

CITY OF BOULDER PLANNING BOARD MEETING AGENDA

DATE:

February 17, 2026

TIME: 6:00 PM

PLACE: Hybrid Meeting

1. CALL TO ORDER

2. PUBLIC PARTICIPATION

3. APPROVAL OF MINUTES

A. The February 25, 2025 Draft Planning Board Meeting Minutes are scheduled for approval.

4. CALL UP ITEMS

5. PUBLIC HEARING ITEMS

A. **AGENDA TITLE:** Public Hearing and consideration of a site review amendment to the Boulder Jewish Commons Lot 2b located at 6018 Oreg Ave. for the development of a new synagogue.

6. MATTERS FROM THE PLANNING BOARD, PLANNING DIRECTOR, AND CITY ATTORNEY

A. East Boulder Subcommunity Plan Form-Based Code Discussion

7. DEBRIEF MEETING/CALENDAR CHECK

8. ADJOURNMENT

For more information call (303) 441-1880. Board packets are available after 4 p.m. Friday prior to the meeting, online at www.bouldercolorado.gov.

* * * SEE REVERSED SIDE FOR MEETING GUIDELINES * * *

**CITY OF BOULDER PLANNING BOARD
VIRTUAL AND HYBRID MEETING GUIDELINES**

These guidelines apply to electronic meetings and hybrid meetings. Hybrid meetings permit simultaneous in-person and electronic participation.

CALL TO ORDER

The Board must have a quorum (four members present) before the meeting can be called to order.

AGENDA

The Board may rearrange the order of the agenda or delete items for good cause. The Board may not add items requiring public notice.

PUBLIC PARTICIPATION

The public is welcome to address the Board (3 minutes* maximum per speaker) during the Public Participation portion of the meeting regarding any item not scheduled for a public hearing. The only items scheduled for a public hearing are those listed under the category PUBLIC HEARING ITEMS on the Agenda. **Any exhibits introduced into the record must be provided to the Board Secretary for distribution to the Board and admission into the record via email 24 hours prior to the scheduled meeting time.**

DISCUSSION AND STUDY SESSION ITEMS

Discussion and study session items do not require motions of approval or recommendation.

PUBLIC HEARING ITEMS

A Public Hearing item requires a motion and a vote. The general format for hearing of an action item is as follows:

1. Presentations

- Staff presentation (10 minutes maximum*).
- Applicant presentation (15-minute maximum*). Any exhibits introduced into the record at this time must be provided to the Board Secretary by email, no later than 24 hours prior to the scheduled meeting time, for distribution to the Board and admission into the record.
- Planning Board questioning of staff or applicant for information only.

2. Public Hearing

Each speaker will be allowed an oral presentation of up to three minutes*. Three or more people may pool their allotted time so one speaker can speak for five minutes*. To pool time, all the people pooling time must be present in-person in the physical meeting room or present electronically when the spokesperson is called to speak. Speakers with pooled time must identify the people they are pooling time with by first and last name when called upon to speak, so they can be called upon to confirm their presence and willingness to pool their speaking time.

- Speakers should introduce themselves, giving name and address. If officially representing a person, entity, group, homeowners' association, etc., please state that for the record as well.
- The board requests that, prior to offering testimony, the speaker disclose any financial or business relationship with the applicant, the project, or neighbors. This includes any paid compensation. It would also be helpful if the speaker disclosed any membership or affiliation that would affect their testimony.
- Speakers are requested not to repeat items addressed by previous speakers other than to express points of agreement or disagreement. Refrain from reading long documents and summarize comments wherever possible. Documents and other physical evidence must be submitted via email 24 hours prior to the scheduled meeting to become a part of the official record.
- Speakers should address the applicable Land Use Code criteria and, if possible, reference the criteria that the Board uses to decide a case.
- Any exhibits intended to be introduced into the record at the hearing must be emailed to the Secretary for distribution to the Board and admission into the record **24 hours prior to the meeting**.
- Citizens can email correspondence to the Planning Board and staff at boulderplanningboard@bouldercolorado.gov, up to **24 hours prior to the Planning Board meeting**, to be included as a part of the record.
- Applicants under Title 9, B.R.C. 1981, will be provided the opportunity to speak for up to 3 minutes* prior to the close of the public hearing. The board chair may allow additional time.

3. Board Action

- Board motion. Motions may take any number of forms. With regard to a specific development proposal, the motion generally is to either approve the project (with or without conditions), to deny it, or to continue the matter to a date certain (generally in order to obtain additional information).
- Board discussion. This is undertaken entirely by members of the Board. The applicant, members of the public or city staff participate only if called upon by the Chair.
- Board action (the vote). An affirmative vote of at least four members of the Board is required to pass a motion approving any action. If the vote taken results in either a tie, a vote of three to two, or a vote of three to one in favor of approval, the applicant shall be automatically allowed a rehearing upon requesting the same in writing within seven days.

MATTERS FROM THE PLANNING BOARD, DIRECTOR, AND CITY ATTORNEY

Any Planning Board member, the Planning Director, or the City Attorney may introduce before the Board matters which are not included in the formal agenda.

ADJOURNMENT

The Board's goal is that regular meetings adjourn by 10:30 p.m. and that study sessions adjourn by 10:00 p.m. New agenda items will generally not

be commenced after 10:00 p.m.

VIRTUAL MEETINGS

For Virtual Meeting Guidelines, refer to <https://bouldercolorado.gov/government/board-commission/planning-board> page for the approved Planning Board Participation Rule for Electronic and Hybrid Hearings.

*The Chair may lengthen or shorten the time allotted as appropriate. If the allotted time is exceeded, the Chair may request that the speaker conclude his or her comments

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CITY OF BOULDER
PLANNING BOARD ACTION MINUTES
February 25, 2025
Hybrid Meeting

A permanent set of these minutes and an audio recording (maintained for a period of seven years) are retained in Central Records (telephone: 303-441-3043). Minutes and streaming audio are also available on the web at: <http://www.bouldercolorado.gov/>

PLANNING BOARD MEMBERS PRESENT:

Laura Kaplan, Vice Chair
Kurt Nordback
ml Robles (virtual)
Mark McIntyre
Jorge Boone, Chair (virtual)
Mason Roberts
Claudia Hanson Thiem

PLANNING BOARD MEMBERS ABSENT:

STAFF PRESENT:

Lisa Houde, Principal Planner
Chris Hagelin, Transportation Principal Project Manager
Sam Bromberg, Access Services Senior Project Manager
Charles Ferro, Development Review Senior Manager
Thomas Remke, Senior Operations Specialist

1. CALL TO ORDER

Chair, **J. Boone**, declared a quorum at 6:00 p.m. and the following business was conducted.

2. PUBLIC PARTICIPATION

In Person: Nobody spoke.

Virtual: Lynn Segal

3. APPROVAL OF THE MINUTES

A. The January 7, 2025 Draft Planning Board Minutes are scheduled for approval.

K. Nordback made a motion seconded by M. McIntyre to approve the January 7, 2025 Draft Planning Board Meeting Minutes. Planning Board voted 6-0 (C. Hanson Thiem absent at time of vote). Motion passed.

B. The January 21, 2025 Draft Planning Board Minutes are scheduled for approval.

K. Nordback made a motion seconded by M. McIntyre to approve the January 21, 2025 Draft Planning Board Meeting Minutes. Planning Board voted 6-0 (C. Hanson Thiem absent at time of

vote). Motion passed.

C. The January 28, 2025 Draft Planning Board Minutes are scheduled for approval.

K. Nordback made a motion seconded by M. McIntyre to approve the January 28, 2025 Draft Planning Board Meeting Minutes. Planning Board voted 5-0 (C. Hanson Thiem absent at time of vote; ml Robles abstained due to absence at January 28, 2025 meeting.). Motion passed.

4. MATTERS FROM THE PLANNING BOARD, PLANNING DIRECTOR, AND CITY ATTORNEY

A. Project Update on Access Management and Parking Strategy (AMPS): Code and Policy Enhancement

Staff Presentation: Lisa Houde and Chris Hagelin presented the item to the board.

Board Questions: Lisa Houde and Chris Hagelin answered questions from the board.

Board Discussion:

Key Issue #1: Does Planning Board support staff's recommendations related to maximum parking requirements, bicycle parking, shared parking, and electric vehicle charging?

Key Issue #2: Does Planning Board support the general approach to the design of the Transportation Demand Management (TDM) ordinance for new developments, particularly relating to staff's recommendation on the use of financial guarantees as the mechanism of funding tenant TDM programs, and utilization of a three-tiered approach with specified exemptions?

Key Issue #3: Does Planning Board support staff's recommended on-street parking management strategies?

The board responded to questions presented by staff and offered their feedback on the project.

(02:07:10) M. McIntyre stated that the city should ensure that all parking is consciously priced, even when free, and use parking policy as a consistent tool across public, on-street, and neighborhood contexts. He believes that requiring developers to charge for parking while maintaining free on-street parking undermines land-use goals, creates spillover impacts, and complicates code compliance. He supported expanding and reforming NPPs with more progressive, equitable pricing. He criticized current TDM and bike parking standards for prioritizing quantity over usability, particularly for e-bikes.

(02:16:23) L. Kaplan supported staff's work and research and endorsed eliminating parking minimums, while recommending that parking calculations still be provided as informational context during site review. She raised equity concerns about exempting Tier 0 and affordable

housing from TDM requirements, emphasizing the importance of ensuring residents still receive TDM benefits even if it is not efficient for that development to do trip generation reports and monitoring. She supported minimizing Planning Board involvement in TDM plans once the program is proven to function effectively, similar to building code compliance. She supported charging for parking through the Neighborhood Parking Program or other tools. Rather than have charges that escalate per household, she prefers the idea of limiting to one permit per registered driver. She supported staff's statement that they would not increase pricing for short term residents. She did not support limiting the number of permits available for large multifamily developments which would disprivilege people who live in multifamily buildings compared to occupants of single family homes

(02:19:48) M. Roberts agreed with Mark and Laura, especially on the on the NPP expansion, and the charging for parking. He suggested clearer, table-based standards for bike parking similar to electric vehicle charging requirements. He also noted that if TDM requirements are tied to non-by-right uses that exist in perpetuity, the costs and structure of TDM should be evaluated on a perpetual basis. He recommended analyzing long-term funding assumptions using realistic interest rates based on historical returns of guaranteed funds.

(02:21:38) K. Nordback supported not imposing parking maximums, encouraging shared parking, and ensuring usable bike parking for a variety of bicycle types, and expressed interest in exploring on-street EV charging options. He recommended that TDM thresholds for multi-unit residential projects be based on floor area rather than unit count and supported evaluating the net present value of long-term TDM guarantees. He noted that public parking is currently subsidized and advocated for an equitable, citywide parking pricing approach, with exemptions for low-income and affordable housing residents, rather than expanding NPPs.

(02:25:08) : MI Robles noted that she thinks that this AMPS project really highlights the complexity of the role automobiles have been given in cities. She noted that a pretty significant amount of land will be opened up when we change the parking requirements, and she would encourage proactivity on encouraging how that existing parking areas will transition to new uses. She thinks that there is an opportunity there to impact some of our goals in affordability and environmental concerns. She recognized that this might belong in the Boulder Valley Comp Plan process, but wanted to highlight this fact.

(02:27:05) C. Hanson Thiem recommended that any ordinance include tools to improve the quality of bike parking. She supported long-term TDM financial guarantees but emphasized the need for lasting physical infrastructure requirements and recommended refining TDM tiers based on trip generation estimates rather than project counts. She agreed with her colleagues regarding equitable pricing of on-street parking. She expressed ambivalence about the proposed school walk zones, suggesting the city focus on higher-impact investments.

(02:32:21) J. Boone supported eliminating parking maximums, advocated for including bike charging, and urged a more thoughtful approach to EV charging. While expressing some

reservations about eliminating parking requirements, he emphasized capturing the land value created by reduced parking requirements through strong TDM financial guarantees. He is skeptical about the real-world effectiveness of commercial SUMP programs and raised concerns about increasing on-street parking costs for residents, pointing to quality-of-life consideration.

5. DEBRIEF MEETING/CALENDAR CHECK

6. ADJOURNMENT

The Planning Board adjourned the meeting at 8:47 PM.

APPROVED BY

Board Chair

DATE

DRAFT



CITY OF BOULDER PLANNING BOARD

MEETING DATE: February 17, 2025

AGENDA TITLE: Public Hearing and consideration of a site review amendment to the Boulder Jewish Commons Lot 2b located at 6018 Oreg Ave. for the development of a new synagogue.

Applicant: Shannon Jones, Stantec
Owners: Congregation Bonai Shalom

REQUESTING DEPARTMENT / PRESENTERS

Brad Mueller, Planning & Development Services Director
Charles Ferro, Senior Planning Manager
Alex Pichacz, Senior Planner

OBJECTIVE

1. Planning Board hears applicant and staff presentations.
2. Hold quasi-judicial public hearing.
3. Planning Board action to approve, approve with conditions, or deny.

SUMMARY

Project Name: Boulder Jewish Commons / Bonai Shalom Synagogue
Location: 6018 Oreg Avenue
Size of Property 2.54 acres (total)
Zoning: RR-1 (Rural Residential – 1), RE (Rural Estate)
Comprehensive Plan: VLR (Very Low Density Residential), LR (Low Density Residential)

EXECUTIVE SUMMARY

The purpose of this item is for the Planning Board to review and take action on the Site Review Amendment for the redevelopment of a 2.54-acre site located at 6018 Oreg Avenue to include a new synagogue. The proposal includes a setback modification to the front yard landscaped setback to preserve mature trees along the south side of the property, and the parking lot screening requirement to the east to allow visibility to the adjacent lot owned by the JCC. The applicant has requested a referral to a public hearing for Planning Board approval of the Site Review application based on neighborhood feedback.

Staff is recommending approval of the Site Review application finding the proposal consistent with relevant [Boulder Valley Comprehensive Plan \(BVCP\) policies](#) and the [Site Review criteria](#) as outlined in within this memorandum, subject to conditions of approval.

The applicant's proposed plans can be found in [Attachment A](#). The full list of staff responses to the Site and Use Review criteria for the approval recommendation by staff can be found in [Attachment B](#).

STAFF RECOMMENDATION

Staff has found that the proposed project meets criteria of [Section 9-2-14, B.R.C. 1981](#) and is recommending that Planning Board approve the application in the form of the following motions:

Suggested Motion Language:

Motion to approve Site Review application #LUR2025-00031, adopting the staff memorandum as findings of fact, including the attached analysis of review criteria, and subject to the recommended conditions of approval.

KEY ISSUES

1. Is the proposed project consistent with the Site Review Criteria, Section 9-2-14(h), B.R.C. 1981?

PUBLIC FEEDBACK

Consistent with Section [9-4-3, Public Notice Requirements, B.R.C. 1981](#), staff provided notification to all property owners within 600 feet of the subject location of the applications, and signs have been posted by the applicant indicating the review requested. Staff received comments from neighboring property owners as part of the Site Review application. Neighbors expressed concern about the site design and location of the circular internal drive aisle and the proposed accessory use for a religious school. Staff also received phone calls and email inquiries about the land use code and city processes. Formal comments received are included in [Attachment D](#).

BACKGROUND

Existing Conditions

As shown in [Figure 1](#) on the following page, the site is located on the south side of Oreg Ave., at the corner of Oreg Ave. and Cherryvale Rd.

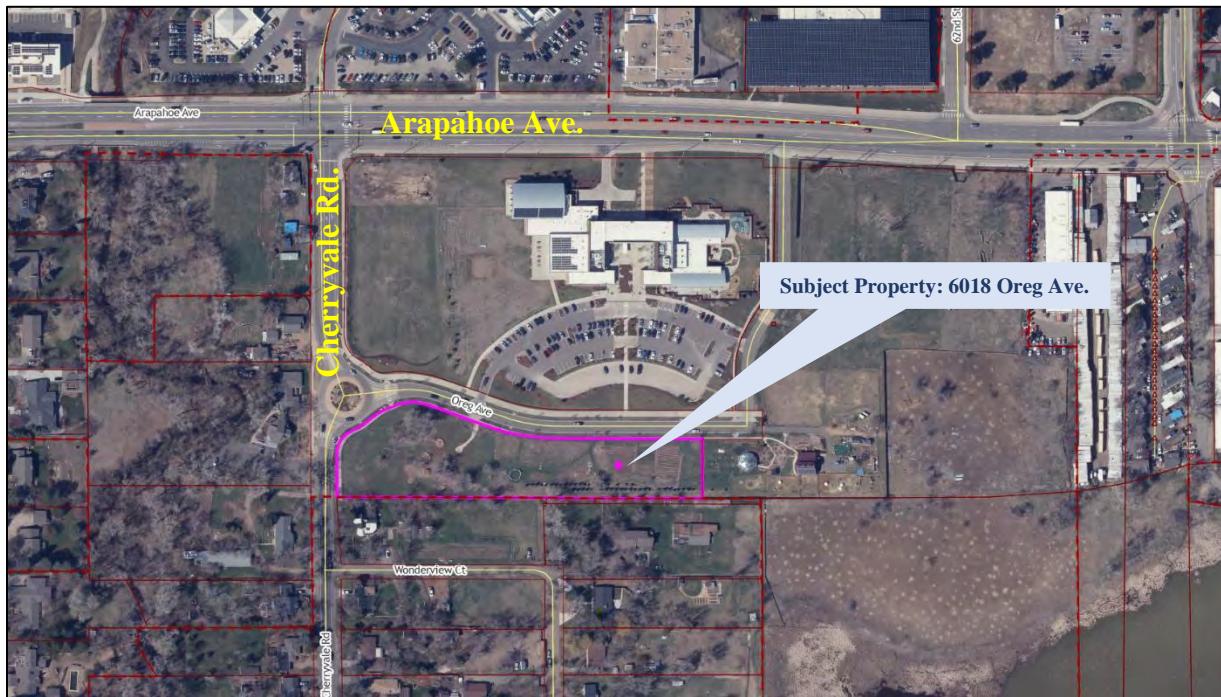


Figure 1. Vicinity Map

The subject site is comprised of a single lot located at 6018 Oreg Ave. totaling 2.54 acres. The lot was created through a subdivision and site review amendment process approved in 2024. The existing property has been used for a community garden and outdoor activity space associated with the Jewish Community Center (JCC). There is no structural development on the site, and the property currently takes access from Oreg Avenue. The site is not impacted by the floodplain, and is not subject to any area plans or design guidelines. An existing irrigation ditch spans the southern border of the property within a 15 foot easement.

Surrounding Context

The site is located between the JCC to the north, and low density residential properties with small scale agricultural uses to the south and west. The site borders the city limits along the property line to the south, with adjacent properties located in unincorporated Boulder County. The existing Bonai Shalom synagogue is located to the west of the site, across from the roundabout on Cherryvale Rd. That synagogue use will be relocated to the project site through this Site Review application, as shown in **Figure 2**. The adjacent property to the east is owned by the JCC and currently used for agricultural purposes.



Figure 2. Existing and proposed synagogue locations.

The surrounding development along Cherryvale Rd. to the south consists of one- and two-story single-family homes in a rural residential setting with mature tree canopies and open space used for small scale agricultural uses primarily in unincorporated Boulder County. Uses intensify towards the north of Cherryvale Rd. along Arapahoe Ave. with the JCC on the south side of Arapahoe Ave., with car dealerships and various commercial and industrial uses along the north side of Arapahoe Ave. Street view images adjacent to the project site along Cherryvale Rd. looking towards the north and south are included in **Figures 3 and 4**.



Figure 3. Google Street View adjacent to the project site looking south from Cherryvale Rd.



Figure 4. Google Street View adjacent to the project site looking north from Cherryvale Rd. towards Arapahoe Ave.

Oreg Ave. and the traffic roundabout along Cherryvale Rd. were constructed in 2015 with the development of the JCC site. Oreg. Ave. is a dedicated city right-of-way that acts as the primary entry to the JCC site and dead ends to the east. A private road on the JCC property connects the east end of Oreg Ave. to Arapahoe Ave. to the north. **Figure 5** shows a view from the roundabout looking east, and it also shows the JCC to the north and subject property to the south.

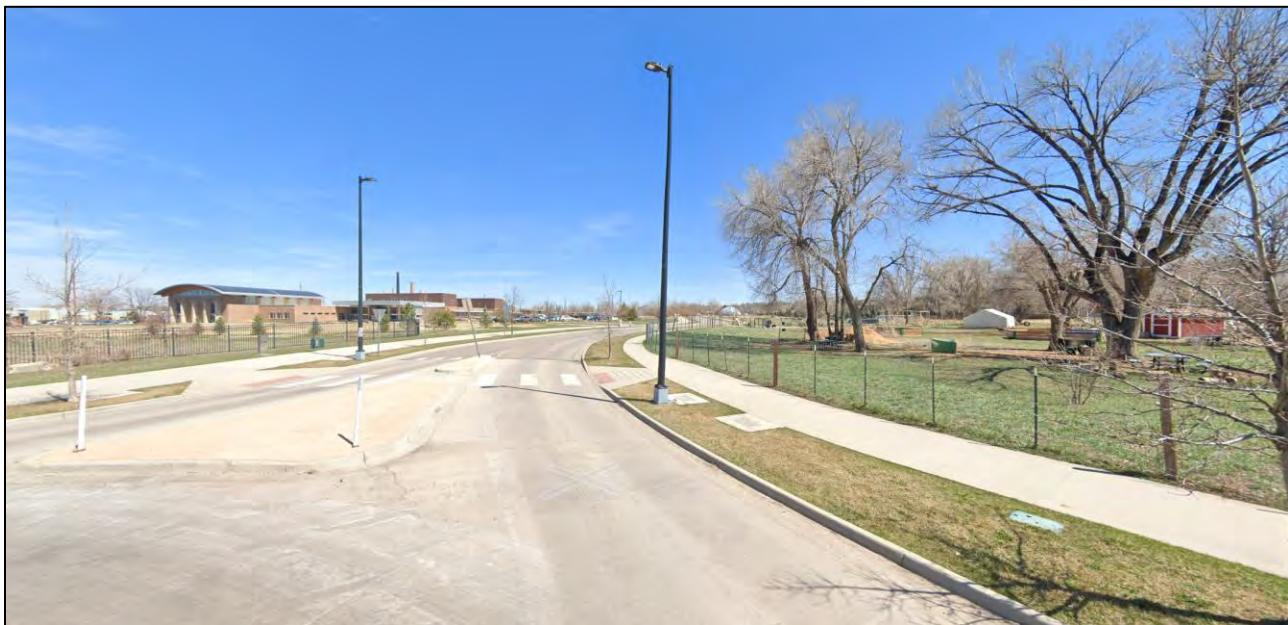


Figure 5. Google Street View looking east along Oreg. Ave. The subject property is shown to the right (south), and the JCC is shown on the left (north).

Boulder Valley Comprehensive Plan (BVCP) Land Use Designation

The BVCP Land Use Designation for the site is Very Low Density Residential (VLR) and Low Density Residential (LR), as shown in **Figure 6**, and are defined with the following characteristics and locations:

- “The VLR area tends to have larger lots and more rural characteristics. Many of these areas are located in unincorporated Boulder County in the Area III–Rural Preservation Area or Area II and may not have urban services. There are several areas in North Boulder and East Boulder within the city limits designated VLR.”
- “LR is the most prevalent land use designation in the city, covering the primarily single-family home neighborhoods, including the historic neighborhoods and Post-WWII neighborhoods.”

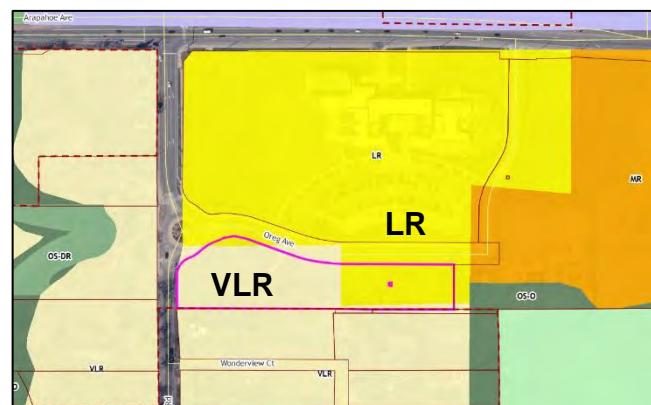


Figure 6. BVCP Land Use Designations

Zoning and Land Use

As shown in **Figure 7**, the zoning on the site is RR-1 and RE. A Religious Assembly use is allowed by-right in both the RR-1 and RE zone districts pursuant to Table 6-1 of [Section 9-6-1, B.R.C. 1981](#). The defined intent for the RR-1 and RE zones per Section 9-5-2, B.R.C. 1981 are as follows:

"Residential - Rural 1, Residential - Rural 2, Residential - Estate, and Residential - Low 1: Primarily detached dwelling units with some duplexes and attached dwelling units at low to very low residential densities."

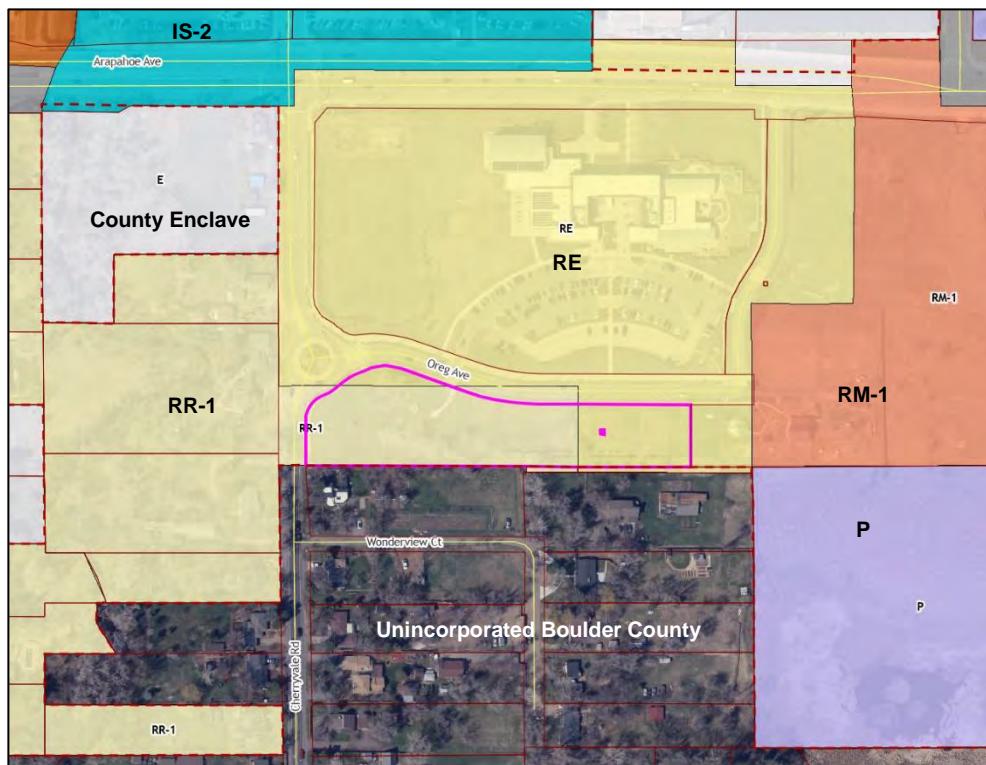


Figure 7. Zoning on and around site

Transportation Connections and Context

The site is not subject to any planned connections or future improvements identified in the [Transportation Master Plan \(TMP\)](#). Transportation improvements along Oreg. Ave. and Cherryvale Rd. were constructed with the development of the JCC site and include the traffic roundabout, detached sidewalks along the rights-of-way with varying widths able to be used as multi-use paths, and on-street bike lanes. The Cherryvale Rd. right-of-way to the south of the site is within county jurisdiction and does not include bike lanes or sidewalks.

Project Description

The proposed Site Review Amendment is for a new religious assembly use (synagogue) to be developed on the subject property. The Bonai Shalom synagogue will relocate to the site from its current location across the street on the west side of Cherryvale Rd. The current synagogue building was previously a single-family home built in the 1960s and located within the 100-year floodplain. The current synagogue was slowly modified throughout years and expanded to approximately 5,000

square feet. The new synagogue will be approximately 12,000 square feet, located outside the floodplain area, and it will provide a modernized space for religious assembly designed with congregation safety and security in mind. It will include outdoor gathering spaces, a larger sanctuary and social hall, classrooms and multipurpose rooms for religious studies, offices for staff, as well as a kitchen and associated service areas. The proposed site plan is shown below in **Figure 9**.

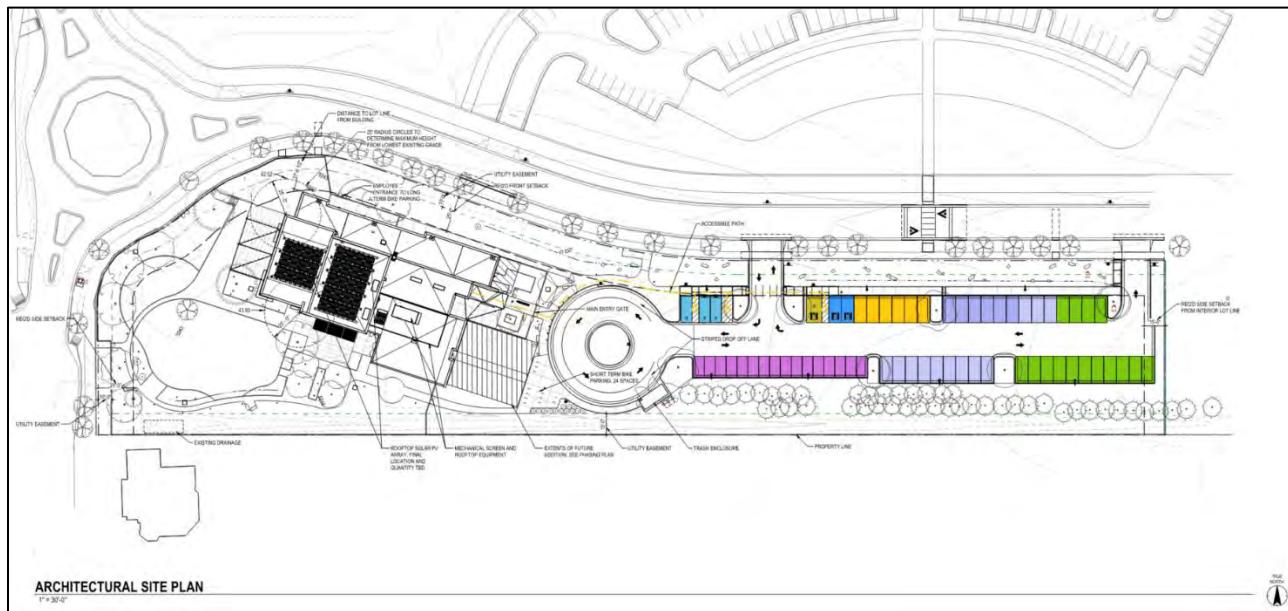


Figure 9. Architectural Site Plan

Phasing Plan

The building is proposed to be constructed in five phases, with the majority of the synagogue built in phase one, and additional classrooms and office space are to be built in subsequent phases on the east side of the building. The phasing plan is shown below in **Figure 10**.

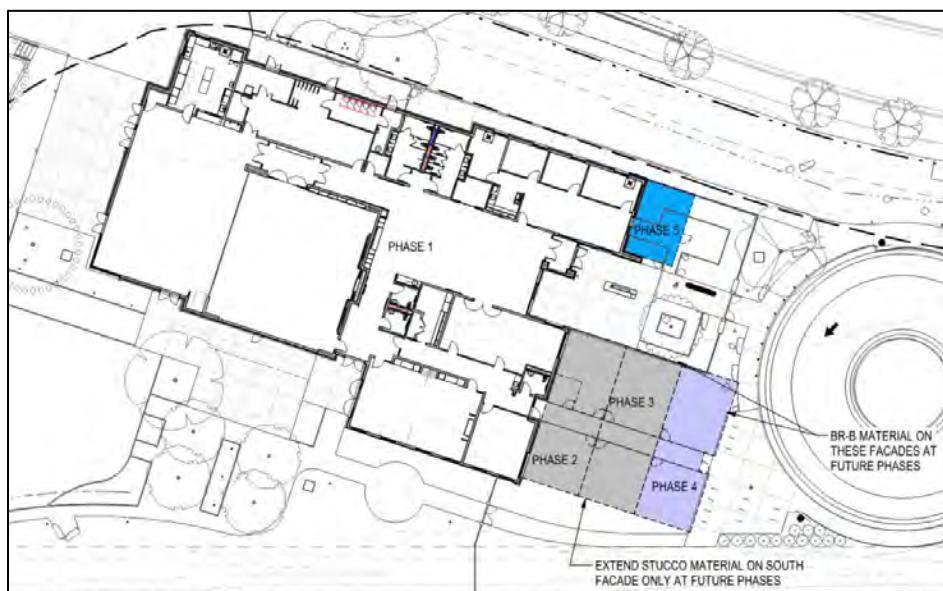


Figure 10. Phasing Plan

Open Space

The RR-1 and RE zones require 10-20% minimum open space based on building height per Section 9-9-11(c), B.R.C. 1981. The proposed building height of 26 feet only requires the applicant to provide 10% open space, which equates to 11,066 square feet. The proposal provides 62,189 square feet of open space, which is 56% of the total site. A large outdoor gathering area provided for the congregation is located behind the building and enclosed by a secure perimeter fence. An entry garden is located within a courtyard at the main entrance, and additional landscaping is provided throughout the site to be used as screening and buffering for adjacent properties. See **Figures 10 and 11** for an illustrative site diagram and proposed open space plan.

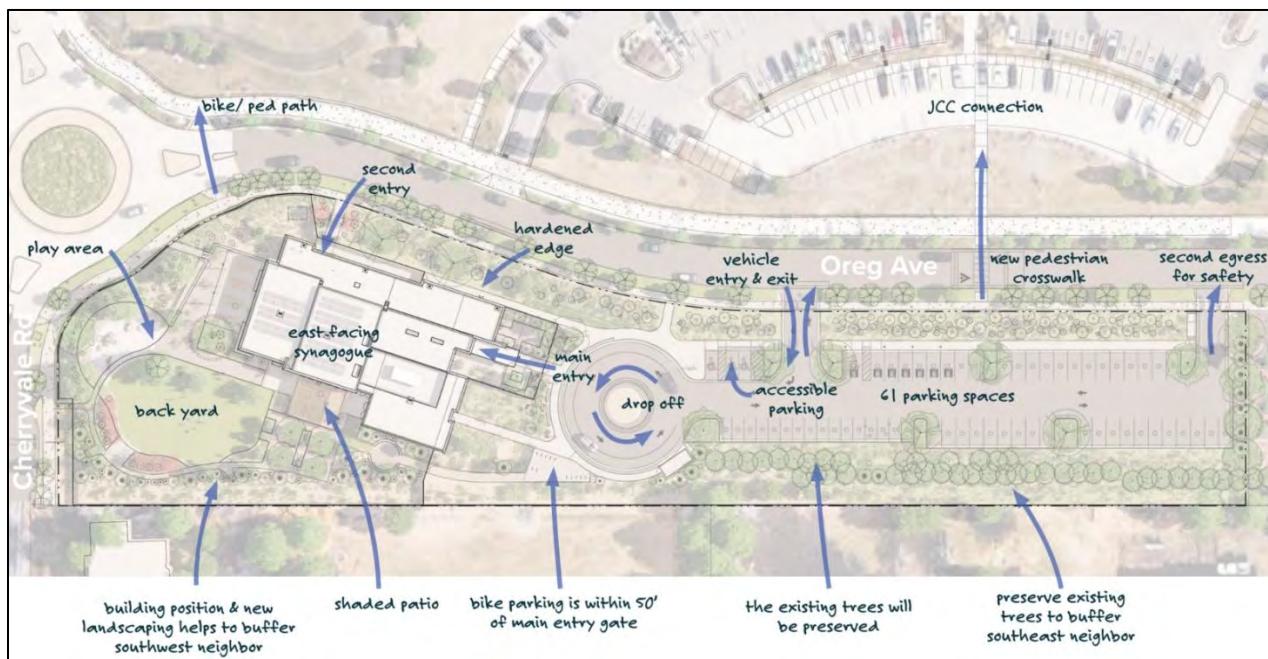


Figure 10. Illustrative site plan

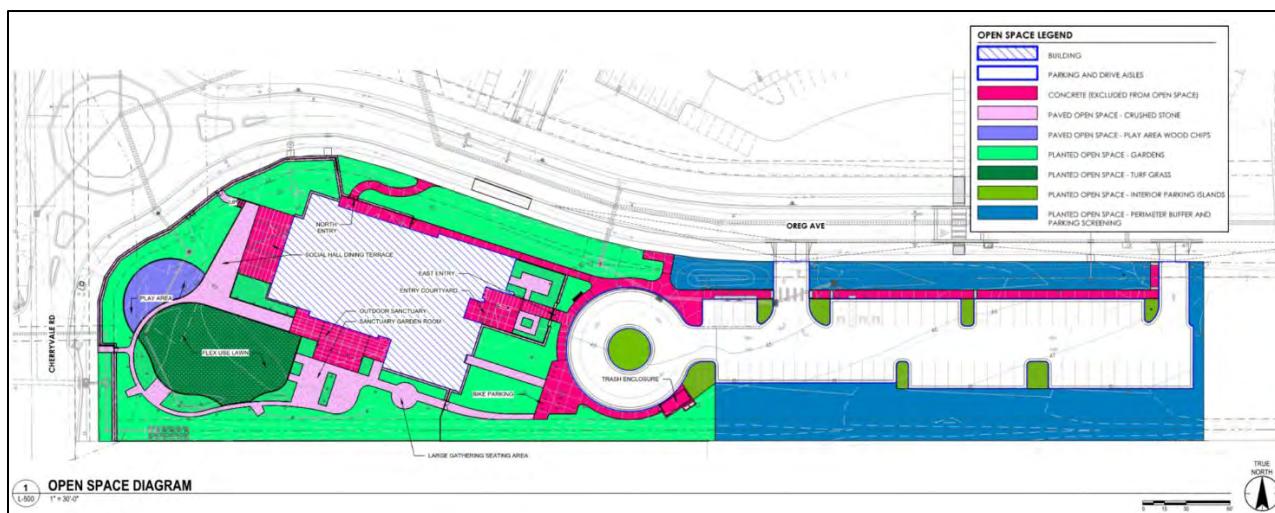


Figure 11. Open Space Plan

Building Architecture and Design

The site is not subject to any adopted area plans or design guidelines and is located on the edge of a rural residential neighborhood characterized by low-density single-family homes on large lots with mature tree canopies and small-scale agricultural uses. The building design is a relatively low-profile, single-story structure with a total height of less than 27 feet in a zone that allows for a 35-foot maximum height, and the building design is consistent with the residential scale of the surrounding neighborhood. The building incorporates high-quality materials consisting of wood, brick, stone, metal, cement siding, and stucco, similar to the JCC but with a darker, neutral color palette.

The applicant worked with Secure Community Network, a nonprofit organization that specializes in security consultation for the Jewish community, and Secure Community Network provided design recommendations for security best practices that the design incorporates, including:

- Perimeter fencing for secure boundary and access control
- Main Entrance Placement to reduce visibility and targeting
- Hardened edges to reduce transparency and create obstacles
- Two curb cuts for quick egress in case of attack

The building is oriented to the street and sidewalk consistent with the site review criteria. A wooden perimeter fence along Cherryvale Rd. and Oreg Ave. will provide security and privacy for the congregation's outdoor activities. The main building entry is located on the east side near the parking area and circular drive aisle used for pick-up and drop-off, and a second entry is located along Oreg Ave., as shown in **Figure 12**. Each building entry is highlighted by an entry gate with an arbor providing human scale. The main entrance is located within a secure courtyard with a garden seating area and canopy providing a transitional space from the exterior landscaped area to the inside of the synagogue.



Figure 12. View from the parking lot along Oreg Ave. looking west towards the main entrance.

While portions of the building along the streetscape are secured by a perimeter fence, focus was given to architectural details above the fence line as viewed from the public realm. Varying roof heights, parapets with brick solider course, material changes, and mechanical screening that matches the fence design provide an aesthetic view of the synagogue. Windows along Oreg Ave. provide transparency to the building, and landscaping throughout the site provides visual interest and balances the built and natural environments. **Figure 13** shows a view from the Cherryvale Rd. roundabout, and **Figure 14** shows a view from Oreg Ave.



Figure 13. Perspective from Cherryvale roundabout.



Figure 14. Perspective from Oreg. Ave looking south

Access, Parking, and Circulation

The proposed vehicular parking area will take access from two locations along Oreg Ave. The access points are requested based on the best practice recommendations from the applicant's security consultant and meet the requirements of the site access and control standards in Title 9 and the separation distance of the city's Design and Construction Standards. The existing sidewalk on the south side of Oreg Ave. currently meets city standards, and sidewalk improvements are not required. There is an existing 12-foot-wide sidewalk on the north side of Oreg Ave., and a new crosswalk will be installed across Oreg Ave. connecting to a sidewalk that leads to the JCC, thereby providing safe pedestrian and alternative transportation routes to the new synagogue from the JCC and surrounding street network. A new concrete scooter parking pad will be installed adjacent to the sidewalk along Oreg Ave. near the pedestrian connection from the sidewalk to the main entrance, as shown in **Figure 15**.

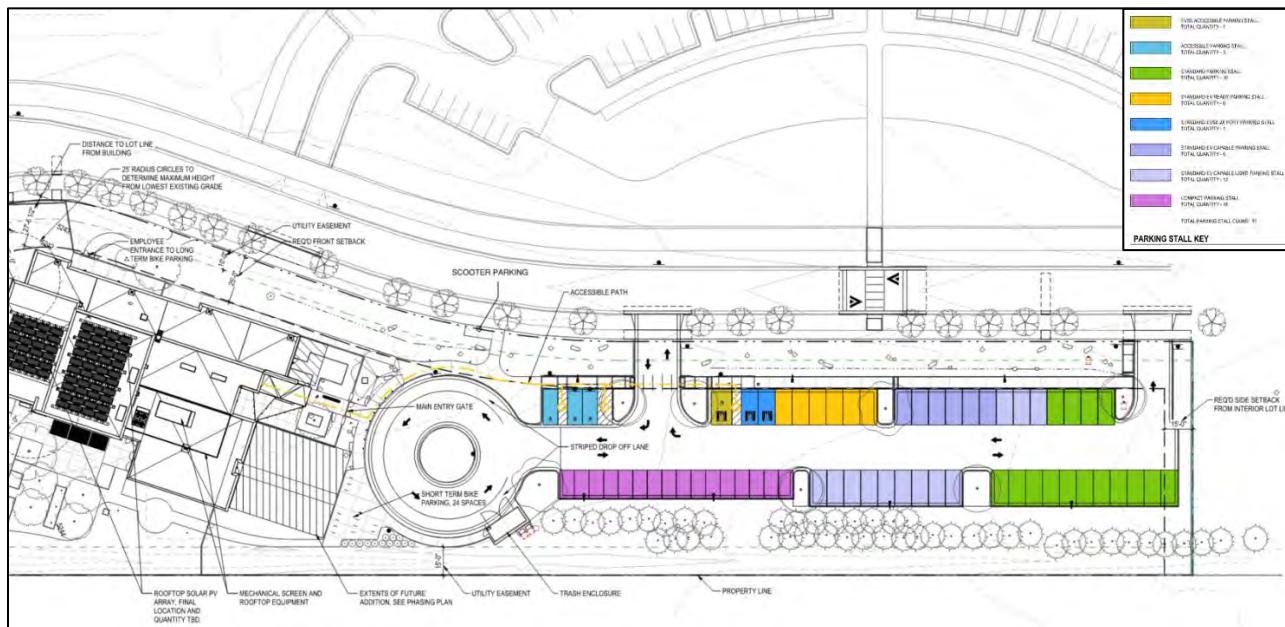


Figure 15. Transportation Circulation

A total of 61 parking spaces are proposed on the east portion of the site. Parking includes a mix of standard and compact spaces, as well as infrastructure for electric vehicle (EV) charging and EV charging ready spaces. A total of 24 short-term bike parking spaces are located near the front entrance to the south, and 8 long-term bike parking spaces are proposed inside the building, accessed from the secondary entrance on Oreg Ave.

