Science Research & Development		8/1000 sq. ft., 80/acre*	16% (9:1)	14% (1:9)	
Landfill & Recycling Center		6/acre	11% (5:5)	10% (4:6)	

(OVER)

MEMBER AGENCIES: Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista and County of San Diego.
ADVISORY/LIAISON MEMBERS: California Department of Transportation, County Water Authority, U.S. Department of Defense, S.D. Unified Port District and Tijuana/Baja California.

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio) Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		TRIP LENGTH (Miles)[L]
LIBRARY	[44:44:12]	50/1000 sq. ft., 400/acre**	2%	(7:3)	10%	(5:5)	3.9
LODGING	[58:38:4]						7.6
Hotel (w/convention facilities/restaurant)		10/occupied room, 300/acre	6%	(6:4)	8%	(6:4)	
Motel		9/occupied room, 200/acre*	8%	(4:6)	9%	(6:4)	
Resort Hotel		8/occupied room, 100/acre*	5%	(6:4)	7%	(4:6)	
Business Hotel		7/occupied room**	8%	(4:6)	9%	(6:4)	
MILITARY	[82:16:2]	2.5/military & civilian personnel*	9%	(9:1)	10%	(2:8)	11.2
OFFICE							
Standard Commercial Office (less than 100,000 sq. ft.)	[77:19:4]	20/1000 sq. ft.,[O] 300/acre*	14%	(9:1)	13%	(2:8)	8.8
Large (High-Rise) Commercial Office (more than 100,000 sq. ft., 6+ stories)	[82:15:3]	17/1000 sq. ft.,[O] 600/acre*	13%	(9:1)	14%	(2:8)	10.0
Office Park (400,000+ sq. ft.)		12/1000 sq.ft., 200/acre* **	13%	(9:1)	13%	(2:8)	
Single Tenant Office		14/1000 sq. ft., 180/acre*	15%	(9:1)	15%	(2:8)	8.8
Corporate Headquarters		7/1000 sq. ft., 110/acre*	17%	(9:1)	16%	(1:9)	
Government (Civic Center)	[50:34:16]	30/1000 sq. ft.**	9%	(9:1)	12%	(3:7)	6.0
Post Office							
Central/Walk-In Only		90/1000 sq. ft.**	5%		7%		
Community (not including mail drop lane)		200/1000 sq. ft., 1300/acre*	6%	(6:4)	9%	(5:5)	
Community (w/mail drop lane)		300/1000 sq. ft., 2000/acre*	7%	(5:5)	10%	(5:5)	
Mail Drop Lane only		1500 (750 one-way)/lane*	7%	(5:5)	12%	(5:5)	
Department of Motor Vehicles		180/1000 sq. ft., 900/acre**	6%	(6:4)	10%	(4:6)	
Medical-Dental	[60:30:10]	50/1000 sq. ft., 500/acre*	6%	(8:2)	11%	(3:7)	6.4
PARKS	[66:28:6]		4%		8%		5.4
City (developed w/meeting rooms and sports facilities)		50/acre*	13%	(5:5)	9%	(5:5)	
Regional (developed)		20/acre*					
Neighborhood/County (undeveloped)		5/acre (add for specific sport uses), 6/picnic site* **					
State (average 1000 acres)		1/acre, 10/picnic site**					
Amusement (Theme)		80/acre, 130/acre (summer only)**			6%	(6:4)	
San Diego Zoo		115/acre*					
Sea World		80/acre*					
RECREATION							
Beach, Ocean or Bay	[52:39:9]	600/1000 ft. shoreline, 60/acre*					6.3
Beach, Lake (fresh water)		50/1000 ft. shoreline, 5/acre*					
Bowling Center		30/1000 sq. ft., 300/acre, 30/lane **	7%	(7:3)	11%	(4:6)	
Campground		4/campsite**	4%		8%		
Golf Course		7/acre, 40/hole, 700/course* **	7%	(8:2)	9%	(3:7)	
Driving Range only		70/acre, 14/tee box*	3%	(7:3)	9%	(5:5)	
Marinas		4/berth, 20/acre* **	3%	(3:7)	7%	(6:4)	
Multi-purpose (miniature golf, video arcade, batting cage, etc.)		90/acre	2%		6%		
Racquetball/Health Club		30/1000 sq. ft., 300/acre, 40/court*	4%	(6:4)	9%	(6:4)	
Tennis Courts		16/acre, 30/court**	5%		11%	(5:5)	
Sports Facilities							
Outdoor Stadium		50/acre, 0.2/seat*					
Indoor Arena		30/acre, 0.1/seat*					
Racetrack		40/acre, 0.6 seat*					
Theaters (multiplex w/matinee)	[66:17:17]	80/1000 sq. ft., 1.8/seat, 360/screen*	1/3%		8%	(6:4)	6.1
RESIDENTIAL	[86:11:3]						7.9
Estate, Urban or Rural (average 1-2 DU/acre)		12/dwelling unit*[R]	8%	(3:7)	10%	(7:3)	
Single Family Detached (average 3-6 DU/acre)		10/dwelling unit*[R]	8%	(3:7)	10%	(7:3)	
Condominium (or any multi-family 6-20 DU/acre)		8/dwelling unit*[R]	8%	(2:8)	10%	(7:3)	
Apartment (or any multi-family units more than 20 DU/acre)		6/dwelling unit*[R]	8%	(2:8)	9%	(7:3)	
Military Housing (off-base, multi-family)							
(less than 6 DU/acre)		8/dwelling unit	7%	(3:7)	9%	(6:4)	
(6-20 DU/acre)		6/dwelling unit	7%	(3:7)	9%	(6:4)	
Mobile Home							
Family		5/dwelling unit, 40/acre*	8%	(3:7)	11%	(6:4)	
Adults Only		3/dwelling unit, 20/acre*	9%	(3:7)	10%	(6:4)	
Retirement Community		4/dwelling unit**	5%	(4:6)	7%	(6:4)	
Congregate Care Facility		2.5/dwelling unit**	4%	(6:4)	8%	(5:5)	
RESTAURANT[S]	[51:37:12]						4.7
Quality		100/1000 sq. ft., 3/seat, 500/acre* **	1%	(6:4)	8%	(7:3)	
Sit-down, high turnover		160/1000 sq. ft., 6/seat, 1000/acre* **	8%	(5:5)	8%	(6:4)	
Fast Food (w/drive-through)		650/1000 sq. ft., 20/seat, 3000/acre* **	7%	(5:5)	7%	(5:5)	
Fast Food (without drive-through)		700/1000 sq. ft.**	5%	(6:4)	7%	(5:5)	
Delicatessen (7am-4pm)		150/1000 sq. ft., 11/seat*	9%	(6:4)	3%	(3:7)	
TRANSPORTATION							
Bus Depot		25/1000 sq. ft.**					
Truck Terminal		10/1000 sq. ft., 7/bay, 80/acre**	9%	(4:6)	8%	(5:5)	
Waterport/Marine Terminal		170/berth, 12/acre**					
Transit Station (Light Rail w/parking)		300/acre, $2^{1/2}$/parking space (4/occupied)**	14%	(7:3)	15%	(3:7)	
Park & Ride Lots		400/acre (600/paved acre), 5/parking space (8/occupied)* **	14%	(7:3)	15%	(3:7)	

* Primary source: *San Diego Traffic Generators.*

** Other sources: *ITE Trip Generation Report [6th Edition]*, Trip Generation Rates (other agencies and publications), various SANDAG & CALTRANS studies, reports and estimates.

[P] Trip category percentage ratios are daily from local household surveys, often cannot be applied to very specific land uses, and do not include non-resident drivers (draft SANDAG *Analysis of Trip Diversion*, revised November, 1990):
PRIMARY - one trip directly between origin and primary destination.
DIVERTED - linked trip (having one or more stops along the way to a primary destination) whose distance compared to direct distance ≥ 1 mile.
PASS-BY - undiverted or diverted < 1 mile.

[L] Trip lengths are average weighted for all trips to and from general land use site. (All trips system-wide average length = 6.9 miles)

[C] Fitted curve equation: $Ln(T) = 0.502\ Ln(x) + 6.945$

[O] Fitted curve equation: $Ln(T) = 0.756\ Ln(x) + 3.950$

T = total trips, x = 1,000 sq. ft.

[R] Fitted curve equation: $t = -2.169\ Ln(d) + 12.85$ t = trips/DU, d = density (DU/acre), DU = dwelling unit

[S] Suggested PASS-BY [undiverted or diverted < 1 mile] percentages for trip rate reductions only during P.M. peak period (based on combination of local data/review and Other sources**):

COMMERCIAL/RETAIL	
Regional Shopping Center	20%
Community " "	30%
Neighborhood " "	40%
Specialty Retail/Strip Commercial (other)	10%
Supermarket	40%
Convenience Market	50%
Discount Club/Store	30%
FINANCIAL	
Bank	25%
AUTOMOBILE	
Gasoline Station	50%
RESTAURANT	
Quality	10%
Sit-down high turnover	20%
Fast Food	40%

[T] Trip Reductions - In order to help promote regional "smart growth" policies, and acknowledge San Diego's expanding mass transit system, consider vehicle trip rate reductions (with proper documentation and necessary adjustments for peak periods). The following are some examples:

[1] A 5% daily trip reduction for land uses with transit access or near transit stations accessible within 1/4 mile.

[2] Up to 10% daily trip reduction for mixed-use developments where residential and commercial retail are combined (demonstrate mode split of walking trips to replace vehicular trips).

CFS ENGINEERS
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GUN RANGE DEVELOPMENT
Proposed Building Development and Parking
2350 Franklin Road
Lawrence, Kansas 66046
CFS Project No. 165294

7 Step Traffic Impact Analysis

December 30, 2016

Prepared for:
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access points will not require a left-turn or right-turn auxiliary lane due to the low volume of generated traffic. There are no sight obstructions or sight distance issues at the driveway intersections. A shared parking lot connection to the businesses to the south is not feasible due to the 6 ft high retaining wall between the properties.

STEP 7: Estimate of Trips Generated by Existing and Proposed Development

The existing site has a 409 sq ft building and is vacant, therefore the existing traffic is negligible. For evaluating traffic impacts from new land developments, transportation engineers typically utilize the Trip Generation Manual (9th Edition) published by the Institute of Transportation Engineers (ITE). The 9th Edition is the most current manual and covers a diverse assortment of commercial, residential, industrial and specialty types of land developments. Since ITE data for a shooting range is unavailable, a substitute ITE category and ITE code was used. It was assumed that the 432 (Golf Driving Range) would be a good comparison since there are similar lanes in which a person performs a solo activity. The Gun Range development will provide 10 shooting lanes. Also, the 4,000 sq ft retail area within the building was categorized as ITE Code 826 (Specialty Retail Center). The 10 lanes and 4 thousand sq ft (ksf) of retail was then multiplied by their ITE Average Trip Generation Rates to determine the increased traffic volumes. Volumes were calculated as follows for the daily total and the AM and PM Peak Hours on a typical weekday:

ITE Trip Generation Manual (9th Edition) Generation Rates and Directional Distributions

		Average Trip Generation Rate	Total Traffic	Traffic Entering	Traffic Exiting
ITE Land Use 432 (Golf Driving Range)	**Weekday Total**	13.65 vpd/unit	137		
	AM Peak Hour	0.40 vpd/unit	4	2	2
	PM Peak Hour	1.25 vpd/unit	13	6	7
ITE Land Use 826 (Specialty Retail Center)	**Weekday Total**	44.32 vpd/unit	177		
	AM Peak Hour	6.84 vpd/unit	27	13	14
	PM Peak Hour	2.71 vpd/unit	11	5	6

These volumes are very low and will not significantly change the traffic patterns of the local street network. By-pass traffic will not be generated by these land use categories.

Summary

Analysis of the projected volumes of traffic to be generated by this proposed development are as follows: the AM peak hour yields approximately 31 vehicles per hour (vph) while the PM peak hour yields approximately 24 vph. As the maximum volume is less than 100 vph, this 7 Step Analysis satisfies the City of Lawrence's Development Code and a more detailed Traffic Impact Study will not be required to be performed. The analysis of the proposed development does not indicate that there would be any appreciable change in traffic volumes as a result of this project.

Appendix I - Exhibit Map

On weekends, the facility will continue to accommodate the routine functions but may also have events with a varied attendance. For purposes of this study, an attendance of up to 250 people was considered. These events may include weddings or other celebratory gatherings. The Friday afternoon peak hour of generator is believed to have the facilities highest trip generation during the arrival of a 250-person event. During this timeframe, the facility may generate a total of 361 peak hour trips. On a Saturday, the facility may generate a total of 1,928 daily trips, with 357 of these occurring during the afternoon peak hour of generator. **Table 2** summarizes the estimated trip generation for the proposed development.

Table 2 – Lake Gulch Whiskey Resort Weekend Project Traffic Generation

Land Use	Size	Vehicles Trips						
		Sat. Daily	Friday Peak Hour of Generator			Friday Peak Hour of Generator		
			In	Out	Total	In	Out	Total
Weekend Operations with 250-person Event								
Manufacturing (ITE 140) – Distillery Operations	18 Employees	24	5	7	12	2	2	4
Hotel (ITE 310) – Lodge & Cabins	60 Rooms	492	18	18	36	25	19	44
Sit-Down Restaurant (ITE 932)	4,800 Square Feet	652	52	50	102	28	26	54
Trucks (Client Information)	5 Trucks	10	2	2	4	0	0	0
Distillery Tours (Client Information)	60 Patrons	400	60	60	120	60	60	120
Weekend Events	250 People	350	130	5	135	130	5	135
Weekend Operations Summation		**1,928**	**244**	**117**	**361**	**245**	**112**	**357**

In addition to these typical weekday and weekend operations with standard events, approximately 10 to 15 large events may occur at the facility each year. There is a planned amphitheater which may accommodate 1,000 to 2,000 people. When these events occur, it is believed that arrangements will be made with the hotel/casinos in Black Hawk to partner with their facility for lodging, parking, and shuttle service to and from the event. As these special events aren't expected during typical weekday or weekend operations, they were not specifically evaluated within this traffic study. These events are anticipated to occur on Friday nights and on weekends.

APPENDIX D

QUEUING ANALYSIS WORKSHEETS

EXISTING (2020) CONDITIONS

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	32	55
Average Queue (ft)	11	10	24
95th Queue (ft)	35	34	47
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	58	21	13	43	16	17	116	20	27	92	59
Future Volume (vph)	38	58	21	13	43	16	17	116	20	27	92	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	86	0	14	64	0	0	144	22	29	100	64
v/c Ratio	0.19	0.25		0.13	0.37			0.11	0.02	0.04	0.07	0.05
Control Delay	29.9	23.4		39.1	35.8			8.1	0.1	3.6	3.8	0.9
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.4	0.4
Total Delay	29.9	23.4		39.1	35.8			8.1	0.1	3.6	4.2	1.2
Queue Length 50th (ft)	19	30		8	26			24	0	4	16	2
Queue Length 95th (ft)	44	66		25	62			71	0	8	27	6
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	217	812		407	605			1258	950	805	1388	1344
Starvation Cap Reductn	0	0		0	0			0	0	0	969	1010
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.19	0.11		0.03	0.11			0.11	0.02	0.04	0.24	0.19

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	400	30	149	376	22	146
Future Volume (vph)	400	30	149	376	22	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	435	33	162	409	24	159
v/c Ratio	0.65	0.10	0.12	0.13	0.18	0.10
Control Delay	38.3	10.6	1.7	1.2	38.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	10.6	1.7	1.2	38.8	0.1
Queue Length 50th (ft)	122	0	0	0	12	0
Queue Length 95th (ft)	160	23	25	30	34	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	678	1320	3256	285	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.05	0.12	0.13	0.08	0.10

Intersection Summary	
Area Type:	Other

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	31	53
Average Queue (ft)	10	11	28
95th Queue (ft)	34	36	48
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	82	30	19	61	22	23	166	29	38	131	85
Future Volume (vph)	55	82	30	19	61	22	23	166	29	38	131	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	60	122	0	21	90	0	0	205	32	41	142	92
v/c Ratio	0.26	0.33		0.18	0.46			0.18	0.04	0.06	0.11	0.07
Control Delay	30.0	24.2		39.1	36.3			10.1	0.1	4.0	4.1	0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.5	0.5
Total Delay	30.0	24.2		39.1	36.3			10.1	0.1	4.0	4.7	0.8
Queue Length 50th (ft)	28	44		11	37			54	0	3	18	0
Queue Length 95th (ft)	57	87		32	80			104	0	10	24	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	233	814		396	608			1123	868	743	1306	1320
Starvation Cap Reductn	0	0		0	0			0	0	0	871	952
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.26	0.15		0.05	0.15			0.18	0.04	0.06	0.33	0.25

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	571	42	213	538	32	208
Future Volume (vph)	571	42	213	538	32	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	621	46	232	585	35	226
v/c Ratio	0.70	0.11	0.21	0.19	0.24	0.14
Control Delay	34.7	7.7	2.0	1.8	40.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	7.7	2.0	1.8	40.4	0.2
Queue Length 50th (ft)	170	0	19	28	17	0
Queue Length 95th (ft)	205	24	38	47	45	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	686	1095	3107	206	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.07	0.21	0.19	0.17	0.14

Intersection Summary	
Area Type:	Other

OPENING YEAR (2022) WITHOUT PROJECT

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	31	31
Average Queue (ft)	6	17	12
95th Queue (ft)	26	40	35
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	60	22	14	44	17	18	119	21	28	94	61
Future Volume (vph)	39	60	22	14	44	17	18	119	21	28	94	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	89	0	15	66	0	0	149	23	30	102	66
v/c Ratio	0.20	0.26		0.14	0.38			0.12	0.02	0.04	0.07	0.05
Control Delay	29.9	23.3		39.3	35.6			9.0	0.0	3.6	3.8	0.9
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.4	0.4
Total Delay	29.9	23.3		39.3	35.6			9.0	0.0	3.6	4.2	1.2
Queue Length 50th (ft)	19	31		8	26			36	0	5	16	2
Queue Length 95th (ft)	44	67		26	64			73	0	8	27	6
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	217	813		405	605			1209	921	801	1387	1344
Starvation Cap Reductn	0	0		0	0			0	0	0	965	1006
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.19	0.11		0.04	0.11			0.12	0.02	0.04	0.24	0.20

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	408	31	152	383	23	149
Future Volume (vph)	408	31	152	383	23	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	443	34	165	416	25	162
v/c Ratio	0.66	0.10	0.13	0.13	0.19	0.10
Control Delay	38.2	10.3	1.7	1.2	38.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	10.3	1.7	1.2	38.0	0.1
Queue Length 50th (ft)	124	0	0	0	12	0
Queue Length 95th (ft)	162	23	26	31	35	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	679	1314	3254	285	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.05	0.13	0.13	0.09	0.10

Intersection Summary	
Area Type:	Other

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	31	31
Average Queue (ft)	18	6	24
95th Queue (ft)	43	27	44
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	84	31	20	62	23	24	169	30	39	133	87
Future Volume (vph)	56	84	31	20	62	23	24	169	30	39	133	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	125	0	22	92	0	0	210	33	42	145	95
v/c Ratio	0.27	0.34		0.19	0.46			0.19	0.04	0.06	0.11	0.07
Control Delay	29.9	24.4		39.2	36.1			10.2	0.1	4.1	4.2	0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.5	0.5
Total Delay	29.9	24.4		39.2	36.1			10.2	0.1	4.1	4.7	0.8
Queue Length 50th (ft)	28	46		12	37			56	0	3	17	0
Queue Length 95th (ft)	58	89		33	81			107	0	10	25	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	234	814		395	608			1120	866	739	1305	1319
Starvation Cap Reductn	0	0		0	0			0	0	0	865	946
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.26	0.15		0.06	0.15			0.19	0.04	0.06	0.33	0.25