The applicant has provided a Transportation Demand Management (TDM) Plan, which outlines the site characteristics and TDM strategies to reduce reliance on single-occupancy vehicles, including NECO passes for staff and information about rideshares. (See **Attachment C**).

The one-way circular drive aisle located adjacent to the front entrance was designed to be large enough for emergency vehicles to access the building, as well as to allow adequate space for cars to pass other vehicles that are temporarily stopped for loading or unloading. Parking lot screening criteria contained in Section 9-9-14, B.R.C. 1981 are met with a 7-foot wooden fence proposed along the south property line and additional landscaping where feasible.

REVIEW PROCESS

Per [Section 9-2-14, B.R.C. 1981](#), the project requires a Site Review Amendment because the property is subject to a previously approved Site Review for the JCC. The current proposal is subject to the Site Review criteria in Section 9-2-14, B.R.C. 1981. The following modifications under the land use code are requested:

- 9-7-1, Schedule of Form and Bulk Standards: **Front Yard Landscape Setback** modification from 25 feet to 10 feet to allow the parking lot to be closer to Oreg Ave. in order to preserve existing trees for a landscape buffer along the south side of the property.
- 9-7-1, Schedule of Form and Bulk Standards: **Side Yard Setback** modification from 10 feet to 7 feet on the east property line to allow for an additional parking space.
- 9-9-14, Parking Lot Landscaping Standards: **Screening Parking Lots at Property Edges modification** along the east property line to allow for a visual line of sight to the adjacent property owned by the JCC for enhanced security.

ANALYSIS/ KEY ISSUES

1. Is the proposed project consistent with the Site Review Criteria, Section 9-2-14(h), B.R.C. 1981?

Staff finds that the proposed project is consistent with the Site Review criteria found in [Section 9-2-14\(h\), B.R.C. 1981](#), and with the goals and policies of the BVCP, in particular those that address the built environment. Please see **Attachment B** for Staff's Analysis of the Site Review Criteria. Staff find that the proposed modifications to the land use code are consistent with criteria to allow for additional residential density with access to nearby commercial corridors, transit, and services within a 15-minute walk. Modifications to bike parking locations and distributions support the intended use of high density residential and locate short-term bike parking near the multi-use path connection to Folsom St. Modification to the rear yard setback allows for additional parking screening and coverage.

In terms of consistency with the Site Review criteria, staff finds that the project promotes alternatives to the automobile by incorporating site design techniques and infrastructure that support and encourage walking, biking, and other alternatives to the single-occupant vehicle, provides open space areas that meet the needs of the congregation and visitors, and incorporates landscaping design that includes a variety of plantings that provide a diversity of colors and contrasts in terms of texture and seasonality. Staff finds the proposed building and siting design to be compatible with the character of the surrounding area. The building design successfully creates visual interest and a vibrant pedestrian experience while remaining simple, human-scaled, and high quality. Refer to the full analysis of the Site Review criteria provided in **Attachment B**.

RECOMMENDED CONDITIONS OF APPROVAL

1. The Applicant shall ensure that the **development shall be in compliance with all plans prepared by the Applicant** on November 13, 2025, and the Transportation Demand Management

(“TDM”) Plan dated September 10, 2025, all on file in the City of Boulder Planning Department, except to the extent that the development may be modified by the conditions of this approval.

2. The Applicant shall **comply with all previous conditions** contained in any previous approvals, except to the extent that any previous conditions may be modified by this approval, including, but not limited to, the following:

- Development Agreement recorded on September 11, 2014, at Rec. No. 03402227;
- Amendment to Development Agreement recorded on December 3, 2014, at Rec. No. 03415915; and
- Development Agreement recorded on August 6, 2024, at Rec. No. 04056074.

3. Prior to building permit application, the Applicant shall submit, and obtain City Manager approval of, a Technical Document Review application for the following items:

- a. **Final architectural plans**, including material samples and colors, to ensure compliance with the intent of this approval and compatibility with the surrounding area. The architectural intent shown on the plans prepared by the Applicant on November 13, 2025, is acceptable. Planning staff will review plans to assure that the architectural intent is performed.
- b. A **final site plan** which includes detailed floor plans and section drawings.
- c. A **final utility plan** meeting the City of Boulder Design and Construction Standards.
- d. A **final storm water report and plan** meeting the City of Boulder Design and Construction Standards.
- e. **Final transportation plans** meeting the City of Boulder Design and Construction Standards for all transportation improvements. These plans must include, but are not limited to, signage and striping plans in conformance with the Manual on Uniform Traffic Control Devices (MUTCD) standards, transportation detail drawings, geotechnical soils report, and pavement analysis.
- f. A **detailed landscape plan**, including size, quantity, and type of plants existing and proposed; type and quality of non-living landscaping materials; any site grading proposed; and any irrigation system proposed, to ensure compliance with this approval and the City's landscaping requirements. Removal of trees must receive prior approval of the Planning Department. Removal of any tree in City right of way must also receive prior approval of the City Forester.
- g. A **detailed outdoor lighting plan** showing location, size, and intensity of illumination units, indicating compliance with Section 9-9-16, B.R.C.1981.
- h. A **detailed shadow analysis** to ensure compliance with the City's solar access requirements of Section 9-9-17, B.R.C. 1981.

- i. An **address plat** following the city's addressing policy to create a new address.
- j. **Written approval and permission from the affected irrigation ditch company** or lateral owner for the modifications, alterations, and discharge of storm runoff to the existing irrigation ditch.

4. Prior to building permit application, the Applicant shall dedicate to the City, at no cost, the easements necessary to serve the development, including, but not limited to, the following easements as shown on the plans prepared by the Applicant on November 13, 2025, meeting the City of Boulder Design and Construction Standards, as part of Technical Document Review applications, the form and final location of which shall be subject to the approval of the City Manager:

- a. **A public access easement** on the west side of the property that extends one foot beyond the existing sidewalk.

5. Prior to a building permit application, the Applicant shall submit a **financial guarantee, in a form acceptable to the Director of Public Works**, in an amount equal to the cost of providing economic passes to the employees of the development for three years after the issuance of a certificate of occupancy.

6. Pursuant to Subsection 9-2-12(a), "Three Year Rule," B.R.C. 1981, the following **development/phasing plan** is approved:

- 1. Phase 1 includes the construction of a synagogue building (approximately 12,500 square feet in size) and any corresponding improvements and infrastructure as shown on the final approved site plan for Site Review Case No. LUR2025-00031 (the "Site Plan Approval"). Phase 1 shall commence at the date of Site Plan Approval and shall expire three years from the date of Site Plan Approval.
- 2. Phase 2 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phase 2 shall commence no later than at the time of expiration of Phase 1 and expires three years thereafter.
- 3. Phase 3 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phase 3 shall commence no later than at the time of expiration of Phase 2 and expires three years thereafter.
- 4. Phase 4 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phase 4 shall commence no later than at the time of expiration of Phase 3 and expires three years thereafter.
- 5. Phase 5 includes the construction of an addition (approximately 350 square feet in size) as shown on the Site Plan Approval. Phase 5 shall commence no later than at the time of expiration of Phase 4 and expires three years thereafter.

7. The Applicant shall be responsible for maintaining all stormwater quality improvements and stormwater detention improvements, including, but not limited to, permeable parking lot paving.

By:

Brad Mueller, Secretary to the Planning Board

ATTACHMENTS

Attachment A – Applicant’s Proposed Plans and Written Statement

Attachment B – Staff’s Criteria Analysis

Attachment C – Applicant’s TDM Plan and Traffic Study

Attachment D – Public Comments

PROJECT DATA

PROJECT DESCRIPTION:
Redevelopment of parcel lot 2B in the Boulder Jewish Commons Subdivision to a 12,189 SF Synagogue. The building will be inclusive of a worship space, classrooms, admin space, and a social hall.

APPLICABLE CODES:
International Building Code - 2024 Edition
International Mechanical Code - 2024 Edition
International Plumbing Code - 2024 Edition
City of Boulder Energy Conservation Code - 2024 Edition
International Wildland - Urban Interface Code - 2018
International Energy Conservation Code - 2024 Edition
International Fuel & Gas Code (IFGC) - 2024 Edition
National Electrical Code (NEC) - 2023 Edition
ICC A117.1 2017 Accessible and Usable Buildings and Facilities
City of Boulder Municipal Code (Zoning)

FIRE RESISTANCE RATING REQUIREMENTS:
Primary structural frame - 0
Bearing walls (exterior and interior) - 0
Non bearing walls and partitions interior - 0
Floor construction and associated structural secondary members - 0
Roof construction and associated structural secondary members - 0

PROPOSED BUILDING DATA:
PROPOSED AREA: 12,189 GSF
GROSS LOT SIZE: 110,657 SF, 2.54 acres

PROPOSED FLOOR AREA:
LEVEL 1: 12,189 SF
OCCUPANCY GROUPS: PRIMARY: A-2 AND A-3, ACCESSORY: B, E, S-2
TYPE OF CONSTRUCTION: IIB
FRONTAGE INCREASE NOT USED

AREA ALLOWABLE:
Type IIB S1 per table 506.2 - 38,000 SF

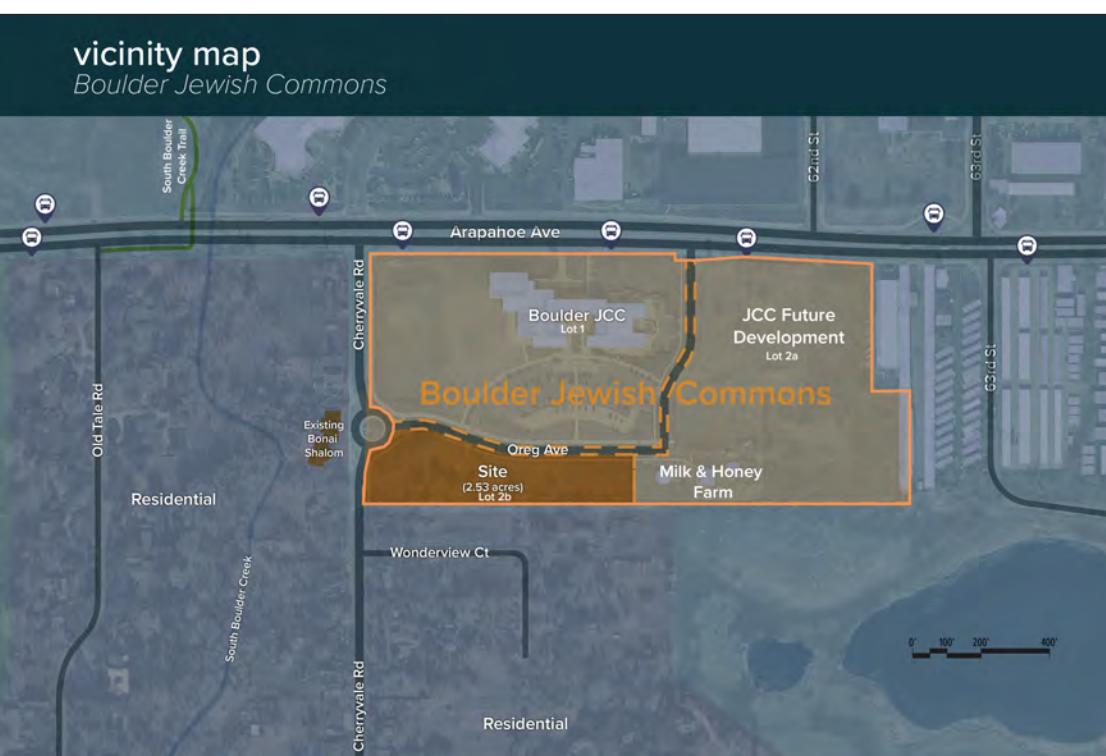
AREA ACTUAL:
12,189 GSF

BUILDING HEIGHT (MAX per table 504.3):
75' above grade plane for sprinklered type IIB buildings

ZONE DISTRICT:
Residential-Rural 1 (RR-1)

LAND USE DESIGNATION:
Very Low Density Residential, Low Density Residential

ZONING STANDARDS:
Minimum front yard landscaped setback - 25'
Minimum front yard setback for all covered and uncovered parking - 25'
Min. side yard setback from a street - 25'
Min. side yard setback from an irrigation line - 15'
Min. total for both side yard setbacks - 40'
Min. rear yard setback - 0 or 3'
Maximum height - 35'
Maximum stories - 3
Maximum height of fences/hedges/walls - 7'
Min. open space for non residential uses - 10-20%
Min. lot area square footage for RR-1 - 30,000 SF
Max. FAR for RR-1 with lots larger than 25,000 SF is .25 - Total proposed project FAR is .11



SHEET INDEX

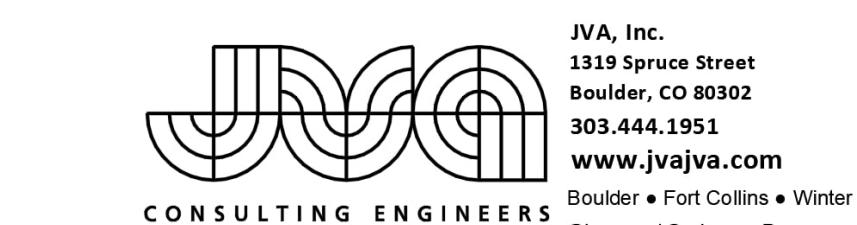
A000	COVER SHEET
A100	ARCHITECTURAL SITE PLAN
A100.1	ARCHITECTURAL SITE PLAN - PHASING DIAGRAM
A101	LEVEL 1 FLOOR PLAN
A102	ROOF FLOOR PLAN
A200	ELEVATIONS
A301	SHADOW ANALYSIS
A401	SIGNAGE
A501	3D RENDERINGS
A502	3D RENDERINGS



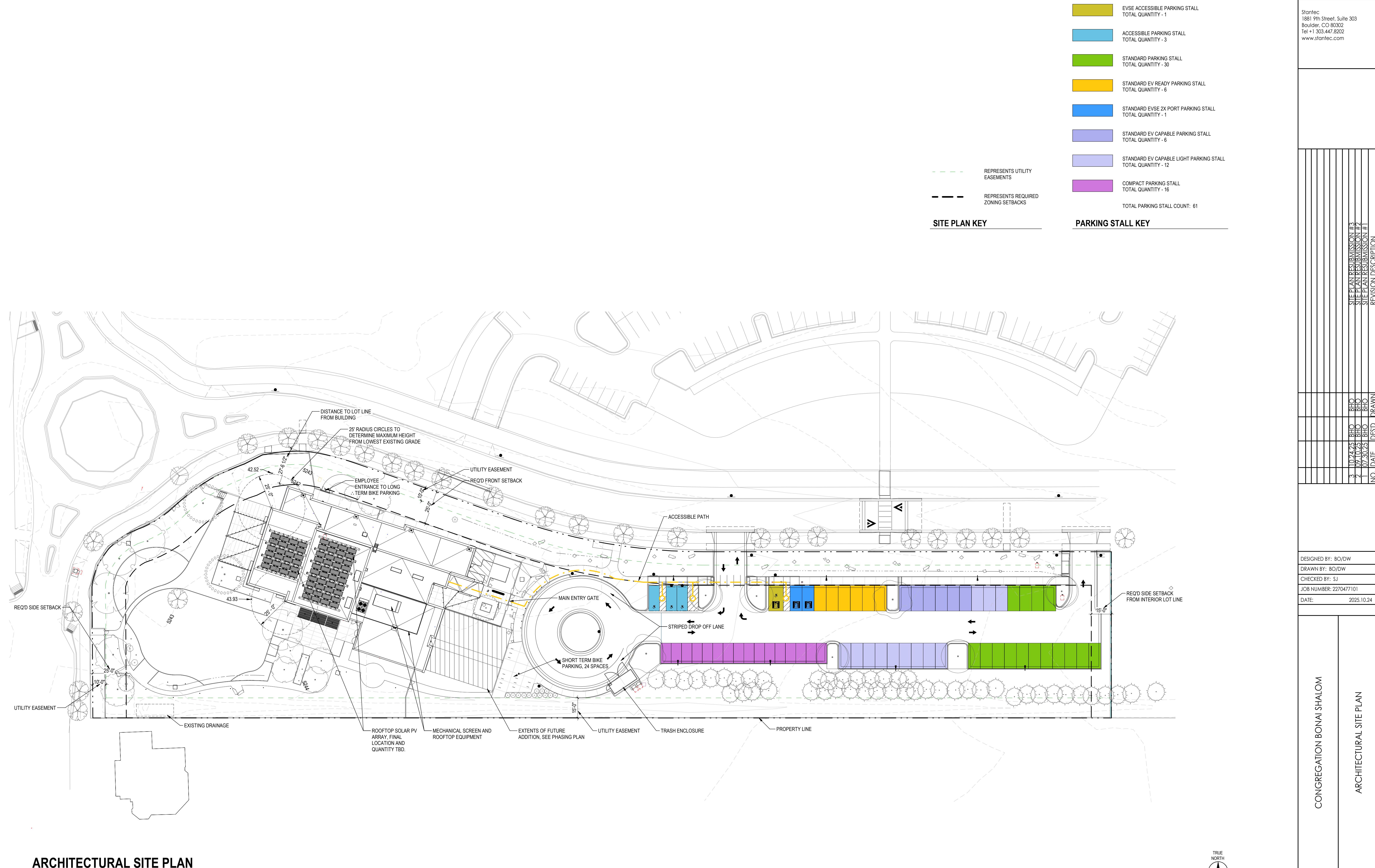
CONGREGATION BONAI SHALOM 6018 OREG AVENUE BOULDER CO 80303

SITE REVIEW AMENDMENT

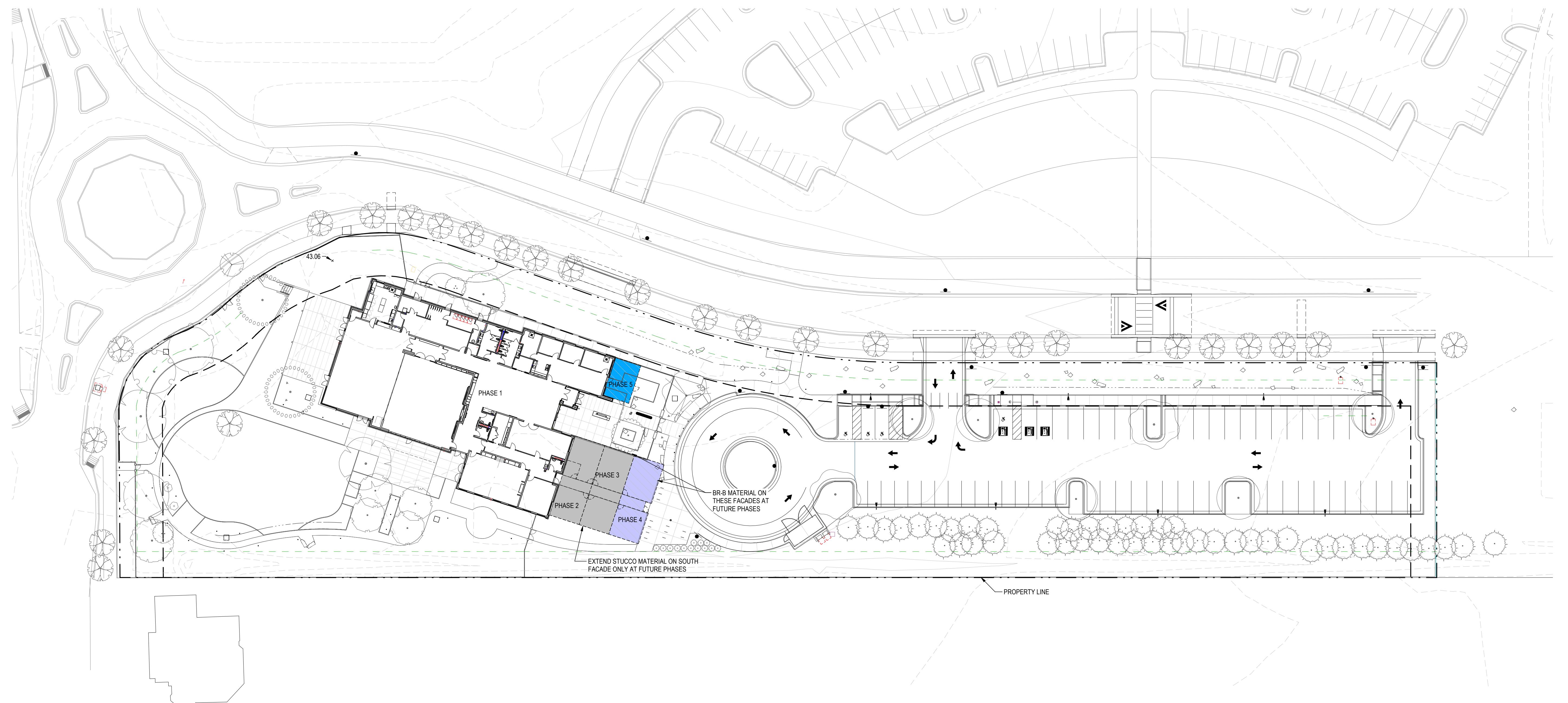
PARCEL LOT 2B OF BOULDER JEWISH COMMONS SUBDIVISION REPLAT A



JVA, Inc.
1319 Spruce Street
Boulder, CO 80302
303.444.1951
www.jvajva.com



PHASING NARRATIVE	PHASING LANGUAGE
PHASE 1 - INCLUSIVE OF ADMIN SPACE, SANCTUARY, SOCIAL HALL, KITCHEN, BACK OF HOUSE ROOMS, ENTRY FOYER, TEACHER RESOURCE ROOM, (3) CLASSROOMS, (2) GATHERING ROOMS, AND BATHROOMS - SQUARE FOOTAGE ROUGHLY ~12,189	a. Phase 1 includes the construction of a synagogue building (approximately 12,500 square feet in size) and any corresponding improvements and infrastructure as shown on the final approved site plan for Site Review Case No. LUR2025-00031 (the "Site Plan Approval"). Phase 1 shall commence at the date of Site Plan Approval and shall expire three years from the date of Site Plan Approval.
PHASE 2 - (2) CLASSROOMS AND RESTROOM ADDED - SQUARE FOOTAGE ROUGHLY ~860	b. Phase 2 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phase 2 shall commence no later than at the time of expiration of Phase 1 and expires three years thereafter.
PHASE 3 - (2) CLASSROOMS - SQUARE FOOTAGE ROUGHLY ~860	c. Phase 3 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phases 3 shall commence no later than at the time of expiration of Phase 2 and expires three years thereafter.
PHASE 4 - (2) CLASSROOMS AND RESTROOM ADDED - SQUARE FOOTAGE ROUGHLY ~860	d. Phase 4 includes the construction of an addition (approximately 860 square feet in size) as shown on the Site Plan Approval. Phase 4 shall commence no later than at the time of expiration of Phase 3 and expires three years thereafter.
PHASE 5 - (2) OFFICES ADDED AT ADMIN WING - SQUARE FOOTAGE ROUGHLY ~350	e. Phase 5 includes the construction of an addition (approximately 350 square feet in size) as shown on the Site Plan Approval. Phase 5 shall commence no later than at the time of expiration of Phase 4 and expires three years thereafter.



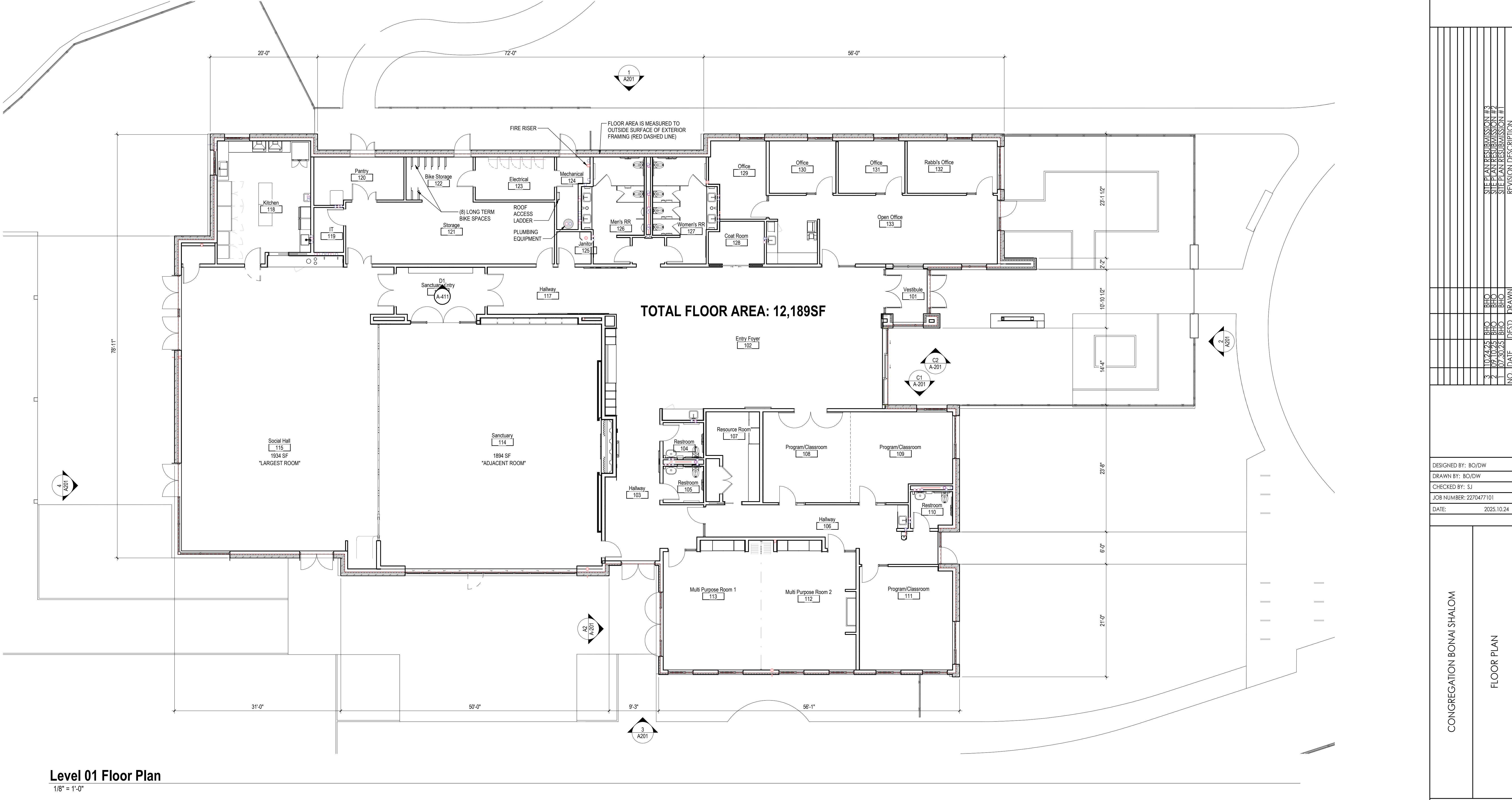
ARCHITECTURAL SITE PLAN - PHASING DIAGRAM

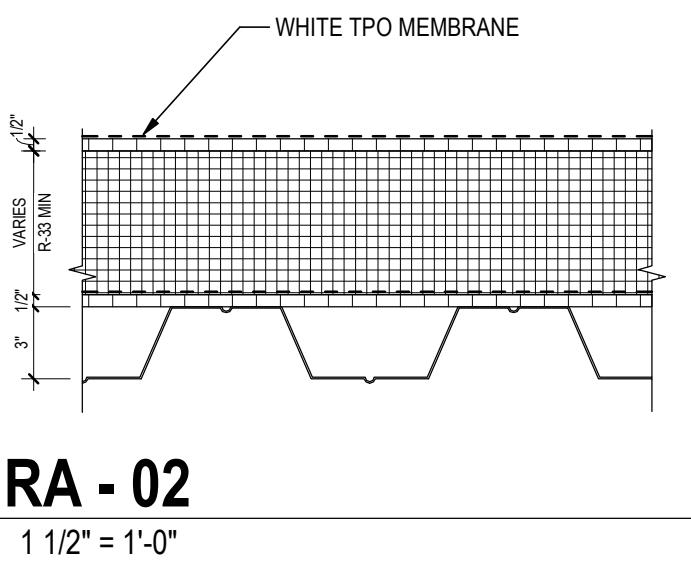
1" = 30'-0"

A100.1

OFF-STREET VEHICLE PARKING CALCULATION	
PHASE 1 3,828 NET SF OF LARGEST ASSEMBLY AND ADJACENT SPACE	
PER TABLE 9-3 IN BOULDER ZONING CODE: 1 SPACE PER 4 SEATS, OR 1 PER 50 SQUARE FEET OF ASSEMBLY AREA IF THERE ARE NO FIXED SEATS - ASSEMBLY AREA INCLUDES THE LARGEST ROOM PLUS ANY ADJACENT ROOMS THAT COULD BE USED AS PART OF THE ASSEMBLY AREA	
3,828/50 = 76 REQ'D PROVIDED 61 STALLS BASED ON A 20% REDUCTION**	
FUTURE PHASING WILL NOT INCLUDE ASSEMBLY SPACE WITH A LARGER OCCUPANCY THAN WHAT IS DOCUMENTED IN PHASE 1, THUS VEHICLE PARKING CALCULATION WILL REMAIN UNCHANGED FOR FUTURE PHASES	

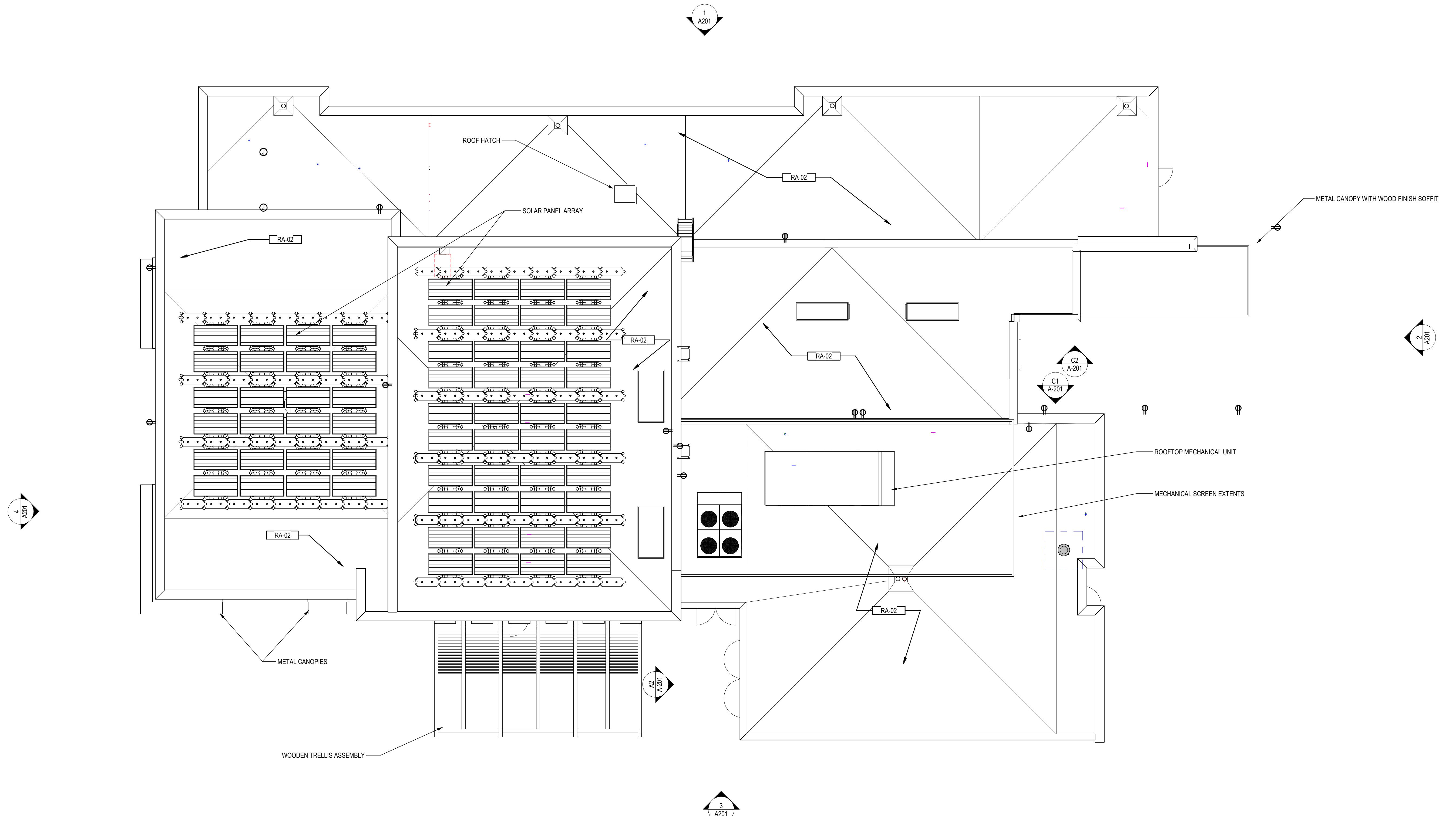
BICYCLE PARKING CALCULATION	
PHASE 1 3,828 NET SF OF LARGEST ASSEMBLY AND ADJACENT SPACE	
THE GREATER OF 1 PER 15 SEATS OR 1 PER 150 SF OF ASSEMBLY SPACE. WITH A 75/25% SPLIT BETWEEN LONG TERM SECURE PARKING AND SHORT TERM VISITOR PARKING.	
3,828/150 = 25.52 REQ'D MIN REQUIRED = 26** LONG TERM = 6 SHORT TERM = 20 PROVIDED = 32 LONG TERM = 8 SHORT TERM = 24	
FUTURE PHASING WILL NOT INCLUDE ASSEMBLY SPACE WITH A LARGER OCCUPANCY THAN WHAT IS DOCUMENTED IN PHASE 1, THUS BICYCLE PARKING CALCULATION WILL REMAIN UNCHANGED FOR FUTURE PHASES	





RA - 02

1 1/2" = 1'-0"



Roof Plan

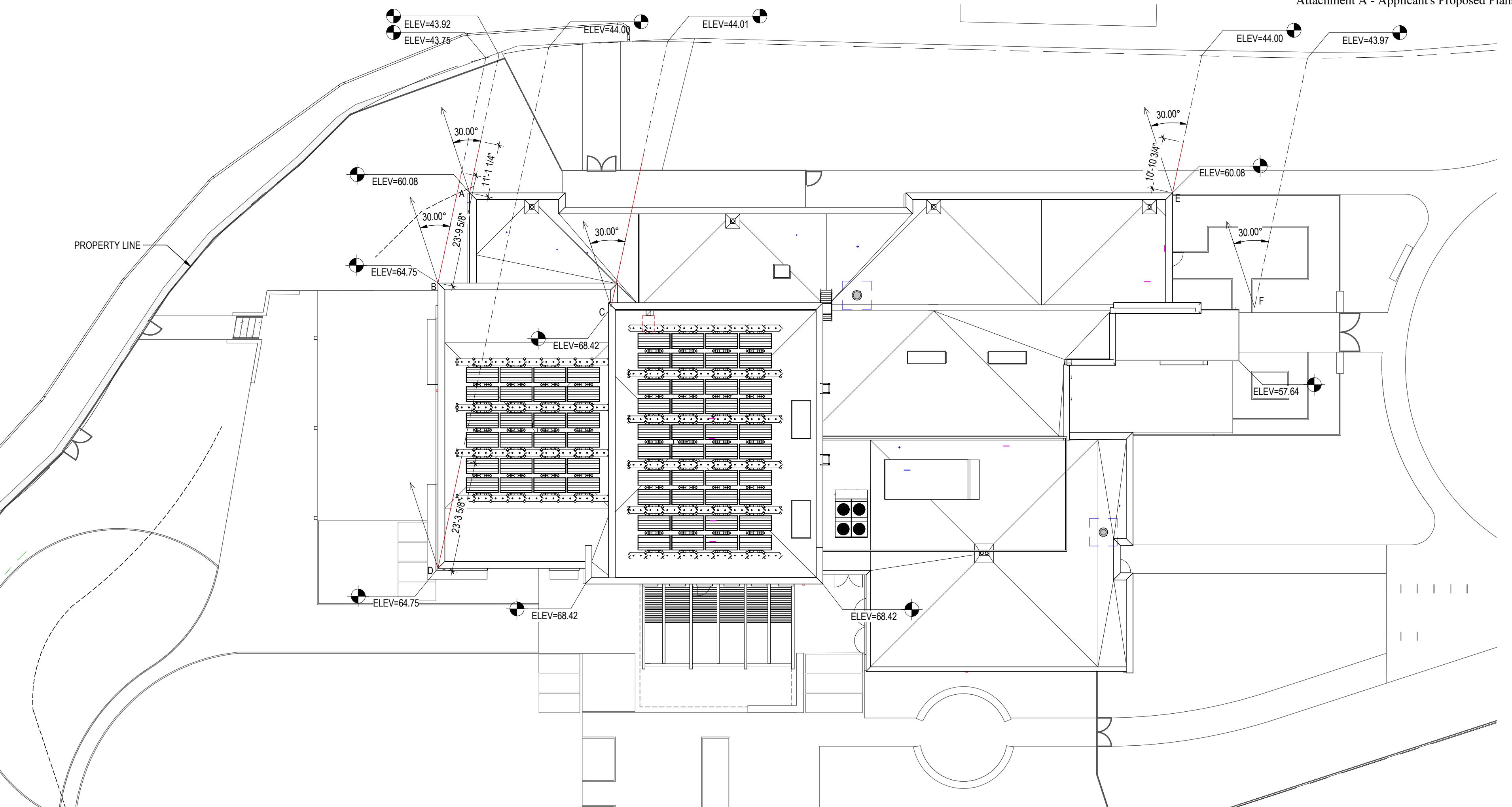
1/8" = 1'-0"

SITE PLAN RESUBMISSION #3
SITE PLAN RESUBMISSION #2
SITE PLAN RESUBMISSION #1
REVISION DESCRIPTION

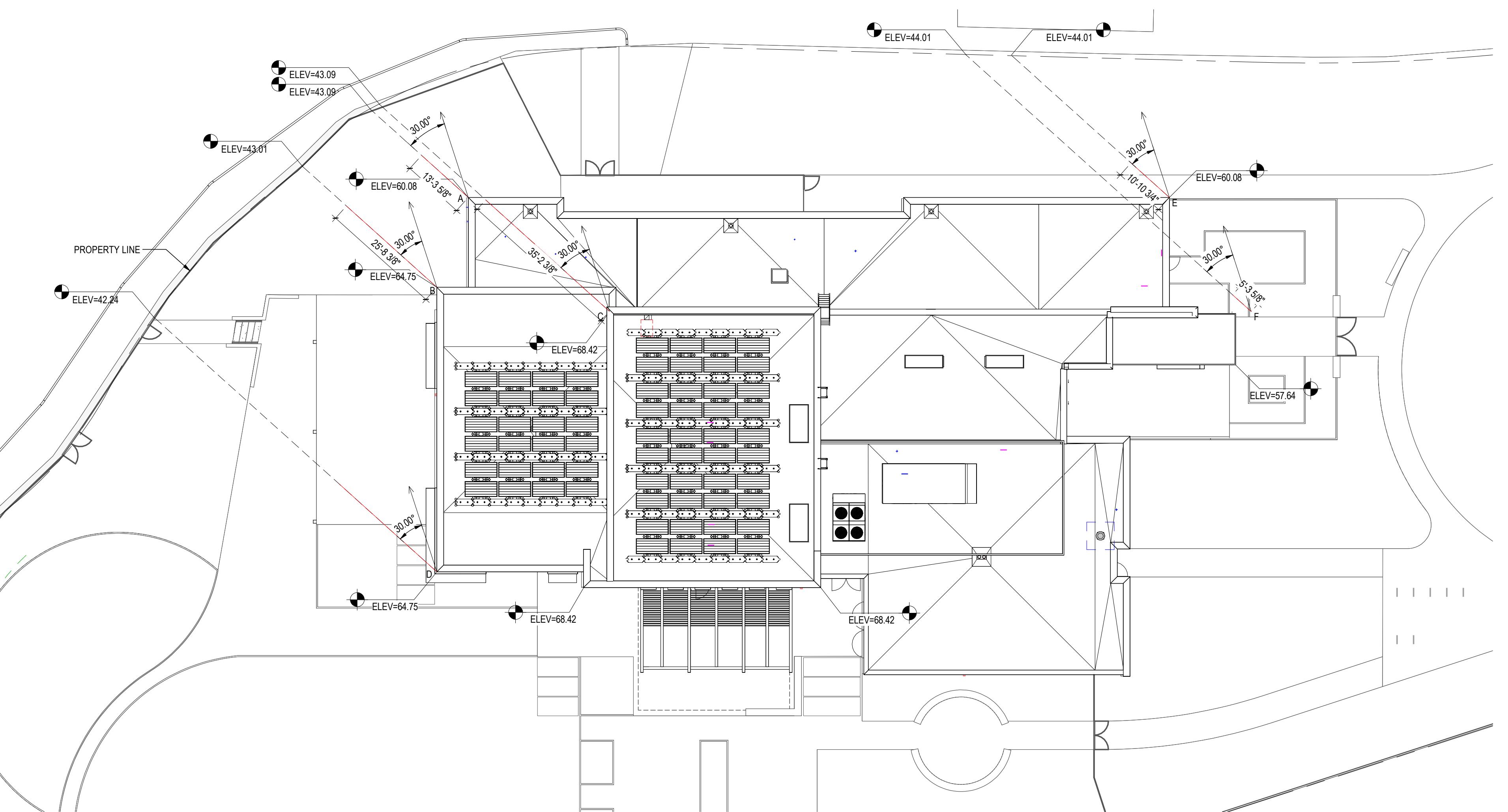
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DRAWN BY: BO/DW
CHECKED BY: SJ
JOB NUMBER: 2270477101
DATE: 2025.10.24

CONGREGATION BONA SHALOM

ROOF PLAN



SHADOW ANALYSIS 2PM



C1 SHADOW ANALYSIS 10AM
A301 1/16" = 1'-0" Page 2

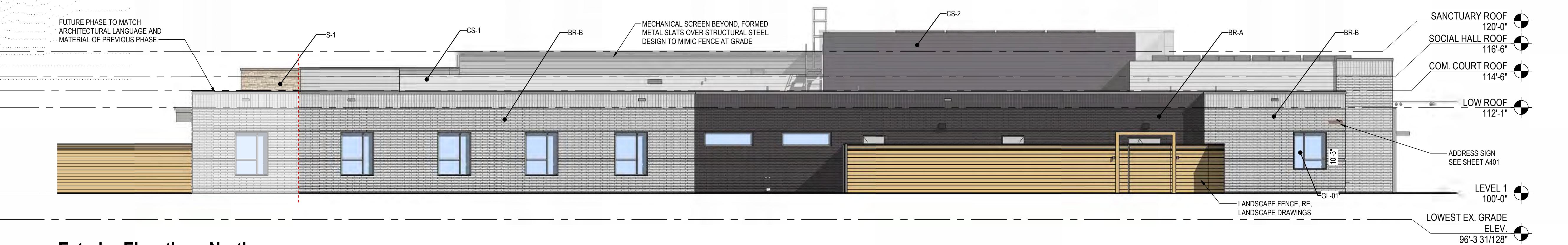
SITE PLAN RESUBMISSION #3
SITE PLAN RESUBMISSION #2
SITE PLAN RESUBMISSION #1

DESIGNED BY: BO/DO
DRAWN BY: BO/DW
CHECKED BY: SJ
JOB NUMBER: 227047
DATE: _____

111

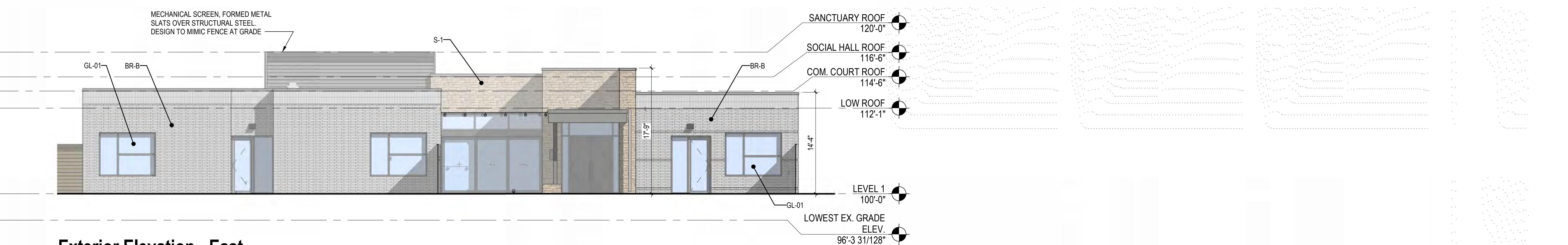
SHADOW ANALYSIS

A301



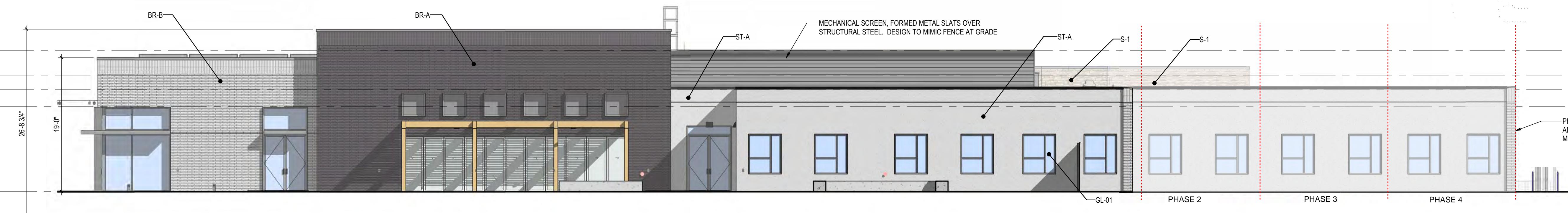
Exterior Elevation - North

1/8" = 1'.



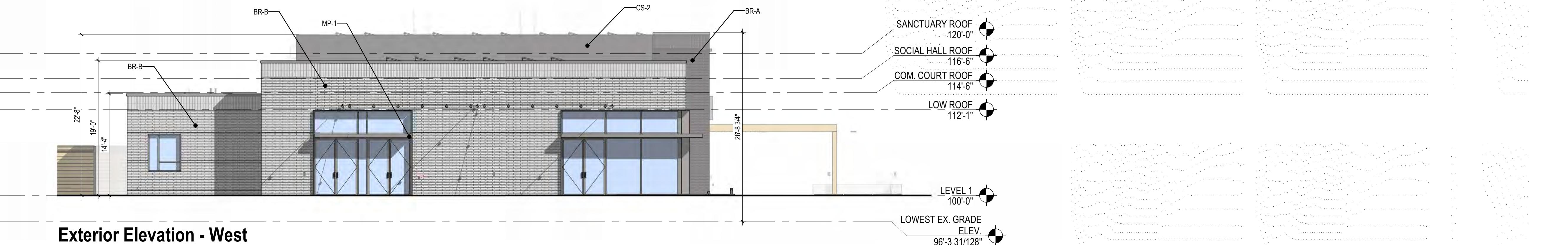
Exterior Elevation - East

1/8" = 1'-0"



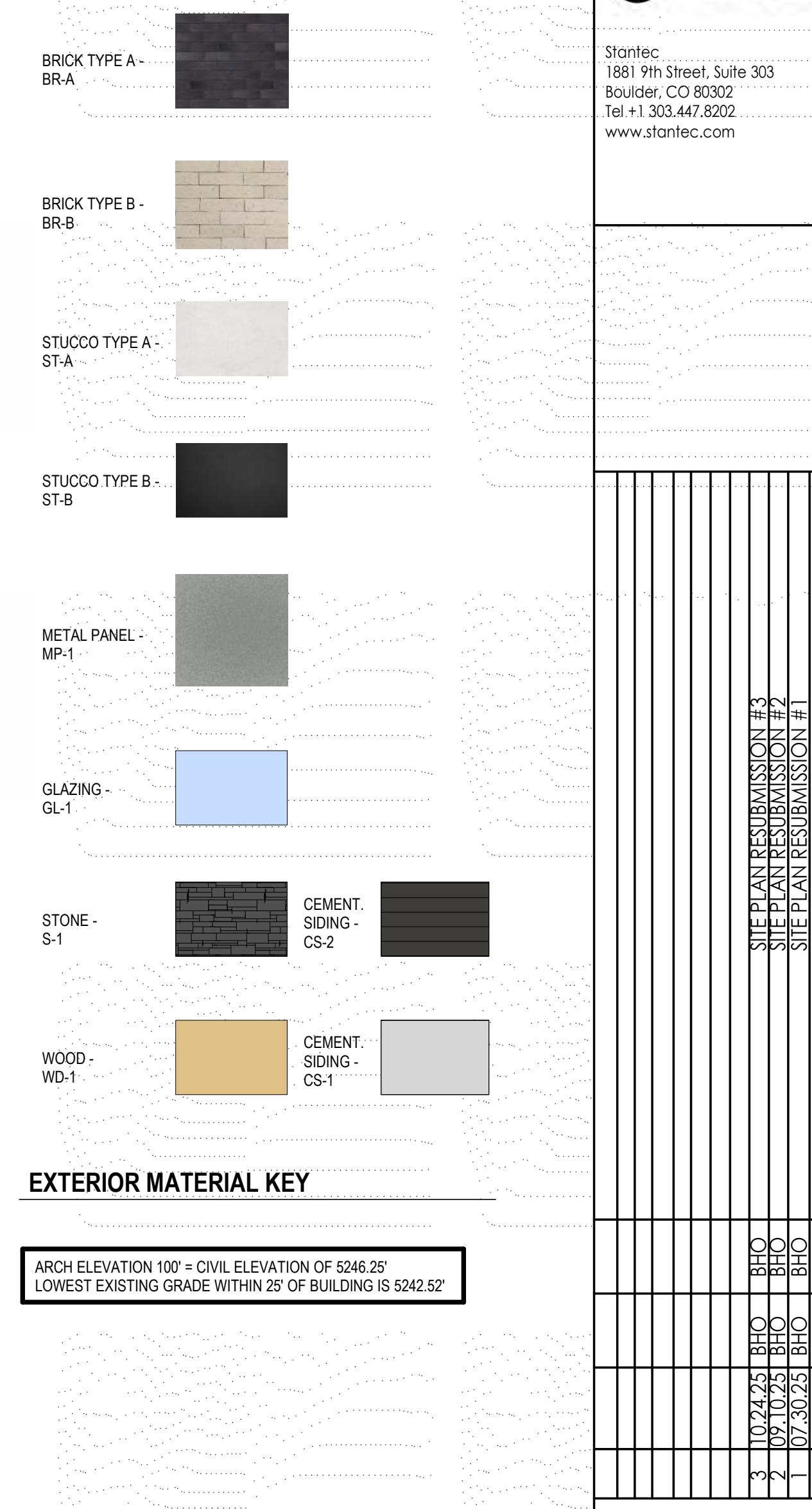
Exterior Elevation - South

1/8" = 1'-0"



Exterior Elevation - West

$$1/8" = 1'$$



INTERIOR MATERIAL KEY

H ELEVATION 100' = CIVIL ELEVATION OF 5246.25'
WEST EXISTING GRADE WITHIN 25' OF BUILDING IS 5242.52'

SITE PLAN RESUBMISSION #3
SITE PLAN RESUBMISSION #2
SITE PLAN RESUBMISSION #1

LEVELS

Sign Type 1

Sign Type 1

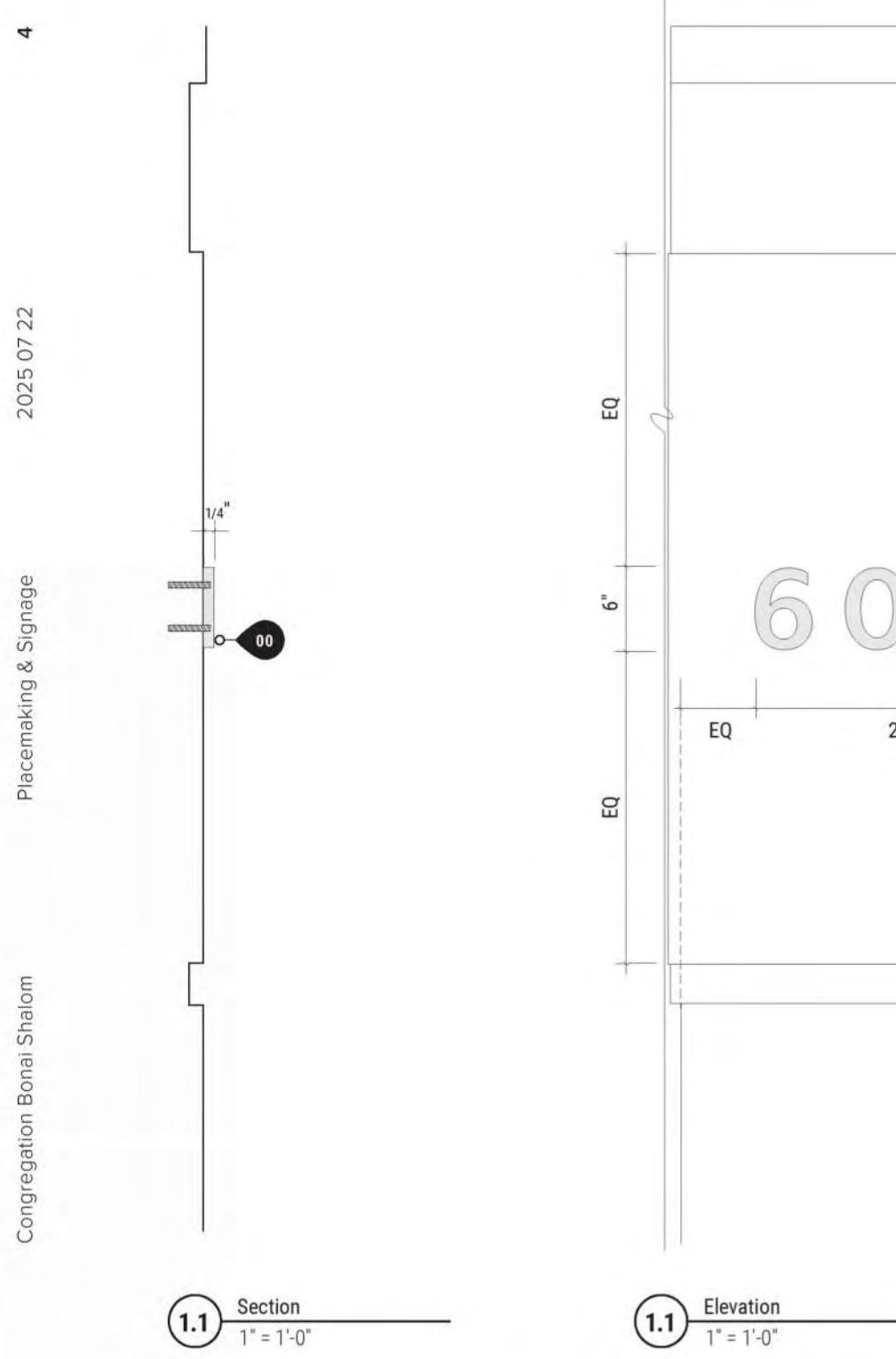
CONGREGATION BONAI SHALOM

SIGNAGE

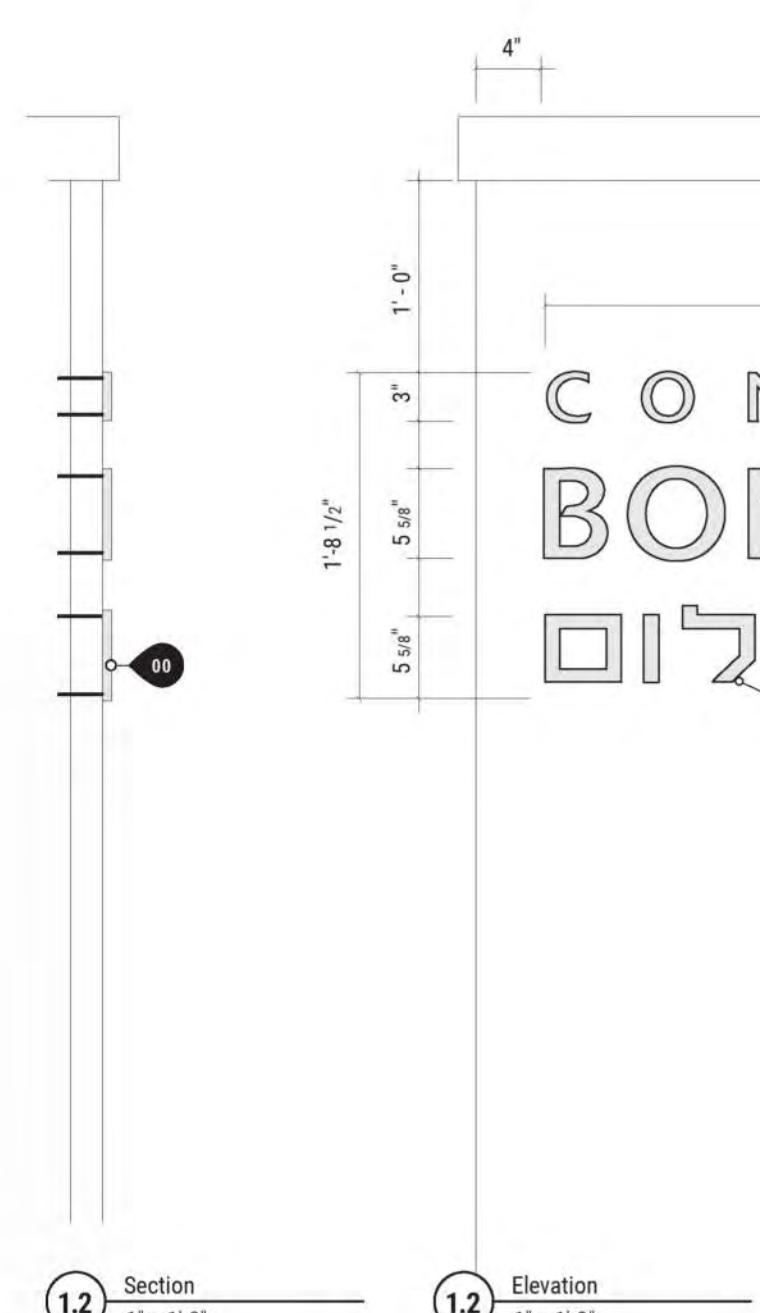
STEP PLAN REQUEST #3
STEP PLAN REQUEST #2
STEP PLAN REQUEST #1
REVISION DESCRIPTION

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CHECKED BY: SJ
JOB NUMBER: 2270477101
DATE: 2025.10.24

A401



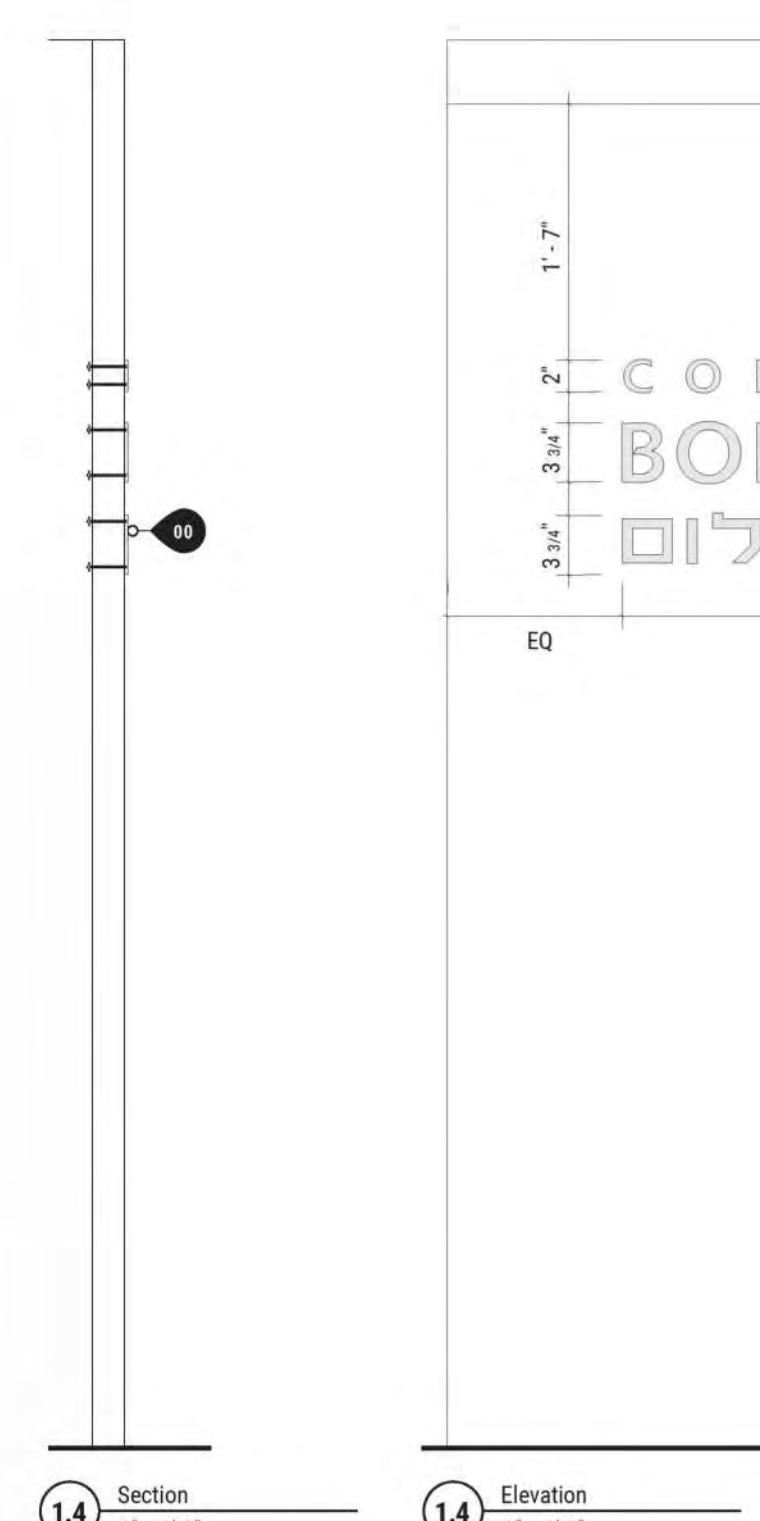
Sign Type 1



CONGREGATION
BONAI SHALOM
הילת בני שלום



Sign Type 1



Sign Type 1





SITE PLAN REVIEW SUBMISSION #3
SITE PLAN REVIEW SUBMISSION #2
SITE PLAN REVIEW SUBMISSION #1
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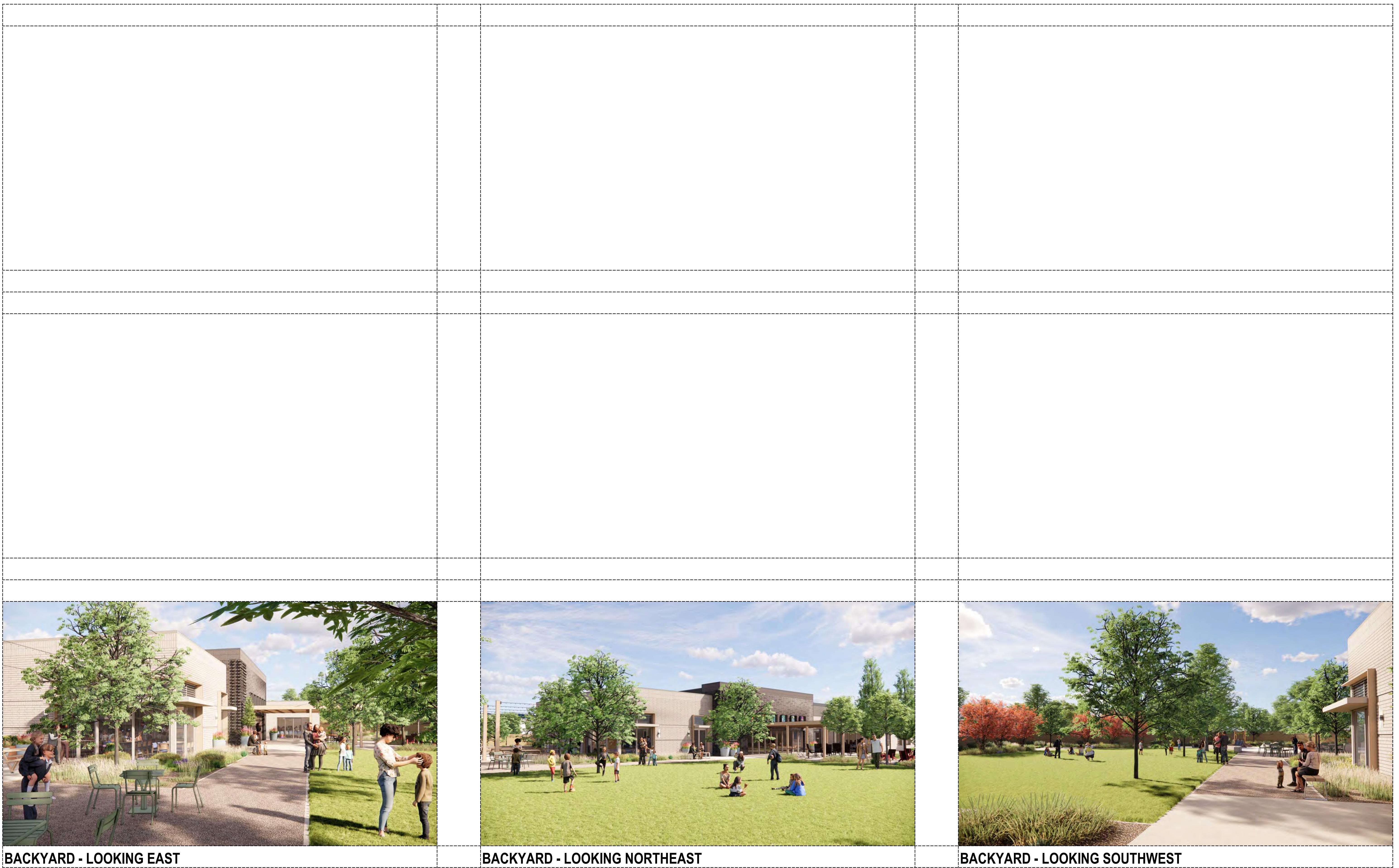
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2 09/07/25 BHO BHO BHO
1 07/30/25 BHO BHO BHO
NO. DATE DESD DRAWN

DESIGNED BY: BO/DW
DRAWN BY: BO/DW
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JOB NUMBER: 2270477101
DATE: 2025.10.24

CONGREGATION BONAI SHALOM

3D RENDERINGS

A501



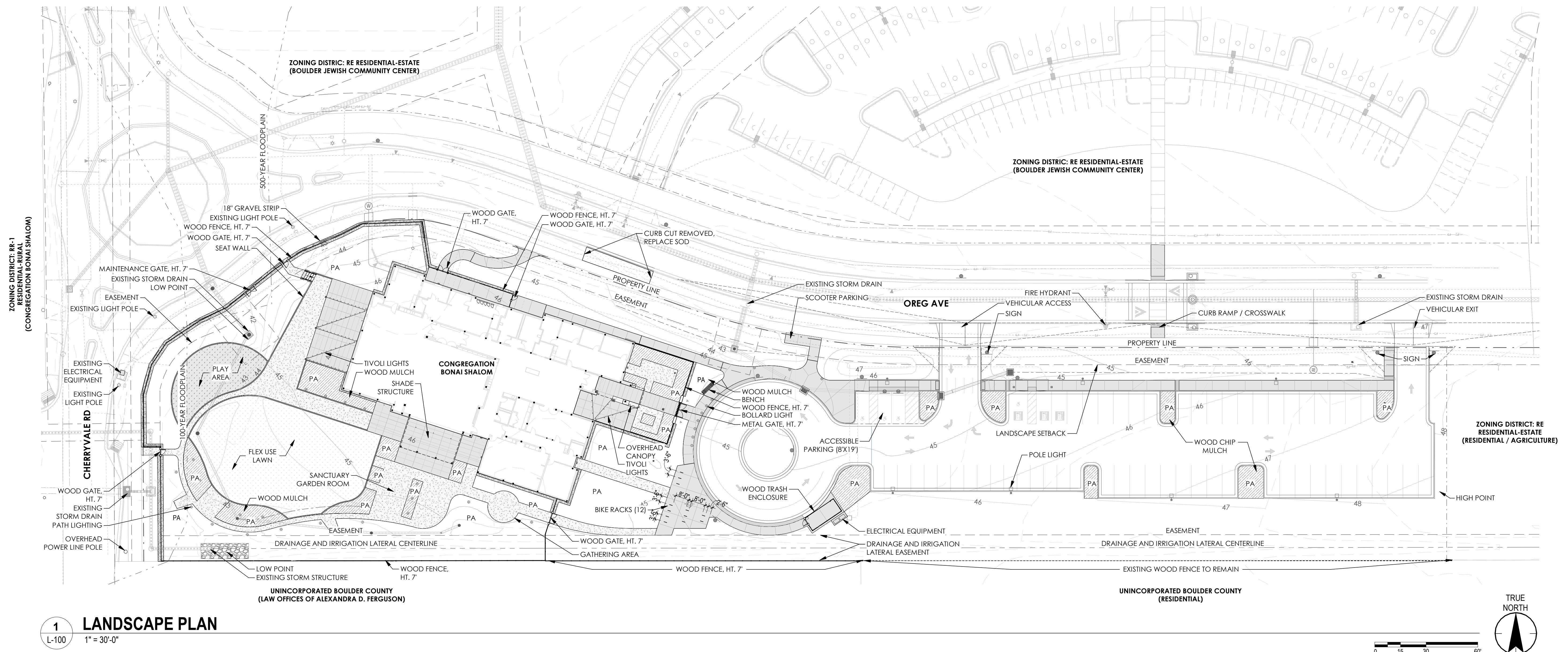
BACKYARD - LOOKING EAST

BACKYARD - LOOKING NORTHEAST

BACKYARD - LOOKING SOUTHWEST

CONGREGATION BONAI SHALOM

3D RENDERINGS


LANDSCAPE PLAN LEGEND

PROPERTY LINE / ZONE LOT BOUNDARY LINE
100-YEAR FLOODPLAIN
500-YEAR FLOODPLAIN
DRAINAGE & IRRIGATION LATERAL CENTERLINE
EASEMENT
CONCRETE PAVING (STANDARD FINISH)
CONCRETE CURB
CRUSHED STONE PAVING
EXISTING LIGHT POLE
BICYCLE RACK
BENCH
PLANTING AREA TYPE 1 (NATIVE SEED)
PLANTING AREA TYPE 2 (PERENNIAL GARDEN WITH WOOD MULCH)
PLANTING AREA TYPE 3 (PARKING ISLANDS WITH WOOD MULCH)
PLAY AREA (WOOD MULCH)
TURF GRASS
PA PLANTING AREA

CONGREGATION B'NAI SHALOM

LANDSCAPE PLAN

STEP PLAN RESUBMISSION #3

STEP PLAN RESUBMISSION #2

STEP PLAN RESUBMISSION #1

REVISION DESCRIPTION

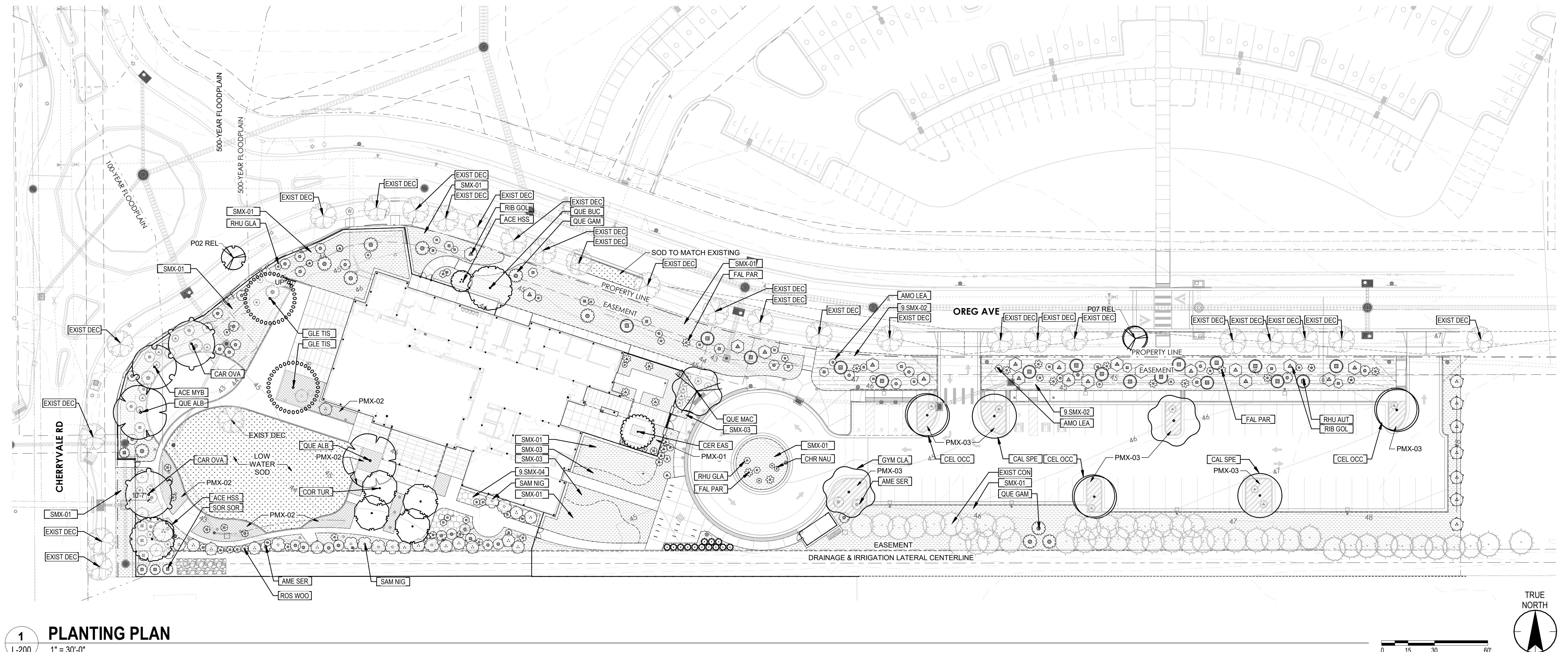
DESIGNED BY: SES

DRAWN BY: SES

CHECKED BY: MD

JOB NUMBER: 2270477101

DATE: 2025.10.24



LANDSCAPE PLAN LEGEND

- PROPERTY LINE / ZONE LOT BOUNDARY LINE
- 100-YEAR FLOODPLAIN
- 500-YEAR FLOODPLAIN
- DRAINAGE & IRRIGATION LATERAL CENTERLINE
- EASEMENT
- CONCRETE PAVING (STANDARD FINISH)
- CONCRETE CURB
- CRUSHED STONE PAVING
- EXISTING LIGHT POLE
- BICYCLE RACK
- BENCH
- PLANTING AREA TYPE 1 (NATIVE SEED)
- PLANTING AREA TYPE 2 (PERENNIAL GARDEN WITH WOOD MULCH)
- PLANTING AREA TYPE 3 (PARKING ISLANDS WITH WOOD MULCH)
- PLAY AREA (WOOD MULCH)
- TURF GRASS
- PA PLANTING AREA

PLANT AND SEED MIX LEGEND

- PMX-01
- PMX-02
- PMX-03
- SMX-01
- SMX-02
- SMX-03
- SMX-04

CONGREGATION BONAI SHALOM

TREE & UNDERSTORY PLANTING PLAN

L-200

DESIGNED BY: SES
DRAWN BY: SES
CHECKED BY: MD
JOB NUMBER: 2270477101
DATE: 2025.10.24

SITE REVIEW-TREE PLANTING SCHEDULE						
SYMBOL	PLANT CODE	BOTANICAL NAME	COMMON NAME	CALIPER / SIZE	QUANTITY	HYDROZONE
DECIDUOUS TREES						
	ACE MYB	Acer miyabei	Miyabe Maple	2" CAL	1	MODERATE
	CAR OVA	Carya ovata	Shagbark Hickory	2" CAL	2	MODERATE
	CAT SPE	Catalpa speciosa	Northern Catalpa	1.5" CAL.	2	MODERATE
	CEL OCC	Cellis occidentalis	Common Hackberry	2" CAL	3	LOW
	COR TUR	Corylus columa	Turkish Filbert	2" CAL	4	MODERATE
	GLE TIS	Gleditsia triacanthos inermis 'Shademaster'	Shademaster Honey Locust	2" CAL	2	LOW
	GYM KEN	Gymnocladus dioicus 'Espresso'	Espresso Kentucky Coffeetree	2" CAL	2	LOW
	QUE ALB	Quercus alba	White Oak	2" CAL	2	MODERATE
	QUE BUC	Quercus buckleyi	Buckley Oak	1.5" CAL.	2	MODERATE
	QUE MAC	Quercus macrocarpa 'Bulletproof'	Burr Oak	2" CAL	1	LOW
21						
EVERGREEN TREES						
	JUN EAS	Juniperus virginiana	Eastern Redcedar	6" HT.	13	LOW
13						
EXISTING TREES - RELOCATED						
	P02 REL	Relocated Street Tree	Deciduous	-	1	
	P07 REL	Relocated Street Tree	Deciduous	-	1	
2						
ORNAMENTAL TREES						
	ACE HSS	Acer pseudosieboldianum x palmatum 'Hasselkus'	Northern Glow® Maple	1.5" CAL.	2	MODERATE
	CER EAS	Cercis canadensis	Eastern Redbud Multi-trunk	2" CAL	1	MODERATE
3						
SITE REVIEW-TREES TO REMAIN						
SYMBOL	PLANT CODE	BOTANICAL NAME	COMMON NAME	CALIPER / SIZE	QUANTITY	HYDROZONE
	EXIST CON	Existing Tree to Remain	Coniferous	-	47	
	EXIST DEC	Existing Tree to Remain	Deciduous	-	26	
73						

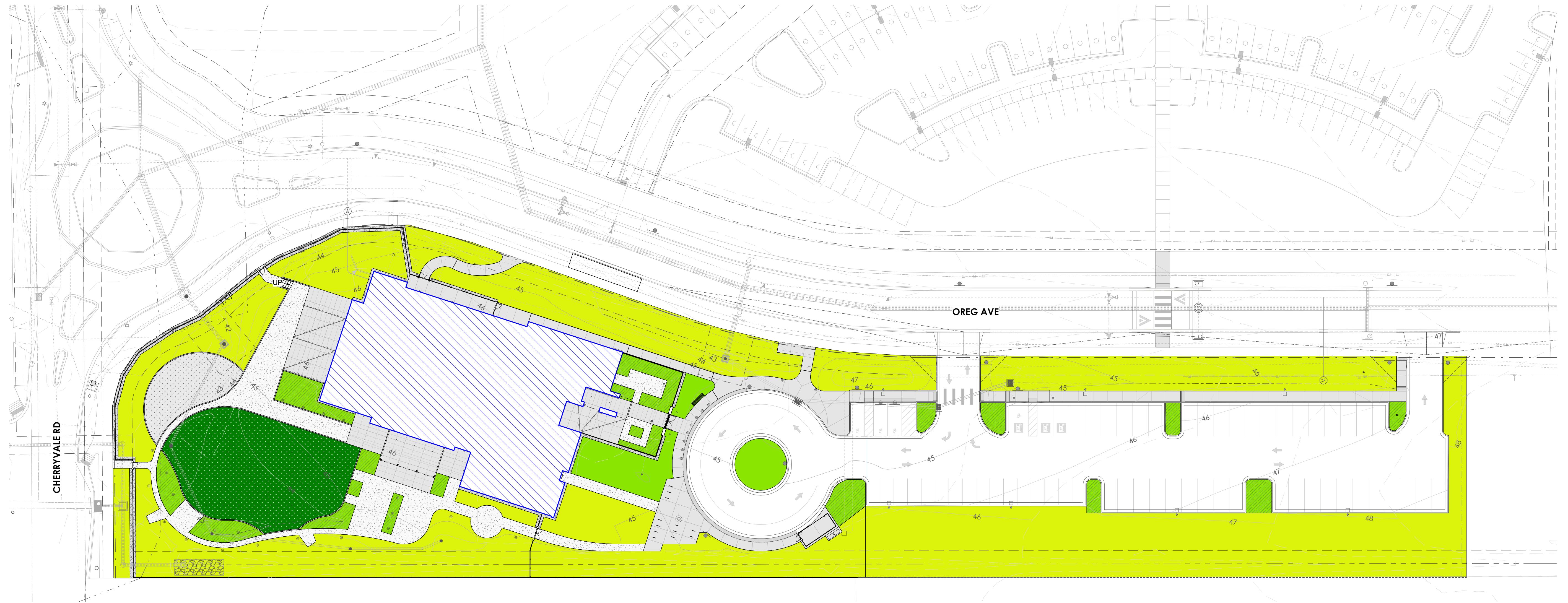
SITE REVIEW-SHRUBS						
SYMBOL	PLANT CODE	BOTANICAL NAME	COMMON NAME	CALIPER / SIZE	QUANTITY	HYDROZONE
DECIDUOUS SHRUBS						
	ACE GLA	Acer glabrum	Rocky Mountain Maple	5 gal	8	
	AME SER	Amelanchier alnifolia	Serviceberry	5 gal	27	LOW
	AMO LEA	Amorpha canescens	Leadplant	5 gal	15	LOW
	CER MOU	Cercocarpus montanus	Alderleaf Mountain Mahogany	5 gal	11	LOW
	CHR GTR	Chrysothamnus nauseosus graveolens	Tall Green Rabbitbrush	5 gal	11	
	CHR NAU	Chrysothamnus nauseosus	Dwarf Blue Rabbitbrush	5 gal	3	VERY LOW
	DAP BUR	Daphne x burkwoodii	Burkwood Daphne	5 gal	4	MODERATE
	FAL PAR	Fallugia paradoxa	Apache Plume	5 gal	14	VERY LOW
	HYD QUE	Hydrangea quercifolia	Oakleaf Hydrangea	5 gal	4	LOW
	JAM AME	Jamesia americana	Waxflower	5 gal	7	LOW
	PER ATR	Perovskia atriplicifolia	Russian Sage	5 gal	10	
	QUE GAM	Quercus gambelii	Gambel Oak	5 gal	13	LOW
	RHU ARA	Rhus aromatica	Fragrant Sumac	5 gal	9	
	RHU AUT	Rhus trilobata 'Autumn Amber'	Autumn Amber Sumac	5 gal	17	LOW
	RHU GLA	Rhus glabra	Smooth Sumac	5 gal	15	LOW
	RIB GOL	Ribes aureum	Golden Currant	5 gal	19	LOW
	RIB RRE	Ribes rubrum 'Red Lake'	Red Lake Red Currant	5 gal	9	LOW
	ROS RUG	Rosa rugosa	Rugosa Rose	5 gal	9	LOW
	ROS WOO	Rosa woodsi	Woods' Rose	5 gal	15	LOW
	SAL IRR	Salix irrorata	Dewystem Willow	5 gal	40	MODERATE
	SAM NIG	Sambucus nigra	Black Elderberry	5 gal	8	MODERATE
	SOR SOR	Sorbaria sorbifolia	False Spiraea	5 gal	7	MODERATE
	VIT SAI	Vitis x 'Saint Theresa Seedless'	Purple Seedless Grape	5 gal	2	LOW

PERENNIAL PLANTING SCHEDULE			
CODE	COMMON NAME	BOTANICAL NAME	HYDROZONE
PMX-01	BEAR'S BREECH	ACANTHUS MOLLIS	MEDIUM
	LADY'S MANTLE	ALCHEMILLA MOLLIS	MEDIUM
	NOODLING ONION	ALLIUM CERNUM	MEDIUM
	SNOWDROP ANEMONE	ANEMONE SYLVESTRIS	MEDIUM
	BLUE WILD INDIGO	BAPTISIA AUSTRALIS	MEDIUM
	SIBERIAN BUGLOSS	BRUNNERA MACROPHYLLA	MEDIUM
	SWEET WOODRUFF	GALIUM ODOURATUM	MEDIUM
	BLUE OAT GRASS	HELIOTRICHON SEMPERVIRENS	MEDIUM
	GRAPE HYACINTH	MUSCARI ARMENIACUM	MEDIUM
	WILD DAFFODIL	NARCISSUS PSEUDONARCISSUS	MEDIUM

CODE	COMMON NAME	BOTANICAL NAME	HYDROZONE
PMX-02	JERUSALEM SAGE	PHLOMIS CASHMERICANA	LOW
	HOLYHOCK	ALCEA ROSEA	LOW
	STAR OF PERSIA	ALLIUM CRISTOPHII	LOW
	GIANT ALLIUM	ALLIUM GIGANTEUM	LOW
	ARKANSAS BLUESTAR	AMONIA HUBrichtii	LOW
	SONATA COSMOS	COSMOS BIPINNATUS 'SONATA'	LOW
	JOE PYE WEED	EUPATORIUM MACULATUM	LOW
	GERMAN IRIS	IRIS X GERMANICA	LOW
	TIGER LILY	LILIUM LANCIFOLIUM	LOW
	PERENNIAL FLAX	LINUM PERENNNE	LOW
	GRAPE HYACINTH	MUSCARI ARMENIACUM	MEDIUM
	PAPERWHITE NARCISSUS	NARCISSUS PAPYRACEUS	MEDIUM
	ROCKY MOUNTAIN PENSTEMON	PENSTEMON STRICTUS	LOW

CODE	COMMON NAME	BOTANICAL NAME	HYDROZONE
PMX-03	VERMILION BLUFFS MEXICAN SAGE	SALVIA DARYCI 'SCARL'	LOW
	COMMON YARROW	ACHILLEA MILLEFOLIUM	LOW
	NARROWLEAF MILKWEED	ASCLEPIAS FASCICULARIS	LOW
	SIDE OATS GRAMA	BOUTELOUA CURTIPENDULA	LOW
	BLUE GRAMA GRASS	BOUTELOUA GRACILIS	LOW
	PALE PURPLE CONEFLOWER	ECHINACEA PALLIDA	LOW
	PERENNIAL FLAX	LINUM PERENNNE	LOW
	ROCKY MOUNTAIN PENSTEMON	PENSTEMON STRICTUS	LOW
	COMPASS PLANT	SILPHIUM LACINIATUM	LOW

SEED MIX SCHEDULE			
PAWNEE BUTTES PBSI NATIVE PRAIRIE WILDFLOWERS			
COMMON NAME	BOTANICAL NAME	HYDROZONE	
BLUE ASTER	SYMPHYTICRUM LAEVE	LOW	
ILLINOIS BUNDLEFLOWER	DESMANTHUS ILLINOENSIS	LOW	
INDIAN BLANKET	GAILLARDIA PULCHELLA	LOW	
LEADPLANT	AMORPHA CANASCENS	LOW	
MAXIMILLIAN SUNFLOWER	HELIANTHUS MAXIMILIANA	LOW	
NARROWLEAF PENSTEMON	PENSTEMON AGNUSCIFOLIUS	LOW	
OXEYE SUNFLOWER	HELIOPSIS HELIANTHOIDES	LOW	
PARTRIDGE PEAS	CHAMAECRISTA FASCICULATA	LOW	
PRairie CINQUEFOIL	DRYMOCALLIS ARGUTA	LOW	
SHOWY PLAINS COREOPSIS	COREOPSIS TINTORATA	LOW	
PURPLE PRAIRIE CLOVER	DALEA PURPUREA	LOW	
BLACKEYED SUSAN	RUDBECKIA HIRTA	LOW	
Upright prairie CONEFLOWER	RATIBIDA COLUMNIFERA	LOW	
SCARLET GLOBEMALLOW	SPHAERALCEA COCCINEA	LOW	
WESTERN YARROW	ACHILLEA TOmentosa	LOW	
PAWNEE BUTTES PBSI NATIVE PRAIRIE MIX			
COMMON NAME	BOTANICAL NAME	HYDROZONE	
BLUE GRAMA	BOUTELOUA GRACILIS	LOW	
BUFFALOGRASS	BUCHLOE DACTYLOIDES	LOW	
SIDE OATS GRAMA	BOUTELOUA CURTIPENDULA	LOW	
WESTERN WHEATGRASS	PASCOYRUM SMITHII	LOW	
SAND DROPSSE			



HYDROZONE DIAGRAM
 1
 L-202 1" = 30'-0"



IRRIGATION INTENT

1. ALL LANDSCAPE AREAS WILL BE WATERED BY AUTOMATIC UNDERGROUND SYSTEM. IRRIGATION DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE WILL CONFORM TO THE WATER CONSERVATION AND IRRIGATION STANDARDS LISTED IN SECTION 9.9-12 "LANDSCAPING AND SCREENING STANDARDS" OF THE CITY OF BOULDER MUNICIPAL CODE AND WILL PROVIDE EFFICIENT WATER USE AND MINIMAL WASTE OF WATER.