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	579	43	216	545	33	211
Future Volume (vph)	579	43	216	545	33	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	629	47	235	592	36	229
v/c Ratio	0.70	0.11	0.22	0.19	0.25	0.14
Control Delay	34.7	7.6	2.0	1.8	40.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	7.6	2.0	1.8	40.4	0.2
Queue Length 50th (ft)	172	0	19	28	18	0
Queue Length 95th (ft)	207	23	39	48	45	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	687	1090	3106	206	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.07	0.22	0.19	0.17	0.14

Intersection Summary	
Area Type:	Other

OPENING YEAR (2022) WITH PROJECT

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	31	49
Average Queue (ft)	22	18	27
95th Queue (ft)	42	43	53
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	60	22	14	44	17	18	144	21	28	118	61
Future Volume (vph)	39	60	22	14	44	17	18	144	21	28	118	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	89	0	15	66	0	0	177	23	30	128	66
v/c Ratio	0.20	0.26		0.14	0.38			0.15	0.02	0.04	0.09	0.05
Control Delay	29.9	23.3		39.3	35.6			9.1	0.0	3.5	3.7	0.7
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.4	0.4
Total Delay	29.9	23.3		39.3	35.6			9.1	0.0	3.5	4.1	1.1
Queue Length 50th (ft)	19	31		8	26			44	0	5	21	2
Queue Length 95th (ft)	44	67		26	64			86	0	6	30	2
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	217	813		405	605			1213	921	789	1387	1344
Starvation Cap Reductn	0	0		0	0			0	0	0	930	1004
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.19	0.11		0.04	0.11			0.15	0.02	0.04	0.28	0.19

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	408	35	172	383	27	170
Future Volume (vph)	408	35	172	383	27	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	443	38	187	416	29	185
v/c Ratio	0.66	0.11	0.14	0.13	0.21	0.12
Control Delay	38.2	10.0	1.9	1.2	38.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	10.0	1.9	1.2	38.7	0.2
Queue Length 50th (ft)	124	0	0	0	15	0
Queue Length 95th (ft)	162	24	30	32	40	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	681	1311	3249	285	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.06	0.14	0.13	0.10	0.12

Intersection Summary	
Area Type:	Other

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	31	54	31
Average Queue (ft)	24	29	29
95th Queue (ft)	45	58	32
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	84	31	20	62	23	24	199	30	39	166	87
Future Volume (vph)	56	84	31	20	62	23	24	199	30	39	166	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	125	0	22	92	0	0	242	33	42	180	95
v/c Ratio	0.27	0.34		0.19	0.46			0.22	0.04	0.06	0.14	0.07
Control Delay	29.9	24.4		39.2	36.1			10.4	0.1	3.9	4.1	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.6	0.4
Total Delay	29.9	24.4		39.2	36.1			10.4	0.1	3.9	4.7	0.8
Queue Length 50th (ft)	28	46		12	37			66	0	3	21	0
Queue Length 95th (ft)	58	89		33	81			123	0	9	28	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	234	814		395	608			1121	866	716	1305	1319
Starvation Cap Reductn	0	0		0	0			0	0	0	815	943
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.26	0.15		0.06	0.15			0.22	0.04	0.06	0.37	0.25

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	579	49	244	545	38	236
Future Volume (vph)	579	49	244	545	38	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	629	53	265	592	41	257
v/c Ratio	0.70	0.12	0.24	0.19	0.28	0.16
Control Delay	34.7	7.3	2.5	1.8	40.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	7.3	2.5	1.8	40.8	0.2
Queue Length 50th (ft)	172	0	23	30	21	0
Queue Length 95th (ft)	207	25	52	49	52	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	690	1086	3098	206	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.08	0.24	0.19	0.20	0.16

Intersection Summary	
Area Type:	Other

BUILDOUT YEAR (2025) WITHOUT PROJECT

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	56	80	54
Average Queue (ft)	36	64	35
95th Queue (ft)	52	95	51
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	63	23	14	47	17	19	221	22	30	296	65
Future Volume (vph)	42	63	23	14	47	17	19	221	22	30	296	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	93	0	15	69	0	0	261	24	33	322	71
v/c Ratio	0.21	0.27		0.14	0.39			0.22	0.03	0.04	0.23	0.05
Control Delay	30.0	23.2		39.0	35.9			9.6	0.0	2.9	3.4	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.4	0.3
Total Delay	30.0	23.2		39.0	35.9			9.6	0.0	2.9	3.8	0.7
Queue Length 50th (ft)	21	32		8	28			69	0	2	22	0
Queue Length 95th (ft)	48	70		26	66			126	0	5	54	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	219	813		405	607			1204	919	739	1384	1342
Starvation Cap Reductn	0	0		0	0			0	0	0	622	980
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.21	0.11		0.04	0.11			0.22	0.03	0.04	0.42	0.20

Intersection Summary	
Area Type:	Other

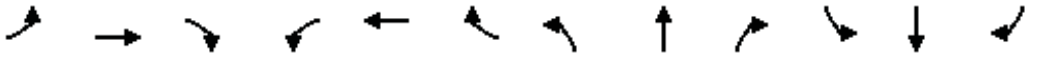


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	437	45	346	411	30	248
Future Volume (vph)	437	45	346	411	30	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	475	49	376	447	33	270
v/c Ratio	0.67	0.14	0.30	0.14	0.23	0.17
Control Delay	37.6	9.0	4.4	1.7	39.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.6	9.0	4.4	1.7	39.0	0.2
Queue Length 50th (ft)	133	0	34	21	18	1
Queue Length 95th (ft)	168	27	64	35	46	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	688	1241	3110	285	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.07	0.30	0.14	0.12	0.17

Intersection Summary	
Area Type:	Other

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	68	99	54
Average Queue (ft)	43	68	40
95th Queue (ft)	69	105	59
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	90	33	21	67	24	25	271	32	42	339	93
Future Volume (vph)	60	90	33	21	67	24	25	271	32	42	339	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	134	0	23	99	0	0	322	35	46	368	101
v/c Ratio	0.28	0.36		0.19	0.48			0.29	0.04	0.07	0.28	0.08
Control Delay	29.8	25.2		38.8	36.8			11.3	0.1	3.0	4.0	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.5	0.5
Total Delay	29.8	25.2		38.8	36.8			11.3	0.1	3.0	4.6	0.7
Queue Length 50th (ft)	30	50		12	42			93	0	3	28	0
Queue Length 95th (ft)	60	95		34	87			169	0	7	35	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	236	815		392	609			1104	860	657	1296	1313
Starvation Cap Reductn	0	0		0	0			0	0	0	550	929
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.28	0.16		0.06	0.16			0.29	0.04	0.07	0.49	0.26

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	624	58	417	588	41	311
Future Volume (vph)	624	58	417	588	41	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	678	63	453	639	45	338
v/c Ratio	0.72	0.13	0.43	0.21	0.30	0.21
Control Delay	34.2	6.6	7.9	1.9	41.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	6.6	7.9	1.9	41.5	0.3
Queue Length 50th (ft)	184	0	76	33	24	0
Queue Length 95th (ft)	220	26	187	55	60	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	696	1055	3093	206	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	11	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.09	0.43	0.21	0.22	0.21

Intersection Summary	
Area Type:	Other

BUILDOUT YEAR (2025) WITH PROJECT

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	56	146	54
Average Queue (ft)	41	89	49
95th Queue (ft)	59	150	64
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	63	23	14	47	17	19	271	22	30	334	65
Future Volume (vph)	42	63	23	14	47	17	19	271	22	30	334	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	93	0	15	69	0	0	316	24	33	363	71
v/c Ratio	0.21	0.27		0.14	0.39			0.26	0.03	0.05	0.26	0.05
Control Delay	30.0	23.2		39.0	35.9			10.0	0.0	2.8	3.4	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.4	0.3
Total Delay	30.0	23.2		39.0	35.9			10.0	0.0	2.8	3.8	0.6
Queue Length 50th (ft)	21	32		8	28			87	0	2	25	0
Queue Length 95th (ft)	48	70		26	66			154	0	5	57	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	219	813		405	607			1208	919	701	1384	1342
Starvation Cap Reductn	0	0		0	0			0	0	0	560	979
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.21	0.11		0.04	0.11			0.26	0.03	0.05	0.44	0.20

Intersection Summary	
Area Type:	Other



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	437	51	378	411	38	290
Future Volume (vph)	437	51	378	411	38	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	475	55	411	447	41	315
v/c Ratio	0.67	0.15	0.33	0.14	0.28	0.20
Control Delay	37.6	8.8	5.1	1.7	39.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.6	8.8	5.1	1.7	39.8	0.3
Queue Length 50th (ft)	133	0	39	21	22	1
Queue Length 95th (ft)	168	28	74	36	54	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	691	1235	3098	285	1583
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.08	0.33	0.14	0.14	0.20

Intersection Summary	
Area Type:	Other

Intersection: 1: Miners Mesa Road & Bobtail Road

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	55	187	93
Average Queue (ft)	50	114	66
95th Queue (ft)	65	199	101
Link Distance (ft)	336	479	88
Upstream Blk Time (%)			1
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	90	33	21	67	24	25	351	32	42	416	93
Future Volume (vph)	60	90	33	21	67	24	25	351	32	42	416	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	90		0	0		50	0		0
Storage Lanes	1		0	1		0	0		1	1		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		470			652			364			185	
Travel Time (s)		12.8			17.8			9.9			5.0	
Confl. Peds. (#/hr)	67		46	46		67			73	73		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	65	134	0	23	99	0	0	409	35	46	452	101
v/c Ratio	0.28	0.36		0.19	0.48			0.37	0.04	0.08	0.35	0.08
Control Delay	29.8	25.2		38.8	36.8			12.2	0.1	2.6	3.6	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0	0.0	0.6	0.5
Total Delay	29.8	25.2		38.8	36.8			12.2	0.1	2.6	4.3	0.7
Queue Length 50th (ft)	30	50		12	42			126	0	3	26	0
Queue Length 95th (ft)	60	95		34	87			222	0	m6	39	0
Internal Link Dist (ft)		390			572			284			105	
Turn Bay Length (ft)	75			90					50			
Base Capacity (vph)	236	815		392	609			1107	860	598	1296	1313
Starvation Cap Reductn	0	0		0	0			0	0	0	487	942
Spillback Cap Reductn	0	0		0	0			0	0	0	0	0
Storage Cap Reductn	0	0		0	0			0	0	0	0	0
Reduced v/c Ratio	0.28	0.16		0.06	0.16			0.37	0.04	0.08	0.56	0.27

Intersection Summary	
Area Type:	Other

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	624	71	482	588	54	378
Future Volume (vph)	624	71	482	588	54	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		240	375		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			25		25	
Right Turn on Red		Yes				Yes
Link Speed (mph)	45			45	25	
Link Distance (ft)	570			721	185	
Travel Time (s)	8.6			10.9	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	678	77	524	639	59	411
v/c Ratio	0.72	0.16	0.53	0.22	0.36	0.26
Control Delay	33.9	6.2	10.9	2.5	42.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	33.9	6.2	10.9	2.5	42.8	0.4
Queue Length 50th (ft)	182	0	113	35	33	0
Queue Length 95th (ft)	220	29	253	59	74	0
Internal Link Dist (ft)	490			641	105	
Turn Bay Length (ft)		240	375			
Base Capacity (vph)	1474	704	996	2944	210	1583
Starvation Cap Reductn	0	0	0	0	23	0
Spillback Cap Reductn	0	0	13	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.11	0.53	0.22	0.32	0.26

Intersection Summary	
Area Type:	Other

APPENDIX E

SIGNAL WARRANT WORKSHEETS

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Existing 2020	**Total Number of Vehicles Entering:**	56
	Friday PM	**Number of Approaches:**	3
		Intersection total delay (seconds):	6.8
		Minor St approach total delay (veh-hr):	0.1

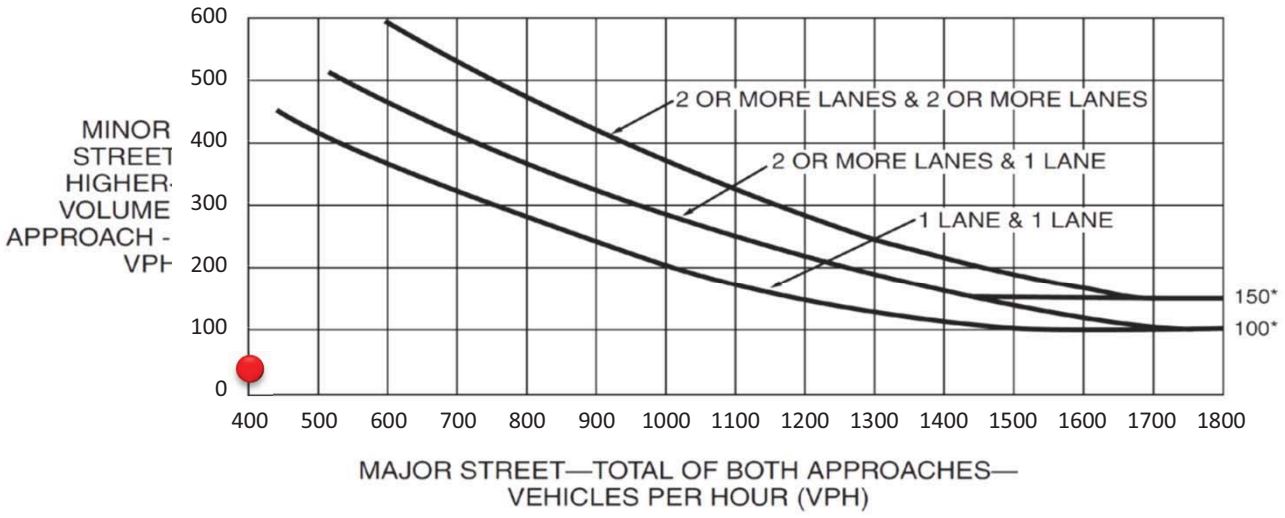
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	NO
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
24	32

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Existing 2020 Saturday PM	**Total Number of Vehicles Entering:**	81
		Number of Approaches:	3
		Intersection total delay (seconds):	6.9
		Minor St approach total delay (veh-hr):	0.1

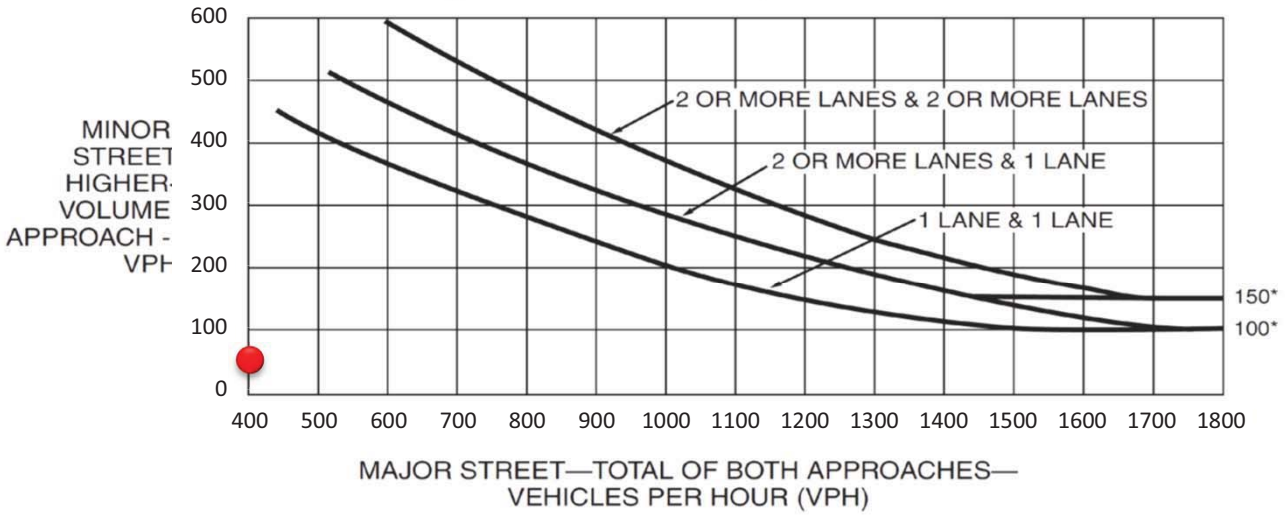
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	NO
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
35	46

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Opening Year 2022	**Total Number of Vehicles Entering:**	61
	Friday PM	**Number of Approaches:**	3
		Intersection total delay (seconds):	6.8
		Minor St approach total delay (veh-hr):	0.1

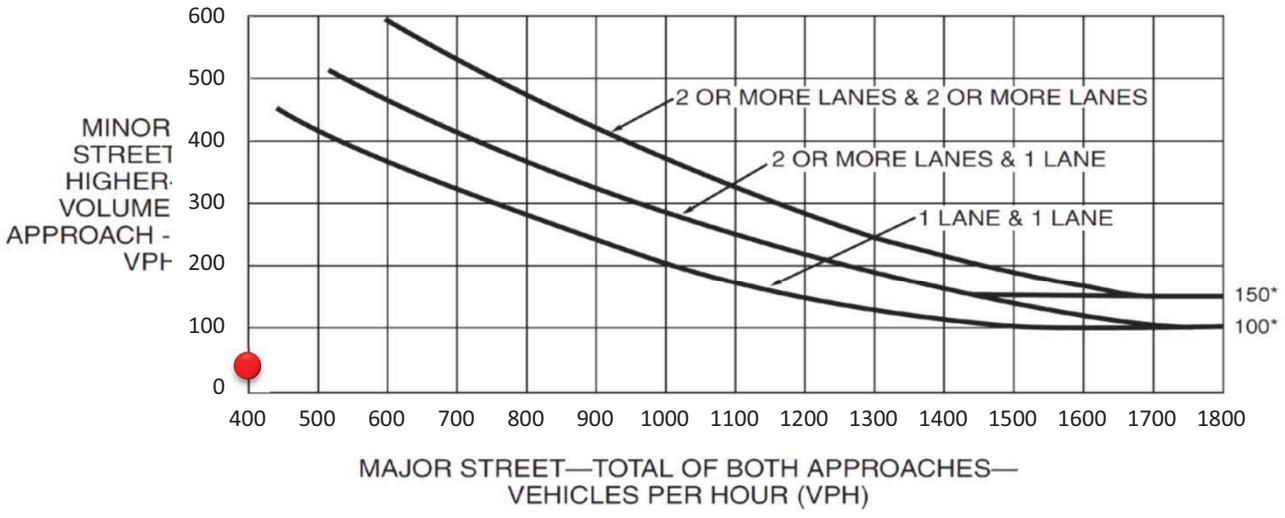
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	NO
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
27	34

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Opening Year 2022 Saturday PM	**Total Number of Vehicles Entering:**	86
		Number of Approaches:	3
		Intersection total delay (seconds):	6.9
		Minor St approach total delay (veh-hr):	0.1