2. THE IRRIGATION SYSTEM WILL BE ZONED TO CORRELATE TO THE ORGANIZATION OF PLANTS INTO HYDROZONES WITH SIMILAR WATERING REQUIREMENTS, ADAPTABILITY, AND SUN EXPOSURE.

3. THE IRRIGATION SYSTEM SHALL FEATURE SMART MANAGEMENT CONTROLS THAT ADJUST FOR RAINFALL, SOIL MOISTURE, AND OTHER WEATHER FACTORS.

4. LANDSCAPE AREAS WILL IRRIGATED AS FOLLOWS:
 A. TREES & SHRUBS - DRIP
 B. PERENNIALS & GROUNDCOVERS - SPRAY
 C. SEEDED AREAS - SPRAY

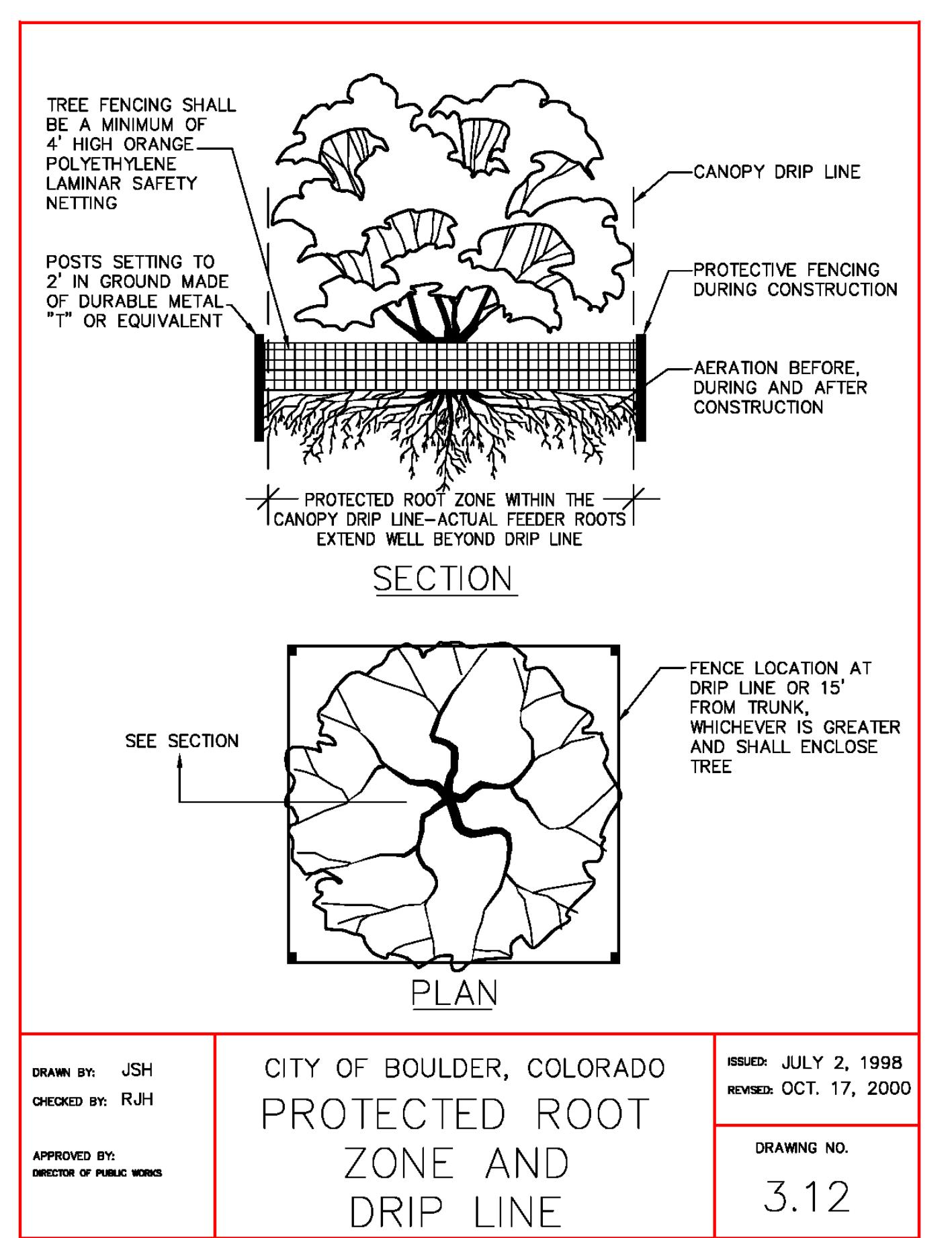
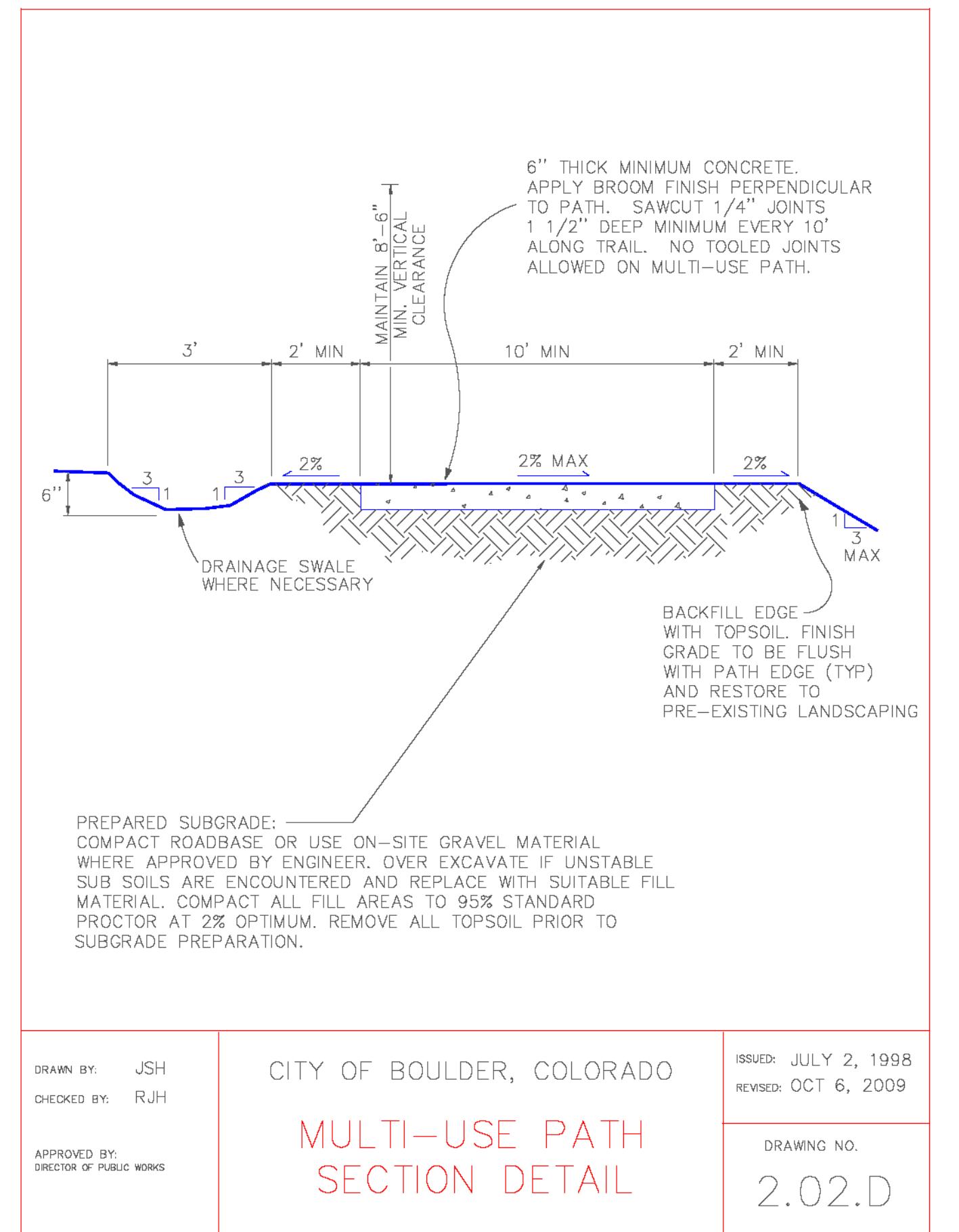
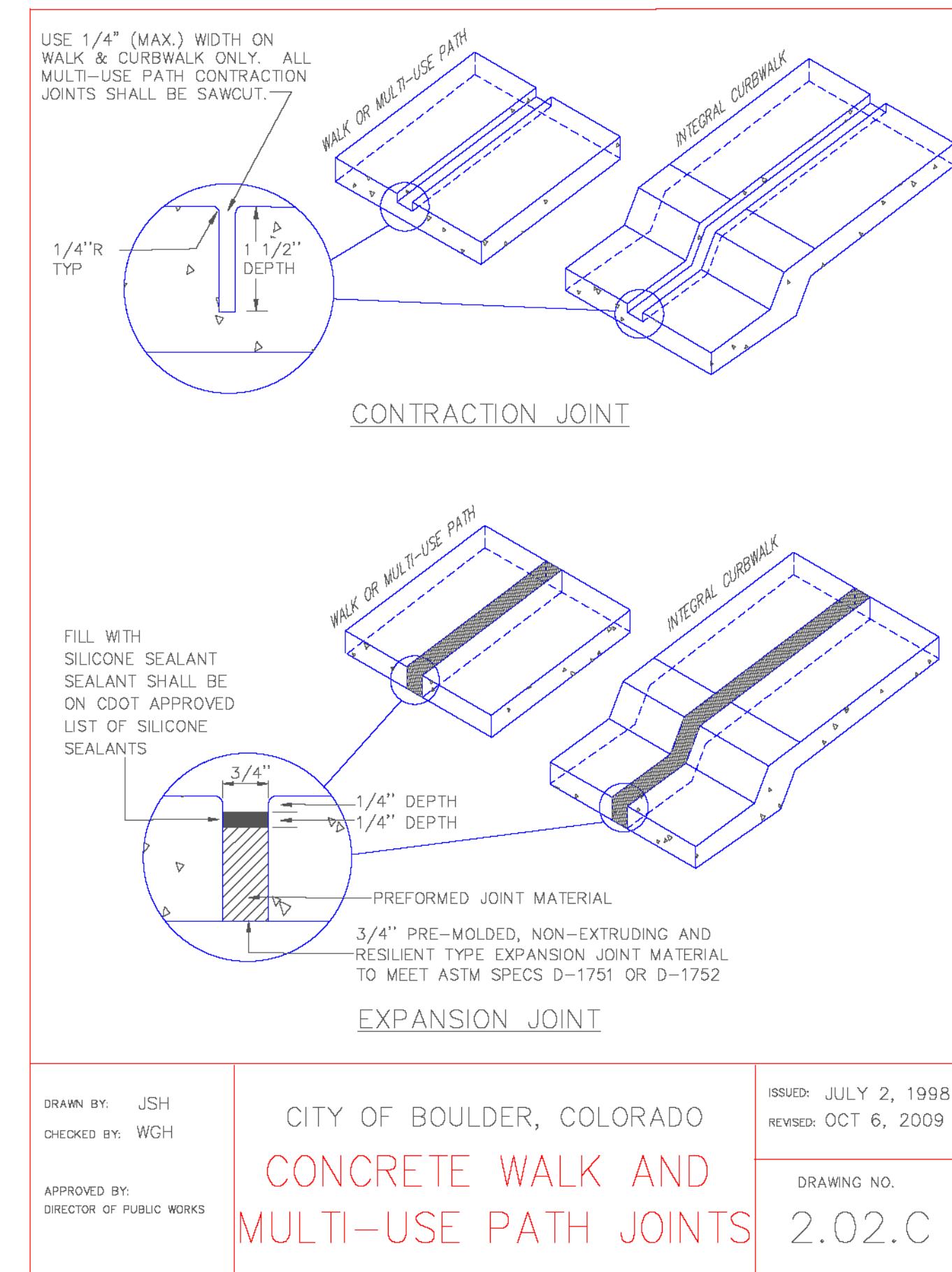
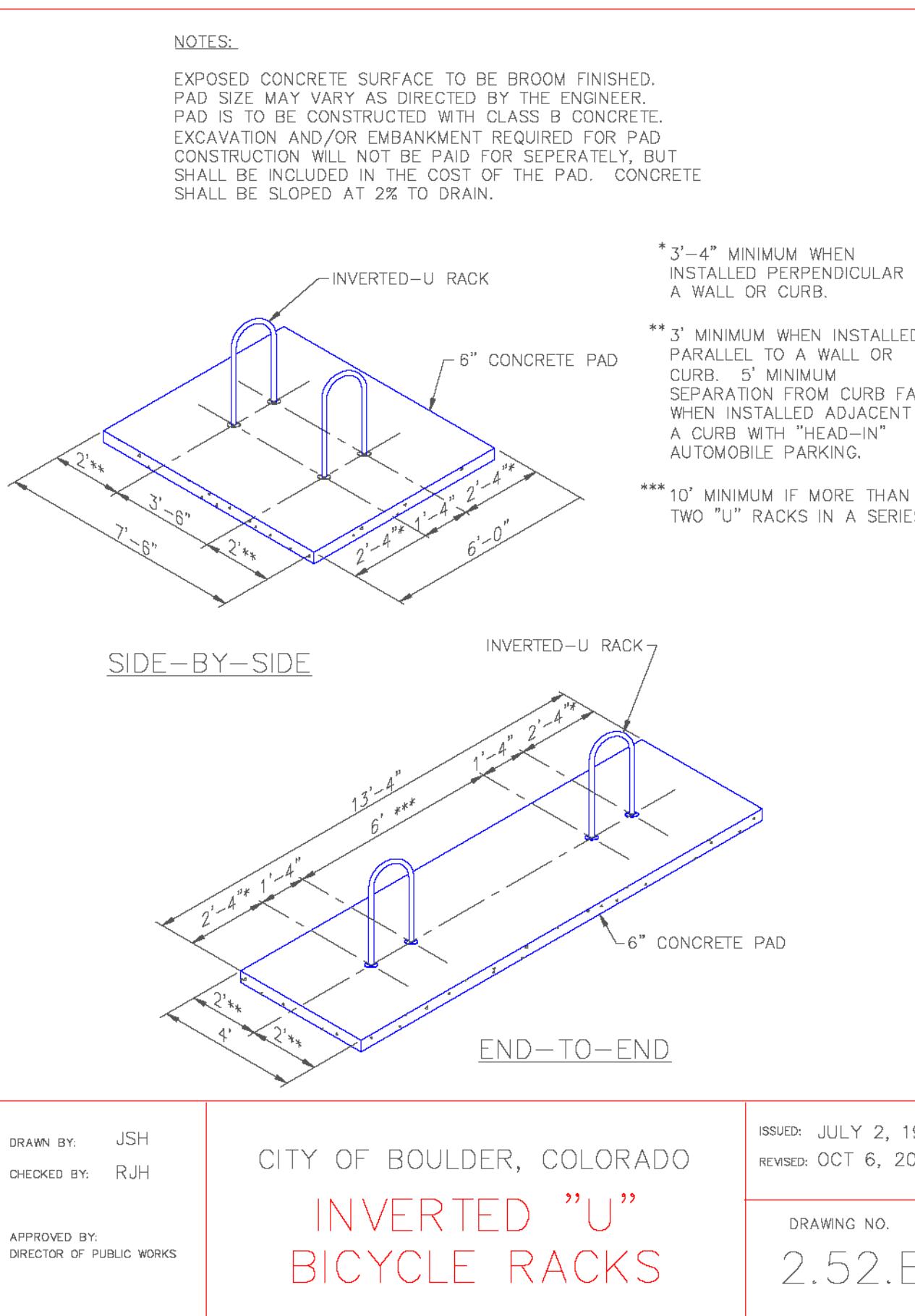


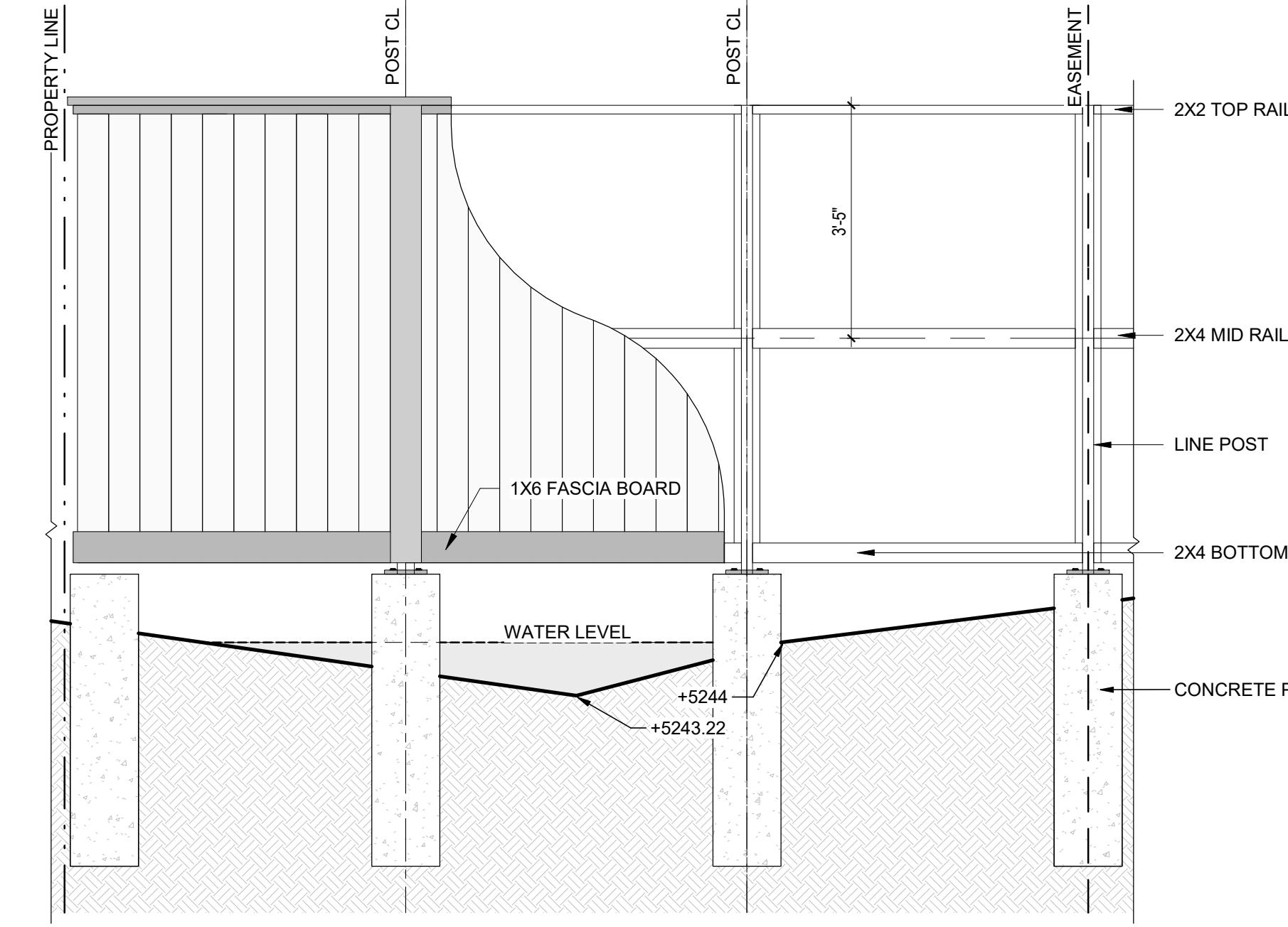
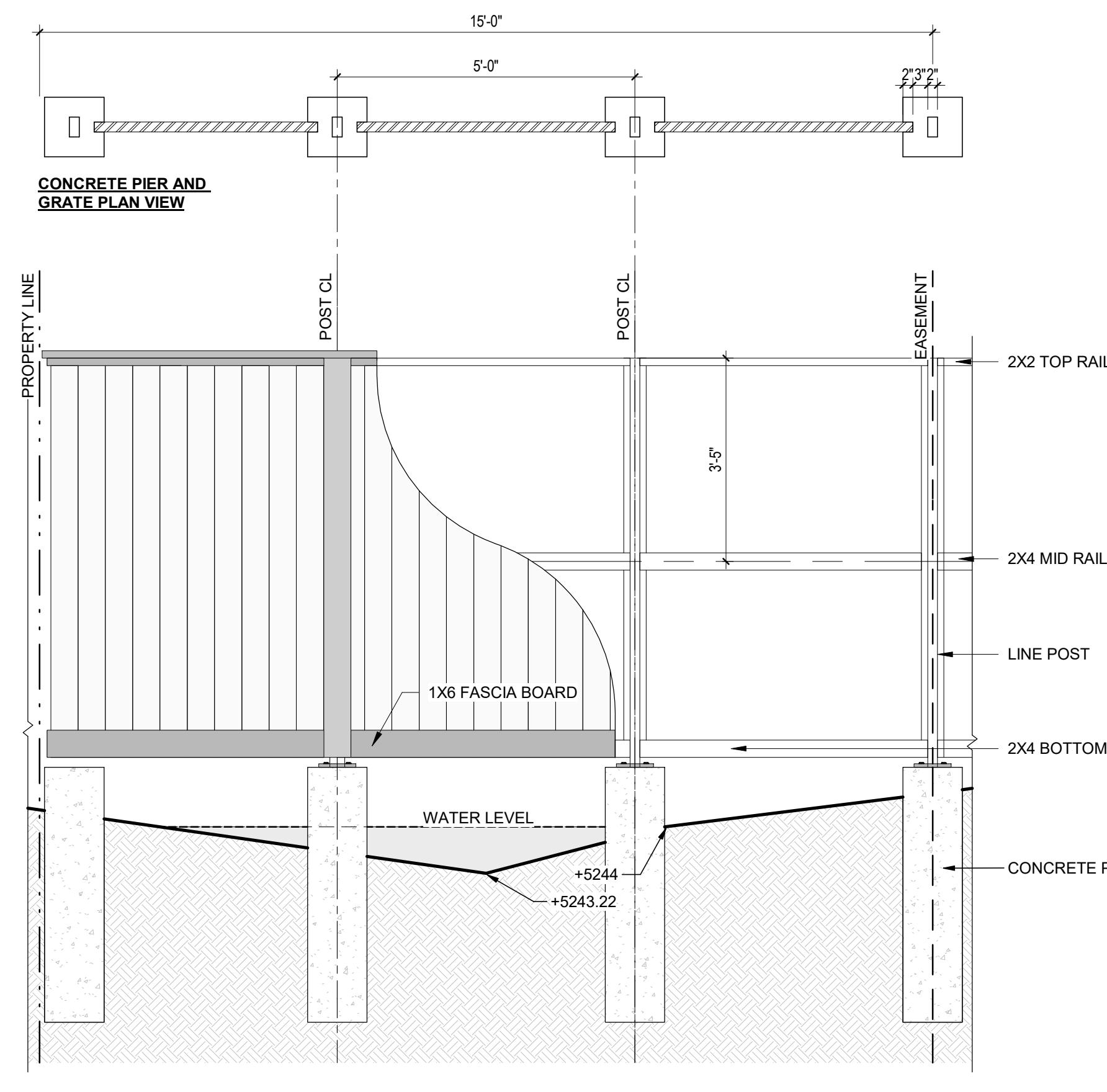
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 DRAWN BY: BO/DW
 CHECKED BY: SJ
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 DATE: 2025.09.10

CONGREGATION BONAI SHALOM

HYDROZONE DIAGRAM

L-202



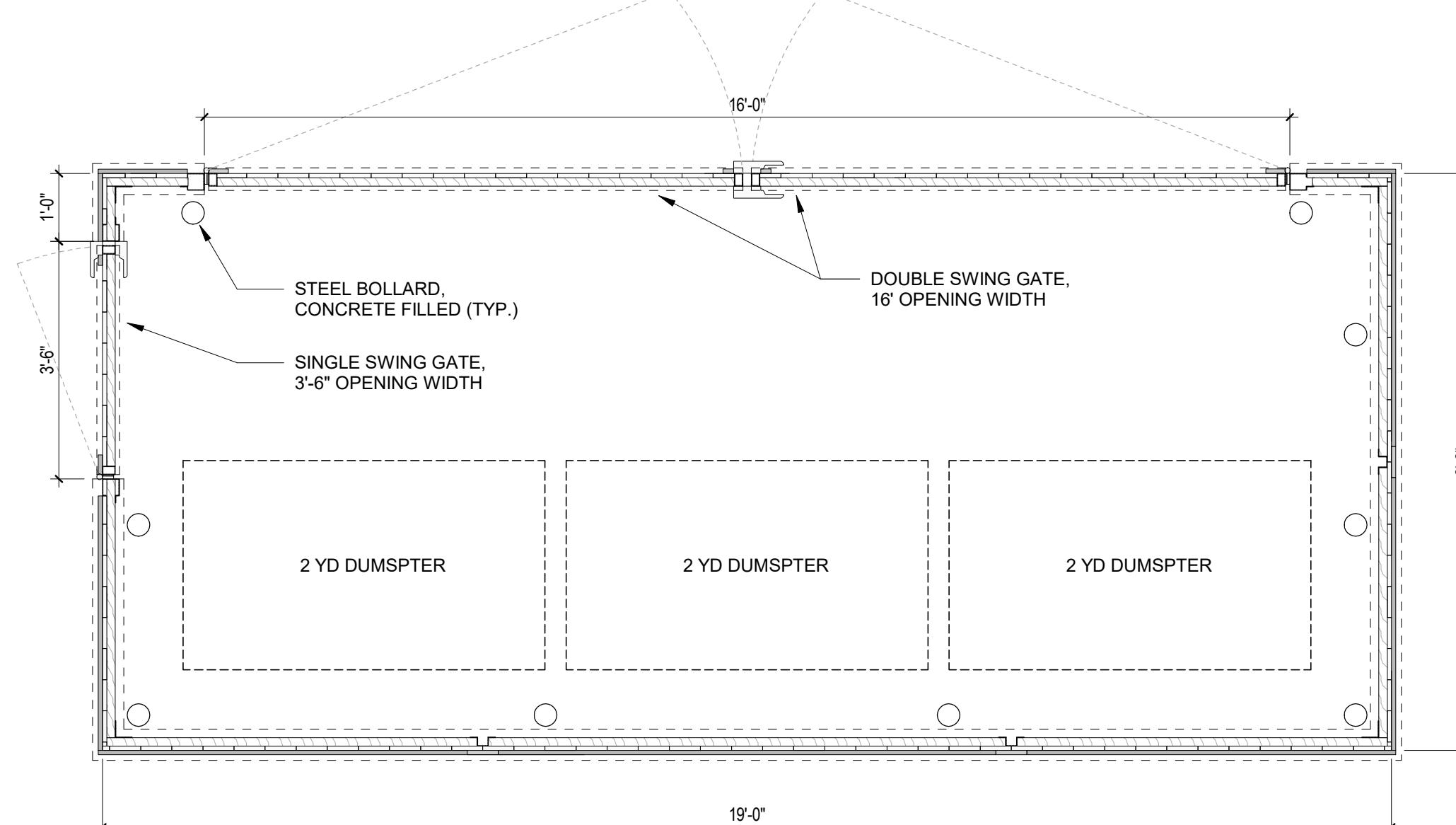


FENCE AT DRAINAGE AND IRRIGATION LATERAL

2

L-302

1/2" = 1'-0"

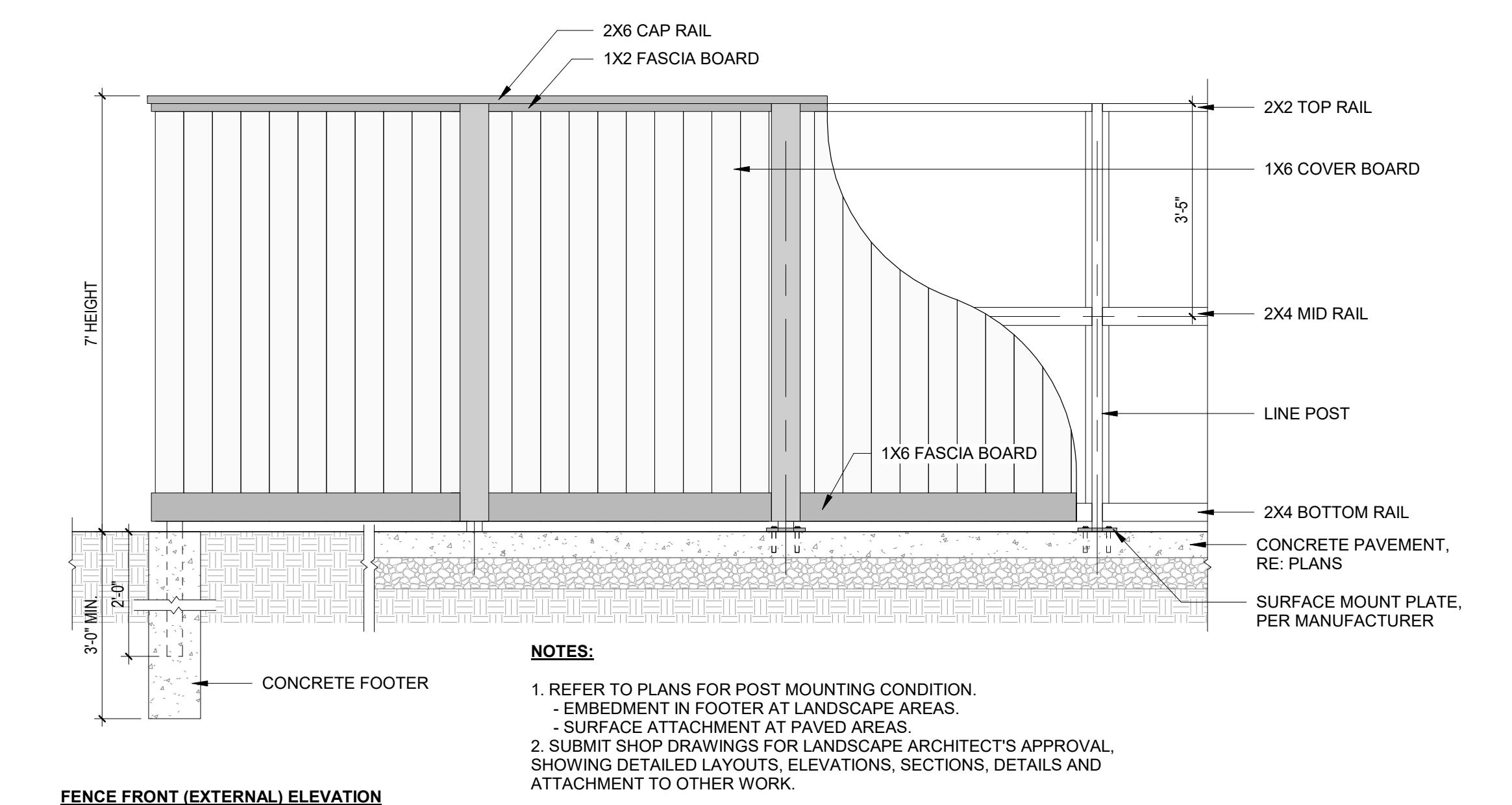


TRASH ENCLOSURE & GATE

1

L-302

1/2" = 1'-0"



SIFF PLAN RESUBMISSION #1
REVISION DESCRIPTION

NO.	DATE	DESD	DRAWN	RHO
1	07/30/25			

CONGREGATION BONAI SHALOM

LANDSCAPE MATERIALS

L-302



1 TREE INVENTORY

L-400

1" = 30'-0"

TREE REMOVAL & PROTECTION LEGEND

- EXISTING TREE TO BE REMOVED BY LICENSED TREE SERVICE
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE RELOCATED

ARBORIST INVENTORY NOTES:

1. THIS MAP IS NOT A LAND SURVEY PLAT OR AN IMPROVEMENT SURVEY PLAT. THE PURPOSE OF THIS MAP IS TO DEPICT TREE INVENTORY INFORMATION REQUESTED BY THE CITY OF BOULDER.
2. THE LOCATION OF ON SITE AND ADJACENT SITE PRIVATE TREES, THEIR SPECIES, CONDITION, AND DIAMETER AT BREAST HEIGHT, ARE SHOWN ACCORDING TO A TREE INVENTORY SURVEY PREPARED BY ROCKY MOUNTAIN ARBORICULTURE CONSULTING, RICHARD WILSON, REGISTERED CONSULTING ARBORIST #747.
3. THIS SURVEY WAS CONDUCTED ON JANUARY 25, 2025, USING INDUSTRY STANDARDS AND FOLLOWING THE REQUIREMENTS IN THE CITY AND COUNTY OF BOULDER'S DEVELOPMENT CODE REQUIREMENTS.
4. TREES WITH A DIAMETER OF LESS THAN 6" ARE GENERALLY EXCLUDED FROM THE SURVEY. THIS INCLUDES APPROXIMATELY 45 SMALL SPRUCE TREES ALONG THE SOUTHERN EDGE OF THE PROPERTY, ALL UNDER 6" IN DIAMETER AND IN VARYING CONDITIONS.
5. THE LINEAL UNITS SHOWN HEREON ARE U.S. SURVEY FEET.

TREE REMOVAL & PROTECTION NOTES:

1. CONTRACTOR SHALL VERIFY ALL DEMOLITION WITH OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL CONTACT ALL UTILITY LOCATOR SERVICES AND VERIFY ALL SERVICE LINES AND EQUIPMENT LOCATIONS WITHIN THE LIMITS OF WORK PRIOR TO COMMENCING DEMOLITION OPERATIONS. CALLUTILITY NOTIFICATION CENTER OF COLORADO TO LOCATE SITE UTILITIES AT 1-800-922-1937 OR 303-534-6700 3 DAYS PRIOR TO COMMENCING THE WORK.
3. CONTRACTOR SHALL BE AWARE THAT UNDERGROUND IMPROVEMENTS MAY EXIST THAT ARE NOT SHOWN IN THE CONSTRUCTION PLANS INCLUDING, BUT NOT LIMITED TO, LIGHTING CONDUITS & IRRIGATION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE IF THESE UNKNOWN IMPROVEMENTS ARE FOUND OR DAMAGED.
4. CONTRACTOR SHALL PUT IN PLACE TREE PROTECTION FENCING, BARRICADES, SIGNAGE, AND EROSION CONTROL MEASURES AS DESCRIBED IN THE SPECIFICATIONS PRIOR TO COMMENCING DEMOLITION OPERATIONS.
5. CONTRACTOR SHALL THOROUGHLY REMOVE AND DISPOSE OF ALL PLANT MATERIALS EXISTING AREAS SHOWN FOR DEMOLITION.
6. CONTRACTOR SHALL COORDINATE SITE DEMOLITION OPERATIONS WITH ALL OTHER TRADES PERFORMING WORK ON THE PROJECT.
7. CONTRACTOR SHALL REPLACE OR REPAIR TO ORIGINAL CONDITION ALL BUILDINGS, UTILITIES, AND SITE IMPROVEMENTS NOT DESIGNATED FOR REMOVAL THAT ARE DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO OWNER.
8. CONTRACTOR SHALL REPAIR ELECTRICAL SYSTEMS, CONDUIT, CONNECTIONS IF DISRUPTED BY CONSTRUCTION OR REMOVALS AT NO ADDITIONAL COST TO OWNER.
9. FIELD VERIFY LOCATION OF TREE PROTECTION FENCE WITH OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING AND MAINTENANCE FOR ALL TREES WITHIN PROJECT LIMITS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING TREES, BUILDINGS, AND SITE IMPROVEMENTS CAUSED BY CONSTRUCTION.
12. ALL WORK WILL BE SUBJECT TO NOISE ORDINANCE REGULATIONS.
13. REMOVAL OF TREES MUST BE PERFORMED BY A BOULDER LICENSED TREE SERVICE. TREE REMOVAL PERMIT IS REQUIRED FROM CITY FORESTER PRIOR TO REMOVAL OF TREES WITHIN THIS PROJECT.
14. REFER TO FORESTRY DWG NO. 3.12 FOR TREE PROTECTION DETAIL.
15. ALL TREE PROTECTION STANDARDS OF CH 3 AND 1 OF THE DESIGN AND CONSTRUCTION STANDARDS SHALL BE MET WITH PARTICULAR ATTENTION GIVEN TO GRADING IMPACTS, LIMITATIONS OF STOCKPILING, SOIL COMPACTION PREVENTION AND VEHICULAR ROUTES. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO ANY SITE DISTURBANCE AND REMAIN IN PLACE FOR THE DURATION OF THE PROJECT. ONLY HAND DIGGING MAY OCCUR WITHIN THE DBH OF ANY TREE TO BE PRESERVED. PROVIDE SUFFICIENT IRRIGATION THROUGHOUT CONSTRUCTION TO MAINTAIN THE LONG TERM HEALTH OF THE TREES.
16. CONTRACTOR TO RETURN ALL EXISTING CITY TREE GRATES TO BOULDER FORESTRY DEPARTMENT.

ASH TREE QUARANTINE:

1. BOULDER COUNTY IS CURRENTLY UNDER AN ASH TREE QUARANTINE FOLLOWING THE DISCOVERY OF THE EMERALD ASH BORER, A DESTRUCTIVE PEST THAT THREATENS THE TREES.
2. THE QUARANTINE PROHIBITS MOVING UNTREATED ASH TREES OR THEIR PARTS OUT OF THE COUNTY AND SURROUNDING AREAS.
3. THE EMERALD ASH BORER IS AN INVASIVE SPECIES RESPONSIBLE FOR KILLING MORE THAN 50 MILLION ASH TREES ACROSS 21 U.S. STATES SINCE 2002, ACCORDING TO OFFICIALS.
4. THE QUARANTINED AREA INCLUDES ALL OF BOULDER COUNTY AND MORE.
5. ITEMS THAT FALL UNDER THE QUARANTINE INCLUDE LOGS, GREEN LUMBER, NURSERY STOCK, WOOD CHIPS, STUMPS, ROOTS, BRANCHES, AND FIREWOOD, ACCORDING TO THE NEWS RELEASE. EXCEPTIONS TO THE QUARANTINE INCLUDE SEEDS, LEAVES, KILN-DRIED, PROCESSED FIREWOOD, AND FINISHED WOOD PRODUCTS WITHOUT BARK, ACCORDING TO THE STATE'S ORDER.
6. ASH TREES MUST BE REMOVED BY A LICENSED TREE ARBORIST.

* THE FOLLOWING SITES WILL BE ACCEPTING ASH TREE MATERIALS WITHIN THE QUARANTINED AREA:

DENVER REGIONAL LANDFILL
 1441 WELD COUNTY ROAD 6, ERIE
 FRONT RANGE LANDFILL
 1830 WELD COUNTY ROAD 5, ERIE
 REPUBLIC LANDFILL

8900 CO HWY 93, GOLDEN
 FOR MORE INFORMATION ABOUT THE EMERALD ASH BORER AND THE QUARANTINE, VISIT EABcolorado.com

NUMBER	SPECIES	DBH	CONDITION	MUNICIPAL ID	REMOVE	TRANSPLANT	NOTES
P1	English Oak	4"	GOOD	NOT PROVIDED	NO	YES	NORTH OF HACKBERRY #20. TRANSPLANT WITHIN SITE RIGHT OF WAY
P2	English Oak	4"	GOOD	NOT PROVIDED	NO		
P3	Kentucky Coffee Tree	1"	GOOD	NOT PROVIDED	NO		
P4	Kentucky Coffee Tree	1"	GOOD	NOT PROVIDED	NO		
P5	Tatarian Maple	3"	DEAD	NOT PROVIDED	YES		
P6	Tatarian Maple	3"	FAIR	NOT PROVIDED	NO		
P7	Bur Oak	1.25"	GOOD	NOT PROVIDED	NO	YES	TRANSPLANT WITHIN SITE RIGHT OF WAY.
P8	Callery Pear	6"	GOOD	NOT PROVIDED	NO		
P9	Callery Pear	4.5"	GOOD	NOT PROVIDED	NO		
P10	Callery Pear	2.5"	FAIR	NOT PROVIDED	NO		TRUNK WOUND
P11	Oak	NA	NA	NA	NA		PREVIOUSLY REMOVED BY OTHERS - NOT SHOWN IN PLANS
P12	Bald Cypress	2"	GOOD	NOT PROVIDED	NO		
P13	Epin Hybrid	6"	GOOD	NOT PROVIDED	NO		
P14	Northern Red Oak	3"	POOR	NOT PROVIDED	NO		TRUNK WOUND
P15	Northern Red Oak	3.5"	FAIR	NOT PROVIDED	NO		TRUNK WOUND
P16	Oak	1"	GOOD	NOT PROVIDED	NO		
P17	Honeylocust	4.5"	POOR	NOT PROVIDED	NO		CANKER
P18	Crabapple	5"	GOOD	NOT PROVIDED	NO		
P19	Crabapple	5"	FAIR	NOT PROVIDED	NO		TRUNK WOUND
P20	English Oak	7"	GOOD	NOT PROVIDED	NO		
P21	Ohio Buckeye	2"	GOOD	NOT PROVIDED	NO		
P22	Oak	1"	GOOD	NOT PROVIDED	NO		
P23	Oak	1"	GOOD	NOT PROVIDED	NO		
P24	Hackberry	4"	GOOD	NOT PROVIDED	NO		
P25	American Elm	5.5"	FAIR	NOT PROVIDED	NO		EUROPEAN ELM SCALE
P26	American Elm	5.5"	FAIR	NOT PROVIDED	NO		EUROPEAN ELM SCALE
P27	Green Ash	5"	VERY POOR	NOT PROVIDED	NO		MULTIPLE STEMS (6)
P28	Green Ash	3"	VERY POOR	NOT PROVIDED	NO		

NUMBER	SPECIES	DBH	CONDITION	MUNICIPAL ID	REMOVE	NOTES
1	Siberian Elm	32"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT. ESTIMATED DBH - FENCED IN, NO ACCESS.
2	Siberian Elm	8"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT. ESTIMATED DBH - FENCED IN, NO ACCESS.
3	Siberian Elm	20"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT. ESTIMATED DBH - FENCED IN, NO ACCESS.
4	Siberian Elm	21"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
5	Siberian Elm	34"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
6	Green Ash	18"	VERY POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
7	Siberian Elm	7.5"	FAIR	N/A	NO	TREE TO REMAIN. INCORPORATE INTO DESIGN.
8	Apricot/ Prunus spp.	6.5"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
9	Siberian Elm	15"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
10	Siberian Elm	9"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
11	Siberian Elm	15"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
12	Siberian Elm	28"	FAIR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
13	Green Ash	8"	VERY POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
14	Green Ash	9"	VERY POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
15	Siberian Elm	18"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
16	Siberian Elm	12"	GOOD	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
17	Siberian Elm	29"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
18	Siberian Elm	7.5"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
19	Siberian Elm	10"	POOR	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.
20	Hackberry	11.5"	GOOD	N/A	YES	TREE TO BE REMOVED. SITE DESIGN CONFLICT.

EXCELLENT	SPECIMEN TREE, HEALTHY WITH GOOD VIGOR NO APPARENT SIGNS OF DISEASE OR MECHANICAL INJURY NO CORRECTIVE WORK REQUIRED EXCEPTIONAL FORM REPRESENTATIVE OF THE SPECIES	FAIR	BELLOW AVERAGE CONDITION AND VIGOR FOR THE AREA IN NEED OF CORRECTIVE PRUNING MAY LACK CHARACTERISTIC FORM FOR SPECIES MAY SHOW EVIDENCE OF DISEASE OR INJURY TREE MAY BE SALVAGEABLE WITH PROPER CARE	VERY...	POOR VIGOR APPEARS TO BE IN DECLINE AND IN THE LAST STAGES OF LIFE LITTLE LIFE FOLIAGE SINGLE OR MULTIPLE SEVERE DEFECTS FAILURE IS PROBABLE OR IMMINENT
GOOD	AVERAGE CONDITION AND VIGOR FOR THE AREA NO APPARENT SIGNS OF DISEASE OR... LITTLE CORRECTIVE WORK REQUIRED TYPICAL FORM REPRESENTATIVE OF THE SPECIES	PORR	GENERAL STATE OF DECLINE OR DEAD MAY SHOW SEVERE SIGNS OF DISEASE OR INJURY MAY BE SEVERELY MISSHAPEN MAY BE HAZARDOUS	DEAD	DEAD TREE

CONGREGATION BONAI SHALOM

TREE INVENTORY

STEP PLAN SUBMISSION #3

STEP PLAN SUBMISSION #2

STEP PLAN SUBMISSION #1

REVISION DESCRIPTION

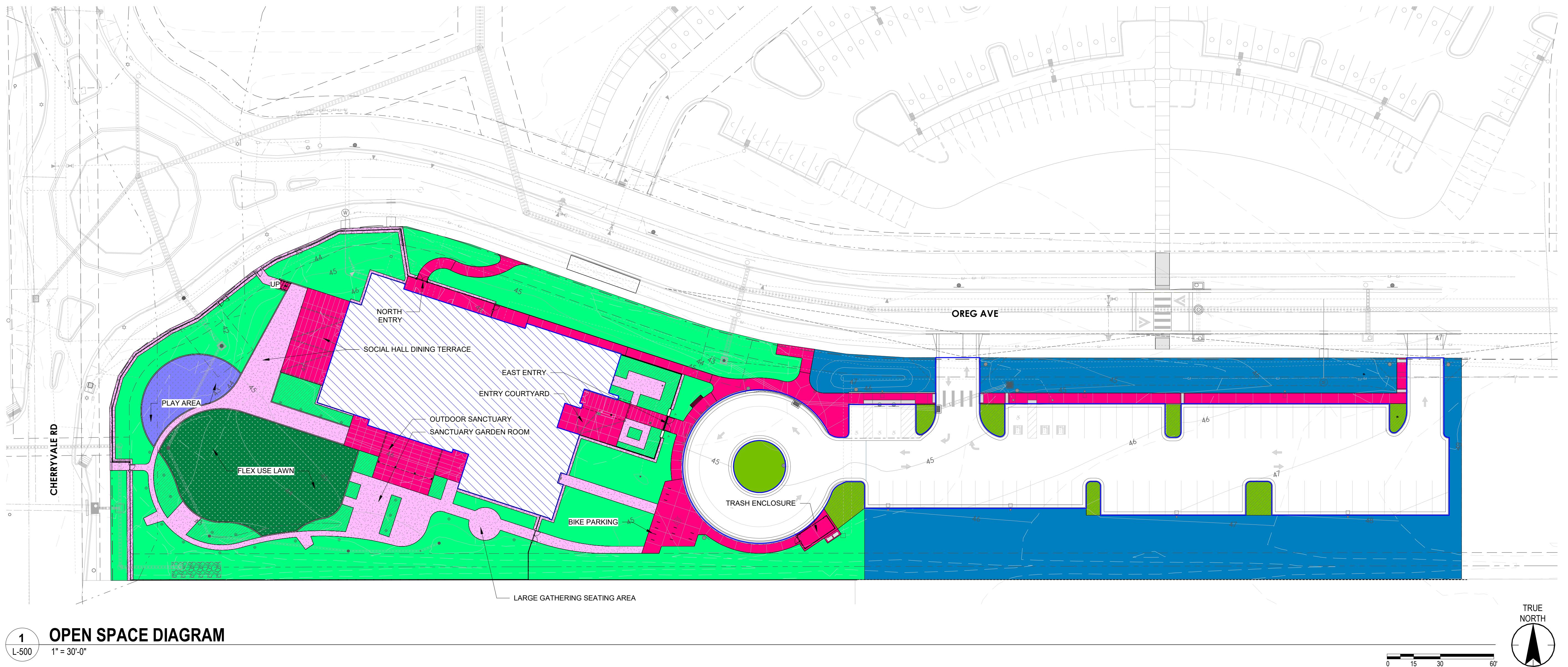
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CHECKED BY: MD
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DATE: 2025.10.24

L-400

EXISTING SPRUCE TREE BORDER INVENTORY LIST:						
NUMBER	SPECIES	DBH	CONDITION	MINICIPAL ID	REMOVE	NOTES
S1	Blue Spruce	5"	FAIR	NOT PROVIDED	YES	
S2	Blue Spruce	3"	FAIR	NOT PROVIDED	YES	
S3	Blue Spruce	4"	GOOD	NOT PROVIDED	YES	
S4	Blue Spruce	3.5"	FAIR	NOT PROVIDED	NO	UNDERDEVELOPED LOWER BRANCHES
S5	Blue Spruce	3"	FAIR	NOT PROVIDED	NO	UNDERDEVELOPED LOWER BRANCHES
S6	Blue Spruce	3.5"	GOOD	NOT PROVIDED	NO	
S7	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S8	Blue Spruce	3.5"	FAIR	NOT PROVIDED	NO	WASP IN TREE
S9	Blue Spruce	5"	GOOD	NOT PROVIDED	NO	
S10	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S11	Blue Spruce	5"	GOOD	NOT PROVIDED	NO	
S12	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	
S13	Blue Spruce	4"	FAIR	NOT PROVIDED	NO	
S14	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S15	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S16	Blue Spruce	5"	GOOD	NOT PROVIDED	NO	
S17	Blue Spruce	4"	POOR	NOT PROVIDED	NO	
S18	Blue Spruce	3"	FAIR	NOT PROVIDED	NO	
S19	Blue Spruce	3.5"	FAIR	NOT PROVIDED	NO	LAST SPRUCE WEST OF ELMS
S20	Blue Spruce	4.5"	FAIR	NOT PROVIDED	NO	FIRST SPRUCE EAST OF ELM TREES
S21	Blue Spruce	3"	POOR	NOT PROVIDED	NO	
S22	Blue Spruce	3.5"	FAIR	NOT PROVIDED	NO	UNDERDEVELOPED LOWER BRANCHES
S23	Blue Spruce	4"	POOR	NOT PROVIDED	NO	
S24	Blue Spruce	2"	VERY POOR	NOT PROVIDED	NO	5' TALL AND STILL HAS STAKES AND STRAPS ATTACHED.
S25	Blue Spruce	4"	FAIR	NOT PROVIDED	NO	EUROPEAN ELM SCALE
S26	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	WASP IN TREE
S27	Blue Spruce	4.5"	FAIR	NOT PROVIDED	NO	
S28	Blue Spruce	2"	DEAD	NOT PROVIDED	NO	
S29	Blue Spruce	5"	FAIR	NOT PROVIDED	NO	
S30	Blue Spruce	2.5"	FAIR	NOT PROVIDED	NO	
S31	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	
S32	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	MAGPIE NEST
S33	Blue Spruce	5.5"	GOOD	NOT PROVIDED	NO	
S34	Blue Spruce	2"	POOR	NOT PROVIDED	NO	5' TALL AND STILL HAS STAKES AND STRAPS ATTACHED. LAST OF DOUBLE ROW
S35	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S36	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	
S37	Blue Spruce	5.5"	GOOD	NOT PROVIDED	NO	
S38	Blue Spruce	5.5"	GOOD	NOT PROVIDED	NO	
S39	Blue Spruce	2"	DEAD	NOT PROVIDED	NO	
S40	Blue Spruce	3"	FAIR	NOT PROVIDED	NO	
S41	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S42	Blue Spruce	5"	GOOD	NOT PROVIDED	NO	
S43	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	LEANING CORRECTED
S44	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S45	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	
S46	Blue Spruce	5"	GOOD	NOT PROVIDED	NO	MAGPIE NEST
S47	Blue Spruce	4.5"	FAIR	NOT PROVIDED	NO	
S48	Blue Spruce	4.5"	GOOD	NOT PROVIDED	NO	
S49	Blue Spruce	3"	DEAD	NOT PROVIDED	NO	
S50	Blue Spruce	4"	GOOD	NOT PROVIDED	NO	POSSIBLY OUTSIDE OF CONSTRUCTION

CONGREGATION BONAI SHALOM

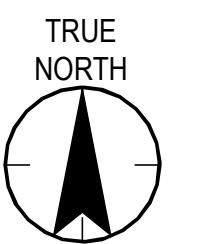
TREE INVENTORY


1 OPEN SPACE DIAGRAM

L-500

1" = 30'-0"

0 15 30 60'



LANDSCAPE PLAN LEGEND	
PROPERTY LINE / ZONE LOT BOUNDARY LINE	
100-YEAR FLOODPLAIN	
500-YEAR FLOODPLAIN	
DRAINAGE & IRRIGATION LATERAL CENTERLINE	
EASEMENT	
CONCRETE PAVING (STANDARD FINISH)	
CONCRETE CURB	
CRUSHED STONE PAVING	
EXISTING LIGHT POLE	
BICYCLE RACK	
BENCH	
PLANTING AREA TYPE 1 (NATIVE SEED)	
PLANTING AREA TYPE 2 (PERENNIAL GARDEN WITH WOOD MULCH)	
PLANTING AREA TYPE 3 (PARKING ISLANDS WITH WOOD MULCH)	
PLAY AREA (WOOD MULCH)	
TURF GRASS	
PA	PLANTING AREA

OPEN SPACE LEGEND	
	BUILDING
	PARKING AND DRIVE AISLES
	CONCRETE (EXCLUDED FROM OPEN SPACE)
	PAVED OPEN SPACE - CRUSHED STONE
	PAVED OPEN SPACE - PLAY AREA WOOD CHIPS
	PLANTED OPEN SPACE - GARDENS
	PLANTED OPEN SPACE - TURF GRASS
	PLANTED OPEN SPACE - INTERIOR PARKING ISLANDS
	PLANTED OPEN SPACE - PERIMETER BUFFER AND PARKING SCREENING

LANDSCAPE NOTES:

- LANDSCAPE SCHEDULE: (A) NOTHING SHALL BE PLANTED BETWEEN OCTOBER 15 AND MARCH 1 WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY. STOCK, OTHER THAN CONTAINER-GROWN STOCK, SHALL NOT BE PLANTED BETWEEN JUNE 1 AND SEPTEMBER 1 WITHOUT PRIOR WRITTEN APPROVAL OF THE CITY. BARE ROOT STOCK SHALL NOT BE PLANTED AFTER APRIL 3 OR IF PLANTS HAVE BEGUN TO LEAF OUT. (B) NOTHING SHALL BE PLANTED DURING FREEZING OR EXCESSIVELY WINDY, HOT, OR WET WEATHER OR WHEN THE GROUND CONDITIONS CANNOT BE PROPERLY WORKED FOR DIGGING, MIXING, RAKING, OR GRADING. (C) NOTHING SHALL BE PLANTED UNTIL THE ADJACENT SITE IMPROVEMENTS, PAVEMENTS, IRRIGATION INSTALLATION AND FINISH GRADING IS COMPLETED. THE CONTRACTOR SHALL TEST THE IRRIGATION SYSTEM IN THE PRESENCE OF THE DIRECTOR. THE IRRIGATION SYSTEM SHALL BE IN APPROVED, OPERATING CONDITION PRIOR TO ANY PLANTING.
- SITE PREPARATION AND ALL PLANTING FOR NEW PLANTING AREAS OR DISTURBED AREAS SHALL BE COMPLETED, AT A MINIMUM, IN ACCORDANCE WITH THE CITY OF BOULDER DESIGN AND CONSTRUCTION STANDARDS. SITE PREPARATION SHALL INCLUDE TILLING THE SOIL TO A MINIMUM DEPTH OF SIX INCHES BELOW THE FINISHED GRADE, TOGETHER WITH SOIL AMENDMENTS THAT ARE APPROPRIATE TO ENSURE THE HEALTH AND SUSTAINABILITY OF THE LANDSCAPE TO BE PLANTED.
- ALL NEW PLANTING BEDS AND A 3-FOOT DIAMETER RING AT THE BASE OF NEW TREE WITHIN SOD OR SEDED AREAS SHALL BE MULCHED WITH ORGANIC MULCH AT LEAST 4" DEEP. WEED BARRIER FABRIC SHALL NOT BE USED IN ANY NEW PLANTING AREAS.
- GRAVEL, ROCK MULCH, OR CRUSHER FINES SHALL BE REMOVED FROM UNDER STREET TREES AND REPLACED WITH ORGANIC MULCH. NEW ROCK OR GRAVEL MAY NOT BE USED IN NEW PLANTING AREAS AND MAY ONLY BE USED IN SPECIFIC ORNAMENTAL FEATURES IN LIMITED AREAS (SUCH AS THE BOTTOM OF A DRAINAGE SWALE OR DRY RIVER BED) OR AS PEDESTRIAN PATH OR PATIO. DENVER BOTANIC GARDEN SQUEEGEE MULCH PAVING STANDARD MAY APPLY TO ANY NATIVE & XERIC PLANTING AREAS WHERE ORGANIC MULCH MAY BE DEDIMENTAL TO PLANT HEALTH.*
- AN AUTOMATIC IRRIGATION SYSTEM SHALL BE INSTALLED FOR ALL NEW LANDSCAPING AND NEW OR EXISTING STREET TREES IF ONE DOES NOT CURRENTLY EXIST. INSTALL A SMART SYSTEM THAT ADJUSTS FOR RAINFALL, SOIL MOISTURE, AND OTHER WEATHER FACTORS FOR ALL NEW IRRIGATION ZONES.
- PROTECTIVE MAINTENANCE: AN APPLICANT FOR CONSTRUCTION APPROVAL SHALL PROVIDE MAINTENANCE AND CARE FOR ALL EXISTING TREES REQUIRED TO BE PROTECTED IN THE PUBLIC RIGHT-OF-WAY ADJACENT TO ANY PROJECT OR CONSTRUCTION SITE DURING CONSTRUCTION ACTIVITIES AND THE PUBLIC IMPROVEMENT WARRANTY PERIOD TO ENSURE THAT EXISTING TREES SURVIVE AND ARE NOT DAMAGED. REFER TO CHAPTER 3 OF THE DESIGN AND CONSTRUCTION STANDARDS FOR ALL TREE PROTECTION REQUIREMENTS.
- ALL NEW TREES SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXISTING WATER OR SEWER UTILITY LINES OR FROM LIGHT POLES OR OVERHEAD UTILITY POLES. ALL NEW UTILITY LINES SHALL BE LOCATED A MINIMUM OF 10' FROM ANY EXISTING PUBLIC STREET TREE.

LANDSCAPE REQUIREMENTS TABLE

ZONING	RR-1
TOTAL LOT SIZE (SF)	110,657
TOTAL BUILDING COVERAGE (SF)	12,189
TOTAL PARKING LOT AREA (SF)	26,084
TOTAL LANDSCAPE AREA (SF)	72,384

DESCRIPTION	REQUIRED	PROVIDED	PERCENTAGE
TOTAL LENGTH OF STREET FRONTRAGE	NA	938	NA
TOTAL NUMBER OF STREET TREES*	23	26 (EXISTING) 2 (RELOCATED)	117%
TOTAL AREA OF PARKING LOT (SF)	NA	26,084	NA
TOTAL NUMBER OF PARKING SPACES	76	61	80%
TOTAL NUMBER OF ACCESSIBLE STALLS	4	4	100%
TOTAL NUMBER OF BIKE PARKING	26	32	118%
SHORT TERM BIKE PARKING	20	24	104%
LONG TERM BIKE PARKING	6	8	114%
TOTAL INTERIOR PARKING LOT LANDSCAPE AREA	1304	2,166	166%
TOTAL NUMBER OF TREES IN INTERIOR PARKING LOT	7	7	100%
TOTAL LENGTH OF PARKING LOT SCREEN AT ROW	NA	433	NA
TOTAL WIDTH OF PARKING LOT SCREEN AT ROW	20	20	100%
TOTAL LENGTH OF PARKING LOT SCREEN AT PROPERTY LINES	NA	568	NA
TOTAL NUMBER OF TREES AT PARKING LOT SCREEN AT PROPERTY LINES	23	47 (EXISTING) 13 (PROPOSED)	260%
TOTAL NUMBER OF LANDSCAPE TREES	55	37 (PROPOSED) 75 (EXISTING)	203%
TOTAL NUMBER OF OVERALL SHRUBS	277	277	100%
TOTAL AMOUNT OF HIGH WATER USE ZONES	0	0	0%
TOTAL AMOUNT OF TURF GRASS	NOT TO EXCEED 25%	5,594	8%

OPEN SPACE

TYPE OF USE	AREA (SF)	PERCENTAGE
BUILDING COVERAGE (SF)	12,189	11%
PARKING LOT	26,084	24%
SIDEWALKS	10,195	9%
TOTAL HARDSCAPE (NOT USEABLE OPEN SPACE)	48,468	44%
OPEN SPACE: INTERIOR PARKING LOT LANDSCAPING	2,166	2%
OPEN SPACE: CRUSHER FINES PATHS	7,371	7%
OPEN SPACE: PERIMETER BUFFER & LANDSCAPE SCREEN	19,576	18%
OPEN SPACE: GARDENS & LANDSCAPING	25,953	23%
OPEN SPACE: PLAY AREA	1,529	1%
OPEN SPACE: TURF	5,594	5%
TOTAL LANDSCAPE AREA (USABLE OPEN SPACE)	62,189	56%
TOTAL LOT SIZE	110,657	

(PHASING) LANDSCAPE REQUIREMENTS TABLE

ZONING	RR-1
TOTAL LOT SIZE (SF)	110,657
TOTAL BUILDING COVERAGE (SF)	13,049
TOTAL PARKING LOT AREA (SF)	26,084
TOTAL LANDSCAPE AREA (SF)	71,524

DESCRIPTION	REQUIRED	PROVIDED	PERCENTAGE
TOTAL LENGTH OF STREET FRONTRAGE	NA	938	NA
TOTAL NUMBER OF STREET TREES*	23	26 (EXISTING) 2 (RELOCATED)	117%
TOTAL AREA OF PARKING LOT (SF)	NA	26,084	NA
TOTAL NUMBER OF PARKING SPACES	76	61	80%
TOTAL NUMBER OF ACCESSIBLE STALLS	4	4	100%
TOTAL NUMBER OF BIKE PARKING	26	32	118%
SHORT TERM BIKE PARKING	20	24	104%
LONG TERM BIKE PARKING	6	8	114%
TOTAL INTERIOR PARKING LOT LANDSCAPE AREA	1304	2,166	166%
TOTAL NUMBER OF TREES IN INTERIOR PARKING LOT	7	7	100%
TOTAL LENGTH OF PARKING LOT SCREEN AT ROW	NA	433	NA
TOTAL WIDTH OF PARKING LOT SCREEN AT ROW	20	20	100%
TOTAL LENGTH OF PARKING LOT SCREEN AT PROPERTY LINES	NA	568	NA
TOTAL NUMBER OF TREES AT PARKING LOT SCREEN AT PROPERTY LINES	23	47 (EXISTING) 13 (PROPOSED)	260%
TOTAL NUMBER OF LANDSCAPE TREES	55	37 (PROPOSED) 75 (EXISTING)	211%
TOTAL NUMBER OF OVERALL SHRUBS	274	277	104%
TOTAL AMOUNT OF HIGH WATER USE ZONES	0	0	0%
TOTAL AMOUNT OF TURF GRASS	NOT TO EXCEED 25%	5,594	8%

(PHASING) OPEN SPACE

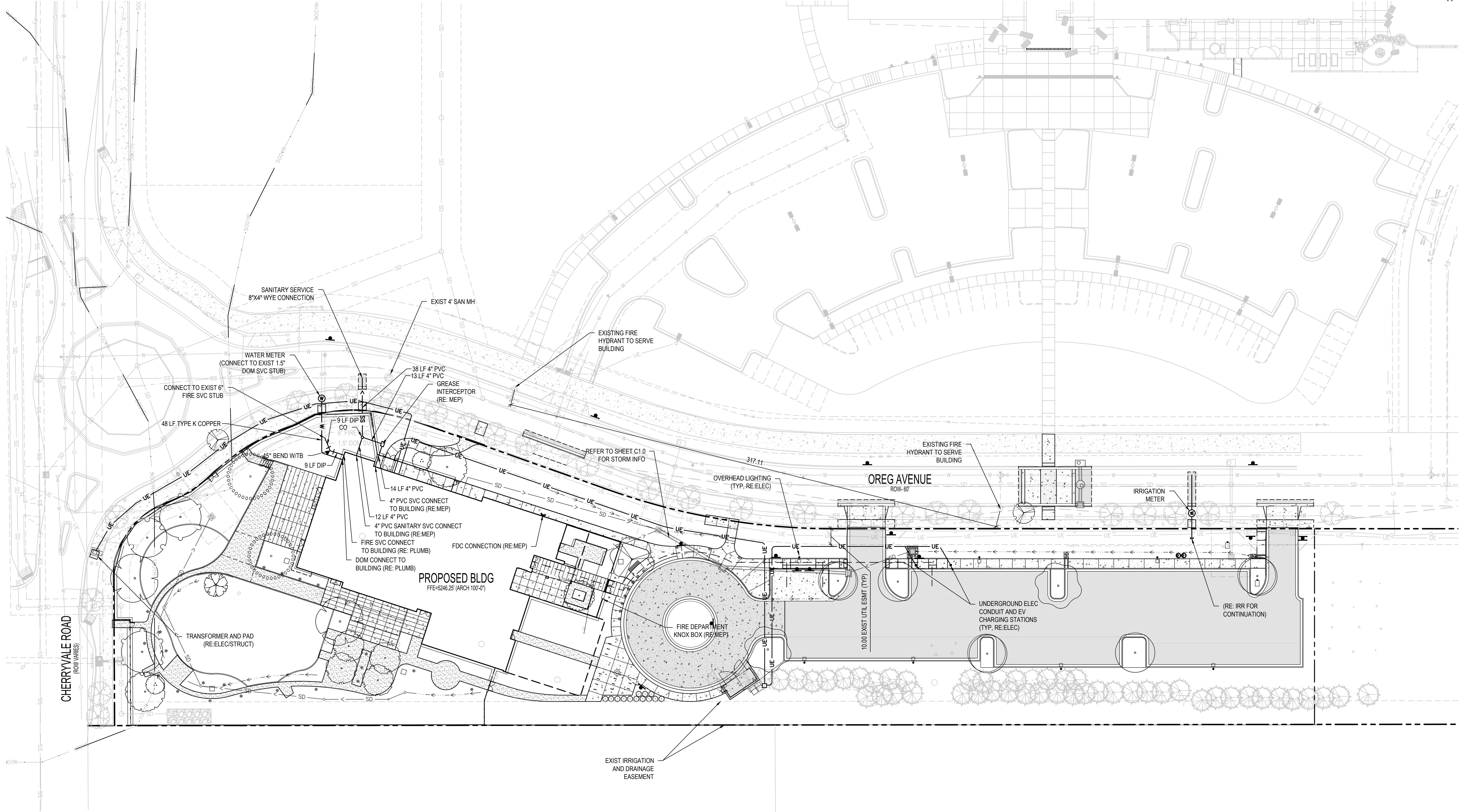
TYPE OF USE	AREA (SF)	PERCENTAGE
BUILDING COVERAGE (SF)	13,049	12%
PARKING LOT	26,084	24%
SIDEWALKS	10,195	9%
TOTAL HARDSCAPE (NOT USEABLE OPEN SPACE)	49,328	45%
OPEN SPACE: INTERIOR PARKING LOT LANDSCAPING	2,166	2%
OPEN SPACE: CRUSHER FINES PATHS	7,371	7%
OPEN SPACE: PERIMETER BUFFER & LANDSCAPE SCREEN	19,576	18%
OPEN SPACE: GARDENS & LANDSCAPING	25,093	23%
OPEN SPACE: PLAY AREA	1,529	1%
OPEN SPACE: TURF	5,594	5%
TOTAL LANDSCAPE AREA (USABLE OPEN SPACE)	61,329	55%
TOTAL LOT SIZE	110,657	

(SEE ARCHITECTURAL PHASING PLANS FOR ADDITIONAL INFORMATION PERTAINING TO PHASING.)

CONGREGATION BONAI SHALOM

OPEN SPACE DIAGRAM

L-500

**UTILITY NOTES:**

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. CONTRACTOR TO POTHOLE EXISTING UTILITIES AT PROPOSED UTILITY CROSSINGS IN ROW PRIOR TO CONSTRUCTION.
3. ALL DRY UTILITY AND ELECTRIC DESIGNS ARE PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. SEE MEP PLANS AND SPECIFICATIONS AND COORDINATE WITH ALL UTILITY OWNERS AS NEEDED.
4. CONTRACTOR TO MARK ALL UTILITY STUBS WITH MARKERS.
5. CONTRACTOR TO FIELD VERIFY ALL EXISTING STUB LOCATIONS FOR SERVICE PRIOR TO CONSTRUCTION.

 30 0 30 60
 SCALE IN FEET

1881 9th Street, Suite 303
Boulder, CO 80302
Tel +1 303.447.8202
www.stantec.com

ABBREVIATIONS

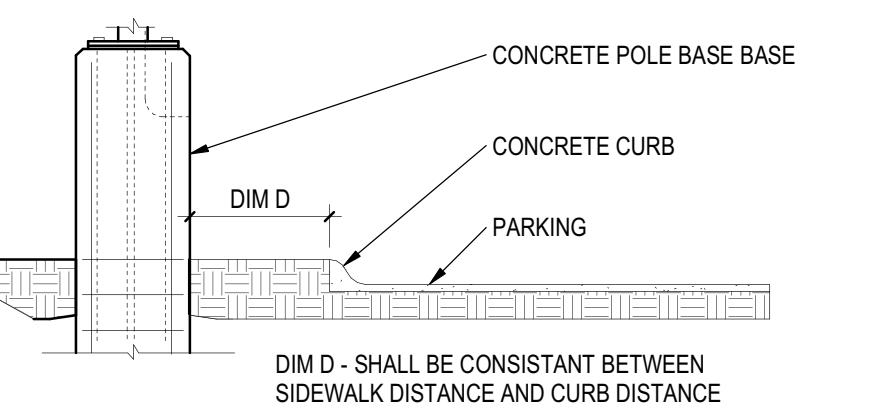
CIRCUITS		LUMINAIRES									
(F)	FUTURE										
A	AMPS										
AFF	ABOVE FINISHED FLOOR										
AFG	ABOVE FINISHED GRADE										
AHJ	AUTHORITY HAVING JURISDICTION										
BOH	BACK OF HOUSE										
EM	EMERGENCY										
EQ	EQUAL										
ETD	EMERGENCY TRANSFER DEVICE										
G, GND	GROUND										
LTG	LIGHTING										
MAX	MAXIMUM										
MIN	MINIMUM										
MISC	MISCELLANEOUS										
N	NEUTRAL										
NC	NORMALLY CLOSED										
NEC	NATIONAL ELECTRIC CODE										
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION										
NIC	NOT IN CONTRACT										
NL	NIGHT LIGHT										
NO	NORMALLY OPEN										
NTS	NOT TO SCALE										
OC	ON CENTER										
OCC	OCCUPANCY										
OCFI	OWNER FURNISHED, CONTRACTOR INSTALLED										
STD	STANDARD										
TYP	TYPICAL										
UNIV	UNIVERSAL VOLTAGE										
UON	UNLESS OTHERWISE NOTED										
V	VOLTS										
XFMR	TRANSFORMER										

WORK DEFINITION

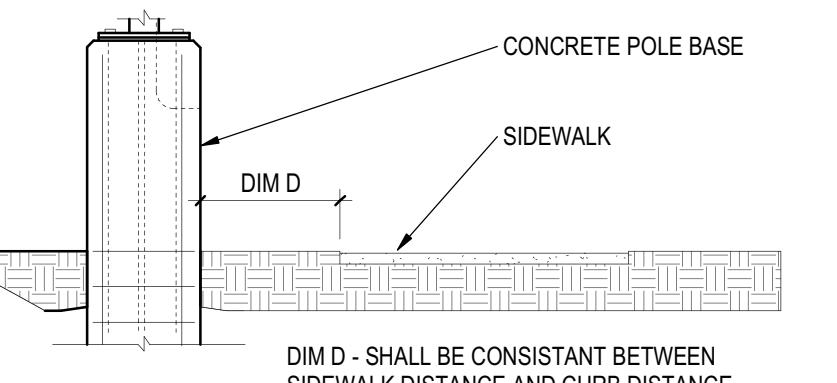
—	NEW WORK
— —	FUTURE
— — —	TEMPORARY, AS NOTED
— — — —	DAYLIGHT ZONE
???	KEY NOTE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	BUG RATING	LAMP		CONTROLS		INPUT		FORM			NOTES
					TYPE	LUMENS	CCT	CRI	TYPE	RANGE	WATTA GE	WATTAGE UNITS	VOLTAGE E	
XB1	34" HEIGHT LIT IMPACT-RATED BOLLARD	BEGA	B84623 + B99865	B0-U0-G0	LED	300 LM	3000K	80	0-10V	10%	9	W	120V	BRONZE SHIELDED 360° DISTRIBUTION
XB1A	TYPE 'XB1' EXCEPT NON-ILLUMINATED CAP	—	B71128	N/A	N/A	N/A	N/A	N/A	N/A	0	W	N/A	—	LUMINAIRE SHALL BE PROVIDED WITH MAXIMUM OUTPUT OF 300 LUMENS (MODIFICATION) FROM MANUFACTURER.
XB2	27" HEIGHT BOLLARD, SPIKE MOUNT, REMOTE DRIVER	LOUIS POULSEN	FLINT GARDEN	B0-U2-G0	LED	291 LM	3000K	80	NON-DIM	N/A	15	W	120V	CORTEN 180° DISTRIBUTION DOWNLIGHT
XB3	14" HEIGHT BOLLARD, SPIKE MOUNT, REMOTE DRIVER	LOUIS POULSEN	FLINT GARDEN	B0-U2-G0	LED	291 LM	3000K	80	NON-DIM	N/A	9	W	120V	CORTEN 180° DISTRIBUTION DOWNLIGHT
XB4	21" HEIGHT BOLLARD, SPIKE MOUNT, REMOTE DRIVER	LOUIS POULSEN	BYSTED GARDEN	B0-U2-G0	LED	324 LM	3000K	80	NON-DIM	N/A	14	W	120V	CORTEN SHIELDED 360° DISTRIBUTION
XC1	STRING LIGHTING, LAMPS 24" ON CENTER	PRIMUS	DEC0 STRING	N/A	LED	42 LM/LAMP	3000K	80	0-10V	10%	1	W/LAMP	120V	BLACK POLE/WALL 12'-0" AFG
XD1	4" DIAMETER ROUND DOWNLIGHT, FIXED, WET-RATED	DMF	M-SERIES COMMERCIAL	N/A	LED	500 LM	3000K	90	0-10V	1%	10	W	120V	BRONZE 50° BEAM ANGLE
XF1	TREE UPLIGHT, 60° GLARE SHIELD, STEPPED BAFFLE W/ HEX	LIGHTCRAFT OUTDOOR	LITTLE SMOKY	N/A	LED	676 LM	3000K	80	ELV	10%	8	W	120V	DARK BRONZE 40° OPTIC
XL2	1" WIDE, 0.76" HEIGHT, CONTINUOUS RUN LINEAR WALL WASH, LENGTH PER PLAN	INSIGHT	CO-PILOT WASH	N/A	LED	319 LM/FT	3000K	90	0-10V	10%	4	W/FT	120V	STANDARD 30° DISTRIBUTION
XP1	AREA LIGHTING, 1 LIGHT SQUARE, HOUSE SIDE SHIELD	GARDO	OPF	B1-U0-G2	LED	4,619 LM	3000K	80	INTEGRAL	10%	33	W	120V	BRONZE POLE @ 19'-0" AFG
XP2	PEDESTRIAN POST TOP LUMINAIRE, COMFORT OPTICS	GARDO	PPT	N/A	LED	2,000 LM	3000K	80	INTEGRAL	10%	15	W	120V	BRONZE POLE @ 8'-0" AFG
XS1	4" DIAMETER, 4" HEIGHT CYLINDER DOWNLIGHT	DMF	M-SERIES	N/A	LED	500 LM	3000K	80	0-10V	10%	10	W	120V	BRONZE GENERAL AMBIENT
XY1	6' X 6' BUILDING MOUNTED DOOR / PATH LIGHTING	EUROFASE	KILO	N/A	LED	320 LM	3000K	90	ELV	5%	12	W	120V	BLACK GENERAL AMBIENT DOWNLIGHT @ 5'-6" AFG
XY2	24" HEIGHT, 6" WIDTH, 3.1/2" DEPTH DECORATIVE WALL SCONCE	EUROFASE	INNTRA	N/A	LED	572 LM	3000K	90	ELV	5%	20	W	120V	DAMASCUS BRASS DECORATIVE @ 6'-6" AFG
XY3	3.5" DIAMETER, 6.5" HEIGHT CYLINDER DOWNLIGHT	DMF	H-SERIES	N/A	LED	350 LM	3000K	90	ELV	5%	5	W	120V	BLACK GENERAL AMBIENT 90° DOWNLIGHT @ 5'-6" AFG
XY5	8' LENGTH LINEAR WALL WASH, 6' EXTENDED ARM, MOUNT, LOW OUTPUT, LOUVER, DOWNLIGHT	INSIGHT	E5X	N/A	LED	3,220 LM	3000K	90	0-10V	1%	32	W	120V	10' X 10' WALL
XY6	TYPE 'XY5' EXCEPT 4' LENGTH	—	—	N/A	LED	1,610 LM	—	—	0-10V	1%	16	W	120V	TBD
XY6A	5' WIDTH, 5' HEIGHT, 5" DEPTH, WALL PACK	VERSALED	WP73-W	N/A	LED	630 LM	3000K	80	NON-DIM	—	6	W	120V	BRONZE STANDARD WALL
XY6B	—	—	—	N/A	LED	—	—	—	—	—	—	WALL	—	PROVIDE WITH INTEGRAL PROGRAMMABLE MICROWAVE BILEVEL SENSOR FOR AUTOMATIC ON/OFF BASED ON OCCUPANCY DURING NON-DAYLIT HOURS. MOUNT TOP OF LUMINAIRE FLUSH WITH TOP OF FENCE.