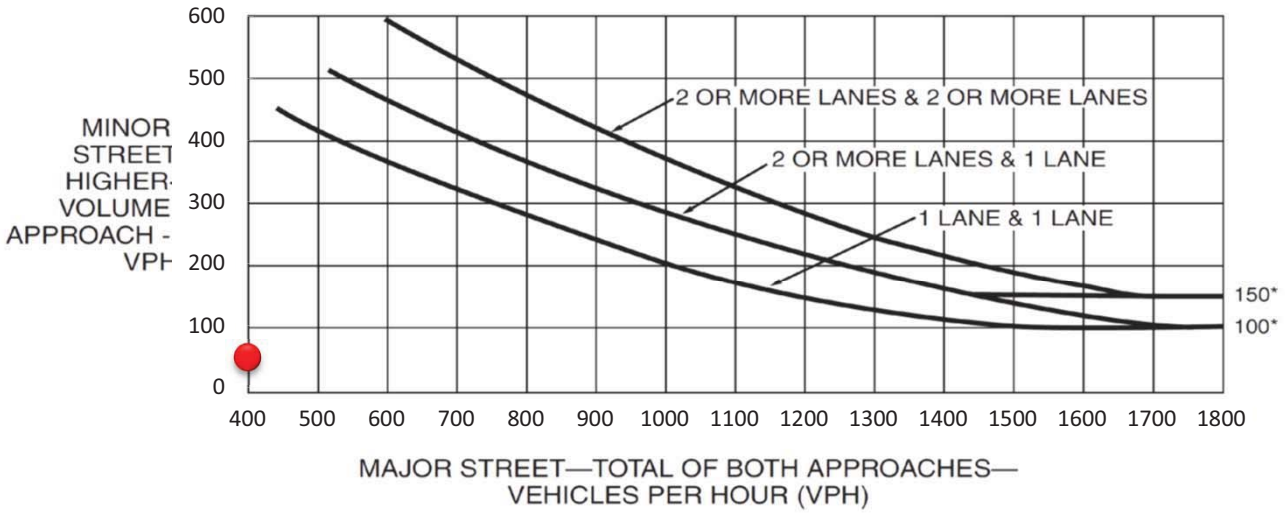
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	NO
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
38	48

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Opening Year 2022 + Project Friday PM	**Total Number of Vehicles Entering:**	116
		Number of Approaches:	3
		Intersection total delay (seconds):	7.0
		Minor St approach total delay (veh-hr):	0.1

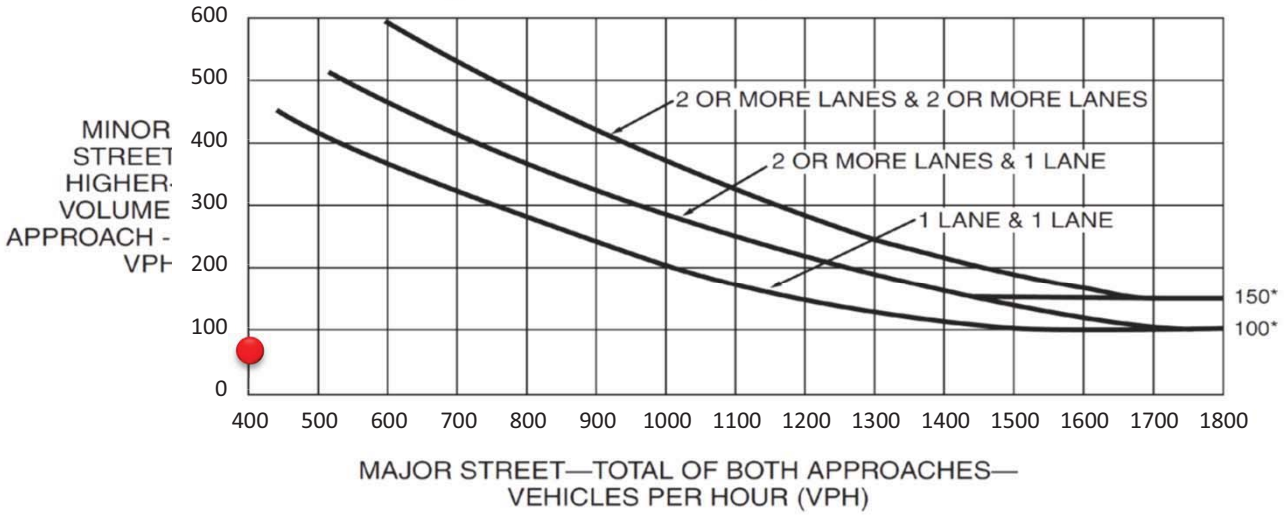
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	NO
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
54	62

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Opening Year 2022 + Project Saturday PM	**Total Number of Vehicles Entering:**	156
		Number of Approaches:	3
		Intersection total delay (seconds):	7.2
		Minor St approach total delay (veh-hr):	0.2

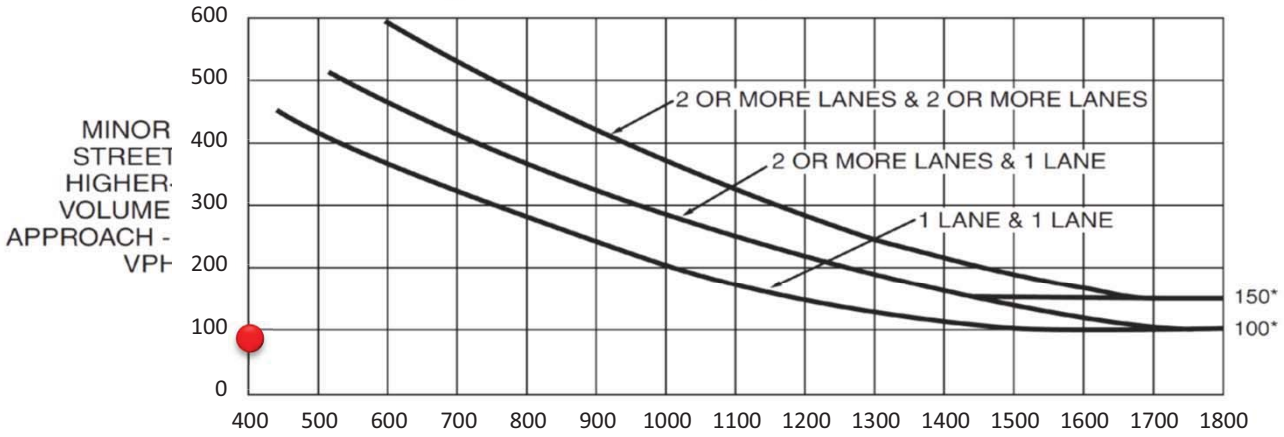
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	YES
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
75	81

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Buildout Year 2025 Friday PM	**Total Number of Vehicles Entering:**	588
		Number of Approaches:	3
		Intersection total delay (seconds):	9.9
		Minor St approach total delay (veh-hr):	0.4

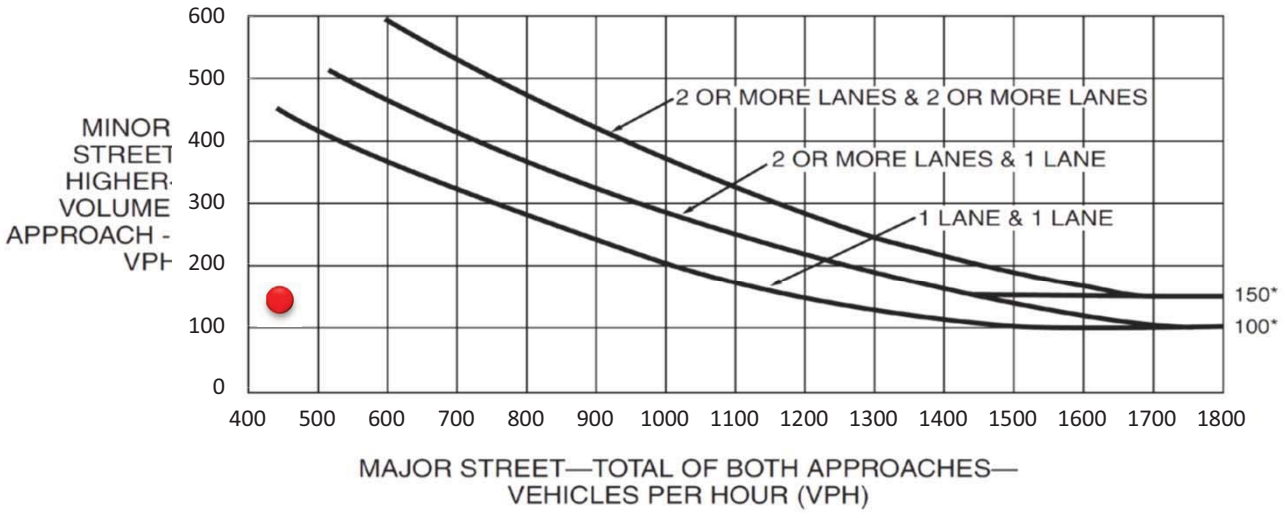
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	YES
3	Total volume entering the intersection during the peak hour	NO

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
447	141

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Buildout Year 2025 Saturday PM	**Total Number of Vehicles Entering:**	656
		Number of Approaches:	3
		Intersection total delay (seconds):	10.5
		Minor St approach total delay (veh-hr):	0.4

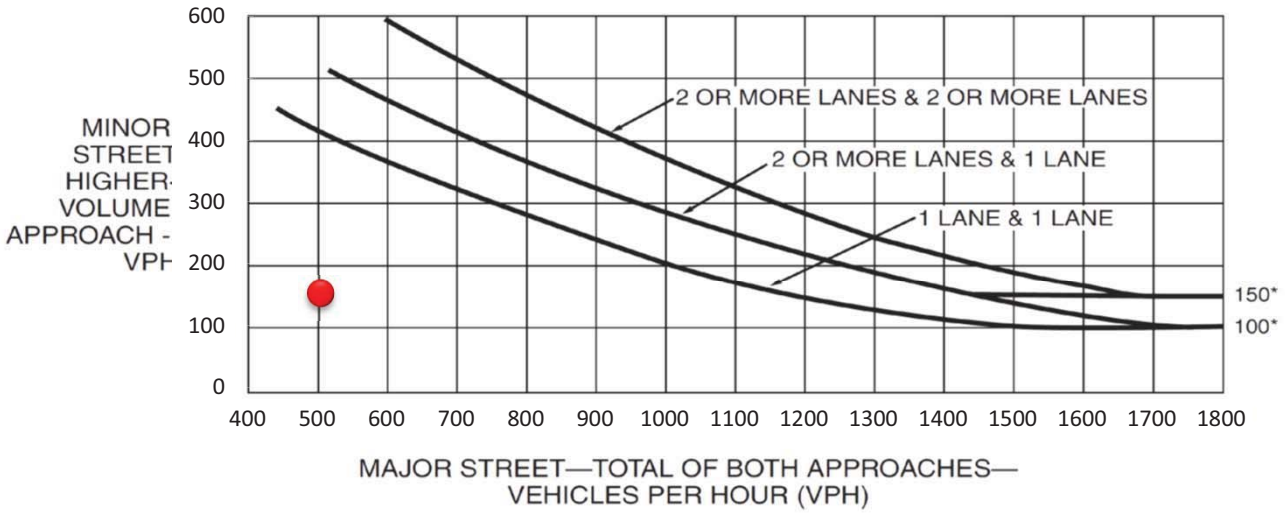
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	YES
3	Total volume entering the intersection during the peak hour	YES

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
504	152

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Buildout Year 2025 + Project Friday PM	**Total Number of Vehicles Entering:**	686
		Number of Approaches:	3
		Intersection total delay (seconds):	10.9
		Minor St approach total delay (veh-hr):	0.6

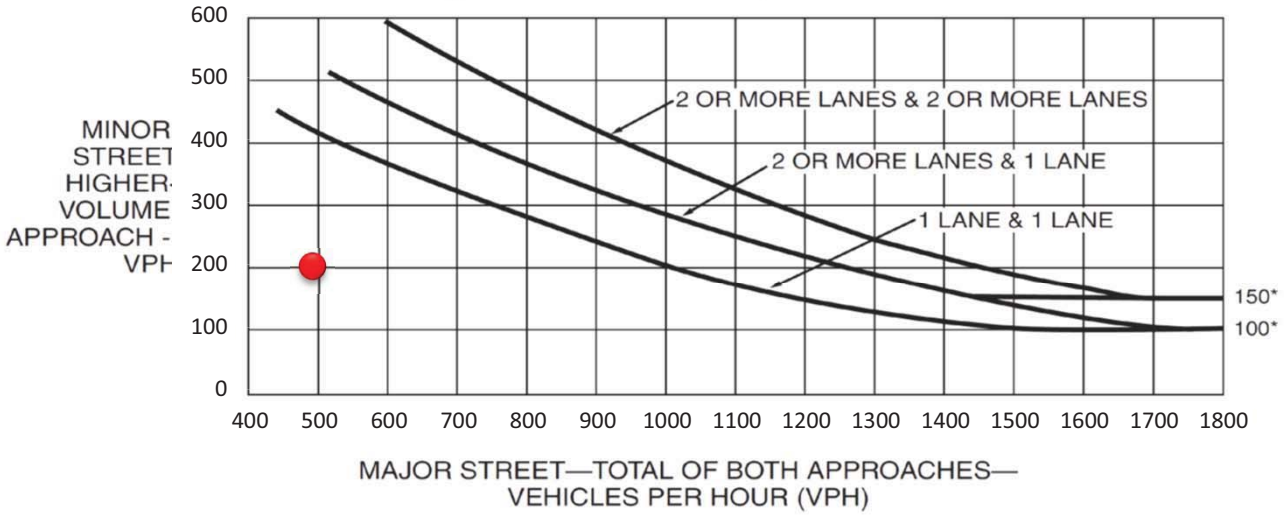
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	YES
3	Total volume entering the intersection during the peak hour	YES

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
489	197

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

RICK ENGINEERING COMPANY

SIGNAL WARRANT ANALYSIS

Minor Street:	Miners Mesa Road	**Number of Lanes on minor street:**	1
Major Street	Bobtail Road	**Number of Lanes on major street:**	1
Scenario:	Buildout Year 2025 + Project Saturday PM	**Total Number of Vehicles Entering:**	831
		Number of Approaches:	3
		Intersection total delay (seconds):	13.2
		Minor St approach total delay (veh-hr):	0.9

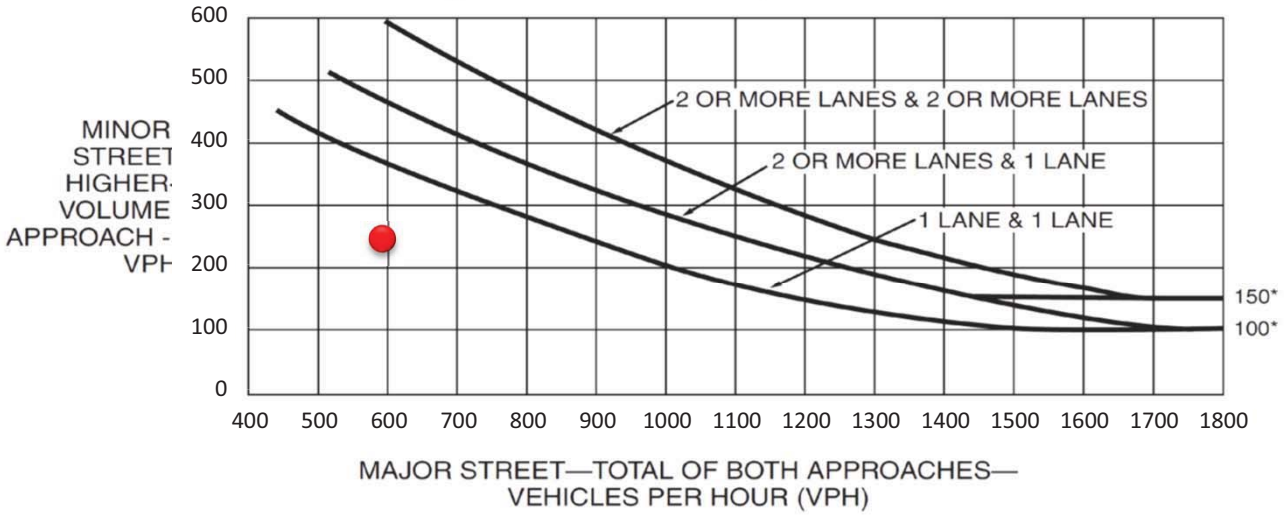
Part A

		Criteria Met?
1	Minor St approach total stopped time delay	NO
2	Volume on the same minor street approach (one directional only)	YES
3	Total volume entering the intersection during the peak hour	YES

Part B

Volume on Major St (Σ of both Approaches)	Volumes on Minor St (higher approach)
590	241

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Does the Intersection Meet Peak Hour Signal Warrants?:	
PART A	**NO**
PART B	**NO**

WILL SERVE LETTER

November 16, 2020

Click here to enter text.

Re: Black Hawk Miners Mesa

Dear Mr. Krall,

This letter is to confirm that Xcel Energy is your utility provider for natural gas and electrical service. In accordance with our tariffs, on file with and approved by the Colorado Public Utilities Commission, gas and electric facilities can be made available to serve the project at Miners Mesa In Black Hawk, CO.

Your utility service(s) will be provided after the following steps are completed:

- ***Application submitted to Public Service's "Builders Call Line (BCL)"*** – once your application is accepted you will be assigned a design department representative who will be your primary point of contact
- ***Utility design is completed*** – you must provide your design representative with the site plan, the one line diagrams, and panel schedules for electric and gas loads if applicable
- ***All documents provided by design representative are signed and returned***
- ***Payment is received***
- ***Required easements are granted*** - you must sign and return applicable easement documents to your Right-of-Way agent
- ***Site is ready for utility construction***

A scheduled in-service date will be provided once these requirements have been met.

It is important to keep in mind that the terms and conditions of utility service, per our tariffs, require that you provide adequate space and an easement on your property for all gas and electric facilities required to serve your project, including but not limited to gas and electrical lines and meters, transformers, and pedestals. General guidelines for these requirements can be found at Site Requirements. https://www.xcelenergy.com/staticfiles/xe-responsive/Admin/Managed Documents & PDFs/Xcel-Energy-Standard-For-Electric-Installation-and-Use.pdfEasement requirements can be found at Utility Design and Layout.

Xcel Energy looks forward to working with you on your project and if I can be of further assistance, please contact me at the phone number or email listed below.

Sincerely,

Kelli Fries
Xcel Energy Designer

Mailing address: Public Service Company of Colorado
PO Box 640
Evergreen, CO 80437

UTILITY REPORT
FOR
BLACK HAWK PARK

Job Number: D01055A
November 30, 2020

CK ENGINEERING COMPANY
ENGINEERING COMPANY
RICK ENGINEERING CO

PRELIMINARY UTILITY REPORT
FOR BLACK HAWK PARK

Prepared for

Ventana Capital
Mr. Bryan Horan
9801 East Easter Avenue
Centennial, Colorado 80112
(303) 340-7006

Prepared by:

Rick Engineering Company
9801 East Easter Avenue
Centennial, CO 80112
(303) 537-8020

Job#: D01055A
Date: November 30, 2020

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- B. Description of Existing System

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- A. Water and Sewer Preliminary Utility Layout
- B. Water Distribution Analysis from City of Black Hawk Public Works Department

I. GENERAL LOCATION AND DESCRIPTION

A. Location

The Black Hawk Park property is located within the City of Black Hawk off Miner's Mesa Road. The property is approximately 48 acres in area. The property is located in the North Half of Section 18 and the Southwest Quarter of Section 7 within Township 3 South, Range 72 West of the 6th Principal Meridian, in the City of Black Hawk, County of Gilpin and State of Colorado. The property is currently Zoned Commercial/Business Services (C/BS) and has an approved Special Review Use (SRU) permit to allow for a Recreational Campground and an Indoor Shooting Range. The City of Black Hawk comprehensive plan designates this property as Low Intensity Mixed Use and does not fall within a defined Overlay District.



B. Description of the Property

The majority of the property is a plateau at the top of Miner's Mesa road overlooking the City of Black Hawk. The plateau area generally falls west to east, with a low point near the existing detention pond. The ground falls steeply from the plateau to the north and northeast extending past the property boundary.