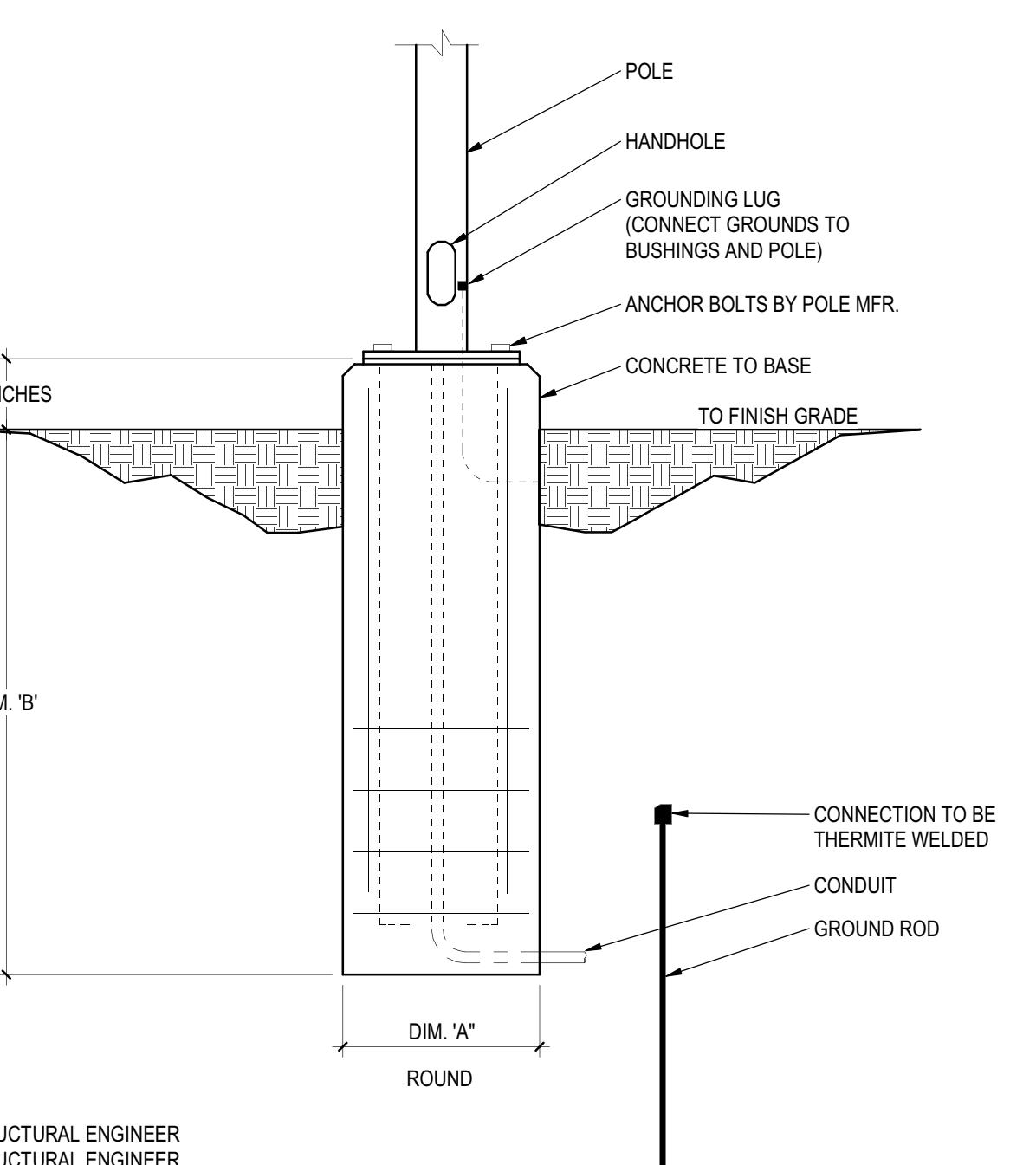
ENTITLEMENT NARRATIVE													
A. FOR COMPLIANCE WITH BOULDER MUNICIPAL CODE, SECTION 9-8-16, RESIDENTIAL ZONING DISTRICTS, THE SITE HAS BEEN DESIGNED TO THE FOLLOWING REQUIREMENTS:													
1. MAXIMUM ALLOWABLE LIGHT LEVELS MEASURED IN FOOTCANDLES													
• 5.0 AT BUILDING ENTRIES													
• 3.0 IN PARKING AREAS													
• 3.0 ALONG PEDESTRIAN PATHS													
• 2.0 IN COMMON OPEN SPACE AREAS													
2. MAXIMUM LUMEN RATING FOR A FULL CUTOFF LUMINAIRE SHIELDED FROM VIEW OF ADJACENT STREETS AND PROPERTIES													
• 8,500 FOR PARKING AREAS													



3 EA02 6" = 1'-0" STANDARD POLE BASE DETAIL NEAR PARKING



2 EA02 6" = 1'-0" STANDARD POLE BASE DETAIL NEAR SIDEWALK



1 EA02 12" = 1'-0" STANDARD POLE BASE DETAIL

SITE PLAN RESUBMISSION 13
SITE PLAN RESUBMISSION 12
SITE PLAN RESUBMISSION 11
SITE PLAN RESUBMISSION 10
REVISION DESCRIPTION

A2 A2 A2 A2
102425 093025 073025 073025
3 2 1 1
NO. DATE DESD DRAWN

DESIGNED BY: AZ
DRAWN BY: AZ
CHECKED BY: VP
JOB NUMBER: 2270477101
DATE: 2025.10.24

CONGREGATION BONAI SHALOM

SITE LIGHTING DETAILS

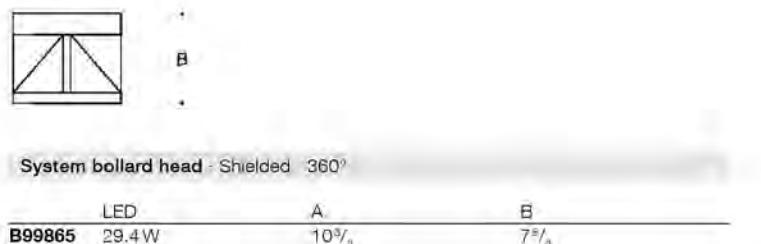
EA02



XB1

System bollard head - Shielded - 360°

Application
BEGA system bollard head with shielded 360° light distribution. Simply order the bollard head and also the required bollard tube in various heights and options. Both modules can be joined together easily and quickly during the installation.
Materials
Clear safety glass with white ceramic coating
Die-cast aluminum
Extruded aluminum
Marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy
High temperature silicone gasket
Medium density captive stainless steel fasteners
Interlocking stainless steel mounting mechanism for attachment of head and tube
Stainless steel helicoil
Pure anodized aluminum reflector surface
NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65
Weight: 17.2 lbs.
Electrical
Operating voltage 120-277VAC
Minimum start temperature -30°C
LED module wattage 28W
System wattage 34.0W
Controllability 0-10V dimming down to 1%
Color rendering index Ra > 80
Lumen output 1837 lm
LED service life (L70) 60000 hrs
LED color temperature
 4000K (K4)
 3500K (K35)
 3000K (K3)
 2700K (K27)
BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details
Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.
Available colors
 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:
Available options
 CUS Custom finish
 MGU Marine grade undercoat
 NTB Natural bronze (premium finish)
 RAL RAL finish



System bollard head - Shielded - 360°

LED A B
B99865 29.4W 10 1/2" 7 1/2"

BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 info@bega-us.com

Due to the dynamic nature of lighting products and the associated technologies, luminaire data on this sheet is subject to change at the discretion of BEGA North America. For the most current technical data, please refer to bega-us.com
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Updated 07/11/25

XB1A

System bollard head - Non-illuminated cap

Application
Designed for occasions when integral components of BEGA System Bollard tubes are required where additional light is not.

Materials
Die-cast aluminum
Interlocking stainless steel mounting mechanism for attachment of head and tube

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65

Weight: 3.5 lbs.

Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.

Available colors
 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:

Available options
 CUS Custom finish
 MGU Marine grade undercoat
 NTB Natural bronze (premium finish)
 RAL RAL finish

System bollard tube - Drive-through protection

Application
BEGA system bollard luminaire impact tube for vehicle drive-through protection. BEGA system bollard tubes are designed for easy attachment to system bollard heads using an interlocking mechanism. An accompanying bollard tube and anchorage are designed for three different impact ratings depending on the corresponding foundation detail: Up to 1.5 metric tons at 8 mph, up to 1.5 metric tons at 15 mph, and up to 3.0 metric tons at 30 mph (K4 requirements). Full scale concrete and rebar structural construction documents provided. Statics calculation and design based on PA68: 2013 British Standard and Europe IVA 14-1: 2013.

Materials
Marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy
Stainless steel hardware
Galvanized steel anchorage

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65

Weight: 140.7 lbs.

Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.

Available colors
 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:

Available options
 CUS Custom finish
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 NTB Natural bronze (premium finish)
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System bollard tube - Drive-through protection

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Materials
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Galvanized steel anchorage

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65

Weight: 140.7 lbs.

Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.

Available colors
 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:

Available options
 CUS Custom finish
 MGU Marine grade undercoat
 NTB Natural bronze (premium finish)
 RAL RAL finish

System bollard tube - Drive-through protection

Application
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Materials
Marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy
Stainless steel hardware
Galvanized steel anchorage

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65

Weight: 140.7 lbs.

Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.

Available colors
 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
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 CUS:

Available options
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 MGU Marine grade undercoat
 NTB Natural bronze (premium finish)
 RAL RAL finish

System bollard tube - Drive-through protection

Application
BEGA system bollard luminaire impact tube for vehicle drive-through protection. BEGA system bollard tubes are designed for easy attachment to system bollard heads using an interlocking mechanism. An accompanying bollard tube and anchorage are designed for three different impact ratings depending on the corresponding foundation detail: Up to 1.5 metric tons at 8 mph, up to 1.5 metric tons at 15 mph, and up to 3.0 metric tons at 30 mph (K4 requirements). Full scale concrete and rebar structural construction documents provided. Statics calculation and design based on PA68: 2013 British Standard and Europe IVA 14-1: 2013.

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 Black (BLK) Bronze (BRZ)
 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:

Available options
 CUS Custom finish
 MGU Marine grade undercoat
 NTB Natural bronze (premium finish)
 RAL RAL finish

System bollard tube - Drive-through protection

Application
BEGA system bollard luminaire impact tube for vehicle drive-through protection. BEGA system bollard tubes are designed for easy attachment to system bollard heads using an interlocking mechanism. An accompanying bollard tube and anchorage are designed for three different impact ratings depending on the corresponding foundation detail: Up to 1.5 metric tons at 8 mph, up to 1.5 metric tons at 15 mph, and up to 3.0 metric tons at 30 mph (K4 requirements). Full scale concrete and rebar structural construction documents provided. Statics calculation and design based on PA68: 2013 British Standard and Europe IVA 14-1: 2013.

Materials
Marine grade, copper free ($\leq 0.3\%$ copper content) A360.0 aluminum alloy
Stainless steel hardware
Galvanized steel anchorage

NRTL listed to North American Standards, suitable for wet locations
Protection class IP 65

Weight: 140.7 lbs.

Finish
All BEGA standard finishes are matte, textured powder coat with minimum 3 mil thickness. BEGA Undure® finish provides superior fade protection in Black, Bronze, and Silver. BEGA standard White is a super durable polyester powder. Optionally available RAL, custom, and premium colors provided in polyester powder and/or liquid paint.

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 Silver (SLV) White (WHT)
 Natural Bronze (NTB) RAL:
 CUS:

Available options
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Available colors
 Black (BLK



GARDCO

PureForm

PPT PureForm LED post top

Gardco PureForm LED post top features a sleek, low profile design and is available with two light engines. ComfortEdge optics provide a unique and lower glare lighting solution designed to enhance visual comfort for pedestrian applications, while precision optics maximize efficiency and spacing. PureForm post top is available with multiple optical distributions with output up to 17,000 lumens. A full range of control options provides additional energy savings. Optional integral emergency battery backup is available for path-of-egress illumination.

Project: _____

Location: _____

Case No.: _____

Date: _____

Page: _____

Length: _____

Depth: _____

Notes: _____

Ordering guide

Prefix	Ordering Code	Lumens Selection	CCT/CRI	Distribution	Shielding	Mounting	Voltage
PPT	P Precision optics	A01* 2500 A06 11000 730 70CRI 3000K	T2M Area optic type 2 HIS*	T2M Area optic type 2	None	T3 Mounts to a 3" x 3" tenon (standard)	T2 120V 208V
	A02* 3500 A07 13500 740 70CRI 4000K	TSM Area optic type 3	TSM Area optic type 3	None	internal house side shield (clip-on)	T2 120-277V	
	A03 4500 A08 16000 830 80CRI 3000K	TSM Area optic type 6	TSM Area optic type 6	None	T2 120-277V		
	A04 7000 A09 17000 830 80CRI 4000K	BLG Beck light control	BLG Beck light control	T3 Mounts to a 3" x 3" tenon (standard)	UVN 120-277V		
	A05 9000 827 80CRI 2700K (ETOR)			T2 120V	480 480V		
C Comfort optics	A01* 2500 A06 11000 830 80CRI 3000K	T2M Comfort optic type 2	T2M Comfort optic type 2	None	UVN 120-277V		
	A02* 3500 A07 13500 830 80CRI 4000K	TAM Comfort optic type 4M	TAM Comfort optic type 4M	None	480 480V		
	A03 4500 A08 16000 827 80CRI 2700K (ETOR)	TSM Comfort optic type 5M	TSM Comfort optic type 5M	None	UVN 120-277V		
	A04 7000 A09* 17000 835 80CRI 3500K (ETOR)			None	480 480V		
	A05 9000 750 70CRI 5000K (ETOR)			None	UVN 120-277V		

Example: PPT-P-A09-840-TSM-T3-120-DALI-CS30-PCB-B2

Driver type	Dimming Controls (choose one may be selected)	Lighting control (choose one may be selected)	Emergency	Finish
0-10V	DLEA	None	None	Standard textured finish
0-10V 0-10V	None	Dimming leads externally accessible (controlled by other)	EMC* Emergency battery backup (0-10V to +40°C/-2°F to +104°F)	BR Black
	FAWS	Field switch	PCB*2.0	WH White
	BL50L2*	PIR motion response dim to 50% L2 lens	TLR6	BZ Bronze
	BL50L3*	PIR motion response dim to 50% L3 lens	TR7*4.0	GY Dark grey
	BL50M*	Microwave motion sensor factory set at 50% dimming	TLR7*4.0	MG Medium grey
DALI	SR DALI	None	None	Customer specified
	CMS05*4	Security 50 % dimming, 7 hours	PCB*3.0	OC Optional color (specify optional color or RAL color code)
	CMS05*	Medium 50 % dimming, 8 hours	TR5*4.0	
	CMS07*	Medium 30 % dimming, 8 hours	TR7*4.0	
	SR04*	SR driver connected to Zhaga socket (D4)	TR7*4.0	
	WIAPLW*	Wireless interact outdoor low mounting (7-15), white housing	TLR6	
	WIAPLW*	Wireless interact outdoor low mounting (7-15), black housing	TR7*4.0	
	WIAPHW*	Wireless interact outdoor low mounting (15-40), white housing	TLR7*4.0	
	WIAPHW*	Wireless interact outdoor low mounting (15-40), black housing	TR7*4.0	

1. Extended heat times apply. Contact factory for details.
2. Available with Area optics only. Not allowed with Comfort optics.
3. Available with Comfort optics only at 120-347V. Not allowed with Area optics.
4. Not available at 347-480V(HV).

5. Not available for Pxielated (P-Axx) optic lumen packages: A01-A02 and Comfort (P-Axx) optic lumen packages: A01-A09.

6. Not available at 120-277V(UVN).

7. EMC only compatible with DLEA and Dynamismer (CS3X, CMXK) Dimming control options.

8. Not available with Microwave Motion Sensor BL50MW.

9. Not available with Comfort (C-Axx) optic lumen packages: A07-A09.

10. If selected with Dimming control, D9M leads from receptacle will not be connected directly.

11. Available with Comfort optics.

12. Must specify input voltage.

13. BL50MW options and TwiLock photocell options (TLR6, TLR7, TLR8, PCB) are not compatible due to memory conflict.

14. Not available with Dimming options.

15. EMC limited to 25°C max ambient with shielding and A09. All other configurations listed to 40°C ambient.

16. For comfort PPT, emergency cold-pack conflicts with BL50xx & POB/TLRx & Zhaga & FAWS.








VersaLED Lighting
Versatile Lighting Solutions

OUTDOOR



WP73-W
Small Wall Pack

Project _____

Type _____

Catalog Number _____

DESIGNED BY: AZ

DRAWN BY: AZ

CHECKED BY: VP

JOB NUMBER: 2270477101

DATE: 2025.10.24

SPECIFICATIONS

HOUSING

- Heavy duty die cast aluminum housing
- Offered in bronze and white finish
- Corrosion resistant housing and hardware
- OxyShield 9-stage anti-oxidation process
- Silicone rubber gasket
- Four 1/2" HUB

ELECTRICAL

- Quad Tap (Q7) - 120-277V
- 50/60 Hz
- Operating Temperature: -40°C - 40°C (-40°F - 104°F)

OPTICAL SYSTEM

- Prismatic Lens
- High quality heat sinks for temperature control
- IC current controlled LED circuits
- Beam angle: 110° x 65°
- CO > 80
- PF > 0.95
- THD < 20%
- 70,000 Hours @ L₇₀

CODE COMPLIANCE

- cULus Listed for Wet Locations
- IP54

WARRANTY

- 5 Year

WP73-W-6L-QT-30K* 6W 630 Lumens 3000K

WP73-W-6L-QT-50K* 6W 660 Lumens 5000K

*Specify Color: BZ-Bronze, WH-White

ORDERING INFORMATION

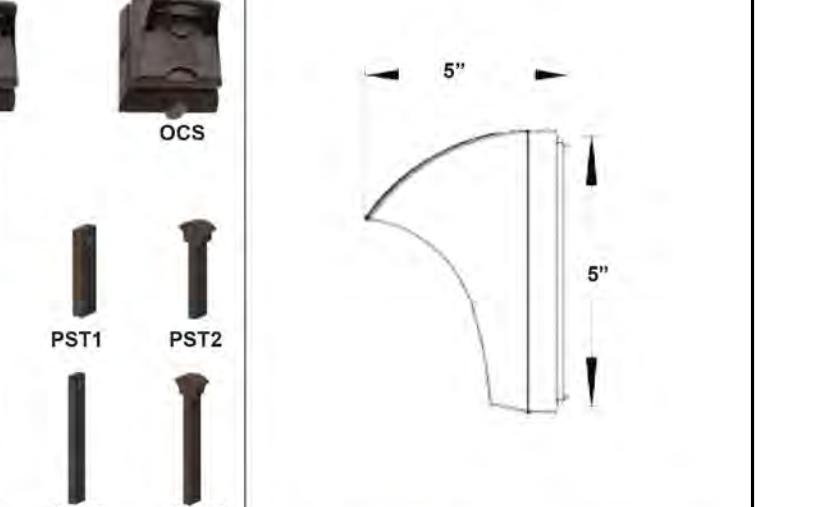
CATALOG #	Wattage	Lumens	CCT
WP73-W-6L-QT-30K*	6W	630 Lumens	3000K
WP73-W-6L-QT-50K*	6W	660 Lumens	5000K

OPTIONS (Factory Installed)

- EM - Emergency Battery Backup, Back Box (available in white and bronze)
- EMPM - Emergency Battery Back, Post Mount (available in white and bronze)
- OCS - Programmable Microwave BiLevel Sensor
- BK - Black Housing
- GY - Gray Housing
- SV - Silver Housing

ACCESSORIES (ships on side)

- WP73-W-PST1 - 18" Single Sided Post (available in white and bronze)
- WP73-W-PST2 - 18" Double Sided Post (available in white and bronze)
- WP73-W-PST3 - 36" Single Sided Post (available in white and bronze)
- WP73-W-PST4 - 36" Double Sided Post (available in white and bronze)



5"

5"

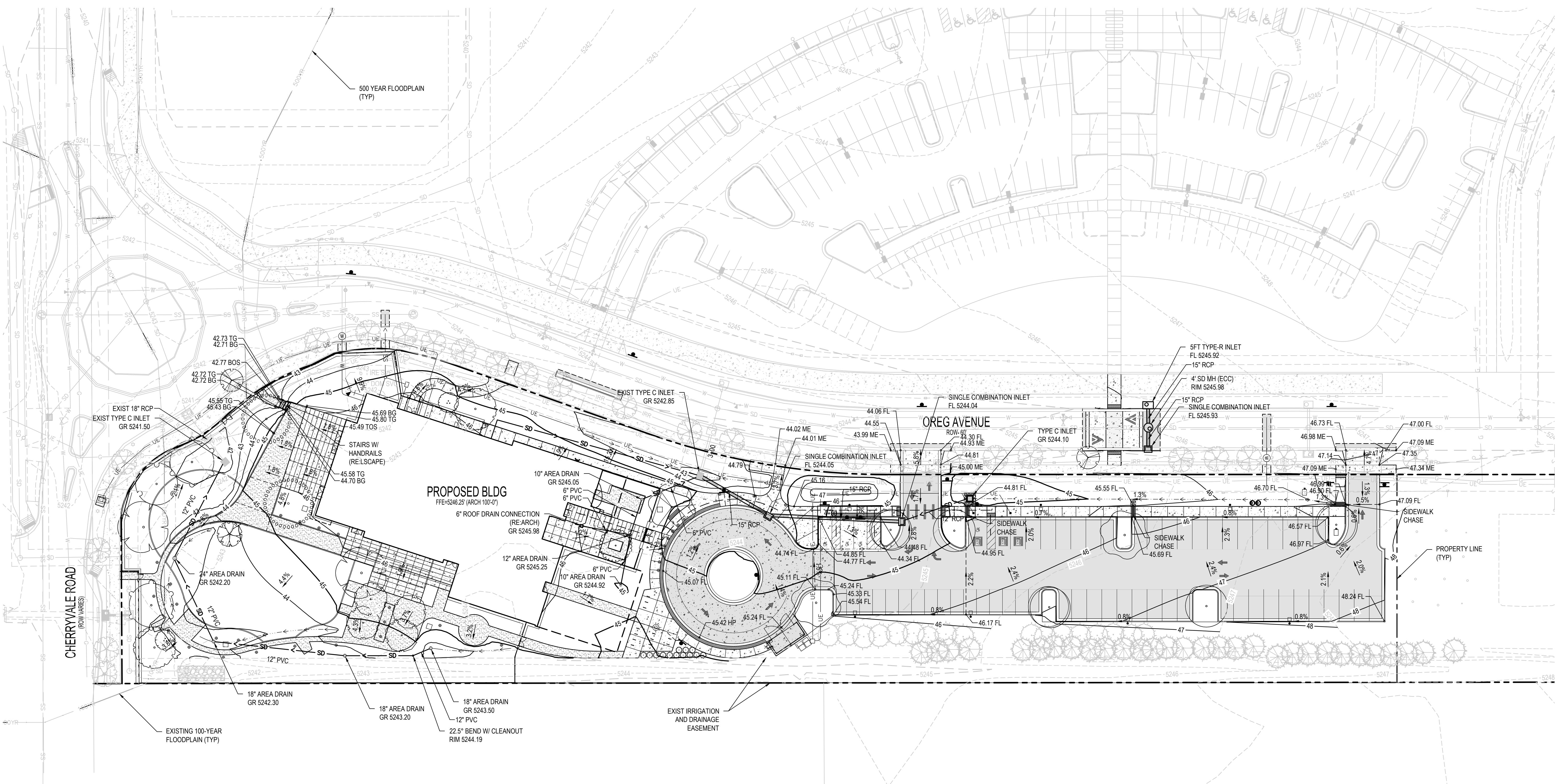
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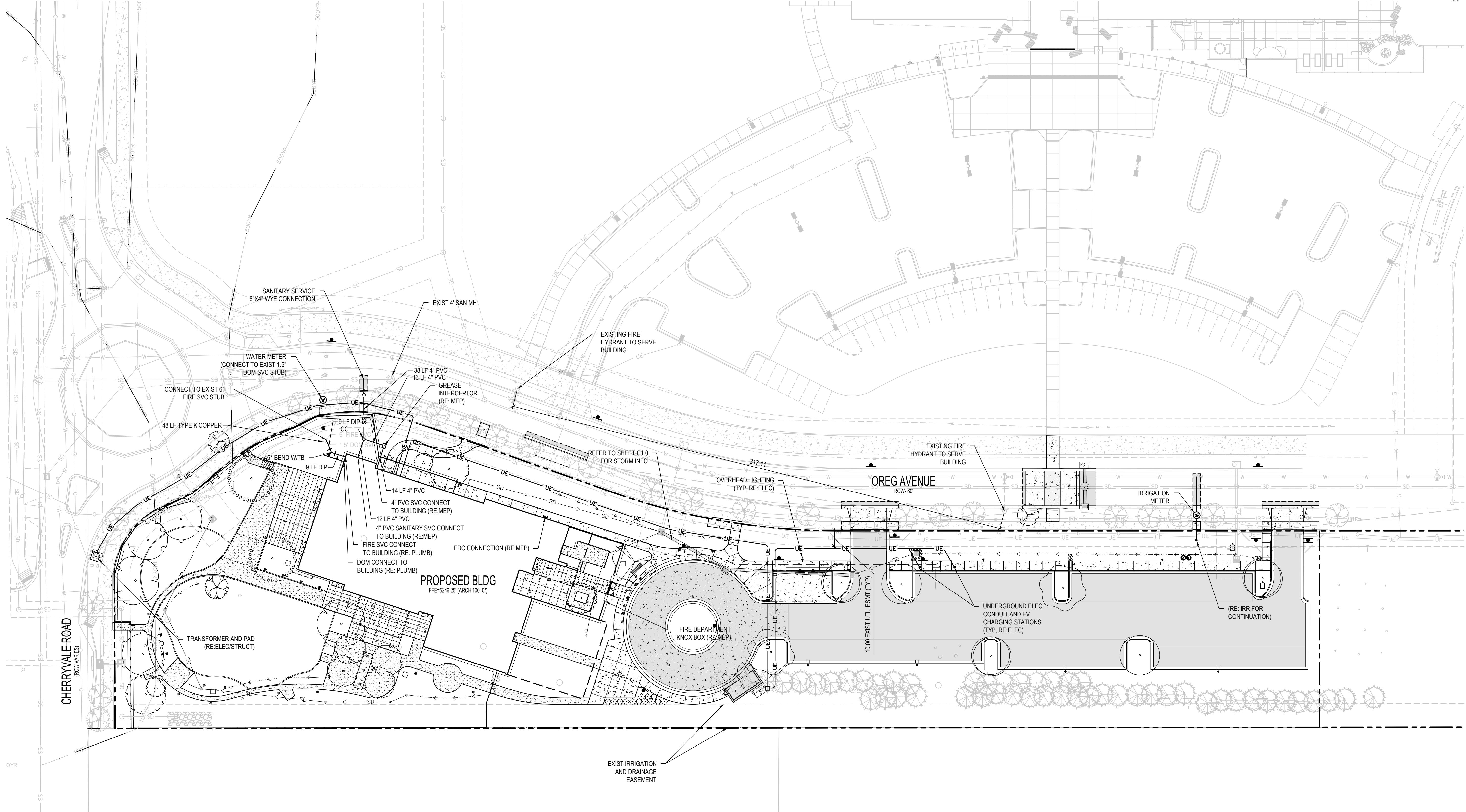
5"

CONGREGATION BONAI SHALOM

LIGHTING FIXTURE CUTSHEETS

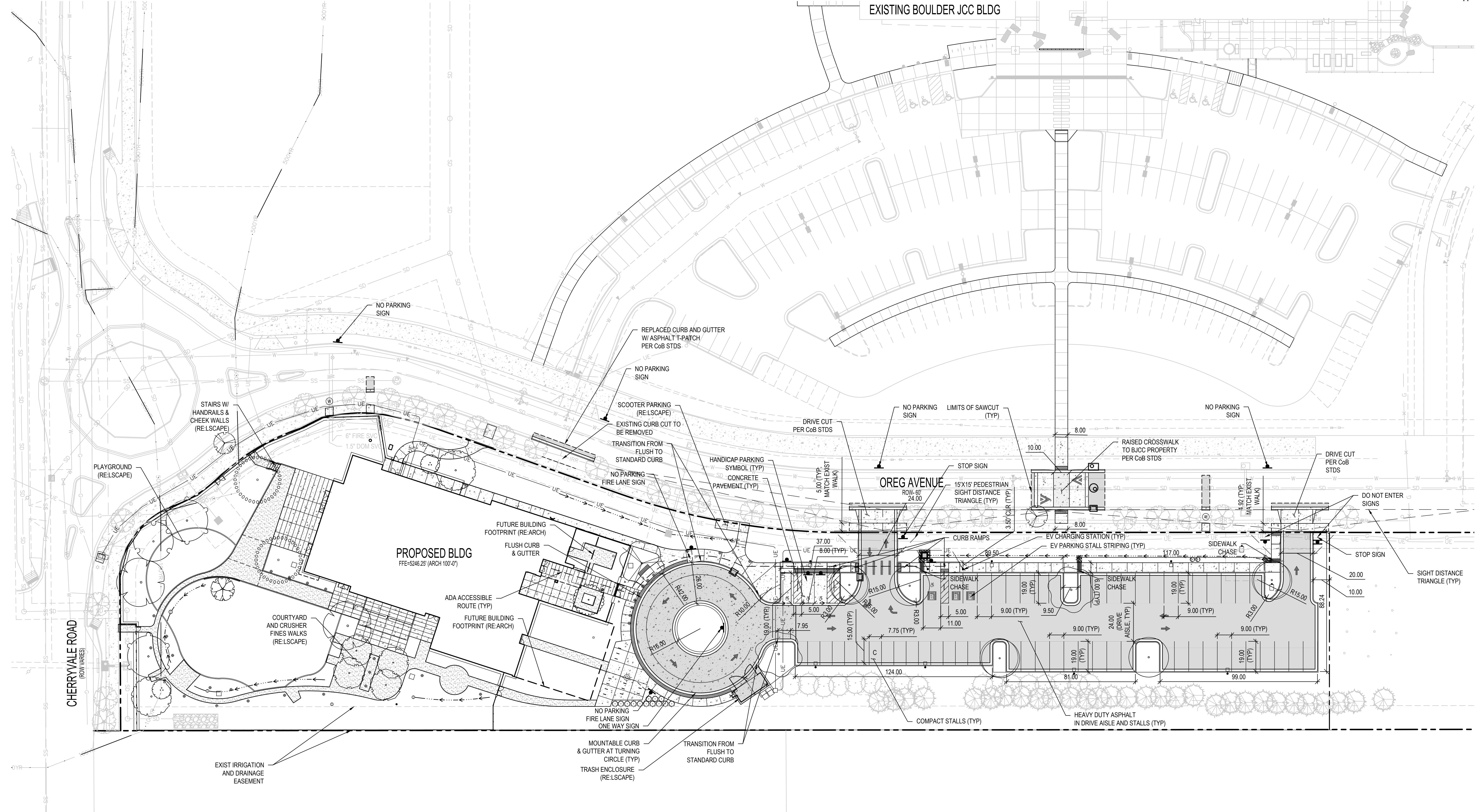
EA06



**UTILITY NOTES:**

1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. CONTRACTOR TO POTHOLE EXISTING UTILITIES AT PROPOSED UTILITY CROSSINGS IN ROW PRIOR TO CONSTRUCTION.
3. ALL DRY UTILITY AND ELECTRIC DESIGNS ARE PROVIDED BY OTHERS AND SHOWN FOR REFERENCE ONLY. SEE MEP PLANS AND SPECIFICATIONS AND COORDINATE WITH ALL UTILITY OWNERS AS NEEDED.
4. CONTRACTOR TO MARK ALL UTILITY STUBS WITH MARKERS.
5. CONTRACTOR TO FIELD VERIFY ALL EXISTING STUB LOCATIONS FOR SERVICE PRIOR TO CONSTRUCTION.

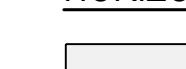
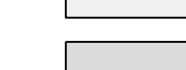
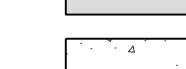
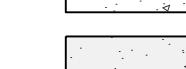
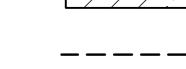

 30 0 30 60
 SCALE IN FEET



HORIZONTAL CONTROL NOTES:

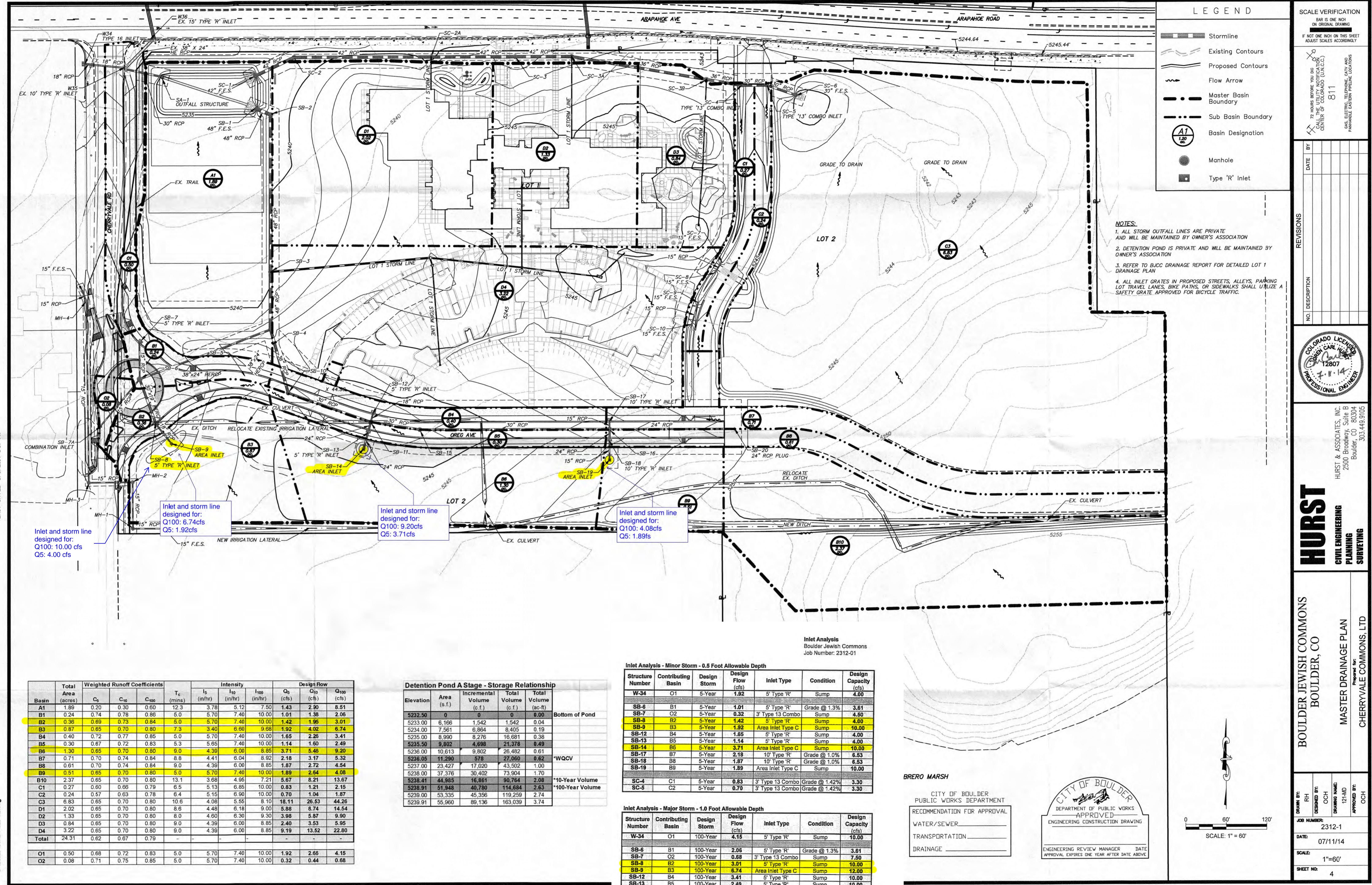
1. ALL DIMENSIONS AND RADII ARE TO FACE OF CURB, FACE OF BUILDING AND EDGE OF WALK UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO REPAIR/REPLACE ALL DAMAGE TO EXISTING FLATWORK OR SITE FEATURES NOT INTENDED FOR DEMOLITION.
3. REFER TO GRADING AND DRAINAGE PLAN FOR FURTHER INFORMATION PERTAINING TO CURB & GUTTER, CHASES, AND DRAINAGE PANS.

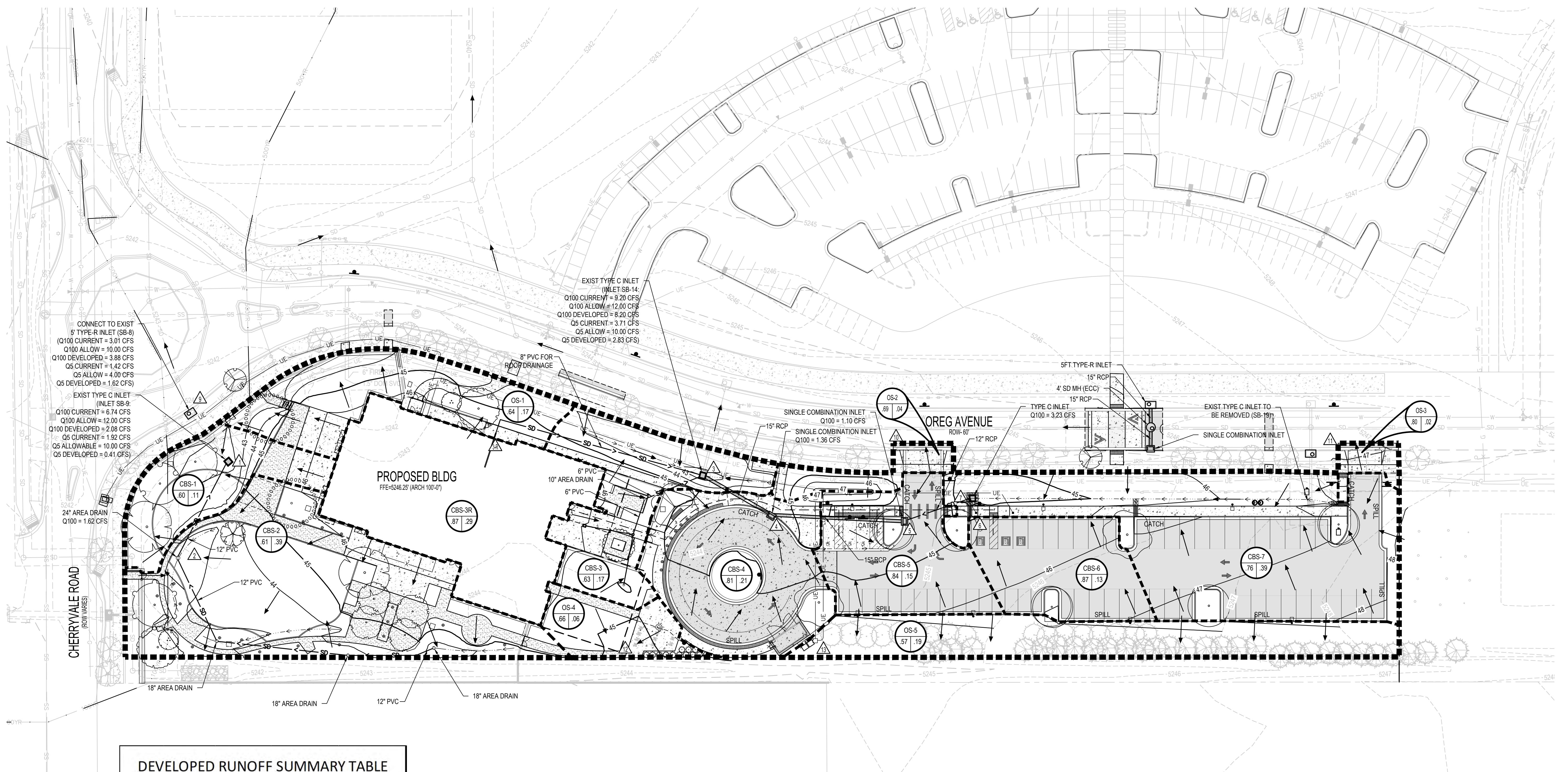
HORIZONTAL CONTROL LEGEND

	ASPHALT PAVING
	HEAVY-DUTY ASPHALT PAVING
	CONCRETE PAVING
	HEAVY-DUTY CONCRETE PAVING
	MILL AND OVERLAY
	LIMITS OF SAWCUT

30 0 30 60

SCALE IN FEET

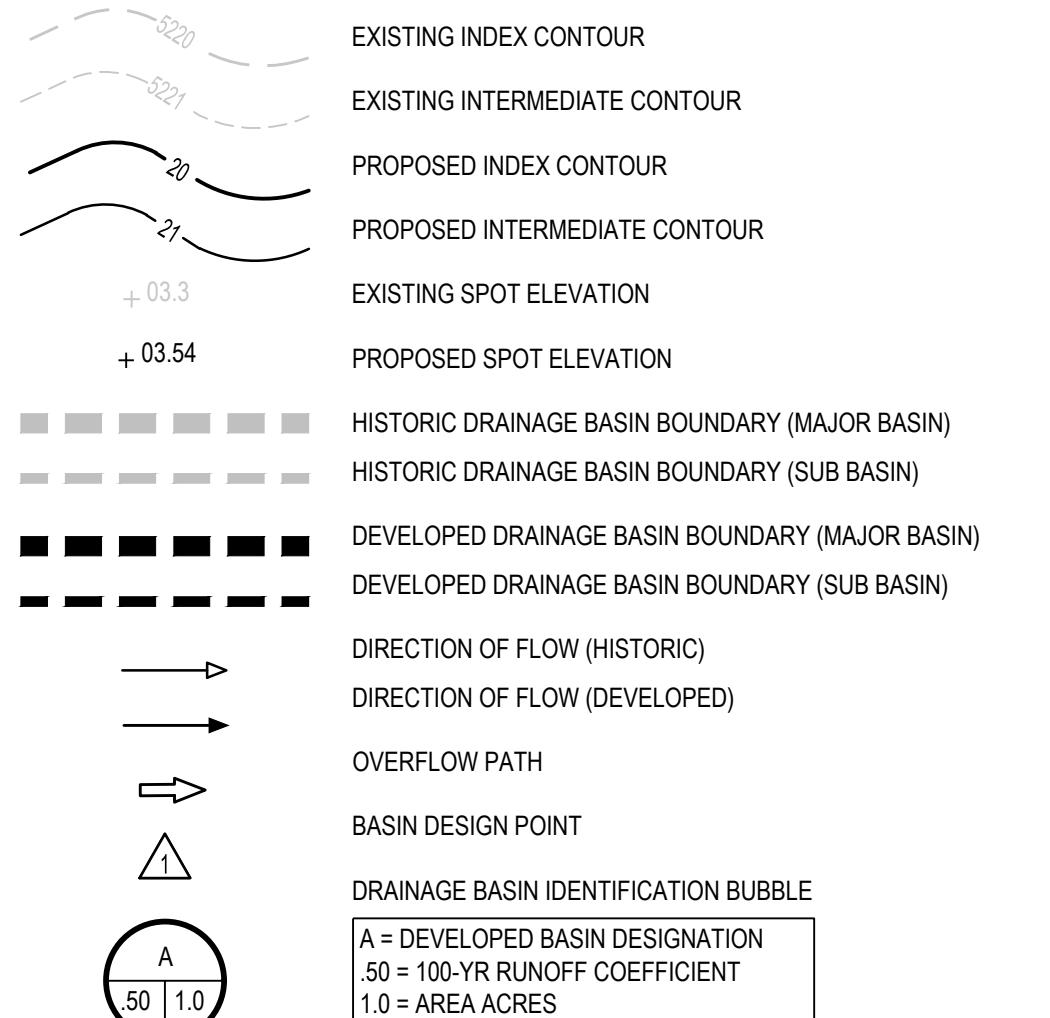




DEVELOPED RUNOFF SUMMARY TABLE

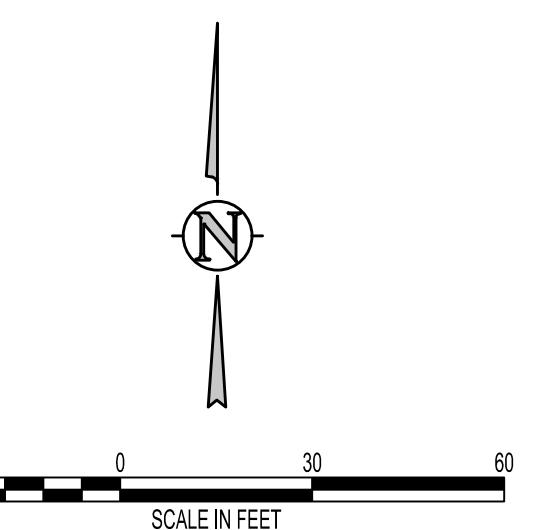
BASIN	DESIGN POINT	AREA (ACRES)	5-YR RUNOFF (CFS)	100-YR RUNOFF (CFS)
CBS-1	1	0.11	0.09	0.50
CBS-2	2	0.39	0.33	1.62
TOTAL TO SB-9	0.51	0.42	2.12	
CBS-3R	3-R	0.29	0.84	2.16
CBS-3	3	0.17	0.19	0.90
CBS-4	4	0.21	0.48	1.36
CBS-5	5	0.15	0.41	1.10
CBS-6	6	0.13	0.36	0.94
CBS-7	7	0.39	0.74	2.29
TOTAL TO SB-14	1.34	3.02	8.76	
ONSITE TOTALS	1.85	3.44	10.87	
OS-1	9	0.17	0.20	0.87
OS-2	10	0.04	0.06	0.23
OS-3	11	0.02	0.04	0.13
OS-4	12	0.06	0.08	0.32
OS-5	13	0.19	0.13	0.89
OFFSITE TOTALS	0.47	0.52	2.44	
SITE TOTALS	2.32	3.96	13.32	

DRAINAGE MAP LEGEND



GRADING AND DRAINAGE NOTES:

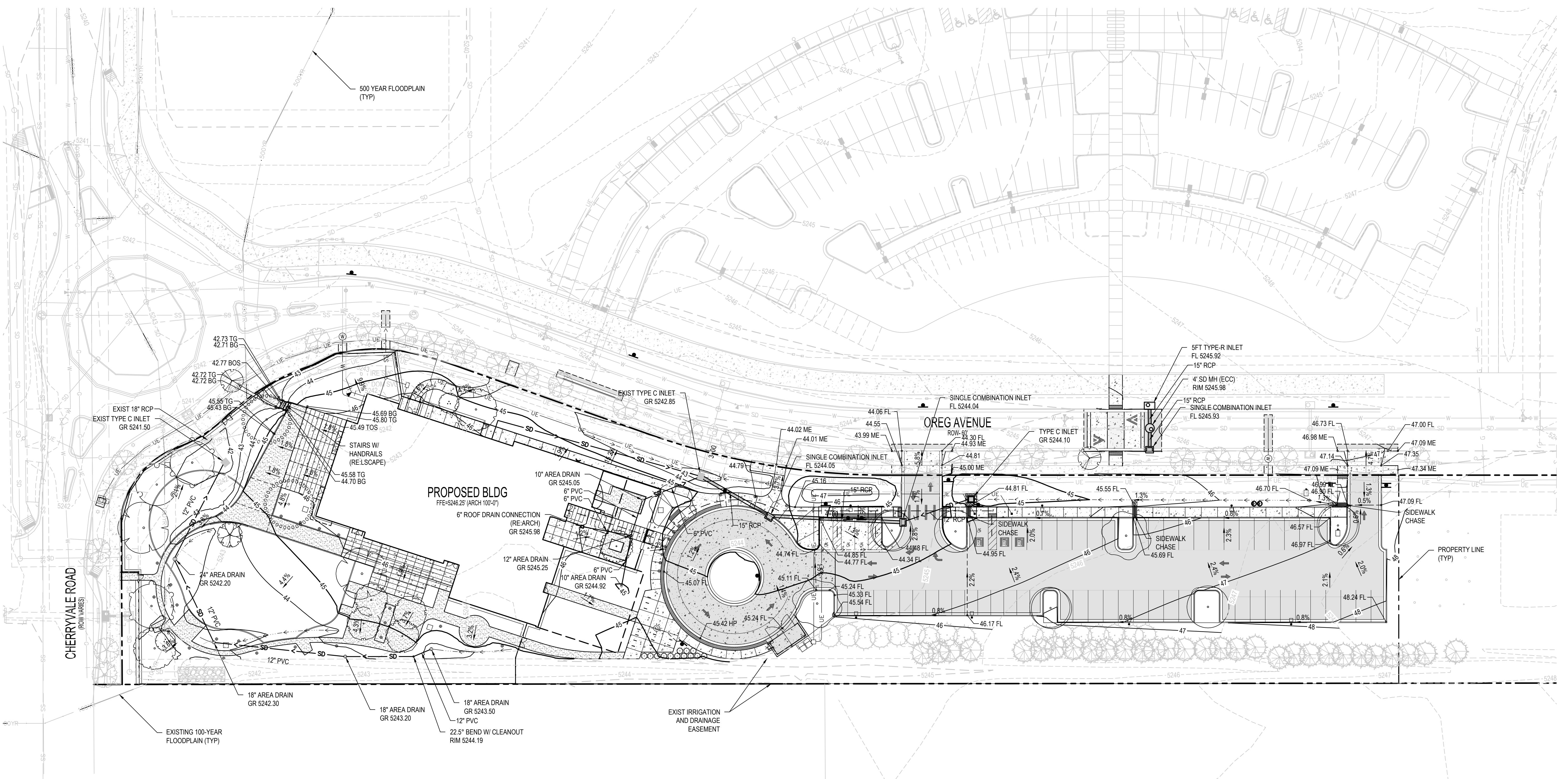
1. CONTRACTOR TO FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. REFER TO GENERAL NOTES FOR UTILITY LOCATION AND PROTECTION.
2. CONTRACTOR TO POTHOLE EXISTING UTILITIES AT PROPOSED UTILITY CROSSINGS IN ROW PRIOR TO CONSTRUCTION.
3. REFER TO HORIZONTAL CONTROL PLAN FOR FURTHER INFORMATION PERTAINING TO CURB & GUTTER, CHASES, AND DRAINAGE PANS.
4. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITIONS.
5. ALL SPOT ELEVATIONS ARE TO FINISHED GRADE OR FLOWLINE UNLESS OTHERWISE SPECIFIED.
6. IF WALL IS SHOWN, TG DENOTES THE FINISHED GRADE ADJACENT TO THE HIGH SIDE OF THE WALL. BG DENOTES THE FINISHED GRADE ADJACENT TO THE LOW SIDE OF THE WALL. REFER TO ARCH PLANS/DETAILS FOR WALL ELEVATIONS BEYOND THE ADJACENT FINISHED GRADES (EXPOSED WALL, CAP/FOOTER, ETC.).



Stantec
1881 9th Street, Suite 303
Boulder, CO 80302
Tel +1 303.447.8202
www.stantec.com

JVA, Inc. 1319 Spruce
Boulder, CO 80302 303.441.1111
www.jvajva.com
Boulder • Fort Collins • Winter
Glenwood Springs • Denver

NO	DATE	DES'D	DRAWN	REVISION DESCRIPTION
3	10.24.25	AJC	CCE	SITE PLAN RESUBMISSION #3
2	09.10.25	AJC	CCE	SITE PLAN RESUBMISSION #2
1	07.30.25	AJC	CCE	SITE PLAN RESUBMISSION #1



GRADING AND DRAINAGE NOTES

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J:\3761c - Congregation Bonai Shalom\Drawings\3761c-01-GRP-01-SITE-REV.dwg, 12/08/2025 - 2:47 PM, CCE

Item 5A - 6018 Oreg Ave. Site Review Amendment

Page 48 of 276

C1.0

CONGREGATION BONAI SHALOM



Congregation Bonai Shalom

Site Review Amendment Written Statement

07.30.2025





section 1

project overview & objectives

section 2

development schedule

section 3

vicinity map, context & site strategy

section 4

style guides & perspectives

section 5

site review criteria

section 6

appendix: letters regarding security
& copies of special agreements, etc.



section 1
project overview & objectives



Congregation Bonai Shalom

Mission

Congregation Bonai Shalom is an egalitarian synagogue of diverse membership that embraces traditional prayer and practice with openness and creativity. We strive to make a difference in our community and the world by preparing our children for Jewish Life, providing adult education, strengthening connections to Israel, and participating in social action projects and green initiatives. Congregation Bonai Shalom endeavors to be a community rich in:

Avodah

A vibrant and traditional spiritual practice and meaningful life-cycle events

Torah

A flourishing school and lifelong learning community.

Kehillah

An inclusive community where members connect socially, care for each other through acts of loving-kindness, and steward the world beyond our walls through social action.

1527 Cherryvale Rd
Boulder, CO 80303
(303) 442-6605

Establish a new synagogue that celebrates and bolsters the Jewish community in Boulder, while never exceeding its own needs, means, or ambitions. Create a destination that aspires to attract Jewish Boulderites and encourages growth of the congregation.

project vision + goals

project objectives

Timeless & Enduring

Resilient

*design to appeal to and last
for many generations*

Homey

Universally Accessible

*home-like, cozy and
unpretentious*

Humble Beauty

Beauty without Pretense

*celebratory but
never opulent*

Rooted in Place

Engagement

*born from a rich history
and designed for growth*

Tikkun Olam

Sustainability Embodied

"repairing the world"

Nature Embrace

Connect People to the Land

*embrace climate &
Boulderites love of outdoors*

Secure Community Network (SCN)

Congregation Bonai Shalom's security consultant

The Secure Community Network® (SCN®), a nonprofit 501(c)(3), is the official safety and security organization of the Jewish community in North America. Founded in 2004, SCN works on behalf of over 50 national Jewish nonprofit organizations, 146 Federations, and over 300 independent communities as well as with other partners in the public, private, nonprofit and academic sectors to ensure the safety, security, and resiliency of the Jewish people.

SCN serves as the Jewish community's official liaison with federal law enforcement and coordinates closely with federal, state, and local law enforcement partners on safety and security matters related to the Jewish community.

Through the organization's 24/7/365 Jewish Security Operations Command Center™ (JSOCC™) and Duty Desk, SCN intakes and analyzes intelligence and information, providing timely, credible threat and incident information to both law enforcement and community partners.

SCN's team of intelligence, national security, law enforcement, homeland security, and military professionals proactively works with communities and partners across North America to develop and implement strategic frameworks that enhance the safety and security of the Jewish people. This includes developing best practice policies, emergency plans and procedures; undertaking threat and vulnerability assessments of facilities; identifying physical security strategies and measures; providing real-world, life-saving training and exercises to community members and leadership; offering expert security consultation on key safety issues; and providing crisis response as well as incident management support during critical events.

SCN is dedicated to creating a culture of empowerment, collaboration, and resiliency so that Jewish life can not only exist safely and securely today, but flourish for tomorrow and future generations.

design principles

As a sacred Jewish space, the design of a Synagogue is sensitive to traditions and laws around adjacency, operations, and aesthetics. The Sanctuary, for example, is oriented to face Jerusalem, and the deployment of certain technologies is strategically limited in certain areas. Jewish values around education, community, and prayer are expressed thoughtfully through all aspects of the building, from the adjacencies between program areas, to the art on the walls, to the finishes that promote a sense of haimish-ness, or hominess, and encourage congregants to find comfort. The design is constrained by Jewish law and tradition, security considerations, and the budget/fundraising limitations of a relatively small community of member households.

Value

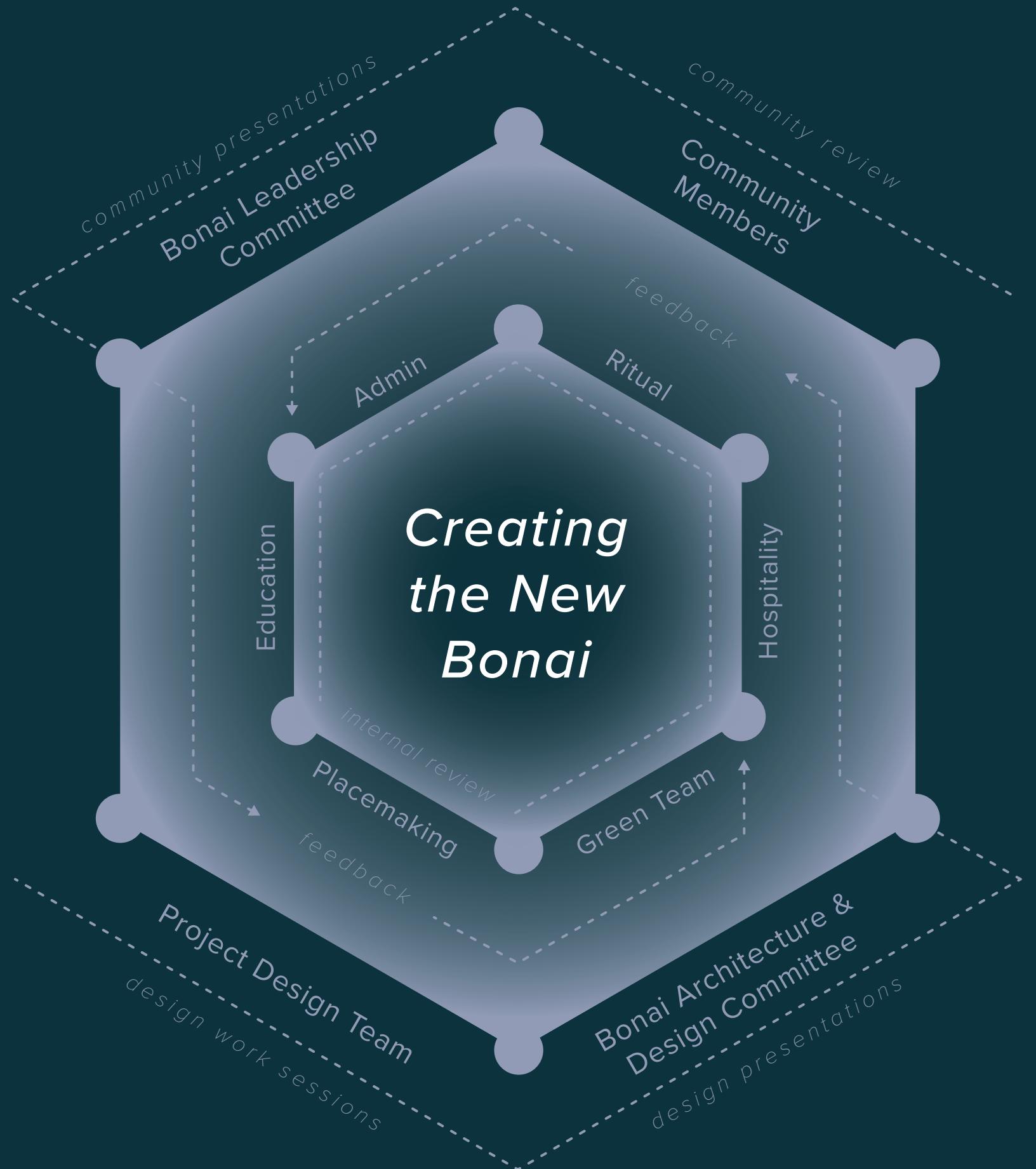
- Responsible use of resources
- Scale and flexibility of space
- High quality & durable material selection
- Extracting value out of each space
- Room to grow, a phased approach

Security

- Secure Community Network security recommendations:
 - Perimeter fencing - secure boundary & access control
 - Main Entrance Placement - reduce visibility & targeting
 - Hardened edges - reduce transparency, create obstacles
 - Two curb cuts needed for quick egress in case of attack

sustainability goals & targets

- *Meet the highest and most progressive standards of sustainability.*
- *Meet 2024 City of Boulder Energy Conservation Code requirements and identify synergistic opportunities to improve energy performance through early energy modeling.*
- *Maximize energy cost savings for operational cost efficiency and endeavor to meet LEEDv4 BD+C new construction criteria but are not pursuing certification. This is calculated based on annual energy cost savings over the ASHRAE 90.1 2010 reference building.*
- *Potential sustainable strategies; Solar, All Electric etc.*



neighboring property owner meetings

The Congregation Bonai Shalom is already a neighbor within this community and desires to continue that positive relationship. Bonai has met several times with the neighboring property owners in March 2022 and October 2022. In those meetings, the neighbors expressed concerns about a previous iteration of the new building design. In a meeting held on May 2nd 2025, we shared with them our strategies to address their concerns and they were supportive of the updated design. In a gesture of understanding and support, they volunteered to allow emergency access off our property and onto theirs. Here is a summary of our conversations:

Height & Scale

Concern related to height and light of the previously 2-story building and they expected a building design that fit the residential scale and character.

Response: The building shrunk in area, height, and is now only 1-story. Many thoughtful design details are included in the design in order to create a more residential quality that fits the neighborhood context.

Light & Illumination

Sensitive to light spill onto their property and yard causing a nuisance at night.

Response: A landscape buffer between the southern property line and the active spaces is now incorporated into the site design. The site lighting has been designed and calculated so that there are zero foot-candles at the property line per code requirements.

Noise

Concern about big events and parties especially with distance to the sanctuary and backyard activities.

Response: The building program was reconfigured to push the Sanctuary and Social Hall farther away from the property line and toward Cherryvale Rd.

Preserving Mature Trees

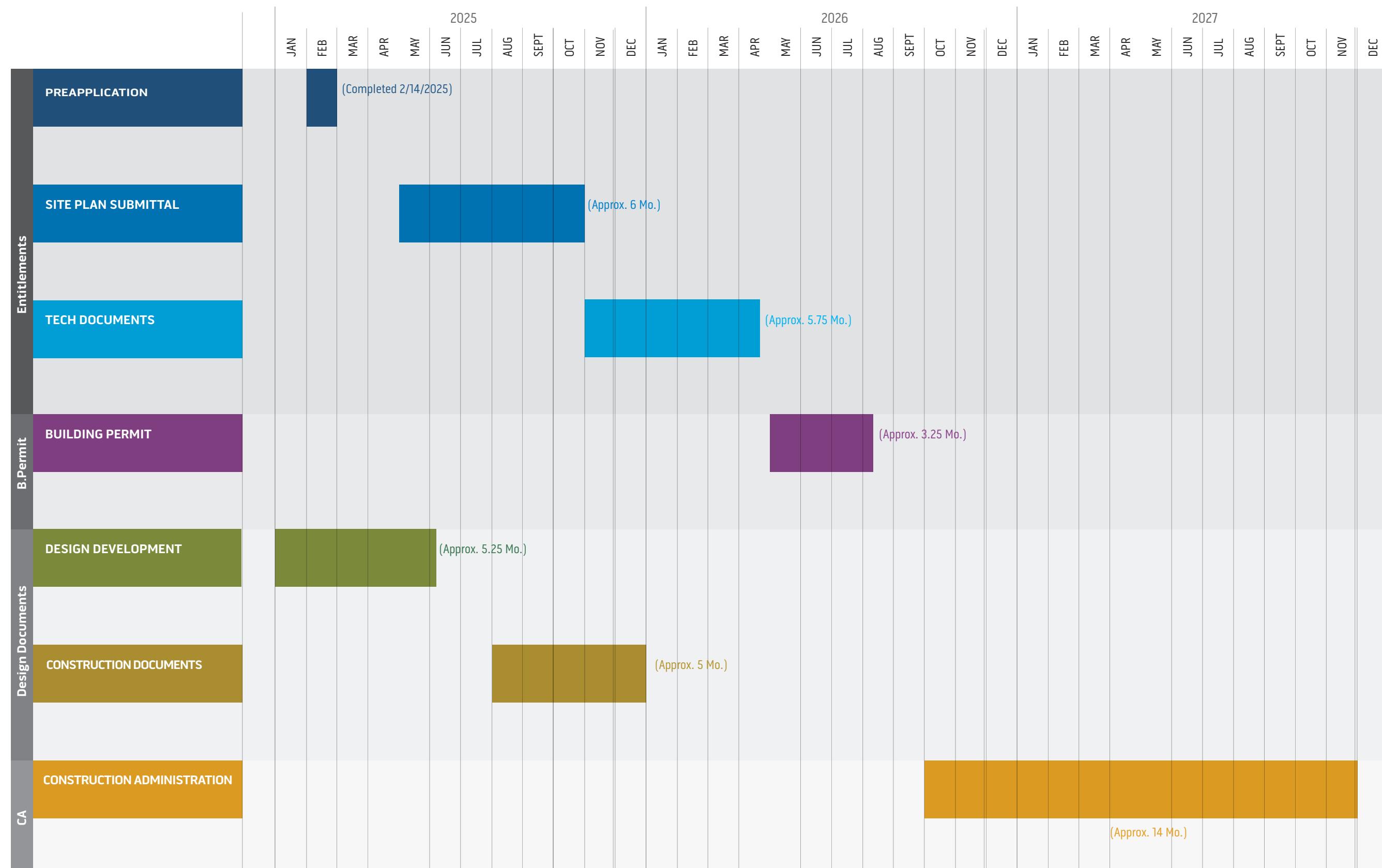
There are two rows of existing mature trees on the south property line that act as a buffer between the new parking lot and the neighboring property. These spruce trees were planted as part of the original site development as a negotiated agreement between the JCC and the neighbor to block headlights from the JCC parking lot. We are trying to honor that original agreement to the best of our ability within the code constraints on our property.

Response: The revised site plan accommodates both the North and South rows of trees except for three trees farthest to the West. However, preserving these trees requires a landscape setback variance and would like to request staff's approval of this variance to respond to Judy Renfroe's letter, dated 3/23/25.

section 2 *development schedule*



development schedule

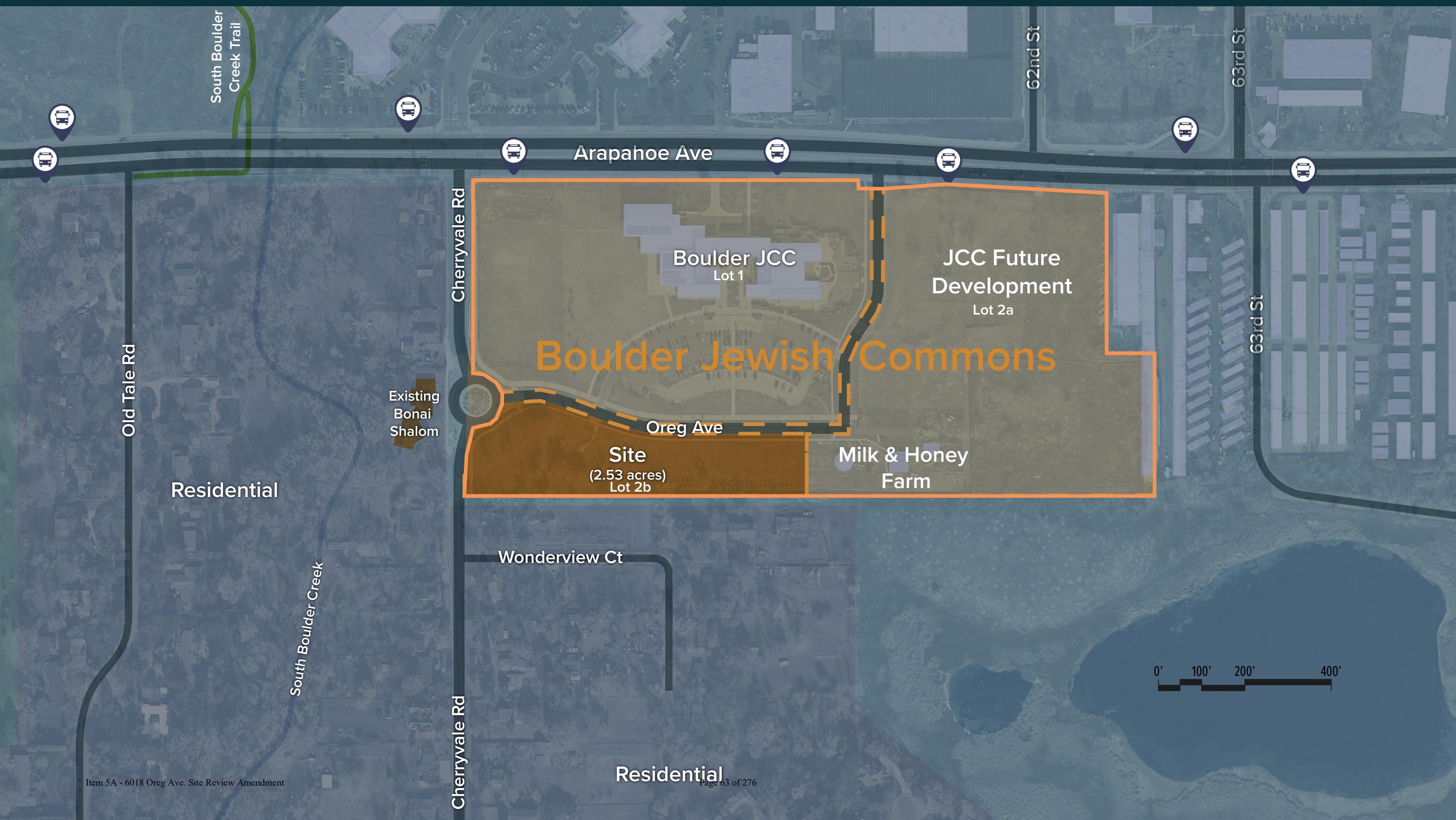


section 3
vicinity map, context, & site strategy



vicinity map

Boulder Jewish Commons



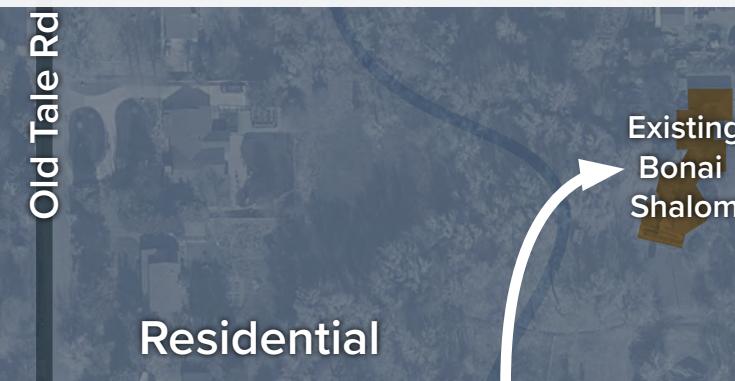
site review amendment

Boulder Jewish Commons

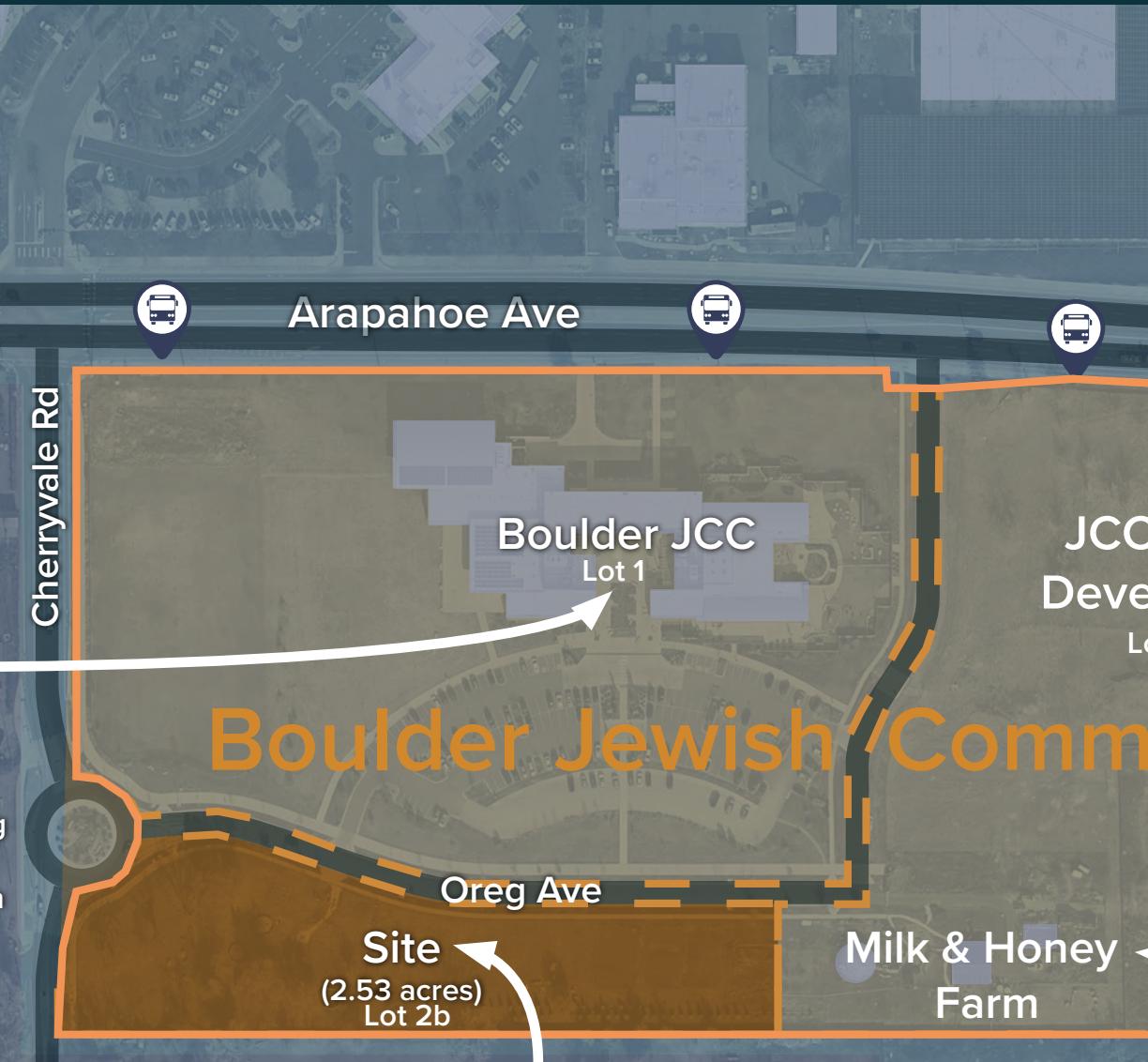
Attachment A - Applicant's Proposed Plans and Written Statement



Lot 1: Boulder JCC, Est. 2016
Brick, Stone, and Metal Accent Materials



Existing Bonai Shalom, Est. 1981
Item 5A - 6018 Oreg Ave. Site Review Amendment
Converted Home



Lot 2b: Existing Site, Acquired 2024
No Displaced Structures

The Boulder Jewish Commons Site Review, approved in 2014, planned for a synagogue or similar use to create a cohesive Jewish campus. In 2024, lot 2 was subdivided into two lots and lot 2b was donated to Congregation Bonai Shalom for their new synagogue building. This site review amendment outlines how the proposed design fits within the overall campus and creates organic connections through each lot.



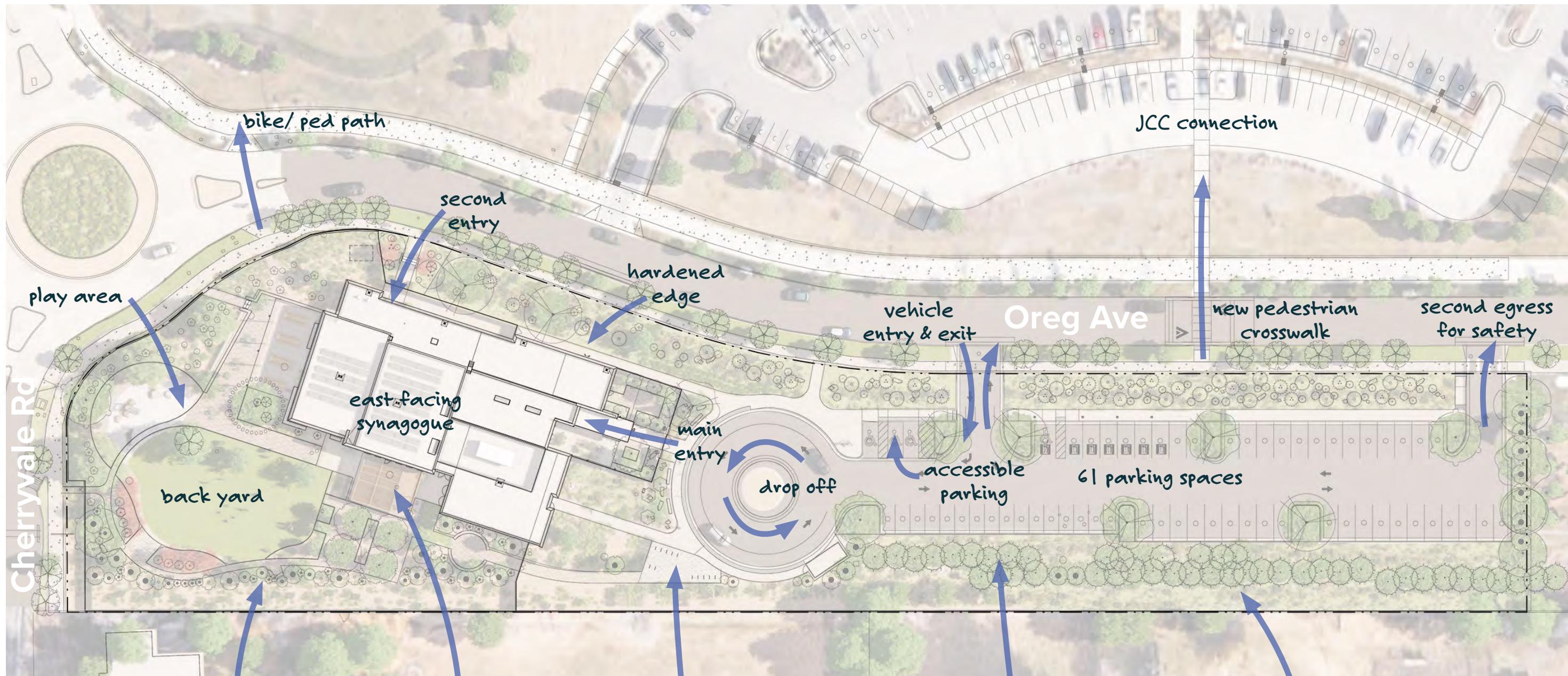
Lot 2a: Existing Milk and Honey Farm, Est. 2016
Educational Sustainable Farm

Transportation & Parking

- *The proposed site layout has two curb cuts. The added curb cut at the east side of the site is for egress only and was added to help alleviate congestion and security concerns from Secure Community Network (SCN). Please refer to the attached letter that describes the specific requirements for this use. We have prepared a TDM and traffic study to support that the second curb cut will improve traffic flow during peak demand times. We had a preliminary meeting with City staff, Edward Stafford, on April 18, 2024 to discuss this issue. This issue was raised again during our preapplication in January 2025 and we received the response, “Staff support the second access” from Alex Pichacz.*
- *Due to the narrow constraints of the site between Oreg and the abutting property to the south, the project is requesting a 20% parking reduction and providing a Travel Demand Management Plan. In considering Parking reduction criteria, Section 9-9-6 (f)(2)(B), Oreg Avenue on-street parking can accommodate the additional spaces that are not able to be located on site.*

project site

strategy



building position & new landscaping helps to buffer southwest neighbor

shaded patio

bike parking is within 50' of main entry gate

the existing trees will be preserved

preserve existing trees to buffer southeast neighbor



a new home for a growing community

The original building which currently houses the Bonai Shalom Congregation was built in the 1960's and was progressively modified through the 80's and 90's as the congregation took over and began to grow. The original home, turned synagogue, has grown to over 5,000 sf of space used for religious services, events and education. The community has rapidly out grown their beloved home and now strive to plan for future.

The new Bonai Shalom will be across the street from the original, while forming a strong connection to the Boulder JCC and will more than double the space for the community. The design will encompass over 12,000 sf of interior including an larger Sanctuary and a Social Hall that can combine to create one shared space, not only for primary religious assembly, but community events and celebrations. The new building will included larger spaces for program and education for children and adults alike.

The new design will position itself for growth, with additional admin, program and education spaces planned for future phases.

section 4
style guides & perspectives





public realm view
landscape buffer, sidewalk and campus connection

style guide

landscape - street edge, parking, and entry



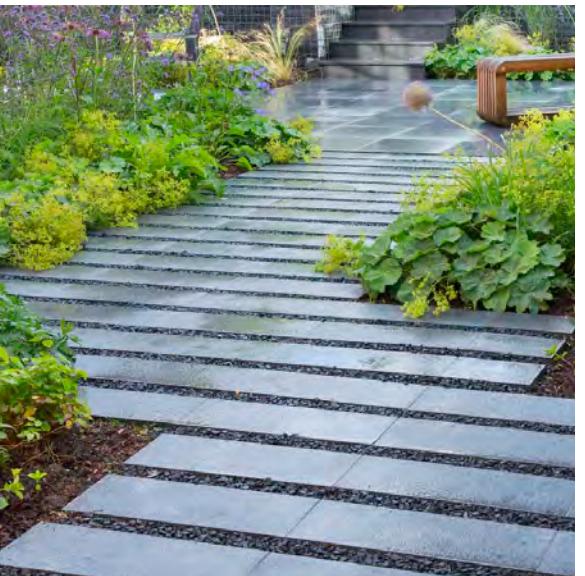
Native planting with protective boulders



Parking with native seed mix



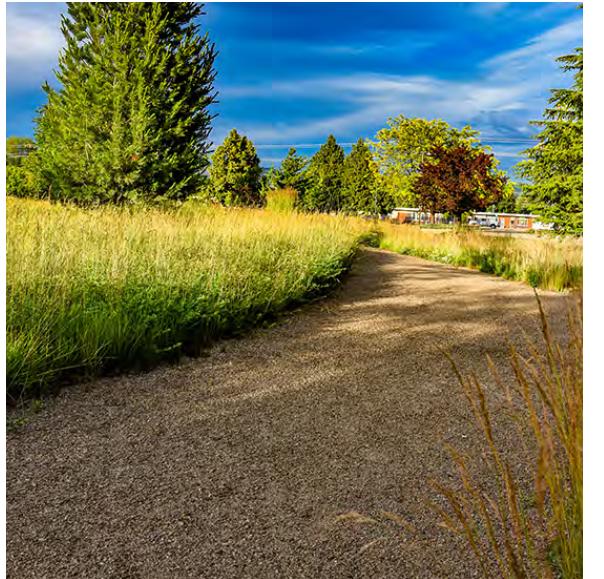
Cedar fence



Paving

style guide

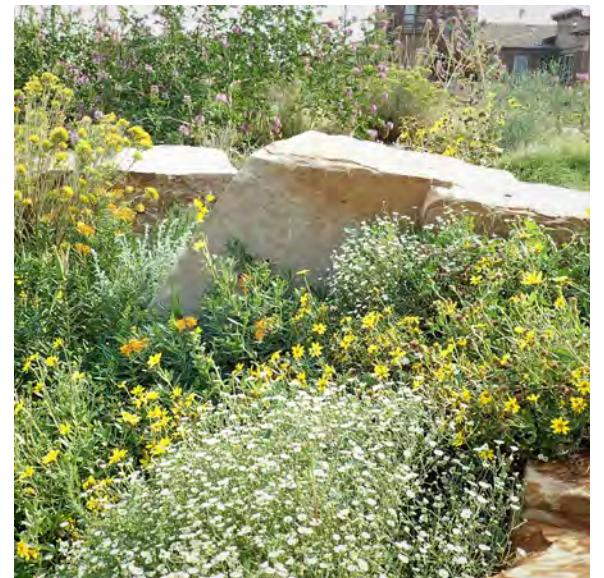
landscape - planting



Crusher fines pathway



Log edging and seating element



Native seeding - wildflower mix



Mowed informal path in native seed



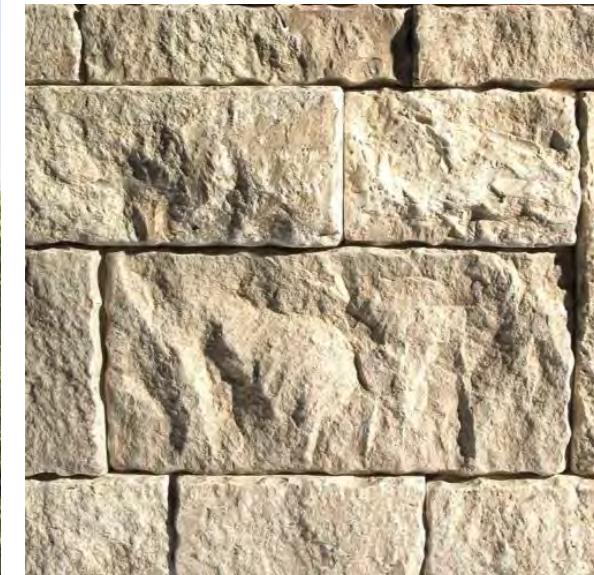
backyard view
outdoor patio



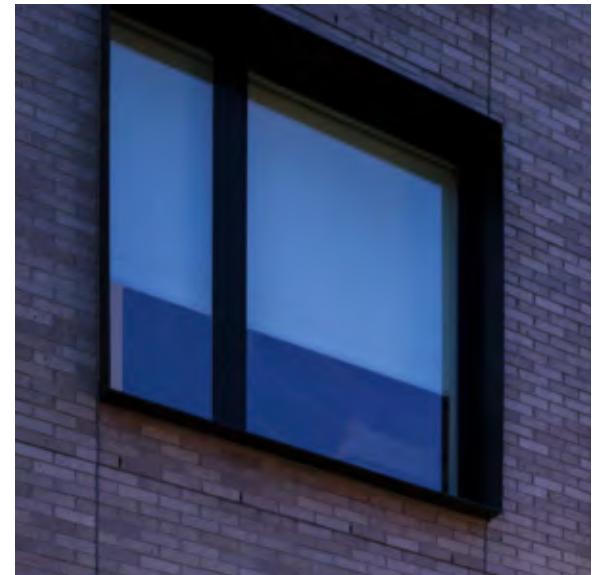
backyard view of sanctuary and social hall
contrasting colors give emphasis to the Sanctuary and entrances are accentuated with canopies