The proposed development on the site will consist of 8 Commercial lots and a single Tract. The proposed uses for the site include the following:

- Airstream recreational campground site inclusive of a check-in facility, a bar, and containerized indoor shooting lanes.
- Distillery and micro-brewery uses.

II. DESIGN CRITERIA AND ASSUMPTIONS

The Black Hawk Park development shall be designed in accordance with the current City of Black Hawk Public Works Department (CBHPWD) requirements, as well as the Black Hawk and Central City Water and Sanitation District (BHCCSD) standards.

A. Water Distribution

The Black Hawk Park development shall have the proposed water distribution system analyzed by the CBHPWD to determine water main sizing.

The Waterfront property falls into the service area of the City of Black Hawk Fire Department. In discussions regarding fire hydrant spacing it was determined that fire hydrants shall be spaced no further than 500' apart. Fire hydrants shall be placed within the Public R.O.W. where possible, or within dedicated easements.

The water distribution system shall be modeled with a fire flow scenario in conjunction with the average day demand for the development to achieve 1500 GPM while maintaining a minimum residual pressure of 20 psi.

The following parameters were used to establish the water requirements:

- Average water demand for the Airstream park shall be 150 gpd per airstream unit in line with hotel usage
- Average water demand for the bar at the airstream park will be 3.0 gpd/sf in line with restaurant usage.
- Average water demand for the airstream check in facility shall be 0.2 gpd/sf in line with general commercial usage.
- Average Water Demand for distillery facilities shall be 2350 gpd/acre based upon the actual estimated peak demands of the Watts Distillery (5308 gpd peak) provided by Dalkita Architects.
- Max Day peak factor shall be 2.5, and Peak Hour peak factor shall be 6.

B. Sanitary Sewer

In accordance with the standards referenced above, the proposed sanitary sewer systems are designed to have adequate capacity to carry the peak hourly sewage flow rates and to maintain minimum velocities of greater than two (2) feet-per-second for full flow sewage flow rates.

The following flow parameters from the BHCCSD Design Standards were used to establish the sewer requirements:

- All proposed sewer mains shall be designed to convey peak flows at a maximum of 50% pipe capacity.
- All gravity sewer mains shall be a minimum of 8" diameter with a minimum slope of 0.5% and a maximum slope of 5.0%.

- Minimum velocity shall be 2 fps and maximum velocity shall be 15 fps at design flow rates
- Sewer flows returned to the system shall be 90% of water demand for the Airstream Park, and 80% of water demand for the distillery facilities.

III. WATER DISTRIBUTION SYSTEM AND ANALYSIS

For Black Hawk Park preliminary analysis, the water system has been split into two major segments:

- Lot 1 water system which includes the master meter for Lot 1 and the downstream privately owned and maintained water infrastructure
- Miners Mesa Road water system which includes the City owned extensions along Miners Mesa Road and connections to existing City owned water mains, inclusive of the portion that loops through Lots 1-5 in a utility easement

The sizing and layout of the proposed water system will be based on the assumed end users for the commercial lots. Onsite water main shall serve Lot 1, which consists of an Airstream RV park with 50 airstream units, a check-in facility and a bar. The remaining lots 2-7 will contain up to 8 distillery facilities. Calculations on usage for the assumed end users are shown in the table below.

Commercial Water Demand				
Lot	Use	Average Day (GPD)	Max Day (GPD)	Peak Hour (GPD)
1	Airstream Units	7500	18750	45000
	Check-In	19	47	112
	Bar	840	2100	5040
2	Distillery	2388	5969	14326
3	Distillery	2451	6128	14706
4	Distillery	2524	6310	15143
5	Distillery	2404	6010	14424
6	2x Distillery	9313	23283	55878
7	Distillery	5308	13270	31848
	TOTAL	32746	81866	196478

A. Lot 1 Water System

The water distribution system for Lot 1 will be master metered off the proposed 12” offsite water main. One fire hydrant will be located downstream of the master meter for the site.

B. Miners Mesa Water System

The 12" offsite water system located in Miners Mesa Road and looping through Lots 1-5 shall be designed and built by others. Lots 2-7 will connect directly off the 12" main and the capacity for the development shall be incorporated into the design.

IV. SEWER SYSTEM IMPROVEMENTS AND ANALYSIS

For Black Hawk Park preliminary analysis, the sewer system has been split into two major segments; private sewer infrastructure within the development, and the shared public sewer infrastructure located within Miners Mesa Road. The Miners Mesa Road sewer shall be designed and constructed by others. The extent of this analysis is the private sewer up to the connection point in Miners Mesa Road, which includes contribution from Lots 1-5 only. Lots 1-5 located on the west side of the development will connect to privately owned and maintained sewer located within the property. Lots 6-8 will connect to the proposed public infrastructure located within Miners Mesa Road.

A. On Site Sewer System

The onsite sewer system has been designed based on a 90% return flow from the water usage for Lot 1 and 80% return flow for the distillery uses on Lots 2-5. Preliminary sizing has been based on the total peak flow out of each basin.

Commercial Sewer Demand			
Basin	**Units**	**Average Flow (GPD)**	**Peak Flow (GPD)**
Lot 1	52	6,687	40,122
Lots 2-5	4	8,790	52,740
Total		15,477	92,862

The CBHPWD specifies that sewer pipe must be sized to carry peak discharge when the pipe is at no more than 50% of maximum capacity. The calculated 50% maximum capacity for 8" PVC sewer at the minimum allowable slope of 0.50% is 358,950 GPD. Based on the calculated total peak flow for each basin, the minimum pipe size of 8" shall be utilized throughout the sewer installation. The sewer system has also been designed to keep a minimum two (2) foot-per-second velocity during full flow conditions per the BHCCSD rules and regulations.

Refer to Appendix A for the proposed onsite and offsite sewer system layout.

B. Offsite Sewer System

The offsite sewer system located in Miners Mesa Road shall be designed and built by others. The capacity required for Lots 1-5 of the development will be incorporated into the design of the Miners Mesa Sewer. Lots 6 and 7 will connect directly to the offsite sewer system.

V. CONCLUSIONS

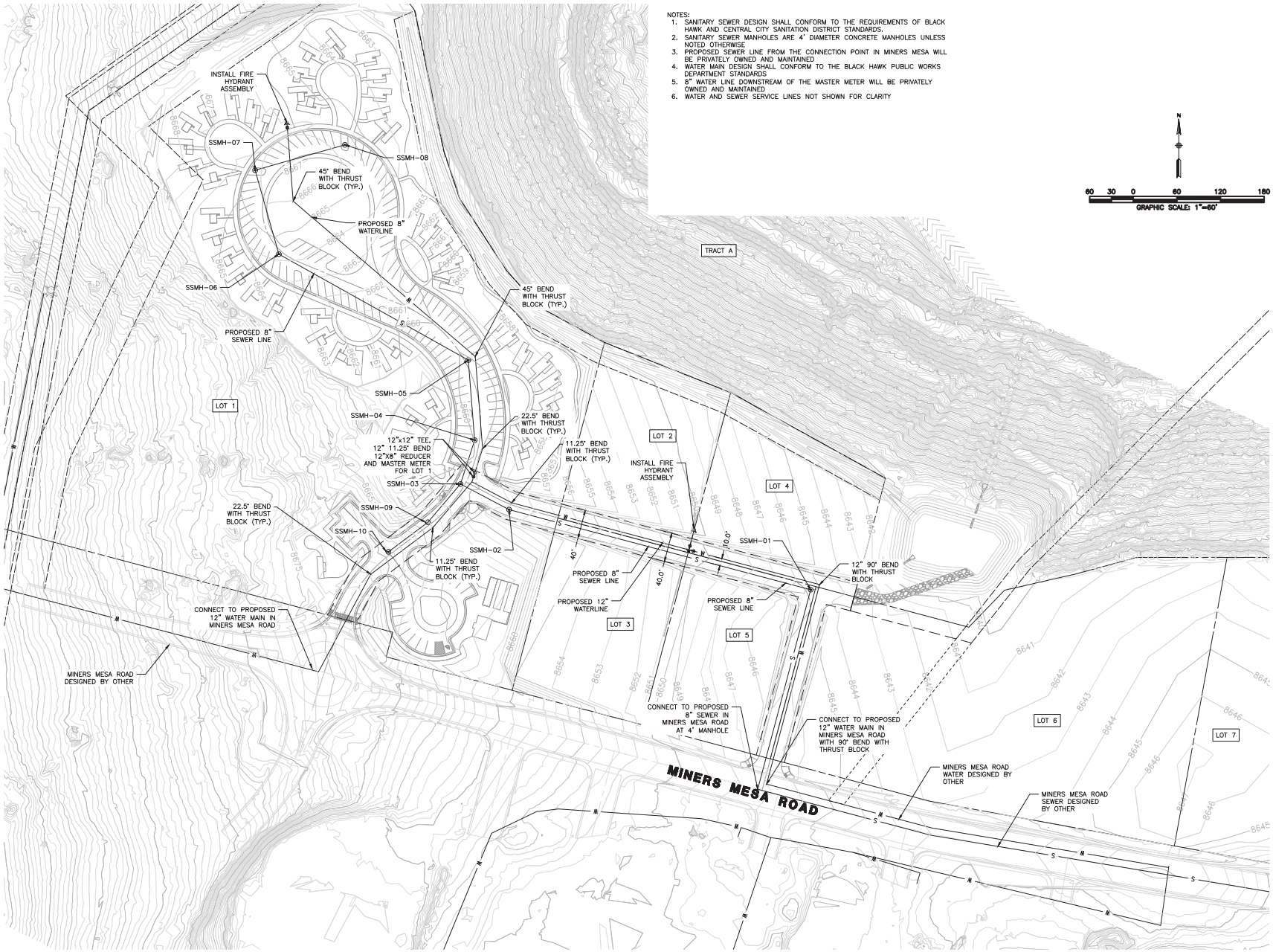
The proposed water system shall meet City of Black Hawk Public Works, City of Black Hawk Fire Rescue and Black Hawk and Central City Water and Sanitation District Standards and Specifications for fire flow and water quality. The offsite improvements in Miners Mesa road designed by others shall be installed as part of the development, and the water distribution system shall be looped to provide redundancy and improved water quality.

The proposed sanitary system shall meet City of Black Hawk Public Works and Black Hawk and Central City Water and Sanitation District standards. The proposed sanitary system shall be sufficient during peak flows and has been sized to have less than 50% capacity.

VI. REFERENCES

- City of Black Hawk Public Works Water Standards and Specifications
- Black Hawk and Central City Sanitation District Standards and Specifications

Appendix A
Water and Sewer Preliminary Utility Layout



BLACK HAWK PARK
OVERALL UTILITY PLAN
GILPIN COUNTY

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

SIGNATURE DATE

REVISIONS:		
NO.	DESCRIPTION	DATE:
1	-	-

SCALE:
DATE: 6/30/2020
DRAWN BY: JP
CHECKED BY: JK
JOB NO: D01055

PROJECT NO.
D01055

DRAWING NO.
UTIL-01

SHEET NO. 04 OF 05 SHEETS

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Appendix B
Water Distribution Analysis from City of Black Hawk Public Works Department


DOMESTIC FLOWS
Miners Mesa Proposed Water Lines
Model Results 11-16-2020
N
W
E
S
0 60 120 240 360
Feet
1 inch = 120 feet
Aerial Photograph Date: 2014
Date: 11-17-2020
Flow 224.4 gpm
Velocity 0.64 ft/s
Demand 40 gpm
Pressure 47.86 psi
Flow 21.75 gpm
Velocity 0.06 ft/s
Demand 0 gpm
Pressure 26.4 psi
Flow 18.25 gpm
Velocity 0.05 ft/s
Demand 0 gpm
Pressure 52.63 psi
Flow 91.3 gpm
Velocity 0.26 ft/s
Flow 133.1 gpm
Velocity 0.38 ft/s
Demand 0 gpm
Pressure 38.33 psi
Flow 41.35 gpm
Velocity 0.12 ft/s
Demand 5 gpm
Pressure 52.2 psi
Demand 0 gpm
Pressure 51.33 psi
Flow 21.75 gpm
Velocity 0.06 ft/s
Flow 399.43 gpm
Velocity 1.13 ft/s
Flow 109.56 gpm
Velocity 0.31 ft/s
Demand 20 gpm
Pressure 51.33 psi
Bus Barn
EOC
Public Works
Miners Mesa Road
Miners Mesa Tank
Head 8765 ft
Flow 120.12 gpm
Velocity 0.34 ft/s
Flow 10.57 gpm
Velocity 0.03 ft/s
Demand 5 gpm
Pressure 54.13 psi
Flow 41.75 gpm
Velocity 0.12 ft/s
Flow 266.33 gpm
Velocity 0.76 ft/s
Demand 5 gpm
Pressure 43.11 psi
Flow 51.77 gpm
Velocity 0.15 ft/s
Flow 10.42 gpm
Velocity 0.07 ft/s
Demand 0 gpm
Pressure 30.11 psi
Flow 46.2 gpm
Velocity 0.13 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Lake Gulch Road
Demand 0 gpm
Pressure 43.96 psi
Demand 0 gpm
Pressure 101.56 psi
Flow 100 gpm
Velocity 0.28 ft/s
Demand 100 gpm
Pressure 134.47 psi


Miners Mesa Proposed Water Lines
Model Results 11-20-2020
N
W
E
S
0 60 120 240 360
Feet
1 inch = 120 feet
Aerial Photograph Date: 2014
Date: 11-20-2020
LOT 1 FIRE FLOWS
Flow 224.28 gpm
Velocity 0.64 ft/s
Fire Flow Demand 1500
Static Pressure 52.28 psi
Residual Pressure 44.98
Available Flow 3610.12 gpm
Duration 2 hrs
Demand 40 gpm
Pressure 52.58 psi
Flow 91.80 gpm
Velocity 0.26 ft/s
Demand 0 gpm
Pressure 31.12 psi
Flow 51.79 gpm
Velocity 0.15 ft/s
Flow 51.79 gpm
Velocity 0.15 ft/s
Demand 0 gpm
Pressure 57.35 psi
Flow 172.50 gpm
Velocity 0.49 ft/s
Demand 0 gpm
Pressure 43.04 psi
Flow 96.86 gpm
Velocity 0.27 ft/s
Demand 5 gpm
Pressure 56.95 psi
Demand 0 gpm
Pressure 56.06 psi
Flow 91.8 gpm
Velocity 0.26 ft/s
Flow 399.36 gpm
Velocity 1.13 ft/s
Demand 20 gpm
Pressure 56.50 psi
Miners Mesa Tank
Head 8776 ft
Bus Barn
Public
Works
EOC
Miners Mesa Road
Demand 5 gpm
Pressure 58.87 psi
Flow 111.8 gpm
Velocity 0.32 ft/s
Flow 226.85 gpm
Velocity 0.64 ft/s
Demand 5 gpm
Pressure 47.87 psi
Flow 121.83 gpm
Velocity 0.35 ft/s
Demand 0 gpm
Pressure 34.89 psi
Flow 126.84 gpm
Velocity 0.36 ft/s
Flow 24.97 gpm
Velocity 0.16 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Lake Guidi Road
Demand 0 gpm
Pressure 48.74 psi
Demand 0 gpm
Pressure 106.34 psi
Flow 100 gpm
Velocity 0.28 ft/s
Demand 100 gpm
Pressure 139.25 psi


LOT 7 FIRE FLOWS
Miners Mesa Proposed Water Lines
Model Results 11-16-2020
N
W
E
S
0 60 120 240 360
Feet
1 inch = 120 feet
Aerial Photograph Date: 2014
Date: 11-17-2020
Flow 224.33 gpm
Velocity 0.64 ft/s
Demand 40 gpm
Pressure 52.61 psi
Flow 99.85 gpm
Velocity 0.28 ft/s
Demand 0 gpm
Pressure 31.14 psi
Flow 59.85 gpm
Velocity 0.17 ft/s
Flow 59.85 gpm
Velocity 0.17 ft/s
Demand 0 gpm
Pressure 57.38 psi
Flow 164.48 gpm
Velocity 0.47 ft/s
Demand 0 gpm
Pressure 43.07 psi
Flow 87.38 gpm
Velocity 0.25 ft/s
Demand 5 gpm
Pressure 56.97 psi
Demand 0 gpm
Pressure 56.08 psi
Flow 99.85 gpm
Velocity 0.28 ft/s
Fire Flow Demand 1500 gpm
Static Pressure 55.81 psi
Residual Pressure 48.51
Available Flow 3780.48 gpm
Duration 2 hrs
Flow 379.36 gpm
Velocity 1.08 ft/s
Bus Barn
Public Works
EOC
Miners Mesa Road
Miners Mesa Tank
Head 8776 ft
Demand 5 gpm
Pressure 58.9 psi
Flow 99.85 gpm
Velocity 0.28 ft/s
Flow 214.88 gpm
Velocity 0.61 ft/s
Demand 5 gpm
Pressure 47.89 psi
Flow 109.87 gpm
Velocity 0.31 ft/s
Demand 0 gpm
Pressure 34.91 psi
Flow 114.88 gpm
Velocity 0.33 ft/s
Flow 22.48 gpm
Velocity 0.14 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Flow 100 gpm
Velocity 0.28 ft/s
Lake Gulch Road
Demand 0 gpm
Pressure 48.76 psi
Demand 0 gpm
Pressure 106.36 psi
Flow 100 gpm
Velocity 0.28 ft/s
Demand 100 gpm
Pressure 139.27 psi

City of Black Hawk – Community Planning & Development
211 Church Street ● Black Hawk ● CO 80422
(303) 582-0615

LAND USE REVIEW
FINAL PLAT

January 4, 2021

Dalton Horan
9801 E. Easter Ave.
Centennial, CO 80112

Email: dahoran@ventanacap.com

RE: P-20-13b
Black Hawk Park Final Plat

Dear Dalton,

The Black Hawk Park Final Plat was sent out on referral on December 7, 2020. The following referral agencies did not respond:

Black Hawk Fire Dept. – Christopher K. Woolley
Black Hawk Police Dept. – Michelle Moriarty
Black Hawk Public Works Dept. – Thomas Isbester
Black Hawk Public Works Dept. – James R. Ford
Public Works/Floodplain Consultant – Chris Manning
Building Review – SAFEbuilt – Dan Wester
Gilpin County Community Development– Stephen Strohminger
Gilpin County Planning Commission - Tami Archer
Gilpin County Assessor - Anne Schafer
Gilpin County School District RE-1 - David MacKenzie

Below are comments from referral agencies that responded regarding the Black Park Final Plat. Original letters submitted from referral agencies are included as an attachment.

Thank you for your comments; responses have been provided by the applicant in blue text below.

AGENCY NAME	**Black Hawk /Central City Sanitation District** **Lynn Hillary** **District Administrator** lynn@bhccsd.com 303-582-3422
Item 1:	No comments at this time.
AGENCY	**Baseline Corporation** **Survey Consultant**

NAME	**Doug Lancaster** **Project Survey Manager** doug.lancaster@baselinecorp.com 970-353-7600 ext. 304
Item 1:	Corrections to plat document required per attached redline drawing.
Applicant Response:	Corrections to the redlines plat have been addressed; comments to specific redlines are included in the redline comment response document included with resubmittal.
Item 2:	Corrections to parcel map check required per attached redlines.
Applicant Response:	[Applicant – please respond in this box to the specific action item above]
AGENCY NAME	**Baseline Corporation** **Ethan Watel** **Planning Manager** ethan@baselinecorp.com 303-202-5010 ext. 218
Item 1:	Corrections to plat document required per attached redline drawing.
Applicant Response:	Corrections to the redlines plat have been addressed; comments to specific redlines are included in the redline comment response document included with resubmittal.
Item 2:	Corrections to written legal description required per attached redlines.
Applicant Response:	Corrections to legal description have been provided.
AGENCY **NAME**	**Transportation Review** **Stolfus & Associates, Inc.** **Matthew Brown, PE** **Senior Transportation Engineer** Matt@Stolfusandassociates.com 303-221-2330
Item 1:	How was the number of parking spaces determined? The number of spaces seems excessive for the RV land use. A comparable use from Black Hawk Municipal Code is hotel/motels which have a parking requirement of 1.12 spaces per unit. Apartment parking ratios are 1.5 spaces per unit.
Applicant Response:	The number of parking spaces will be detailed during the Site Development Plan (SDP) process for each individual lot based on use. Parking spaces will be calculated based on the following provided by Baseline Engineering: • 1.12 spaces per airstream trailer (per hotel requirements) • 1 space per 250sf for the check-in building (per office space requirements) • 1 space per 75sf of outdoor dining area at the airstream bar A variance request may be sought during the SDP for Lot 1 to combine parking for the various uses.
Item 2:	Provide the planned square footage of check-in office and shooting range and confirm the parking amount at those locations is adequate.
Applicant Response:	These will be confirmed during the SDP process for Lot 1. It is currently assumed that the check-in space will be approximately 850 sf and the shooting lanes have been removed from the site plan.

Item 3:	Parking and access for Lots 2 through 7 are not depicted in the drawings. Shared parking and accesses are encouraged to benefit the overall circulation of the site. Pedestrian connections should be provided to encourage walking between uses rather than driving.
Applicant Response:	Parking, including shared parking, will be determined with the end users of lots 2-7, 9, and 10 during the SDP process. Pedestrian connection will be encouraged at that time, dependent on ultimate use.
Item 4:	Internal road to Lots 2-6 does not seem to have space for a future pedestrian connection when the lots become developed. This should be planned. Consider reducing roadway footprint to make room for a sidewalk. Having the ditch off the edge of the traveled
Applicant Response:	Pedestrian connectivity from the roundabout to the future bus stop has been provided for in the updated site plan. The access and utility easement provides for adequate space to accommodate sidewalk in the future, and it is anticipated that this will be reviewed during the SSDP process for individual sites once end users and site plans have been developed.
Item 5:	Clarify if any of the RV Airstream lots will be ADA accessible. Is it required to provide accessible amenities, like a hotel? If so, we need ADA spaces designated.
Applicant Response:	A minimum of 2 airstream units shall be ADA accessible, as well as the check-in building and airstream bar. ADA accessible parking spaces will be provided.
Item 6:	Commercial Development Guidelines state any building entrances shall be fully ADA accessible. ADA space should be provided for office, with an accessible entrance/approach.
Applicant Response:	The check-in building and bar will be ADA accessible and have appropriate parking accommodations and pathways.
Item 7:	Curb ramps are provided in some locations, should also be provided across drives for shooting range/check in.
Applicant Response:	Please refer to updated site plan for proposed curb ramp locations. These will be finalized and detailed during the SDP process.
Item 8:	DG is not considered a stable surface for ADA accessibility. Should use concrete sidewalk materials for any accessible areas, such as the bus pullout, commercial areas, and potentially accessible RV lots.
Applicant Response:	Concrete sidewalks shall be utilized in ADA accessible pathways.
AGENCY	**Historic Review** **Pinyon Environmental, Inc.**
NAME	**Ashley Bushey** Bushey@pinyon-env.com 303-980-5200
Item 1:	No City of Black Hawk Local Landmarks are located within the subject property or immediate vicinity. The Chemung-Belmont Mine (GL.90) is located within the limits of the subject property and is considered eligible for inclusion on the NRHP. This review recommends avoidance of this site or re-survey to determine the presence of extant resources and to revisit NRHP eligibility.

	A portion of the subject property may be subject to a preservation easement, recorded October 2, 1995, in Book 588, Page 072 (Reception Number 86350). The location appears to roughly correlate to the location of Chemung-Belmont Mine (GL.90) (Figure 2). This location may be subject to preservation in perpetuity of buildings referenced in the easement. This review recommends review of the easement by City of Black Hawk Counsel for confirmation. Review of this site did not include pedestrian survey or field inspection. The subject property is in an area with a high occurrence of historic mining activity and existing survey of the area is largely selective (site-specific); therefore, the area holds potential for additional, unidentified historic or historical archaeology sites. Refer to attached letter for more information.
Applicant Response:	Noted
AGENCY	**Century Link/Lumen**
NAME	**Aaron Keller** Aaron.Keller1@lumen.com 303-319-9302
Item 1:	I have no objections to these site plans as there are no Lumen / CenturyLink conflicts along the North side of Miners Mesa Road where the existing overhead lines and poles are to be removed (referenced from EX-01 Preliminary Civil Plans). All construction crews are to protect in place existing Lumen/CenturyLink facilities along the South side of Miners Mesa Road. It is the intent and understanding of Lumen / CenturyLink that this proposed development shall not reduce our rights to any other existing easement or rights we have on this site or in the area This response is submitted WITH THE STIPULATION that if CenturyLink / Lumen facilities are found and/or damaged within the area as described, the Applicant will bear the cost of relocation and repair of said facilities.
Applicant Response:	Noted
AGENCY	**Xcel Energy**
NAME	**Kelli Fries** Kelli.Fries@Xcelenergy.com 303-445-4540
Item 1:	No comments.
AGENCY	**Silver Dollar Metro District**
NAME	**Lynette Hailey** lhailey@centurylink.net
Item 1:	No comments.
AGENCY	**City of Central**

	Planning Commission
NAME	**Ray Rears** **Community Development Director** rrears@cityofcentral.co 303-582-5251
Item 1:	Upon review of the materials, the City has a shared expectation that the Central City Parkway (CCP) will not be materially impacted by this project at the proposed development will follow the conditions agreed upon in the recent Settlement Agreement and Mutual Release. Refer to attached letter for more information.
Applicant Response:	Noted

Please respond to the action items in the "Applicant Response" boxes provided above, and return this letter in Word format to my email address below. Additional items required for revision and resubmittal include:

Final Plat
Parcel Map Check
Written Legal Description

Upon resubmittal, Baseline will refer the updated submittal to the Development Review Committee and referral agencies that provided comment. Contact information has been provided within this letter so that you may contact the referral agencies directly if you have specific questions.

As you know, we have committed to put this Final Plat application on the February 10, 2021 City Council agenda for a review and decision. In order to adequately prepare notices and staff reports for such, please resubmit these updates by January 15, 2021 to stay on track with that intention.

In addition, the progress meeting on Monday January 4, 2021 included discussion related to the timing of dedication of the easement(s) now shown on the Final Plat to be dedicated to the City via the plat. It was also discussed that all the easements now shown on the plat might be dedicated independently via a separate instrument to expedite XCEL Energy work on the property to relocate and underground powerlines. Please decide (and inform us immediately) which means the easements will be conveyed to the City so we can react and respond to you, coordinate timing with XCEL, and prepare for the acceptance in either case. If they are dedicated via a separate instrument, then, in addition to the redlines included with this letter, the plat should also be adjusted show the means of dedication.

Please let me know if you have any questions regarding this referral response letter or next steps.

Regards,

Julie Esterl, Principal Planner
Baseline Corporation
112 N. Rubey Drive, Suite 210
Golden, Colorado, 80403
303-202-5010 ext. 222
julie.esterl@baselinecorp.com

Attachments: Combined Referral Agency Comments

CC: Jason Krall, Rick Engineering
Vince Harris, AICP Baseline Corporation
Cynthia Linker, City of Black Hawk CP&D
Ashley Wilson, City of Black Hawk CP&D

BLACK HAWK PARK

FINAL PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 1 OF 2

DEDICATION

KNOW ALL MEN BY THESE PRESENTS: CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, IS THE OWNER OF THAT REAL PROPERTY SITUATED IN THE CITY OF BLACK HAWK, GILPIN COUNTY, AND HAS CAUSED SAID REAL PROPERTY TO BE LAID OUT AND SURVEYED AS BLACK HAWK PARK, AND DOES HEREBY DEDICATE AND SET APART ALL THE STREETS, ALLEYS AND OTHER PUBLIC WAYS AND PLACES SHOWN ON THE ACCOMPANYING PLAT FOR THE USE OF THE PUBLIC FOREVER, AND DOES HEREBY GRANT TO THE CITY OF BLACK HAWK USE OF THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE INDICATED AS EASEMENTS ON THE ACCOMPANYING PLAT AS PERMANENT PUBLIC EASEMENTS.

LEGAL DESCRIPTION

A REPLAT OF LOT 1, BLOCK 1, MINERS' MESA SUBDIVISION FILING NO. 4, RECORDED AT RECEPTION NUMBER R013116, A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 7, AND THE NORTH HALF OF SECTION 18, BOTH WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS:

LOT 1, BLOCK 1, MINER'S MESA SUBDIVISION FILING NO. 4, COUNTY OF GILPIN, STATE OF COLORADO, EXCEPT THAT PORTION CONVEYED IN THE DEED RECORDED AUGUST 7, 2020 AT RECEPTION NO. 166682 AND RE-RECORDED AUGUST 7, 2020 AT RECEPTION NO. 166800.

CONTAINING 1,977,984 SQUARE FEET OR 45.408 ACRES, MORE OR LESS.

TRACT/LOT TABLE

LOT/TRACT	SQ. FT.	ACRES±	PURPOSE
LOT 1	235,073	5.397	*
LOT 2	44,272	1.016	*
LOT 3	45,423	1.043	*
LOT 4	46,785	1.074	*
LOT 5	50,119	1.151	*
LOT 6	171,627	3.940	*
LOT 7	99,429	2.283	*
LOT 8	46,626	1.070	HISTORIC PRESERVATION AND CONSERVATION EASEMENT
LOT 9	142,888	3.280	*
LOT 10	50,102	1.150	*
TRACT A	1,045,643	24.005	OPEN SPACE, UTILITIES, DRAINAGE

*USES CONFORMING TO C/BS ZONING INCLUDING SRU OF RV CAMPGROUND AND INDOOR SHOOTING FACILITIES

GENERAL NOTES

1.) THE PURPOSE OF THIS FINAL SUBDIVISION PLAT IS TO RECONFIGURE LOT AND TRACT LINES AS SHOWN HEREON, PURSUANT TO C.R.S. 31-23-201, ET SEQ., AND CHAPTER 17 OF THE CITY OF BLACK HAWK MUNICIPAL CODE. NOTHING IN THE APPROVAL OF THIS PLAT SHALL ALLOW, PERMIT, OR CAUSE TO BE ALLOWED OR PERMITTED ANY DEVELOPMENT OR CONSTRUCTION ON ANY LOT HEREON WITH OUT A SUBSEQUENT LAND DEVELOPMENT APPLICATION AND APPROVAL THAT INCLUDES, AT A MINIMUM, PROVISIONS FOR THE CONSTRUCTION OF NECESSARY PUBLIC IMPROVEMENTS AND OTHER CONDITIONS OF APPROVAL AS DETERMINED BY THE BOARD OF ALDERMAN, INCLUDING AT A MINIMUM THOSE PROVISIONS REQUIRED BY 17-63 AND 17-64 OF THE CITY OF BLACK HAWK MUNICIPAL CODE, AS THE SAME MAY BE AMENDED FROM TIME TO TIME. NO CONSTRUCTION OF ANY TYPE SHALL OCCUR ON THE PROPERTY THAT IS PLATTED HEREON UNTIL A SUBSEQUENT AGREEMENT HAS BEEN REACHED BETWEEN THE SUBDIVIDER, OR ITS SUCCESSOR ON IN INTEREST, AND THE CITY REGARDING, AT A MINIMUM, THE NECESSARY PUBLIC IMPROVEMENTS, AND A FINANCIAL GUARANTEE APPROVED BY THE CITY FOR SAID PUBLIC IMPROVEMENTS.

2.) DISTANCES ON THIS FINAL PLAT ARE EXPRESSED IN U.S. SURVEY FEET AND DECIMALS THEREOF. A U.S. SURVEY FOOT IS DEFINED AS EXACTLY 1220/3937 METERS. ALL BEARINGS SHOWN HERE ON ARE IN DEGREE-MINUTES-SECONDS.

3.) ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT, LAND SURVEY BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUE 18-4-508, C.R.S.

4.) NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.

5.) COMMONWEALTH LAND TITLE COMPANY COMMITMENT NUMBER 597-H0508532-023-CNX, AMENDMENT NO. 4, EFFECTIVE DATE DECEMBER 6, 2020 AT 7:00 A.M., WAS ENTIRELY RELIED UPON FOR RECORDED RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES IN THE PREPARATION OF THIS SURVEY.

6.) RICK ENGINEERING, HAS MADE NO INVESTIGATION OR INDEPENDENT SEARCH FOR RECORDED/UNRECORDED EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP TITLE EVIDENCE OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE.

7.) BASIS OF BEARINGS: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ASSUMED TO BEAR N 89°07'38" W BETWEEN MONUMENTS AS SHOWN WITHIN THIS PLAT.

OWNER/DEVELOPER

IN WITNESS WHEREOF, _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC, A NEVADA LIMITED LIABILITY COMPANY, HAS CAUSED _____ NAME TO BE HEREUNTO SUBSCRIBED THIS _____ DAY OF _____, 20__.

_____
BY:

NOTARY PUBLIC

STATE OF _____)
)SS
COUNTY OF _____)

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20__, BY _____, AS _____ OF CLUB VISTA PROPERTIES II, LLC.

WITNESS MY HAND AND SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES _____



VICINITY MAP
SCALE: 1"=1000'

MAYOR'S CERTIFICATE

APPROVED AND ACCEPTED THIS _____ DAY OF _____, 2021 BY THE BOARD OF ALDERMEN OF THE CITY OF BLACK HAWK, SITUATED IN GILPIN COUNTY, COLORADO. THIS APPROVAL DOES NOT GUARANTEE THAT THE SIZE OR SOIL CONDITION OF ANY LOT SHOW HERE ON ARE SUCH THAT A BUILDING PERMIT CAN BE ISSUED.

CITY OF BLACK HAWK

ATTEST: BY:_____
DAVID D. SPELLMAN, MAYOR

_____
MELISSA A. GREINER, CMC, CITY CLERK

SURVEYOR'S CERTIFICATE

I ROBERT J. HENNESSY, A REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY OF BLACK HAWK PARK, WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THE ACCOMPANYING PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, C.R.S., AND THAT THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE SUBDIVISION ORDINANCE FOR THE CITY OF BLACK HAWK HAVE BEEN PLACED ON THE GROUND. THAT THE SURVEY ACCURATELY AND PROPERLY WITHIN APPLICABLE STANDARDS OF PRACTICE SHOWS SAID SURVEY BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF. THIS SURVEY IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

_____
ROBERT J. HENNESSY
REGISTERED COLORADO LAND SURVEYOR NO. 34580
FOR AND ON BEHALF OF RICK ENGINEERING

FOR CLERK AND RECORDER USE ONLY

CLERK AND RECORDER'S CERTIFICATE

_____
RECEPTION NUMBER

ACCEPTING FOR FILING IN THE OFFICE OF THE CLERK AND RECORDER OF GILPIN COUNTY, AT CENTRAL CITY COLORADO ON THIS _____ DAY OF _____, 202__ AT _____ O'CLOCK.

_____
GILPIN COUNTY CLERK AND RECORDER

_____
BY: DEPUTY CLERK

RICK ENGINEERING COMPANY
9801 E EASTER AVE.
CENTENNIAL, CO 80112
PH. (303) 557-8020

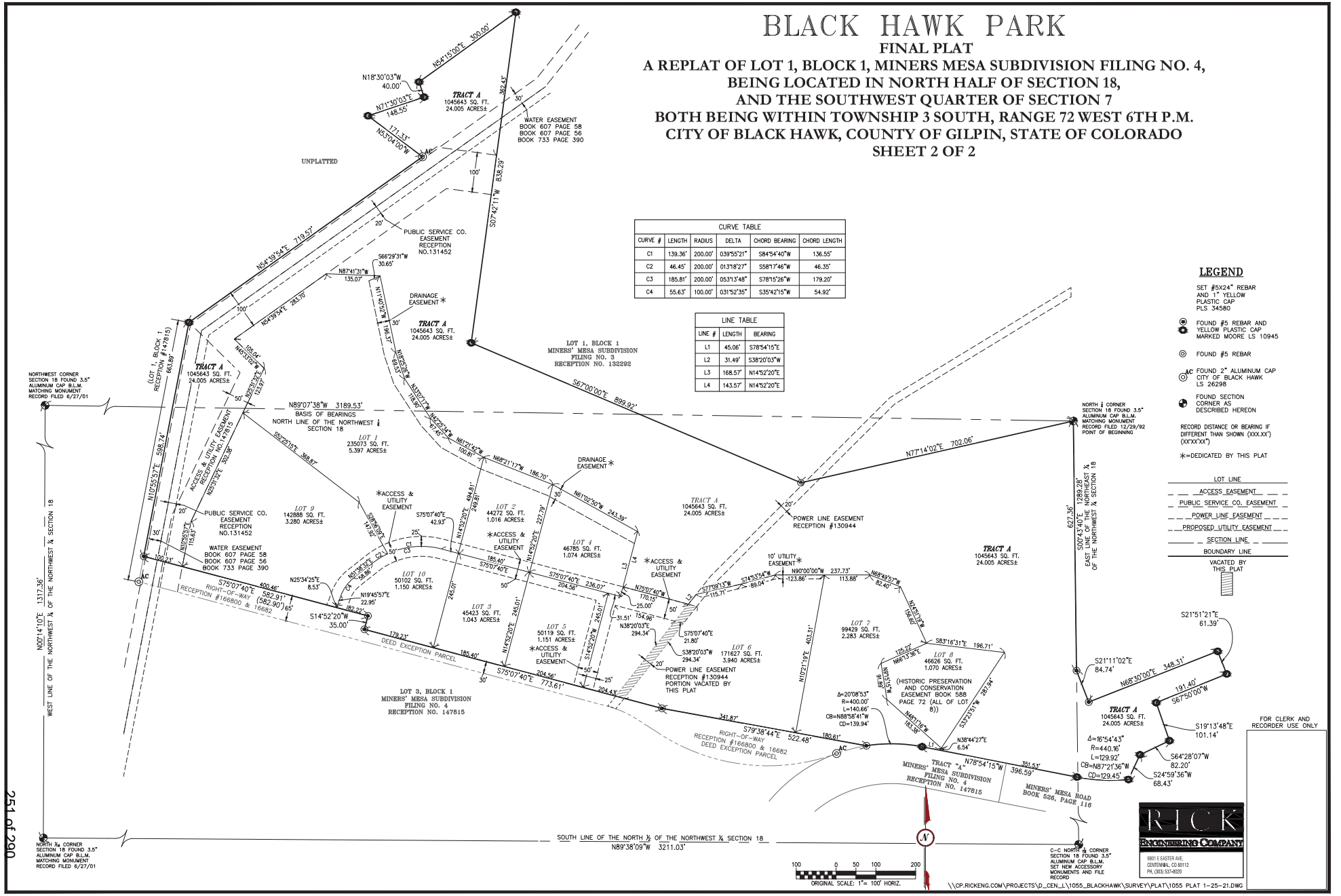
\\CP.RICKENG.COM\PROJECTS\D_CEN_L\1055_BLACKHAWK\SURVEY\PLAT\1055 PLAT 1-25-21.DWG

BLACK HAWK PARK

FINAL PLAT

A REPLAT OF LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, BEING LOCATED IN NORTH HALF OF SECTION 18, AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P.M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

SHEET 2 OF 2



Parcel Map Check Report

Date: 1/26/2021 8:39:51 AM

Parcel Name: Lots - Lot 1
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False

North:1,168,798.7252'	East:3,002,894.4662'

Segment# 1: Line

Course: S42° 25' 33.58"E	Length: 67.452'
North: 1,168,748.9355'	East: 3,002,939.9718'

Segment# 2: Line

Course: S61° 21' 42.44"E	Length: 100.812'
North: 1,168,700.6186'	East: 3,003,028.4509'

Segment# 3: Line

Course: S14° 52' 20.00"W	Length: 249.805'
North: 1,168,459.1819'	East: 3,002,964.3349'

Segment# 4: Line

Course: N75° 07' 40.00"W	Length: 42.931'
North: 1,168,470.2008'	East: 3,002,922.8420'

Segment# 5: Curve

Length: 139.356'	Radius: 200.000'
Delta: 39.9225 (d)	Tangent: 72.641'
Chord: 136.554'	Course: S84° 54' 39.56"W
Course In: S14° 52' 20.00"W	Course Out: N25° 03' 00.87"W
RP North: 1,168,276.9006'	East: 3,002,871.5092'
End North: 1,168,458.0880'	East: 3,002,786.8266'

Segment# 6: Line

Course: N28° 56' 09.10"W	Length: 147.915'
North: 1,168,587.5376'	East: 3,002,715.2608'

Segment# 7: Line

Course: N52° 25' 15.31"W
North: 1,168,812.4933'

Length: 368.867'
East: 3,002,422.9292'

Segment# 8: Line
Course: N25° 31' 32.00"E
North: 1,168,924.3666'

Length: 123.974'
East: 3,002,476.3513'

Segment# 9: Line
Course: N45° 33' 02.00"W
North: 1,168,997.9239'

Length: 105.040'
East: 3,002,401.3665'

Segment# 10: Line
Course: N54° 39' 54.00"E
North: 1,169,162.0059'

Length: 283.704'
East: 3,002,632.8078'

Segment# 11: Line
Course: S87° 41' 30.53"E
North: 1,169,156.5659'

Length: 135.072'
East: 3,002,767.7702'

Segment# 12: Line
Course: S11° 40' 51.86"E
North: 1,168,964.2647'

Length: 196.368'
East: 3,002,807.5276'

Segment# 13: Line
Course: S18° 25' 25.53"E
North: 1,168,898.3023'

Length: 69.526'
East: 3,002,829.5008'

Segment# 14: Line
Course: S33° 07' 17.11"E
North: 1,168,798.7252'

Length: 118.896'
East: 3,002,894.4674'

Perimeter: 2,149.719'
Error Closure: 0.0012
Error North: 0.00001

Area: 235,072.90Sq.Ft.
Course: N89° 24' 39.46"E
East: 0.00118

Precision 1: 1,791,431.667

Parcel Name: Lots - Lot 2
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False

North:1,168,459.1819'	East:3,002,964.3346'

Segment# 1: Line

Course: N14° 52' 20.00"E	Length: 249.805'
North: 1,168,700.6185'	East: 3,003,028.4506'

Segment# 2: Line

Course: S68° 21' 17.39"E	Length: 186.699'
North: 1,168,631.7532'	East: 3,003,201.9847'

Segment# 3: Line

Course: S14° 52' 20.00"W	Length: 227.787'
North: 1,168,411.5969'	East: 3,003,143.5199'

Segment# 4: Line

Course: N75° 07' 40.00"W	Length: 185.396'
North: 1,168,459.1815'	East: 3,002,964.3346'

Perimeter: 849.687'	Area: 44,271.83Sq.Ft.
Error Closure: 0.0004	Course: S1° 59' 12.00"W
Error North: -0.00038	East: -0.00001

Precision 1: 2,124,217.500

Parcel Name: Lots - Lot 3
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False

North:1,168,174.7975'	East:3,003,080.6353'

Segment# 1: Line

Course: N75° 07' 40.00"W	Length: 185.396'
North: 1,168,222.3820'	East: 3,002,901.4500'

Segment# 2: Line

Course: N14° 52' 20.00"E
North: 1,168,459.1814'
Length: 245.007'
East: 3,002,964.3345'

Segment# 3: Line
Course: S75° 07' 40.00"E
North: 1,168,411.5969'
Length: 185.396'
East: 3,003,143.5199'

Segment# 4: Line
Course: S14° 52' 20.00"W
North: 1,168,174.7975'
Length: 245.007'
East: 3,003,080.6353'

Perimeter: 860.807'
Error Closure: 0.0000
Error North: 0.00000
Area: 45,423.41Sq.Ft.
Course: N0° 00' 00.00"E
East: 0.00000

Precision 1: 860,806,000.000

Parcel Name: Lots - Lot 4
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,168,631.7534'
East:3,003,201.9847'

Segment# 1: Line
Course: S61° 02' 49.88"E
North: 1,168,513.9329'
Length: 243.386'
East: 3,003,414.9520'

Segment# 2: Line
Course: S14° 52' 20.00"W
North: 1,168,375.1685'
Length: 143.574'
East: 3,003,378.1017'

Segment# 3: Line
Course: S14° 52' 20.00"W
North: 1,168,351.0060'
Length: 25.000'
East: 3,003,371.6851'

Segment# 4: Line
Course: N75° 07' 40.00"W
North: 1,168,359.0937'
Length: 31.511'
East: 3,003,341.2297'

Segment# 5: Line
Course: N75° 07' 40.00"W
Length: 204.562'
North: 1,168,411.5975'
East: 3,003,143.5204'

Segment# 6: Line
Course: N14° 52' 20.00"E
Length: 227.787'
North: 1,168,631.7538'
East: 3,003,201.9852'

Perimeter: 875.820'
Area: 46,785.07Sq.Ft.
Error Closure: 0.0006
Course: N49° 51' 11.12"E
Error North: 0.00039
East: 0.00046

Precision 1: 1,459,700.000

Parcel Name: Lots - Lot 5
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,168,122.2937'
East:3,003,278.3449'

Segment# 1: Line
Course: N75° 07' 40.00"W
Length: 204.562'
North: 1,168,174.7974'
East: 3,003,080.6356'

Segment# 2: Line
Course: N14° 52' 20.00"E
Length: 245.007'
North: 1,168,411.5969'
East: 3,003,143.5201'

Segment# 3: Line
Course: S75° 07' 40.00"E
Length: 204.562'
North: 1,168,359.0931'
East: 3,003,341.2294'

Segment# 4: Line
Course: S14° 52' 20.00"W
Length: 245.007'
North: 1,168,122.2937'
East: 3,003,278.3449'

Perimeter: 899.139'
Area: 50,119.26Sq.Ft.

Error Closure: 0.0000 Course: N0° 00' 00.00"E
Error North: 0.00000 East: 0.00000

Precision 1: 899,138,000.000

Parcel Name: Lots - Lot 6
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,168,008.3765' East:3,003,812.2297'

Segment# 1: Line
Course: N79° 38' 43.68"W Length: 341.871'
North: 1,168,069.8239' East: 3,003,475.9263'

Segment# 2: Line
Course: N75° 07' 40.00"W Length: 204.429'
North: 1,168,122.2935' East: 3,003,278.3455'

Segment# 3: Line
Course: N14° 52' 20.00"E Length: 245.007'
North: 1,168,359.0929' East: 3,003,341.2301'

Segment# 4: Line
Course: S75° 07' 40.00"E Length: 31.511'
North: 1,168,351.0052' East: 3,003,371.6855'

Segment# 5: Line
Course: N14° 52' 20.00"E Length: 25.000'
North: 1,168,375.1677' East: 3,003,378.1021'

Segment# 6: Line
Course: S75° 07' 40.00"E Length: 170.155'
North: 1,168,331.4950' East: 3,003,542.5570'

Segment# 7: Line
Course: N38° 20' 03.25"E Length: 31.490'
North: 1,168,356.1960' East: 3,003,562.0886'

Segment# 8: Line
Course: N77° 09' 12.70"E Length: 115.715'
North: 1,168,381.9240' East: 3,003,674.9072'

Segment# 9: Line
Course: N74° 53' 54.21"E Length: 89.037'
North: 1,168,405.1209' East: 3,003,760.8693'

Segment# 10: Line
Course: N90° 00' 00.00"E Length: 123.858'
North: 1,168,405.1209' East: 3,003,884.7273'

Segment# 11: Line
Course: S10° 21' 19.00"W Length: 403.314'
North: 1,168,008.3761' East: 3,003,812.2311'

Perimeter: 1,781.388' Area: 171,626.72Sq.Ft.
Error Closure: 0.0014 Course: S71° 30' 43.55"E
Error North: -0.00045 East: 0.00135

Precision 1: 1,272,419.286

Parcel Name: Lots - Lot 7
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,167,969.8478' East:3,004,178.1226'

Segment# 1: Line
Course: S38° 44' 27.49"W Length: 6.540'
North: 1,167,964.7467' East: 3,004,174.0299'

Segment# 2: Line
Course: N78° 54' 15.00"W Length: 45.058'
North: 1,167,973.4181' East: 3,004,129.8142'

Segment# 3: Curve

Length: 140.660'
Radius: 400.000'
Delta: 20.1480 (d)
Tangent: 71.064'
Chord: 139.936'
Course: N88° 58' 41.38"W
Course In: S11° 05' 45.01"W
Course Out: N9° 03' 07.76"W
RP North: 1,167,580.8955'
East: 3,004,052.8339'
End North: 1,167,975.9137'
East: 3,003,989.9005'

Segment# 4: Line
Course: N79° 38' 43.68"W
Length: 180.612'
North: 1,168,008.3766'
East: 3,003,812.2299'

Segment# 5: Line
Course: N10° 21' 19.00"E
Length: 403.314'
North: 1,168,405.1215'
East: 3,003,884.7261'

Segment# 6: Line
Course: N90° 00' 00.00"E
Length: 113.877'
North: 1,168,405.1215'
East: 3,003,998.6031'

Segment# 7: Line
Course: S68° 49' 57.41"E
Length: 82.398'
North: 1,168,375.3681'
East: 3,004,075.4417'

Segment# 8: Line
Course: S24° 51' 18.56"E
Length: 156.595'
North: 1,168,233.2780'
East: 3,004,141.2626'

Segment# 9: Line
Course: S66° 13' 36.06"W
Length: 125.221'
North: 1,168,182.7990'
East: 3,004,026.6669'

Segment# 10: Line
Course: S9° 15' 15.13"E
Length: 91.890'
North: 1,168,092.1050'
East: 3,004,041.4442'

Segment# 11: Line
Course: S48° 11' 16.00"E
Length: 183.379'
North: 1,167,969.8477'
East: 3,004,178.1228'

Perimeter: 1,529.544'	Area: 99,428.82Sq.Ft.
Error Closure: 0.0002	Course: S75° 45' 35.10"E
Error North: -0.00004	East: 0.00016

Precision 1: 7,647,720.000

Parcel Name: Lots - Lot 8
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False

North:1,168,233.2780'	East:3,004,141.2626'

Segment# 1: Line	
Course: S83° 16' 31.17"E	Length: 196.710'
North: 1,168,210.2435'	East: 3,004,336.6193'

Segment# 2: Line	
Course: S33° 23' 51.16"W	Length: 287.943'
North: 1,167,969.8481'	East: 3,004,178.1225'

Segment# 3: Line	
Course: N48° 11' 16.00"W	Length: 183.379'
North: 1,168,092.1053'	East: 3,004,041.4439'

Segment# 4: Line	
Course: N9° 15' 15.13"W	Length: 91.890'
North: 1,168,182.7994'	East: 3,004,026.6666'

Segment# 5: Line	
Course: N66° 13' 36.06"E	Length: 125.221'
North: 1,168,233.2783'	East: 3,004,141.2623'

Perimeter: 885.144'	Area: 46,625.90Sq.Ft.
Error Closure: 0.0005	Course: N32° 26' 01.18"W
Error North: 0.00039	East: -0.00024

Precision 1: 1,770,286.000

Parcel Name: Lots - Lot 9
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False

North:1,168,458.0881'	East:3,002,786.8259'

Segment# 1: Curve

Length: 46.452'	Radius: 200.000'
Delta: 13.3075 (d)	Tangent: 23.331'
Chord: 46.348'	Course: S58° 17' 45.65"W
Course In: S25° 03' 00.87"E	Course Out: N38° 21' 27.83"W
RP North: 1,168,276.9007'	East: 3,002,871.5084'
End North: 1,168,433.7310'	East: 3,002,747.3945'

Segment# 2: Line

Course: S51° 38' 32.17"W	Length: 58.860'
North: 1,168,397.2043'	East: 3,002,701.2394'

Segment# 3: Curve

Length: 55.635'	Radius: 100.000'
Delta: 31.8765 (d)	Tangent: 28.558'
Chord: 54.920'	Course: S35° 42' 14.53"W
Course In: S38° 21' 27.83"E	Course Out: N70° 14' 03.11"W
RP North: 1,168,318.7891'	East: 3,002,763.2963'
End North: 1,168,352.6068'	East: 3,002,669.1880'

Segment# 4: Line

Course: S19° 45' 56.89"W	Length: 22.949'
North: 1,168,331.0099'	East: 3,002,661.4272'

Segment# 5: Line

Course: S25° 34' 25.45"W	Length: 8.532'
North: 1,168,323.3137'	East: 3,002,657.7442'

Segment# 6: Line

Course: N75° 07' 40.00"W	Length: 400.461'
North: 1,168,426.0978'	East: 3,002,270.6984'

Segment# 7: Line
Course: N10° 55' 57.00"E Length: 115.627'
North: 1,168,539.6263' East: 3,002,292.6273'

Segment# 8: Line
Course: N25° 31' 32.00"E Length: 302.382'
North: 1,168,812.4937' East: 3,002,422.9279'

Segment# 9: Line
Course: S52° 25' 15.31"E Length: 368.867'
North: 1,168,587.5380' East: 3,002,715.2595'

Segment# 10: Line
Course: S28° 56' 09.10"E Length: 147.915'
North: 1,168,458.0885' East: 3,002,786.8253'

Perimeter: 1,527.680' Area: 142,888.29Sq.Ft.
Error Closure: 0.0007 Course: N56° 33' 24.07"W
Error North: 0.00039 East: -0.00059

Precision 1: 2,182,400.000

Parcel Name: Lots - Lot 10
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,168,222.3820' East:3,002,901.4499'

Segment# 1: Line
Course: N75° 07' 40.00"W Length: 179.227'
North: 1,168,268.3832' East: 3,002,728.2269'

Segment# 2: Line
Course: N14° 52' 20.00"E Length: 35.000'
North: 1,168,302.2107' East: 3,002,737.2102'

Segment# 3: Line
Course: N75° 07' 40.00"W Length: 82.221'

North: 1,168,323.3139' East: 3,002,657.7435'

Segment# 4: Line
Course: N25° 34' 25.45"E Length: 8.532'
North: 1,168,331.0100' East: 3,002,661.4266'

Segment# 5: Line
Course: N19° 45' 56.89"E Length: 22.949'
North: 1,168,352.6069' East: 3,002,669.1874'

Segment# 6: Curve
Length: 55.635' Radius: 100.000'
Delta: 31.8765 (d) Tangent: 28.558'
Chord: 54.920' Course: N35° 42' 14.53"E
Course In: S70° 14' 03.11"E Course Out: N38° 21' 27.83"W
RP North: 1,168,318.7893' East: 3,002,763.2956'
End North: 1,168,397.2045' East: 3,002,701.2387'

Segment# 7: Line
Course: N51° 38' 32.17"E Length: 58.860'
North: 1,168,433.7312' East: 3,002,747.3938'

Segment# 8: Curve
Length: 46.452' Radius: 200.000'
Delta: 13.3075 (d) Tangent: 23.331'
Chord: 46.348' Course: N58° 17' 45.65"E
Course In: S38° 21' 27.83"E Course Out: N25° 03' 00.87"W
RP North: 1,168,276.9009' East: 3,002,871.5077'
End North: 1,168,458.0883' East: 3,002,786.8252'

Segment# 9: Curve
Length: 139.356' Radius: 200.000'
Delta: 39.9225 (d) Tangent: 72.641'
Chord: 136.554' Course: N84° 54' 39.56"E
Course In: S25° 03' 00.87"E Course Out: N14° 52' 20.00"E
RP North: 1,168,276.9009' East: 3,002,871.5077'
End North: 1,168,470.2010' East: 3,002,922.8406'

Segment# 10: Line
Course: S75° 07' 40.00"E Length: 42.931'
North: 1,168,459.1822' East: 3,002,964.3334'

Segment# 11: Line
Course: S14° 52' 20.00"W Length: 245.007'
North: 1,168,222.3827' East: 3,002,901.4489'

Perimeter: 916.170' Area: 50,101.60Sq.Ft.
Error Closure: 0.0013 Course: N55° 59' 22.66"W
Error North: 0.00070 East: -0.00104

Precision 1: 704,746.154

TRACT

Parcel Name: Tracts – Tract A
Description:
Process segment order counterclockwise: False
Enable mapcheck across chord: False
North:1,168,988.4283' East:3,002,996.7391'

Segment# 1: Line
Course: S67° 00' 00.00"E Length: 899.915'
North: 1,168,636.8035' East: 3,003,825.1152'

Segment# 2: Line
Course: N77° 14' 02.43"E Length: 702.055'
North: 1,168,791.9363' East: 3,004,509.8159'

Segment# 3: Line
Course: S0° 43' 40.28"E Length: 627.359'
North: 1,168,164.6280' East: 3,004,517.7853'

Segment# 4: Line
Course: S21° 11' 02.00"E Length: 84.740'
North: 1,168,085.6142' East: 3,004,548.4072'

Segment# 5: Line
Course: N68° 30' 00.00"E Length: 348.310'
North: 1,168,213.2703' East: 3,004,872.4809'

Segment# 6: Line
Course: S21° 51' 20.81"E Length: 61.387'
North: 1,168,156.2955' East: 3,004,895.3336'

Segment# 7: Line
Course: S67° 50' 00.00"W Length: 191.404'
North: 1,168,084.0784' East: 3,004,718.0762'

Segment# 8: Line
Course: S19° 13' 48.35"E Length: 101.141'
North: 1,167,988.5807' East: 3,004,751.3883'

Segment# 9: Line
Course: S64° 28' 07.43"W Length: 82.205'
North: 1,167,953.1501' East: 3,004,677.2106'

Segment# 10: Line
Course: S24° 59' 36.37"W Length: 68.427'
North: 1,167,891.1308' East: 3,004,648.2992'

Segment# 11: Curve
Length: 129.920' Radius: 440.160'
Delta: 16.9118 (d) Tangent: 65.436'
Chord: 129.449' Course: N87° 21' 36.21"W
Course In: N5° 48' 57.42"W Course Out: S11° 05' 45.00"W
RP North: 1,168,329.0251' East: 3,004,603.6963'
End North: 1,167,897.0932' East: 3,004,518.9873'

Segment# 12: Line
Course: N78° 54' 15.00"W Length: 351.529'
North: 1,167,964.7451' East: 3,004,174.0295'

Segment# 13: Line
Course: N38° 44' 27.49"E Length: 6.540'

North: 1,167,969.8462' East: 3,004,178.1222'

Segment# 14: Line
Course: N33° 23' 51.16"E Length: 287.943'
North: 1,168,210.2416' East: 3,004,336.6190'

Segment# 15: Line
Course: N83° 16' 31.17"W Length: 196.710'
North: 1,168,233.2761' East: 3,004,141.2623'

Segment# 16: Line
Course: N24° 51' 18.56"W Length: 156.595'
North: 1,168,375.3662' East: 3,004,075.4414'

Segment# 17: Line
Course: N68° 49' 57.41"W Length: 82.398'
North: 1,168,405.1196' East: 3,003,998.6028'

Segment# 18: Line
Course: N90° 00' 00.00"W Length: 113.877'
North: 1,168,405.1196' East: 3,003,884.7258'

Segment# 19: Line
Course: N90° 00' 00.00"W Length: 123.858'
North: 1,168,405.1196' East: 3,003,760.8678'

Segment# 20: Line
Course: S74° 53' 54.21"W Length: 89.037'
North: 1,168,381.9226' East: 3,003,674.9057'

Segment# 21: Line
Course: S77° 09' 12.70"W Length: 115.715'
North: 1,168,356.1946' East: 3,003,562.0871'

Segment# 22: Line
Course: S38° 20' 03.25"W Length: 31.490'
North: 1,168,331.4937' East: 3,003,542.5555'

Segment# 23: Line
Course: N75° 07' 40.00"W Length: 170.155'
North: 1,168,375.1664' East: 3,003,378.1006'

Segment# 24: Line
Course: N14° 52' 20.00"E Length: 143.574'
North: 1,168,513.9308' East: 3,003,414.9509'

Segment# 25: Line
Course: N61° 02' 49.88"W Length: 243.386'
North: 1,168,631.7513' East: 3,003,201.9836'

Segment# 26: Line
Course: N68° 21' 17.39"W Length: 186.699'
North: 1,168,700.6166' East: 3,003,028.4495'

Segment# 27: Line
Course: N61° 21' 42.44"W Length: 100.812'
North: 1,168,748.9335' East: 3,002,939.9705'

Segment# 28: Line
Course: N42° 25' 33.58"W Length: 67.452'
North: 1,168,798.7231' East: 3,002,894.4649'

Segment# 29: Line
Course: N33° 07' 17.11"W Length: 118.896'
North: 1,168,898.3003' East: 3,002,829.4983'

Segment# 30: Line
Course: N18° 25' 25.53"W Length: 69.526'
North: 1,168,964.2627' East: 3,002,807.5251'

Segment# 31: Line
Course: N11° 40' 51.86"W Length: 196.368'
North: 1,169,156.5639' East: 3,002,767.7677'

Segment# 32: Line
Course: N87° 41' 30.53"W Length: 135.072'

North: 1,169,162.0038' East: 3,002,632.8053'

Segment# 33: Line
Course: S54° 39' 54.00"W Length: 283.704'
North: 1,168,997.9219' East: 3,002,401.3640'

Segment# 34: Line
Course: S45° 33' 02.00"E Length: 105.040'
North: 1,168,924.3645' East: 3,002,476.3488'

Segment# 35: Line
Course: S25° 31' 32.00"W Length: 426.356'
North: 1,168,539.6238' East: 3,002,292.6261'

Segment# 36: Line
Course: S10° 55' 57.00"W Length: 115.627'
North: 1,168,426.0953' East: 3,002,270.6972'

Segment# 37: Line
Course: N75° 07' 40.00"W Length: 100.226'
North: 1,168,451.8197' East: 3,002,173.8287'

Segment# 38: Line
Course: N10° 55' 57.00"E Length: 598.741'
North: 1,169,039.6943' East: 3,002,287.3814'

Segment# 39: Line
Course: N54° 39' 54.00"E Length: 719.574'
North: 1,169,455.8643' East: 3,002,874.3987'

Segment# 40: Line
Course: N53° 03' 59.98"W Length: 171.327'
North: 1,169,558.8122' East: 3,002,737.4510'

Segment# 41: Line
Course: N71° 30' 03.00"E Length: 148.550'
North: 1,169,605.9458' East: 3,002,878.3251'

Segment# 42: Line
Course: N18° 30' 03.00"W
Length: 40.000'
North: 1,169,643.8785'
East: 3,002,865.6324'

Segment# 43: Line
Course: N54° 15' 00.00"E
Length: 299.996'
North: 1,169,819.1511'
East: 3,003,109.1013'

Segment# 44: Line
Course: S7° 42' 11.00"W
Length: 838.290'
North: 1,168,988.4258'
East: 3,002,996.7378'

Perimeter: 10,131.926'
Area: 1,045,642.86Sq.Ft.
Error Closure: 0.0028
Course: S28° 08' 15.93"W
Error North: -0.00250
East: -0.00134

Precision 1: 3,618,545.000

PRELIMINARY ENGINEERING PLANS FOR
BLACK HAWK PARK

LOT 1, BLOCK 1, MINERS MESA SUBDIVISION FILING NO. 4, LOCATED IN NORTH HALF OF SECTION 18. AND THE SOUTHWEST QUARTER OF SECTION 7 BOTH BEING WITHIN TOWNSHIP 3 SOUTH, RANGE 72 WEST 6TH P,M. CITY OF BLACK HAWK, COUNTY OF GILPIN, STATE OF COLORADO

OWNER:
CLUB VISTA PROPERTIES II, LLC
CONTACT: DARWIN HORAN

DEVELOPER:
VENTANA CAPITAL, INC.
9801 E. EASTER AVE.
CENTENNIAL, CO 80112
PHONE: 303.340.7006

CONTACT: BRYAN HORAN

ENGINEER:
RICK ENGINEERING COMPANY
9801 E. EASTER AVE.
CENTENNIAL, CO 80112
PHONE: 303.537.8020

CONTACT: ROBERT FITCH

SURVEYOR:
RICK ENGINEERING COMPANY
5690 WEBSTER ST.
ARVADA, CO 80002
PHONE: 303.423.6036

CONTACT: BOB HENNESSY

AGENCY:
CITY OF BLACK HAWK
211 CHURCH STREET,
BLACK HAWK, CO 80422
PHONE: 303.582.0615

CONTACT: CYNTHIA LINKER

PROJECT NARRATIVE:
THE PROJECT CONSISTS OF THE SUBDIVISION OF LOT 1, BLOCK1, OF MINERS MESA SUBDIVISION FILING NO. 4 INTO 8 LOTS AND 1 TRACT. THE SCOPE OF WORK TO BE COMPLETED INCLUDES OVERLOT GRADING FOR THE 8 LOTS, PRIVATE ACCESS ROADWAY IMPROVEMENTS AND DRIVEWAY ACCESS POINTS FROM MINERS MESA ROAD, SHARED PRIVATE DRAINAGE AND SEWER INFRASTRUCTURE IMPROVEMENTS, AND PUBLIC WATER INFRASTRUCTURE.

THE PROPERTY IS ZONED COMMERCIAL/BUSINESS SERVICES (C/BS) AND HAS AN APPROVED SPECIAL REVIEW USE (SRU) FOR RECREATIONAL CAMPGROUND AND INDOOR SHOOTING FACILITIES. THE PROPOSED USES FOR THE SITE WILL BE CONSISTENT WITH THE ZONING REQUIREMENTS AND WILL INCLUDE USES SUCH AS:

- AN AIRSTREAM PARK DEVELOPMENT WITH AMENITIES INCLUDING:
  - –A CARETAKERS CHECK–IN BUILDING
  - –AN INDOOR SHOOTING RANGE FACILITIES
  - –AIRSTREAM BAR
- DISTILLERY FACILITIES INCLUDING TASTING ROOMS

STANDARDS AND SPECIFICATIONS

- BLACK HAWK AND CENTRAL CITY WATER AND SANITATION DISTRICT STANDARDS AND DETAILS
- CITY OF BLACK HAWK AND GIPLIN COUNTY ROADWAY DESIGN AND CONSTRUCTION STANDARDS
- MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (2009)
- URBAN STORM DRAINAGE CRITERIA MANUAL VOLUMES 1, 2, & 3 (2016)
- CITY OF BLACK HAWK ZONING ORDINANCE

THE CONTRACTOR SHALL ALERT THE OWNER AND ENGINEER OF ANY DISCREPANCIES FOUND BETWEEN THESE PLANS AND THE STANDARDS AND SPECIFICATIONS USED ABOVE.

VESTED RIGHTS STATEMENT
THIS PLAN IS SUBMITTED TO CREATE VESTED PROPERTY RIGHTS PURSUANT TO ARTICLE 68 OF TITLE 24, C.R.S. AND PURSUANT TO SECTIONS 361 AND 362 OF ARTICLE XVII OF THE BLACK HAWK MUNICIPAL CODE AS ADOPTED BY THE BOARD OF ALDERMEN AND AVAILABLE AT CITY HALL, 201 SELAK STREET, BLACK HAWK, COLORADO 80422.

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
01	COVER
02	EXISTING CONDITIONS
03	GRADING AND DRAINAGE
04	WATER AND SEWER PLAN
05	ROADWAY PLANS



LOCATION MAP
SCALE 1"=1000'

CERTIFICATIONS
OWNER'S SIGNATURE:
CLUB VISTA PROPERTIES II, LLC

NAME: DARWIN HORAN

TITLE: OWNER

STATE OF COLORADO, COUNTY OF GILPIN

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS_____DAY OF_____, 20____, BY: DARWIN HORAN, OWNER OF VISTA PROPERTIES II, LLC.

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES:_____

NOTARY PUBLIC:_____ ADDRESS:_____

CITY OF BLACK HAWK BOARD OF ALDERMEN CERTIFICATION:

THIS SITE DEVELOPMENT PLAN IS APPROVED BY THE BOARD OF ALDERMEN OF THE CITY OF BLACK HAWK, COLORADO, THIS_____DAY OF_____, 20____

BY:_____
MAYOR OF THE CITY OF BLACK HAWK, COLORADO

ATTEST:_____
CITY CLERK

THIS PLAN CONSTITUTES A SITE SPECIFIC DEVELOPMENT AS DEFINED IN 24–69–101. ET SEQ., C.R.S., AND ORDINANCE NO. 98–62 OF THE CITY OF BLACK HAWK.

THE TERM AND CONDITIONS OF SUCH APPROVAL ARE CONTAINED IN RESOLUTION NO._____ ADOPTED BY THE CITY ON_____ AND AVAILABLE AT CITY HALL, 201 SELAK STREET, BLACK HAWK, COLORADO.

LEGEND

	EXISTING	PROPOSED
LOT LINE		
RIGHT–OF–WAY		
CENTERLINE		
CURB		
CURB & GUTTER		
FENCE–GENERAL USE		
DAYLIGHT LINE		
EASEMENT		
FLOWLINE		
RETAINING WALL		
SITE BOUNDARY		
TYPICAL LATERALS	XX	XX
CONTOURS		
SANITARY SEWER MANHOLE		
STORM DRAIN MANHOLE		
WATER VALVE		
FIRE HYDRANT		
TRANSFORMER		
4–WAY SIGN		
2–WAY SIGN		
STREET LIGHT		
POWER POLE		
BENCHMARK		
SET WELL MONUMENT		
ASPHALT		
TYPE R STORM INLET		
TYPE C STORM INLET		
STORM DRAIN		
SEWER LINE	S	S
WATER MAIN	W	W
CONCRETE		
SWALE		
SIGHT TRIANGLE		
TREES		
ROAD BASE		

ABBREVIATION

AIR RELEASE VALVE	ARV
BEGIN CURVE	BC
BLOW OFF VALVE	BOV
BEGIN VERTICAL CURVE STATION	BVCS
BEGINNING OF VERTICAL CURVE ELEVATION	BVCE
CENTERLINE	CL
CLEANOUT	CO
ELECTRIC BOX	EB
END CURVE	EC
END VERTICAL CURVE STATION	EVCS
END VERTICAL CURVE ELEVATION	EVCE
EXISTING GRADE	EG
FINISHED GRADE	FG
FINISHED SURFACE	FS
FINISH FLOOR	FF
FLOW LINE	FL
GARAGE FLOOR FRONT	GFF
GARAGE FLOOR BACK	GFB
GRADE BREAK	GB
HIGH POINT	HP
INVERT	INV
IRRIGATION CONTROL VALVE	ICV
LOW POINT	LP
POINT OF CURB RETURN	PCR
POINT OF VERTICAL CURVE INTERSECTION	PVI
PROPERTY LINE	PL
PUBLIC UTILITY EASEMENT	PUE
PULL BOX	PB
RIGHT–OF–WAY	ROW
THRUST BLOCK	TB
TOP OF CURB	TC
TOP OF FOOTING	TF
TOP OF GRATE	TG
TOP OF WALL	TW
WATER METER	WM

SITE BENCHMARK & BASIS OF BEARING:
CONTROL POINT 1: VERTICAL DATUM IS BASED IPON NAVD88 OPUS/GEOID18, GPS STATIC OBSERVATION.
NORTHING: 1168024.49'
EASTING: 3003217.42'
ELEVATION: 8647.75'
CP 1 IS A 1.5" ALUMINUM CAP STAMPED: "CP A". IT CAN BE FOUND AT THE LANDSCAPING AREA JUST WEST OF THE MAIN ENTRANCE TO THE CITY OF BLACK HAWK MAINTENANCE OFFICE PARKING LOT. IT IS APPROXIMATELY 1.6' TO THE TOP BACK OF CURVE AND 9.4' WESTERLY TO THE POINT OF CURVATURE AND BEING 0.2' BELOW GRADE.

BASIS OF BEARING: BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 18 BEING ASSUMED TO BEAR N 89°07'38" W, A DISTANCE OF 3180.53 FEET BETWEEN THE FOLLOWING DESCRIBED MONUMENTS.

–THE NORTH QUARTER CORNER OF SECTION 18 BEING FOUND 3.5" ALUMINUM CAP B.L.M. MATCHING MONUMENT RECORD FILED 12/29/92.

–THE NORTHWEST CORNER OF SECTION 18 BEING A FOUND 3.5" ALUMINUM CAP B.L.M. MATCHING MONUMENT RECORD FILED 6/27/01.

RICK ENGINEERING COMPANY
[redacted]

BLACK HAWK PARK
COVER SHEET
GILPIN COUNTY, CO

REVISIONS: NO.	DESCRIPTION	DATE:

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

SIGNATURE DATE

SCALE:
DATE: 01/26/2021
DRAWN BY: JP/BG
CHECKED BY: JK
JOB NO: D01055

PROJECT NO.
D01055
DRAWING NO.
COVER
SHEET NO. 01 OF 05 SHEETS

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BLACK HAWK PARK
EXISTING CONDITIONS

GILPIN COUNTY, CO

REVISIONS: NO.	DESCRIPTION	DATE:
1		

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

SIGNATURE DATE

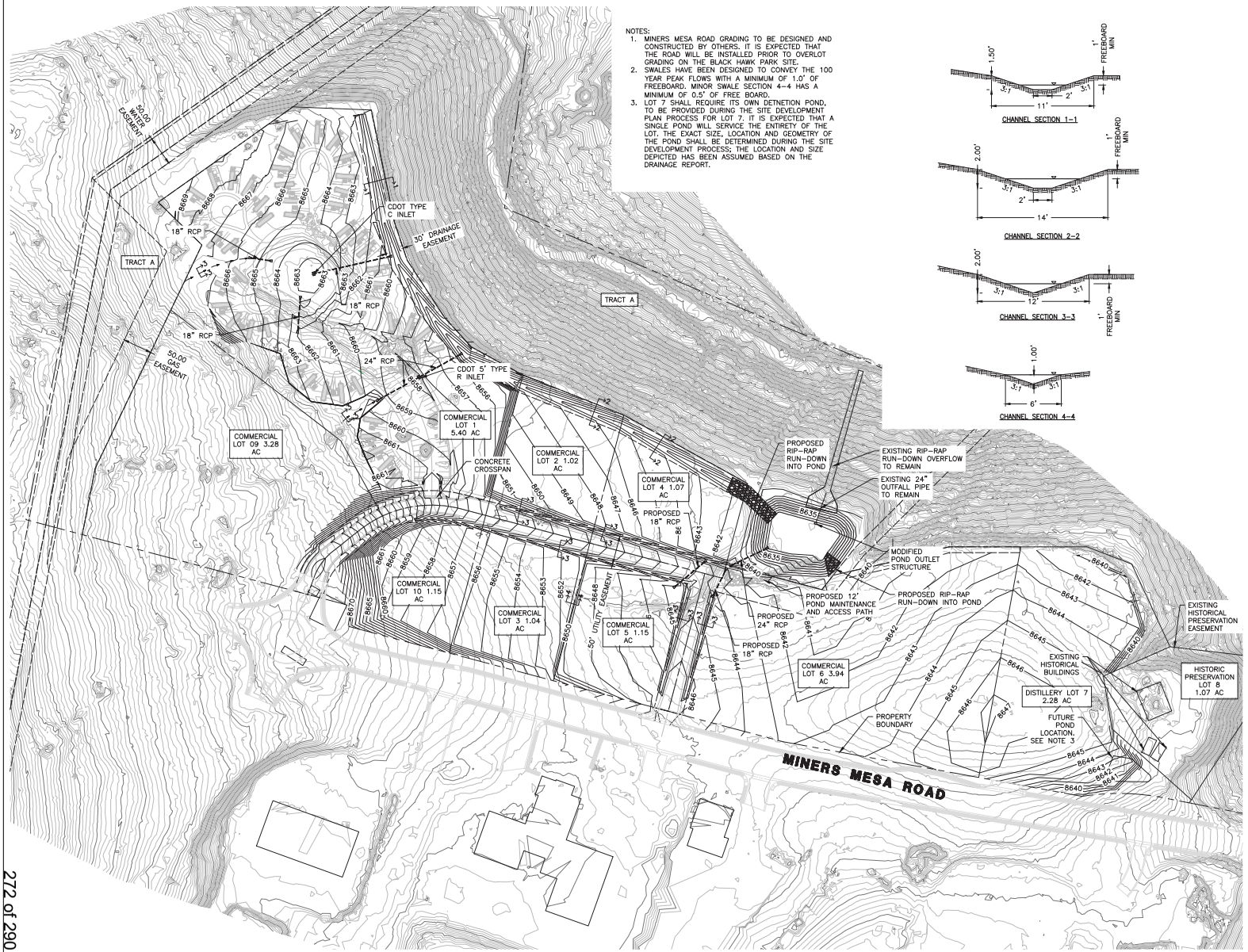
SCALE:	1"=80'
DATE:	01/26/2021
DRAWN BY:	JP/BG
CHECKED BY:	JK
JOB NO:	D01055

PROJECT NO.
D01055

DRAWING NO.
EX-01

SHEET NO. 02 OF 05 SHEETS

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BLACK HAWK PARK
OVERLOT GRADING PLAN
GILPIN COUNTY, CO

REVISIONS: NO.	DESCRIPTION	DATE:
1		

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

SIGNATURE DATE

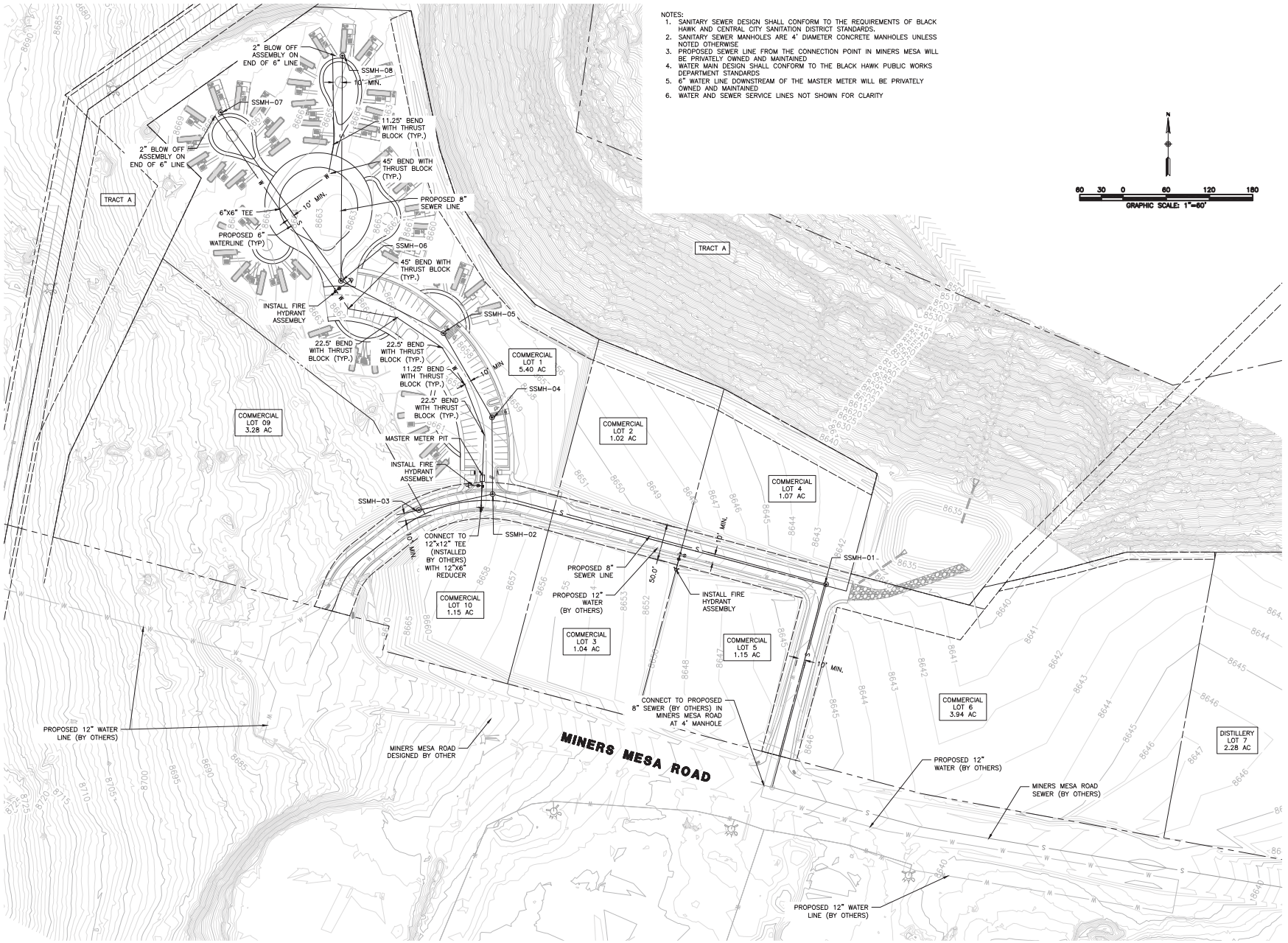
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CHECKED BY:	JK
JOB NO:	D01055

PROJECT NO.
D01055

DRAWING NO.
GRD-01

SHEET NO. 03 OF 05 SHEETS

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BLACK HAWK PARK
OVERALL UTILITY PLAN

GILPIN COUNTY, CO

REVISIONS:	NO.	DESCRIPTION	DATE:
	1		

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

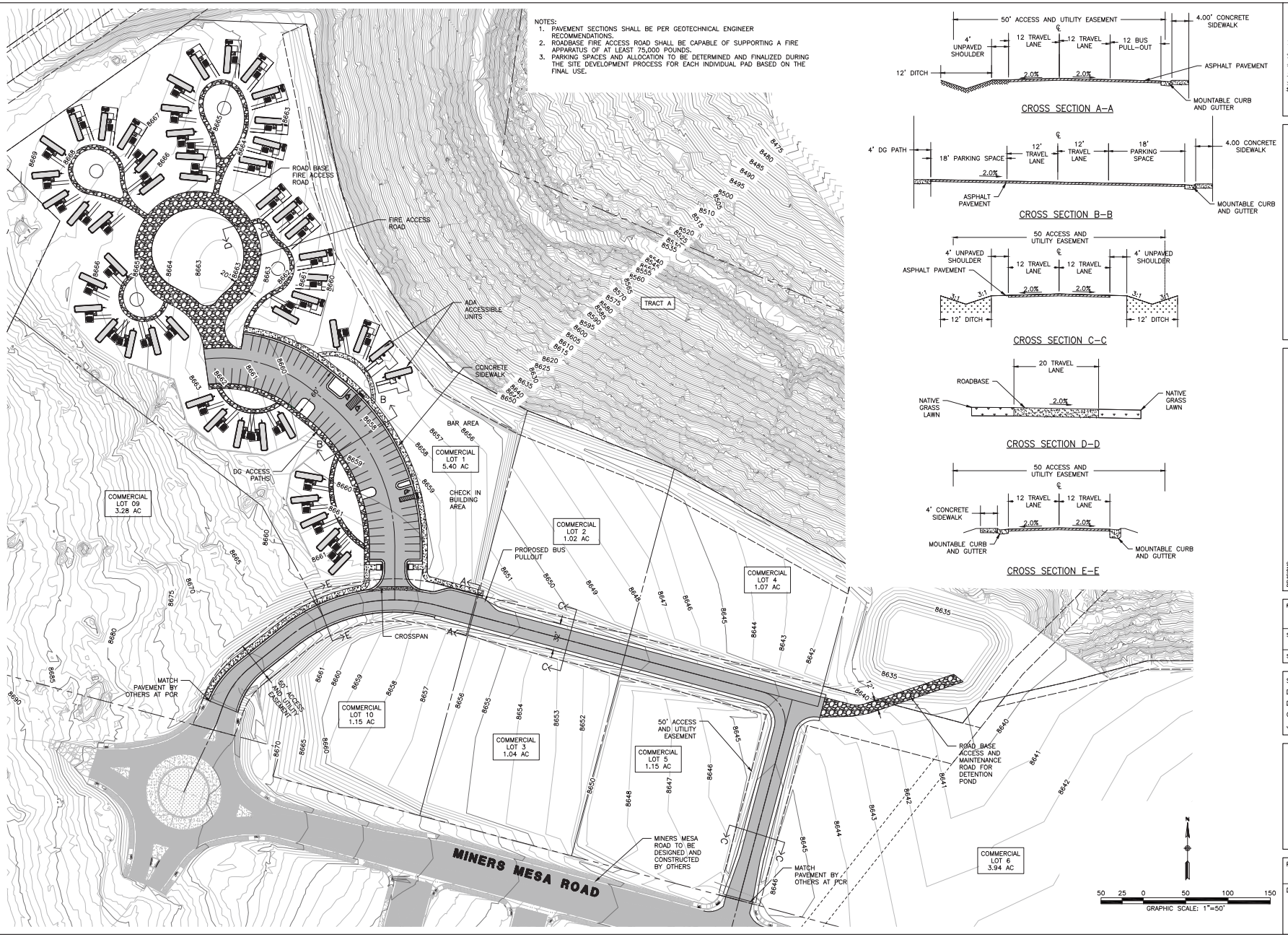
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SCALE:	1" = 50'
DATE:	01/26/2021
DRAWN BY:	JP/BG
CHECKED BY:	JK
JOB NO:	D01055

PROJECT NO.
D01055

DRAWING NO.
UTL-01

SHEET NO. 04 OF 05 SHEETS



RICK

BLACK HAWK PARK
ROADWAY PLAN

GILPIN COUNTY, CO

REVISIONS:

NO.	DESCRIPTION	DATE:
1		

REVIEWED FOR COMPLIANCE BY:

SIGNATURE DATE

SIGNATURE DATE

SCALE:	1" = 50'
DATE:	01/26/2021
DRAWN BY:	JP/BG
CHECKED BY:	JK
JOB NO:	D01055

PROJECT NO.
D01055

DRAWING NO.
RD-01

SHEET NO. 05 OF 05 SHEETS

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NEW EMPLOYEE INTRODUCTIONS

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



TIFFANY MURPHY

EXECUTIVE ADMINISTRATIVE ASSISTANT

Tiffany was hired at the end of March 2020. She came to us from various backgrounds, including a degree in Bio-Medical Engineering and a stint as a small Midwestern town Mayor. Most of her life was spent running her own hospitality software company. The company was called Rubber Tree Software and started on an island off the coast of Brisbane, Australia. Making a move to the entrepreneurial-world allowed her to raise her son, Josh, and still have a career. 25yrs later, she moved back to Colorado, where she was raised, to join her son and family living in Denver. Tiffany is a nature lover and found the perfect spot to reside in Gilpin County while assisting the City of Black Hawk to achieve its goals.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



ASHLEY WILSON



DEVELOPMENT SERVICES COORDINATOR

Prior to working at the City of Black Hawk, I worked for the City of Loveland for a total of 8 years; 4 of those years in the Building Division. I started as a Permit Technician, moved to Permit Technician Supervisor, then Residential Building Inspector, and lastly was asked to fill a new coordinator position. In the coordinator position I supervised the Permit Technicians, facilitated communication between homeowners, business owners, contractors, and consultants, and worked with the Development Review Team to provide the best service possible to our community. I was ready to learn more about the entire Development process and land use, and the Development Services Coordinator position was exactly what I was looking for. The City of Black Hawk's culture is fantastic and I am grateful to be working here.

I am currently pursuing a Bachelor's Degree in Business Management, and hope to be finished soon.

In my free time, I like to hike, camp, and off road. I am a Colorado native and my husband and I live in Johnstown. We have a 6-month old baby and are loving parenthood!

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



WILLIAM AMBURN

POLICE OFFICER

I was recently hired by the City of Black Hawk as a police officer. I work the midnight shift patrolling the neighborhoods and casinos and chasing off the occasional bear. I never thought bear chasing would become required expertise when I started in Law Enforcement. I went into the Army straight out of high school and was stationed in Europe, which gave me a whole new world to explore. I spent my off days and vacations exploring Western Europe. I was in Germany when the Berlin Wall came down, among other things. I started in Law Enforcement at the age of twenty-six and have been a police officer for twenty-three years and counting, most of which in Tennessee.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



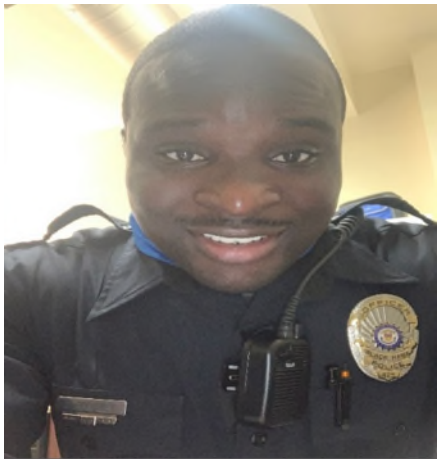
SOL ATENCIO

POLICE OFFICER

I was hired as a police officer with the Black Hawk Police Department. I love interacting with the community and how each day is different with the variety of calls coming in. I was born and raised in Colorado. I have spent most of my time in Highlands Ranch, CO. In high school, I decided law enforcement was my passion, so I joined the Douglas County Explorer Program. From there, I pursued an education at the University of Colorado Boulder. While there, I became a Community Safety Officer, who patrolled the dorms and looked for any crime within the campus. After college, I went to the police academy at Arapahoe Community College to become a police officer. I have loved every second since.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



JASSON BROBBEY

BLACK HAWK ®

POLICE OFFICER I

My name is Jasson Brobbey. I am originally from Ghana but moved here from New York. I began pursuing my career in law enforcement here in Colorado. In my time here, I have come to love Colorado. I have worked for Denver and Adams County Sheriff and am now honored to be a part of the Black Hawk Police Department. I love to be able to contribute to our team effort here at BHPD. I strive to be better at all I do and want to be my best for this department. To further my knowledge and assist on the job, I am completing my bachelor's in psychology with a focus on criminal justice. While I aim to be my best on the job, I am first and foremost a family man. My partner in crime, my fiancé Kayla, has been by my side throughout this journey, and between the two of us, we have our three wild boys. I love to laugh, love to learn, and am always up for a challenge. I look forward to this journey with Black Hawk PD and all it will mean for my family and me.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



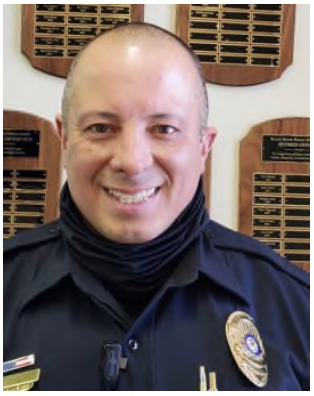
JUSTIN DIETRICK

POLICE OFFICER

I was hired by the City of Black Hawk as a Police Officer. My experience working for the City of Black Hawk so far has been great. I love the culture here! Everyone I meet is super nice, they make work enjoyable, and they create an environment that feels like a family. I feel like a lot of my supervisors and leadership sincerely care about their employees and have their best interest in mind. Working in the mountains is also a plus! I am happily married and have a daughter. I am a native of CO, born and raised in Lakewood. I worked as a police officer for Commerce City, sales of power sports and vehicles, a new construction plumber, a field technician for an engineering firm, and I served as an infantryman in the U.S Army for four years. I love being outdoors and staying active.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



JORGE DUQUE

SERGEANT



Sergeant Jorge Duque is originally from Colombia, South America, and moved to the US in 1999. In his native country, he completed his mandatory military service with the Colombian National Police and, just before coming to the US, he was attending Law School while working for the Colombian Department of Justice.

Sgt. Duque initially lived in Florida, working in the private sector for a few years until joining the Broward County Sheriff's Office as a Community Service Officer until, in 2006, he moved to Colorado to become a State Trooper with the Colorado State Patrol. In this position, he was assigned to Gilpin County for four years and, during his last three years with the State Patrol, he was certified as a Level IV Technical Accident Reconstructionist and was one of the members of the Vehicular Crimes Unit.

In 2013, Sgt. Duque left the Colorado State Patrol to join the First Judicial District Attorney's Office as a Criminal Investigator, where he worked felony investigations. During that time, he was also part of the Witness Protection Unit, the Critical Incident Response Team, and the Child Sex Offender Internet Investigations Unit.

In 2015, Sgt. Duque joined the Colorado Attorney General's Office as the Criminal Investigator in charge of the Foreign Prosecutions Unit where, in coordination with local, state, federal, and international Law Enforcement Agencies, he worked cases with international connections and acted as a liaison with other countries in criminal justice and police matters.

Now, as one of the newest members of the Black Hawk Police Department, Sgt. Duque is very excited to have the opportunity to serve the residents and visitors of the City of Black Hawk.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



RICK GRASSI

SERGEANT



MY NAME IS RICHARD RAYMOND GRASSI JR., “RICK” AND I MADE MY WAY TO BLACK HAWK, COLORADO FROM THE GREAT STATE OF TEXAS.

I GREW UP IN TEXAS WHERE I GRADUATED VIDOR HIGH SCHOOL PRIOR TO JOINING THE UNITED STATES MARINE CORP. UPON RECEIVING AN HONORABLE DISCHARGE FROM THE MILITARY, IT WAS MY DECISION TO BECOME A POLICE OFFICER. I ATTENDED THE POLICE ACADEMY IN BEAUMONT, TEXAS, GRADUATING IN DECEMBER 1994. I WAS ABLE TO GET MY FIRST JOB IN LUFKIN, TEXAS WHERE I SPENT APPROXIMATELY 3.5 YEARS BEFORE DECIDING TO MAKE THE MOVE TO THE HOUSTON AREA.

I MOVED TO TOMBALL, TEXAS IN 1998 AND JOINED THE TOMBALL POLICE DEPARTMENT. I ENDED BY TEXAS LAW ENFORCEMENT CAREER IN TOMBALL, TEXAS WHERE I SPEND THE PAST 21 YEARS. WHILE WORKING AT THE TOMBALL POLICE DEPARTMENT, I WAS ABLE TO PROGRESS THROUGH THE RANKS UNTIL I FINALLY ACHIEVED THE POSITION OF PATROL CAPTAIN IN 2006. MY JOBS, DUTIES, AND RESPONSIBILITIES AS A CAPTAIN INCLUDED BUT WASN’T LIMITED TO PATROL COMMAND, JAIL OPERATIONS, SWAT COMMAND, AND I WAS A PILOT FOR OUR AIR SUPPORT UNIT.

I HAVE THREE CHILDREN AND ONE GRANDCHILD. MY OLDEST DAUGHTER, ALEXIS GRASSI IS 29 YEARS OLD AND CURRENTLY RESIDES IN KATY, TEXAS WITH MY THREE-YEAR-OLD GRANDSON. I ALSO HAVE A 23-YEAR-OLD DAUGHTER, ALYSE GRASSI, AND A 19-YEAR-OLD SON, NICK GRASSI. BOTH ALYSE AND NICK TOOK THIS JOURNEY WITH ME AND CURRENTLY RESIDE IN LAKEWOOD, CO.

I AM NOT A NATIVE TO COLORADO, I AM A TEXAN, I LITERALLY ONLY BEEN TO COLORADO ONCE BEFORE MOVING HERE. IT ONLY TOOK ONE TRIP TO FALL IN LOVE WITH IT. I ACTUALLY FOUND MY APARTMENT ONLINE AND MOVED IN SIGHT UNSEEN BEFORE RELOCATING TO THE CITY OF PARKER WHERE I RECENTLY PURCHASED A HOME.
I AM THOROUGHLY EXCITED TO BE A PART OF THE TEAM IN BLACK HAWK. I ABSOLUTELY LOVE THIS CITY AND LOVE THIS DEPARTMENT.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



JAMES KIMBALL

POLICE OFFICER

I was hired by the City of Black Hawk as a police officer. I am assigned to the uniformed patrol division and work the 9 pm-7 am shift. I have been well received by my peers and enjoy their supportive efforts. My wife Ana and I have been married for 28 years, and we have two adult daughters. We moved to the Denver Metro area in May of 2020 after our girls graduated. I began my law enforcement career in the Air Force and have over 25 years of combined experience in the field. I am blessed to have been competitively promoted through Patrol Officer's rank to Shift Commander at my last department. My family and I chose Colorado as our new home due to the number of outdoor opportunities and beautiful scenery associated with the entire state. We enjoy scenic drives, photography, hiking, kayaking, archery, and shooting sports, to name a few.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



MICHAEL DOWNING

WATER OPERATOR I

I started with the city on October 21st. I'm currently working at the Dory Hill plant. Working here has been great so far because it's outside of the busy city life in Denver, I find it meaningful to be a part of creating the best quality water for the city, residents and visitors.

My favorite place to visit in Colorado is near Almont and the Taylor River in Gunnison County, and Crested Butte. I met my financé in Denver in 2014, and will be getting married later this year. My goals this year are to work hard and learn as much as possible.

I would say that my biggest success and my greatest accomplishments up until now is graduating from the University of Arizona with a Bachelor of Science in Natural Resources, Watershed Management and Hydrology; and recently certifying as a Colorado Water Professional and starting a career in the water treatment industry.

BLACK HAWK ®

CITY OF BLACK HAWK NEW EMPLOYEE INTRODUCTION



TRAVIS (ROYCE) MCLAIN

WATER OPERATOR II

I was hired on November 2nd. I'm tasked with assisting with oversight of the Dory Hill Water Treatment Plant and City Distribution system.

I enjoy working for a smaller system and being back in the mountains. I have a wife and one son. I'm a native to the area. I hope to get my distribution 3 certification this year.

I enjoy blacksmithing, wood work, and cutting firewood. My favorite movie is "The Cowboys", favorite book is "High Country" and my favorite memory is when my son was born