style guide

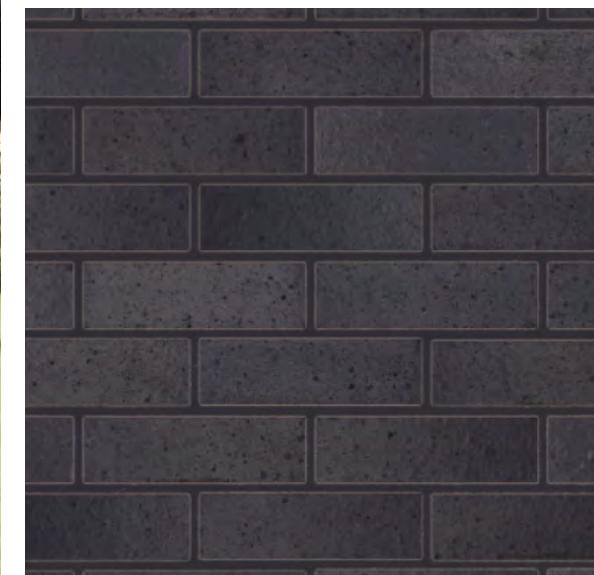
high quality materials



natural local stone
to resemble Jerusalem stone



metal window surround
metal accent color



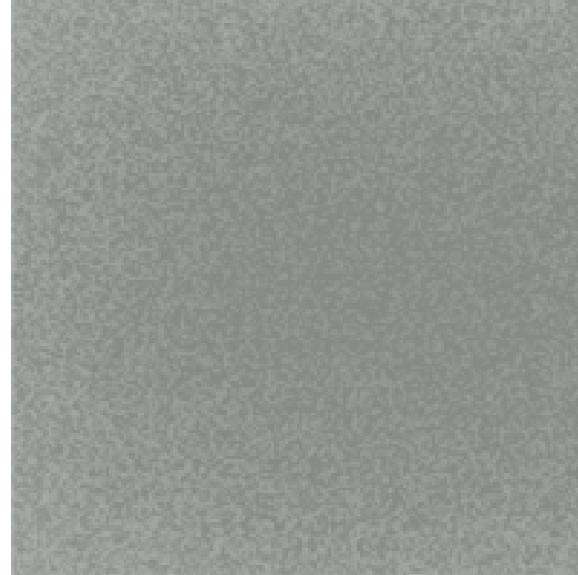
brick
medium gray



brick
light gray

style guide

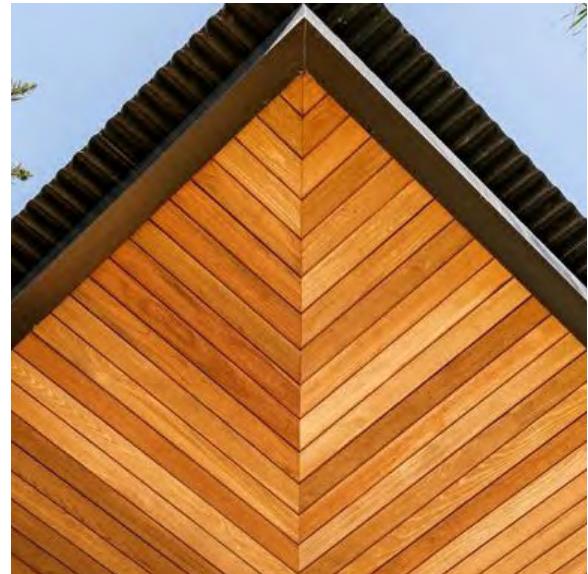
main entry



metal accents
medium gray



wood front door



wood slats
color varies



stone walls
washed with light





First Impression - Exterior View
Oreg and Cherryvale View





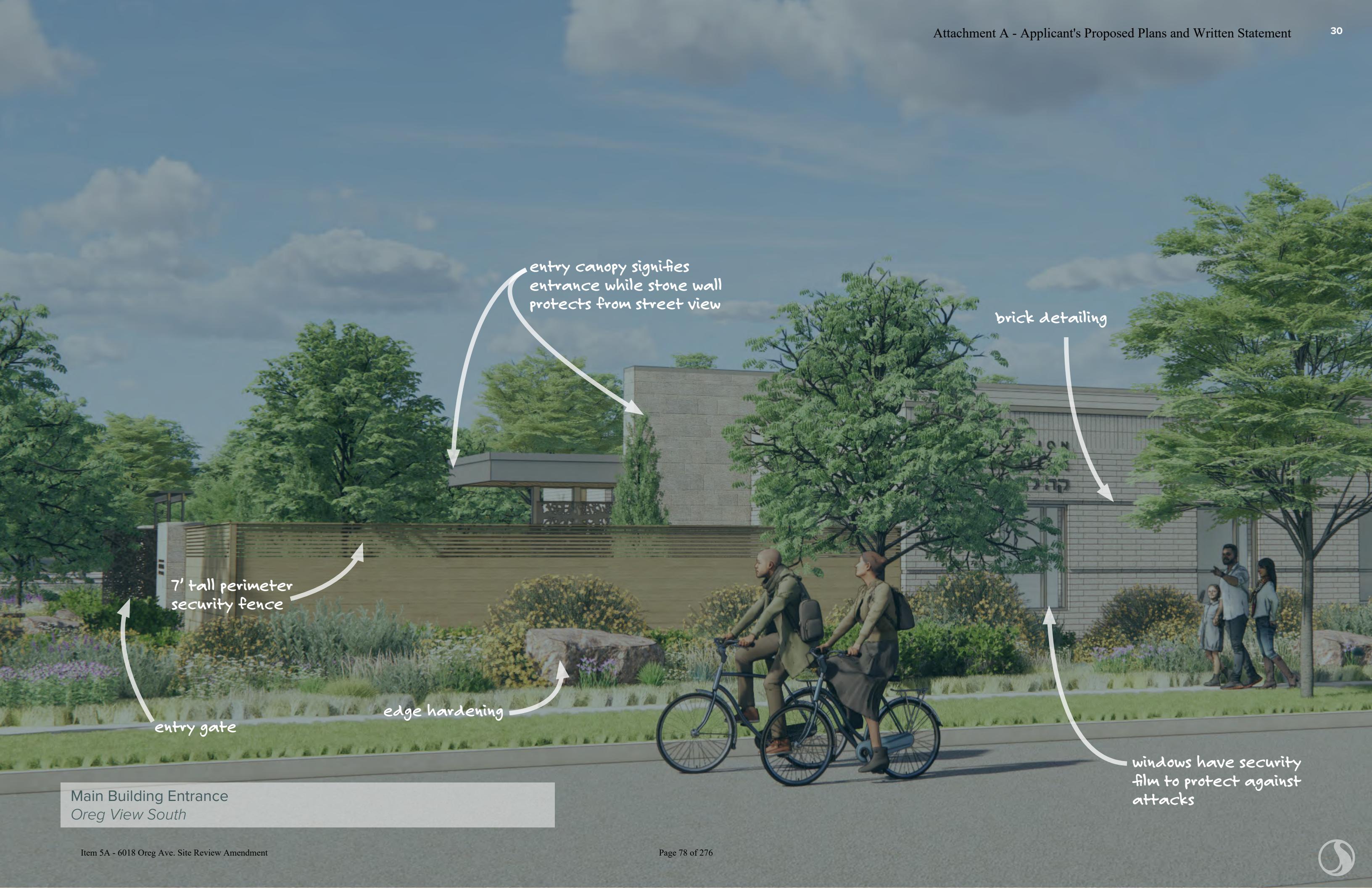


Secondary Entrance
Oreg View South



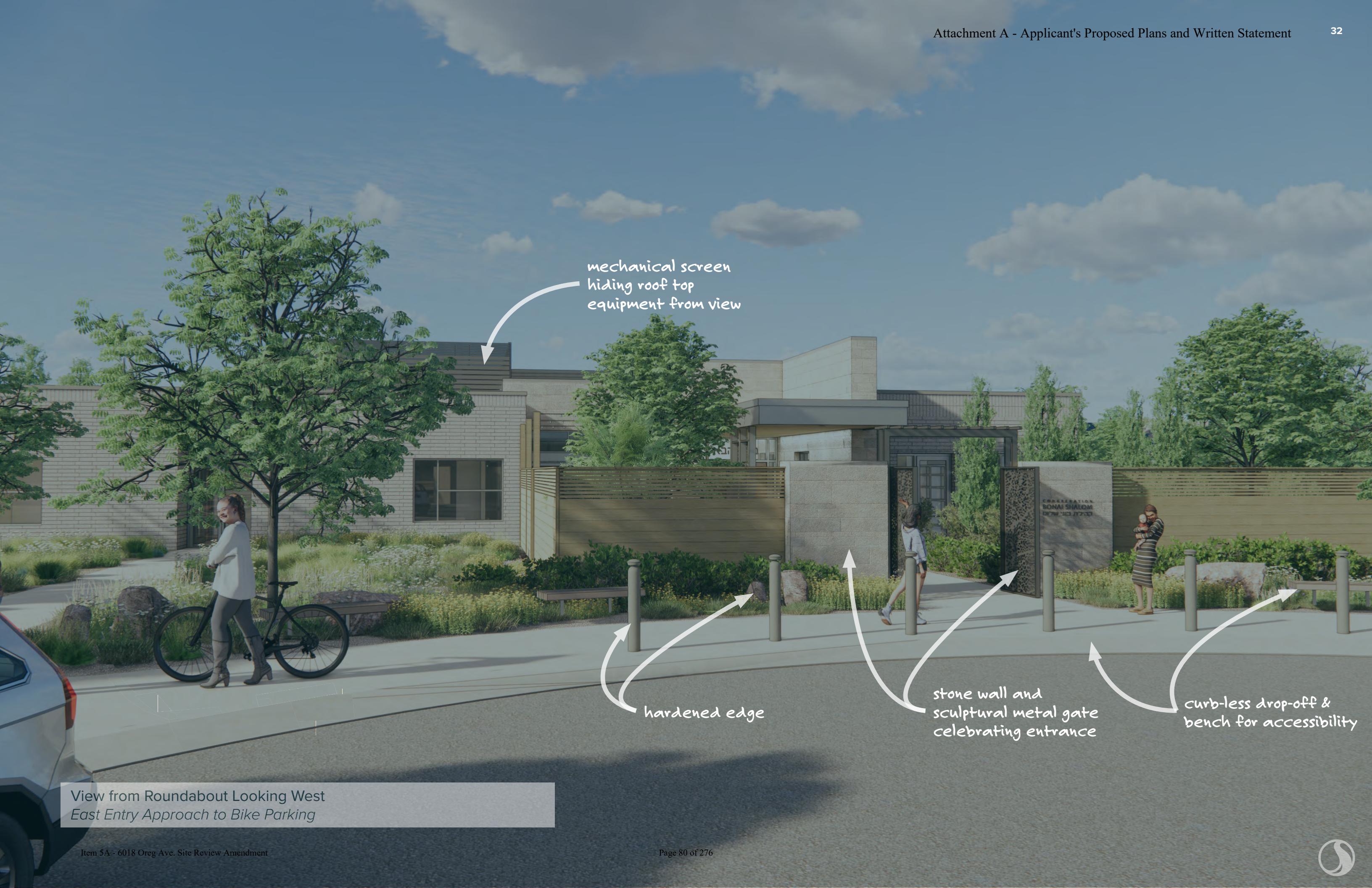


Main Building Entrance
Oreg View South





View from Roundabout Looking West
East Entry Approach & Bike Parking

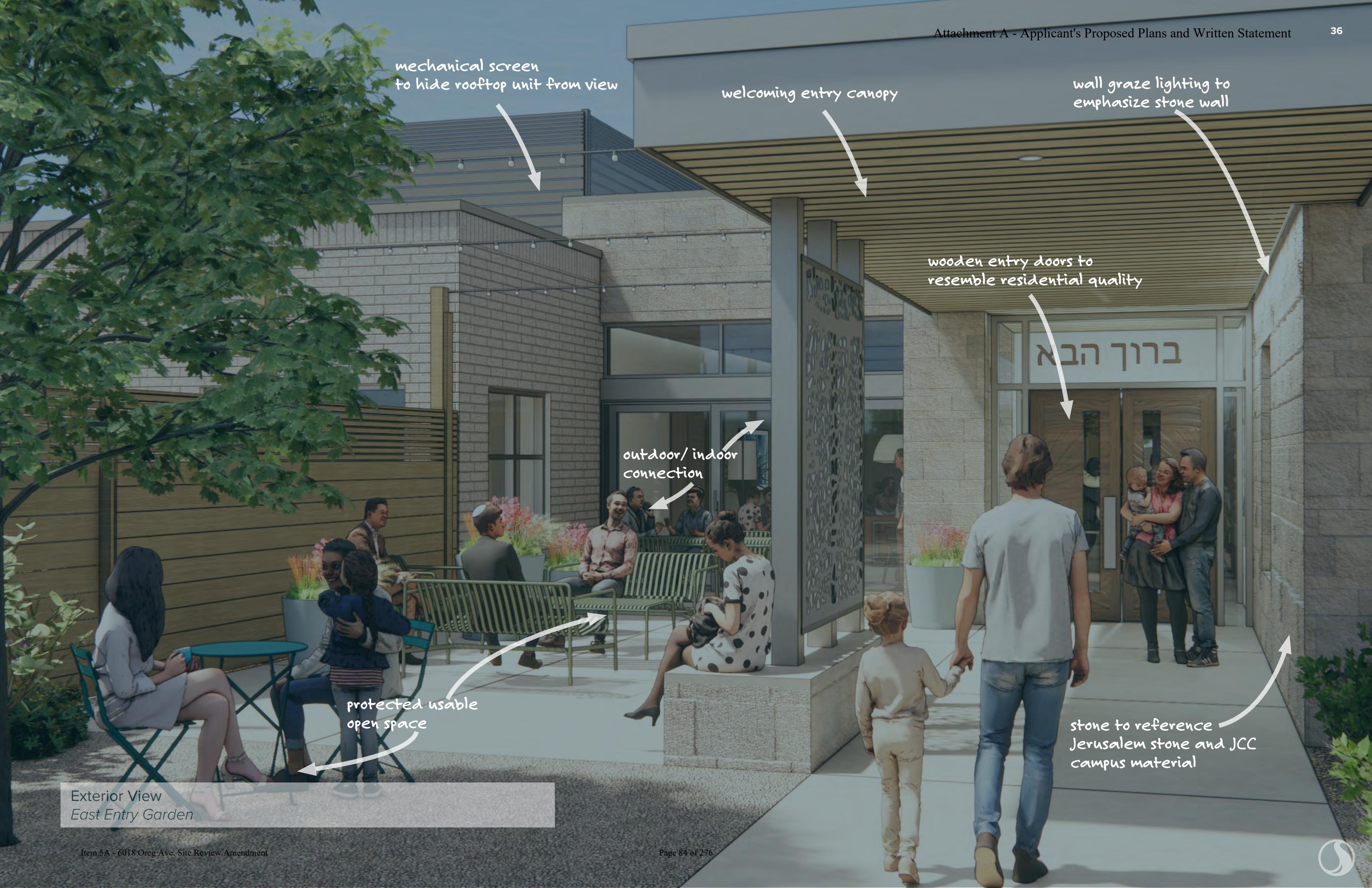








Exterior View
East Entry Garden





Oreg Ave View Looking West
East Parking and JCC Pedestrian Connection



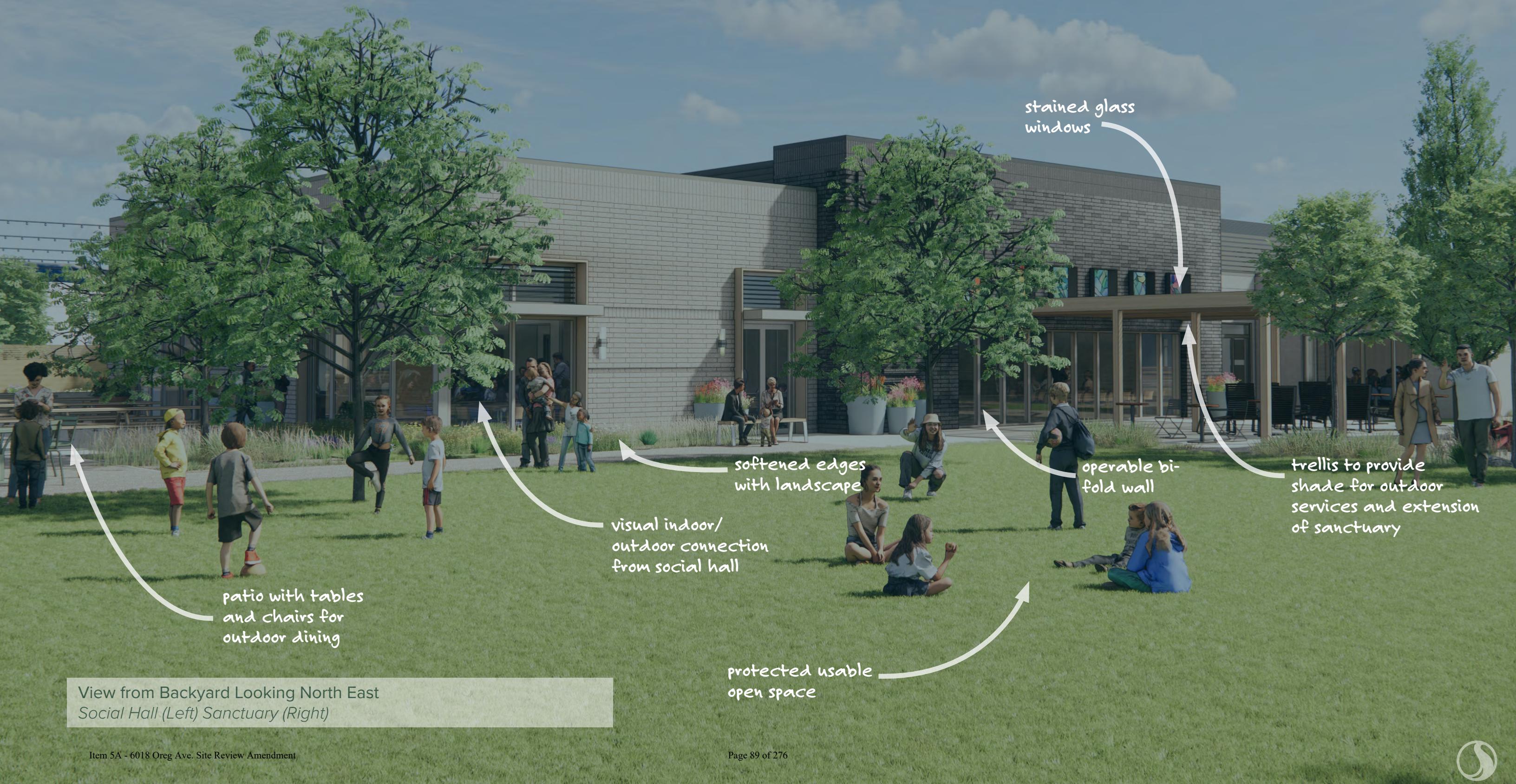




Exterior View
Pedestrian Approach to Main Entry



View from Backyard Looking North East
Social Hall (Left) Sanctuary (Right)





Exterior View
Back Yard Patio



section 5 **site review criteria**



BVCP Policies

The project conforms with many BVCP policies:

- 2.01 Unique Community Identity
- 2.09 Neighborhoods as Building Blocks
- 2.14 Mix of Complimentary Land Uses
- 2.15 Compatibility of Adjacent Land Uses
- 2.23 Boulder Creek, Tributaries & Ditches as Important Urban Design Features
- 2.24 Commitment to a Walkable & Accessible City
- 2.25 Improve Mobility Grid & Connections
- 2.33 Sensitive Infill & Redevelopment
- 2.36 Physical Design for People
- 2.37 Environmentally Sensitive Urban Design
- 2.38 Importance of Urban Canopy, Street Trees & Streetscapes
- 2.39 Outdoor Lighting/Light Pollution
- 2.41 Enhanced Design for All Projects
- 3.01 Incorporating Ecological Systems into Planning
- 3.22 Floodplain Management
- 3.23 Non-Structural Approach to Flood Management
- 4.01 Climate Action: Reduce Greenhouse Gas Emissions
- 4.03 Energy Conservation & Renewable Energy
- 4.04 Local Energy Generation Opportunities
- 4.07 Energy-Efficient Land Use
- 4.08 Energy-Efficient Building Design
- 4.09 Building Construction Waste Minimization
- 5.10 Role of Arts, Cultural, Historic & Parks & Recreation Amenities
- 6.01 All-Mode Transportation System & Safe and Complete Streets
- 6.03 Low Stress Walk and Bike Network
- 6.07 Integrated Transportation Demand Management (TDM) Programs
- 6.13 Access Management & Parking
- 6.14 Transportation Impacts Mitigated
- 8.05 Diversity
- 8.06 Mutual Respect
- 8.07 Safety
- 8.09 Resilience in Public Safety & Risk Prevention
- 8.10 Community Connectivity & Preparedness
- 8.13 Support for Community Facilities
- 10.02 Community Engagement
- 10.06 Youth Engagement

site review criteria

responses

Criteria for Review

The following *responses* are provided to demonstrate how the application meets the Site Review criteria.

(1) Boulder Valley Comprehensive Plan (BVCP) criteria:

A. BVCP Land Use Map and Policies: The proposed project is consistent with the BVCP land use map and, on balance, with the goals and policies of the BVCP particularly those that address the built environment. In applying this, the approving authority shall consistently interpret and apply this criterion and consider whether a particular goal or policy is intended to be applied to individual development projects or is to guide city policy decisions, such as regulatory actions. The BVCP does not prioritize goals and policies, and no project must satisfy one particular goal or policy or all of them.

Response: *The land use map for the area, associated with this proposal, designates the entire property as RR-1 Residential - Rural. The proposed uses of the site include a new synagogue building, parking, and accessory uses. The project strives to be a facility that celebrates the Jewish community, encourages engagement of the congregation, and embodies environmental sustainability which provides a sense of pride to the city and celebrates the values of Boulder. The project is in conformance with the BVCP Policies as identified in the BVCP Policy Analysis and supports the BVCP's Core Values in the following ways:*

Inclusion: *The Congregation Bonai Shalom, at their foundation, is a warm, accepting, and participating membership. They are an inclusive congregation that is providing a fully accessible facility.*

Stewardship: *Tikkun Olam, a Hebrew phrase meaning "repairing the world," is a core concept in Judaism that emphasizes the importance of actively working to improve the world and bring it closer to a more just and harmonious state. The Congregation Bonai Shalom embraces and strives to ensure a healthy and resilient future for the community.*

Sustainability: *A "green" building that allows members to live their values, by incorporating sustainable materials and energy efficient building systems to reduce carbon impact.*

Resilience: *The flexible and adaptable layout of the new facility will provide long-term stability and a proposed phasing plan will accommodate their expanding membership as they grow. It is intended to be timeless and enduring, with a design that appeals to and lasts for many generations.*

Engagement: *Creating the new Bonai is a collaborative process driven by committees, community members and iterative design discussions resulting in a design that reflects the needs and aspirations of the collective congregation.*

Innovation: *The new building design will be a modern facility with enhanced safety and security features and an innovative building layout that passively works to mitigate security threats.*

Collaboration: *The new building will function as the central hub for meetings and gatherings, promoting a sense of community and shared responsibility.*

B. Subcommunity and Area Plans or Design Guidelines: If the project is subject to an adopted subcommunity or area plan or adopted design guidelines, the project is consistent with the applicable plan and guidelines.

Response: *Not Applicable - The project is in Subcommunity Southeast Boulder and there are no applicable plans or adopted design guidelines.*

C. Reducing Greenhouse Gas Emissions: Any new commercial building greater than 30,000 square feet in floor area and any 30,000 square feet or greater addition to a commercial building shall either have a net site energy usage index (EUI) of zero or is designed to achieve a net site EUI that is 10 percent lower than required under the City of Boulder Energy Conservation Code. It shall be a condition of approval that the applicant demonstrate compliance with this criterion at time of building permit. For the purpose of this requirement, "commercial building" shall have the meaning defined in the City of Boulder Energy Conservation Code.

Response: *Not Applicable - The proposed building is less than 30,000 square feet but will meet City of Boulder Energy Conservation Code.*

D. Urban Edge Design: If the project is located within the urbanizing areas along the boundaries between Area I and Area II or III of the BVCP, the building and site design provide for a well-defined urban edge, and, if, in addition, the project is located on a major street shown in Appendix A of this title, the buildings and site design establish a sense of entry and arrival to the city by creating a defined urban edge through site and building design elements visible upon entry to the city.

Response: *The project is in Area I of the BVCP but is not located on a major street. The architectural and site design establish a clearly defined urban edge by aligning the north side of the building to Oreg Ave, creating a landscape buffer to the parking lot and providing a rich pedestrian experience along Cherryvale Road.*

E. Historic or Cultural Resources: If present, the project protects significant historic and cultural resources. The approving authority may require application and good faith pursuit of local landmark designation.

Response: *The proposed new synagogue will be a part of the growing Boulder Jewish Commons. The campus aims to become a destination that encourages engagement of the Jewish community in Boulder and the new synagogue will only help bolster that goal.*

F. Housing Diversity and Bedroom Unit Types: Except in the RR, RE and RL-1 zoning districts, projects that are more than 50 percent residential by measure of floor area, not counting enclosed parking areas, meet the following housing and bedroom unit type requirements in Subsections (i) through (vi). For the purposes of this subparagraph, qualifying housing type shall mean duplexes, attached dwelling units, townhouses, live-work units, or efficiency living units, and bedroom type shall mean studios, one-bedroom units, two-bedroom units, or three-bedroom units.

Response: *Not Applicable - The proposed project does not include any housing.*

G. Environmental Preservation:

(i) The project provides for the preservation of or mitigation of adverse impacts to natural features, including, without limitation, healthy long-lived trees, significant plant communities, ground and surface water, wetlands, riparian areas, drainage areas, and species on the federal Endangered Species List and "Species of Special Concern in Boulder County" designated by Boulder County and their habitat.



site review criteria

responses

Response: The proposed building footprint respects mature trees and balances the programmatic needs. An arborist report inventories the health of existing trees. The site's drainage ditch to the south will be maintained in the new design.

- (ii) Where excavation occurs, the location and design of buildings conforms to the natural contours of the land with tiered floor plates, and the site design avoids over-engineered tabling of land. Slopes greater than 50 percent should be avoided and, to the extent practicable, any such areas shall be stabilized with vegetation.

Response: The proposed site grading involves fill for the building slab, but it accounted for natural contours and does not have significant elevation changes.

(2) Site Design Criteria: The project creates safe, convenient, and efficient connections for all modes of travel, promotes safe pedestrian, bicycle, and other modes of alternative travel with the goal of lowering motor vehicle miles traveled. Usable open space is arranged to be accessible; designed to be functional, encourage use, and enhance the attractiveness of the project; and meets the needs of the anticipated residents, occupants, tenants, and visitors to the project. Landscaping aesthetically enhances the project, minimizes use of water, is sustainable, and improves the quality of the environment. Operational elements are screened to mitigate negative visual impacts. In determining whether this is met, the approving agency will consider the following factors:

A. Access, Transportation, and Mobility:

- (i) The project enables or provides vehicular and pedestrian connectivity between sites consistent with adopted connections plans relative to the transportation needs and impacts of the project, including but not limited to construction of new streets, bike lanes, on-street parking, sidewalks, multi-use paths, transit stops, streetscape planting strips, and dedication of public right-of-way or public access easements, as applicable considering the scope of the project. Where no adopted connections plan applies, the applicant shall, in good faith, and in coordination with the city manager, attempt to coordinate with adjacent property owners to establish, where practicable, reasonable and useful pedestrian connections or vehicular circulation connections, such as between parking lots on abutting properties, considering existing connections, infrastructure, and topography.

Response: The Boulder Jewish Commons is a campus community aspects of such that connections between buildings and parking areas are of primary importance. In order to create a more pedestrian friendly connection to the JCC, the site design will incorporate a new crosswalk across Oreg Ave leading to the existing JCC sidewalks to facilitate circulation to the main building entrance. To accommodate our neighbors to the south, the proposed site design is preserving a row of existing spruce trees, adding a landscape buffer, and carefully designing lighting as to not intrude upon their homes.

- (ii) Alternatives to the automobile are promoted by incorporating site design techniques, land use patterns, and infrastructure that support and encourage walking, biking, and other alternatives to the single-occupant vehicle.

Response: The site design provides priority to exterior bike parking compared to vehicle parking. Secure long-term bike parking located within the building and a landing has been proposed for short-term bike parking that is conveniently located within 50' of the main gate entrance on the East.

- (iii) A transportation demand management (TDM) plan will be complied with including methods that result in a significant shift away from single-occupant vehicle use to alternate modes.

Response: A Transportation Demand Management (TDM) Plan is included in this submittal that promotes alternative transportation modes including improvements to existing pedestrian sidewalks, bicycle connections to multi-use paths along Arapahoe, and encouragement of ridesharing.

- (iv) Streets, bikeways, pedestrian ways, trails, open space, buildings, and parking areas are designed and located to optimize safety of all modes and provide connectivity and functional permeability through the site.

Response: The vehicular entrance to the parking area is intentionally located in east of the handicap parking spaces and roundabout in order to create safe pedestrian paths to the building.

- (v) The design of vehicular circulation and parking areas make efficient use of the land and minimize the amount of pavement necessary to meet the circulation and parking needs of the project.

Response: The parking circulation is designed to minimum dimensions while allowing for efficient traffic flow and fire truck access. The proposed site layout has two curb cuts. The added curb cut at the east side of the site is for egress only and was added to help alleviate congestion and security concerns from Secure Community Network (SCN). Please refer to the attached letter that describes the specific requirements for this use. The second curb cut was supported by staff in the written response to the pre-application dated February 14, 2025.

- (vi) Where practicable and needed in the area and subject to coordination with the city manager, the project provides curbside parking or loading or both consistent with city policies on curbside management.

Response: Not Applicable - The proposed project does not have curbside parking or loading.

B. Open Space:

- (i) Useable open space is arranged to be accessible and designed to encourage use by incorporating quality landscaping, a mixture of sun and shade, hardscape areas and green spaces for gathering.

Response: Outdoor gatherings are at the heart of the congregation's culture. As shown on the site plans, the design incorporates both active and passive areas for outdoor enjoyment that use either building canopies or trees for shade.

- (ii) The open space will meet the needs of the anticipated residents, occupants, tenants, and visitors of the property. In mixed-use projects, the open space provides for a balance of private and common areas for the residential uses and includes common open space that is available for use by residents of the residential uses and their visitors and by tenants, occupants, customers, and visitors of the non-residential uses.

Response: Considerations have been made to support the programmatic functions and the connections between each outdoor space and the interior. For example, the outdoor lawn has been designed to accommodate larger gatherings while smaller areas provide more intimate settings throughout the landscape design.



site review criteria

responses

- (iii) If the project includes more than 50 dwelling units, including the addition of units that causes a project to exceed this threshold, and is more than one mile walking distance to a public park with any of the amenities described herein, at least 30 percent of the required outdoor open space is designed for active recreational purposes.

Response: Not Applicable - The proposed project does not have residential uses.

- (iv) On-site open space is linked to adjacent public spaces, multi-use paths, city parks, or public open space if consistent with Department of Open Space and Mountain Parks or Department of Parks and Recreation plans and planning for the area, as applicable.

Response: We are aware of the CDOT plan to improve the multi-use path on Arapahoe and our project will encourage connection to that path.

C. Landscaping and Screening:

- (i) The project exceeds the minimum landscaping requirements of Section 9-9-12, "Landscaping and Screening Standards," B.R.C. 1981, by at least fifteen percent in terms of planting quantities, includes a commensurate area to accommodate the additional plantings, and, where practical, preserves healthy long-lived trees.

Response: The project exceeds the minimum landscaping requirements by 15% in terms of planting quantities for required site trees and shrubs. The additional 15% shrub quantities were used to enhance the planted screening along the north property line, providing a more botanical presence to the foreground of the building facade and parking lot. Existing trees were preserved to the extent that the building footprint and proposed parking lot would allow. The existing rows of evergreen trees along the south side of the proposed parking lot have been identified as preserved as these are important to the neighbor screening and the JCC has spent much time, money, and effort nurturing those trees. These evergreen trees will be used within the required shrub screening for the parking lot.

- (ii) The landscaping design includes a variety of plants providing a variety of colors and contrasts in terms of texture and seasonality and high-quality hard surface materials, such as stone, flagstone, porous pavers, and decorative concrete.

Response: The softscape is composed of native and non-native/adaptive species, providing a year-round presence of a biodiverse landscape with seasonal blooms and varietal leaf color and texture. Additionally, intentional landscape design objectives are aligned with Jewish ritual/culture and sustainability, water retention, and etc. The hardscape is composed of key areas of concrete with decorative saw cuts, transitioning to crushed granite seating areas that allow for an overlay of tree canopy. Hand-hewn logs are used throughout the gravel garden paths to provide seating.

- (iii) The landscaping design conserves water through use of native and adaptive plants, reduction of exotic plant materials, and landscaping within stormwater detention facilities to create bioswales or rain gardens, or other similar design strategies.

Response: The planting plan is comprised of native and non-native species that are fit to site hydrology, sun and shade exposure, and soil pH. Species selection for the tree canopy was largely based upon City of Boulder approved street trees

Gardens references. Stormwater from the parking lot is collected along the north edge using curb cuts and released into the adjacent planting area. Stone is used in strategic locations to minimize planting area washout from periods of high stormwater volume.

- (iv) Operational elements, such as electrical transformers, trash storage and recycling areas, parking, and vehicular circulation, are screened from the public realm through design elements, such as landscaping, fencing, or placement of structures, to mitigate negative visual impacts.

Response: The landscape design screens all electrical transformers, trash storage, parking and vehicular circulation using decorative wood fencing and shrub lines with a minimum height of 42" and a depth of no less than 6'.

(3) Building Siting and Design Criteria: Building siting and design are consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, are compatible with the character of the area or improves upon that character, consistent with the intent specified in this paragraph. Buildings are positioned and oriented towards the public realm to promote a safe and vibrant pedestrian experience including welcoming, well-defined entries and facades. Building exteriors are designed with a long-lasting appearance and high-quality materials. Building design is simple and to a human scale, it creates visual interest and a vibrant pedestrian experience. Building roof design contributes to a city skyline that has a variety of roof forms and heights. In determining whether this is met, the approving agency will consider the following factors:

(A) Building Siting and Public Realm Interface:

- (i) New buildings and, to the extent practicable, additions to existing buildings are positioned towards the street, respecting the existing conditions or the context anticipated by adopted plans or guidelines. In urban contexts, buildings are positioned close to the property line and sidewalk along a street; whereas, in lower intensity contexts, a greater landscaped setback may be provided to match the surrounding context.

Response: The building orientation is aligned to be parallel with Oreg Avenue and is setback according to the required landscape setback.

- (ii) Wherever practical considering the scope of the project, parking areas are located behind buildings or set back further from the streetscape than the building façade.

Response: Due to the requirement to preserve the existing spruce trees to the south, the building façade cannot be setback further than the parking lot. However, we have provided ample landscape screening from the public right of way to the parking.

- (iii) Along the public realm, building entries are emphasized by windows and architectural features that include one or more of the following: increased level of detail, protruding or recessed elements, columns, pilasters, protruding bays, reveals, fins, ribs, balconies, cornices, eaves, increased window glazing, or changes in building materials or color.

Response: In response to recommendations from SCN, the main entrance is located on the East side of the building and is within a secure front garden space. The building entrance has a large canopy overhang, crafted wood entry doors, and stone material commonly used in synagogues. Additionally, both North and East gates create a welcoming and artful portal flanked by lush landscaping and residential scale features that fit the neighborhood and enhances the pedestrian realm.

- (iv) Defined entries connect the building to the public realm. Unless inconsistent with the context and building's use, along the public realm, one defined entry is provided



site review criteria

responses

every 50 feet. Buildings designed for residential or industrial uses may have fewer defined entries.

Response: Security is the primary design concern when considering this building's use. The amount of building entries is strictly defined by the security consultant because a defined entry point is a weak point in the building's defense. The project team has put an emphasis on the north fence along Oreg to create an enhanced public realm.

- (v) If the project is adjacent to a zoning district of lower intensity in terms of allowable use, density, massing, or scale, the project is designed with an appropriate transition to the adjacent properties considering adopted subcommunity and area plans or design guidelines applicable to the site, and, if none apply, the existing development pattern. Appropriate transitions may be created through design elements such as building siting and design or open space siting and design.

Response: The surrounding zoning districts are of a similar intensity and the property to the South is outside of the city limits. However, the building massing has been designed in such a way that it fits the surrounding neighborhood context and helps to transition from the larger scale building of the JCC to the neighboring properties to the South.

- (vi) The building's siting and relationship to the public realm is consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, is compatible with the character of the area or improves upon that character, consistent with the intent of Paragraph (3), Building Design Criteria.

Response: No plans or guidelines are in place for this site location but is compatible with the character of the area. Please see paragraph (3) response.

(B) Building Design:

- (i) Larger floor plate buildings and projects with multiple buildings have a variety of forms and heights.

Response: The building size is small however the design incorporates various forms and heights in response to the programmatic needs and to add architectural character and a more residential scale.

- (ii) To the extent practical considering their function, mechanical appurtenances are located within or concealed by the building. If they cannot be located within or concealed by the building, their visibility from the public realm and adjacent properties is minimized.

Response: Rooftop mechanical units are first placed with thoughtful sightlines in mind and when needed, are hidden from view with a mechanical screen.

- (iii) On each floor of the building, windows create visual interest, transparency, and a sense of connection to the public realm. In urban, pedestrian main street-built environments, it is a best practice to design at least 60 percent of each ground floor façade facing the street as window area. Otherwise, it is a best practice to design at least 20 percent of the wall on each floor of a building as window area. Blank walls along the most visible portions of the building are avoided.

Response: Similar to the defined entries criteria as outlined above, additional transparency will cause serious security concerns especially along the façade facing Oreg Ave. This project is not located in an urban environment but the building design has been thoughtfully balanced both transparency in the public realm with security while aiming for a residential scale.

(iv) Simple detailing is incorporated into the façades to create visual interest, without making the façade overly complicated. This detailing may include cornices, belt courses, reveals, alternating brick or stone patterns, expression line offsets, window lintels and sills, and offsets in window glass from surrounding materials.

Response: The façade design incorporates brick detailing such as reveals and soldier courses to add variation and interest.

- (v) Balconies on buildings with attached dwelling units are integrated into the form of the building in that exterior walls partially enclose the balcony. Balcony platform undersides are finished.

Response: Not Applicable - The design does not include any balconies.

- (vi) The building's design, including but not limited to use of materials, color, roof forms, and style, is consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, is compatible with the character of the area or improves upon that character, consistent with the intent of paragraph (3), Building Design Criteria.

Response: The project is situated within the Boulder Jewish Commons site review and special consideration was taken to make the building feel a part of the campus character. The proposed design uses similar materials as the Jewish Community Center to the North of Oreg Ave such as brick, stone, and metal canopies. To the South, there is a residential neighborhood. The project attempts to transition the scale from the larger JCC building to the residential neighborhood.

(C) Building Materials:

- (i) Building facades are composed of high-quality, durable, human-scaled materials. High-quality materials include brick, stone, polished concrete masonry units, wood, architectural high pressure laminate panels, cementitious or composite siding, architectural metal panels, or any combination of these materials. Split-faced concrete masonry units, stucco, vinyl siding, EIFS, and unfinished or untreated wood are not considered durable, high-quality materials, but may be used on a limited basis and not on facades facing the public realm. High quality materials are focused on the ground floor facades on all sides of a building and on all floors of facades facing the public realm, and, overall, comprise the vast majority of all building facades.

Response: The building design oriented toward the public realm uses high-quality materials such as natural stone, brick, and metal accents.

- (ii) Monolithic roofing membranes, like Thermoplastic Polyolefin, are not used on roof surfaces that are visible from the street level.

Response: Roof surfaces are not visible from the public realm.

- (iii) The number of building material types is limited, and the building materials are applied to complement the building form and function. The organization of the building materials logically expresses primary building features, such as the spatial layout, building entries, private and common spaces, anchor corners, stairwells, and elevators.

Response: The building material palette has been carefully curated with an emphasis on high quality materials such as natural stone, brick, metal accents and wood to add warmth. The building entries are accentuated with decorative entry gates and make use of natural stone and wood.



site review criteria

responses

(iv) Building cladding materials turn convex corners and continue to the inset wall. This criterion does not apply to changes that occur at an interior corner nor to detailing elements, such as cornices, belt courses, reveals, offsets in expression lines, lintels, and windowsills. Building cladding materials do not change in-plane unless there is at least a 12-inch wall offset.

Response: *Building cladding materials are the same at outside corners throughout the building design. The brick color changes only occur at major building offsets greater than 12-inches.*

(v) Any newly constructed building that includes residential units and is located within 200 feet of a railroad, freeway, or expressway is designed to achieve an interior day-night average noise level of no more than forty-five decibels. Noise shall be measured in a manner that is consistent with the federal Housing and Urban Development's standards in Sections 24 CFR §§ 51.100 to 51.106 for the "measure of external noise environments," or similar standard adopted by the city manager in the event that such rule is repealed. The applicant shall provide written certification prior to the issuance of a certificate of occupancy that the sound abatement and attenuation measures were incorporated in the construction and site design as recommended by a professional engineer

Response: *Not Applicable - The design does not include any residential units.*

(7) Parking Reductions:

The applicant demonstrates, and the approving authority finds, that any reduced parking on the site, if applicable, meets the parking criteria outlined in Section 9-9-6, "Parking Standards," B.R.C. 1981.

Response: *Due to the narrow constraints of the site, the project is requesting a 20% parking reduction and providing a Travel Demand Management Plan.*

Parking Reduction Criteria

The following *responses* are provided to demonstrate how the application meets the Motor Vehicle Parking Reduction criteria.

(2) Parking Reduction Criteria: The approving authority may reduce the parking requirements of this section (see Tables 9-1, 9-2, 9-3 and 9-4), if it finds that the parking needs of all uses in the project will be adequately accommodated. In making this determination, the approving authority shall consider without limitation:

(A) Whether the probable number of all motor vehicles to be owned by occupants of and visitors to dwelling units in the project will be adequately accommodated;

Response: *There are no dwelling units on the project but the probable number of cars will be accommodated in the off-street and on-street parking provided by the site.*

(B) The availability of off-street and nearby on-street parking;

Response: *Oreg Avenue on-street parking can accommodate the additional spaces that are not able to be located on site.*

(C) Whether any proposed shared parking can adequately accommodate the parking needs of different uses of the project considering daytime and nighttime variability of the parking needs of uses;

Response: *There is no proposed shared parking as there is only one proposed use.*

(D) The effectiveness of any multimodal transportation program that is proposed at reducing the parking needs of the project. Applications including such programs shall describe any existing or proposed facilities and proximity to transit lines and shall demonstrate that use of multimodal transportation options will continue to reduce the need for on-site parking on an ongoing basis;

Response: *The City of Boulder maintains an extensive bicycle and pedestrian network throughout the City. The nearest bus stop and on-street bike lane is approximately 700' from the site located on Arapahoe Road. Additional designated bike routes and multi-use paths are within the vicinity of the site. Please refer to the TDM for more information. The project is exceeding the number of required bicycle parking spaces in order to accommodate additional cyclists using multimodal transportation.*

(E) If the number of off-street parking spaces is reduced because of the nature of the occupancy, whether the applicant provides assurances that the nature of the occupancy will not change; and;

Response: *The nature of the occupancy will not change.*

(F) If considering a parking reduction for a use nonconforming as to parking, the approving authority shall evaluate the existing parking arrangement to determine whether it can accommodate additional parking or be rearranged to accommodate additional parking in compliance with the design requirements of subsection (d) of this section. If additional parking can reasonably be provided, the provision of such parking shall be a condition of approval of the requested reduction.

Response: *Due to the narrow constraints of the site, additional parking cannot be reasonably provided.*



section 6

appendix



Secure Community Network

re: security need for 2nd curb cut



Mr. Eric Shafran
 SII LLC
 600 South Cherry Street, Suite 1125
 Denver, CO 80246

March 24, 2024

Mr. Shafran,

Thank you for the opportunity to discuss the ongoing new construction for Bonai Shalom Congregation in Boulder, Colorado. I hope the security items we discussed can assist you and the Congregation in building a suitable and safe new facility.

Secure Community Network (herein SCN) is the official safety and security organization for the Jewish community within the United States. As SCN's Regional Security Advisor, I provide security support to over 100 Jewish facilities throughout Colorado. This support includes security training, facility risk and vulnerability assessments, assistance to security related federal and state grant applications, and liaison with federal, state, and local law enforcement and intelligence agencies throughout the state of Colorado and the United States. Prior to joining SCN, I served 25 years as a Special Agent with the Federal Bureau of Investigation and retired as the Assistant Special Agent in Charge (ASAC) over Crisis Response and Crisis Management matters in the FBI Denver's field office. In that capacity, I directly oversaw all FBI SWAT operations in both Colorado and Wyoming, as well as led the FBI's Evidence Response Team, Bomb Technicians, Crisis Management Team, and other related elements. I served for 15 years as an FBI SWAT operator, 3 of which I served as the Senior Team Leader over an FBI SWAT Team. I was also an FBI-certified Tactical Instructor, in which I trained FBI Special Agents in proper procedures for planning and conducting tactical operations to include arrests, search warrants, and other tactical operations. I have led and/or participated in over 200 FBI tactical operations in various parts of the United States. Prior to joining the FBI, I

was an officer in the United States Marine Corps for 5 years and am a graduate of the United States Naval Academy.

As you are well aware, following the October 7, 2023 attacks in Israel, the threat against the Jewish community is at an extremely elevated level. While the Jewish community makes up only 2% of the United States' population, it is the target of over 60% of the religion-based hate crimes within the United States. In 2023, there was a 112% increase in security incidents against the Jewish community reported to SCN. In addition, there was a 774% increase in swatting and hoax bomb threats targeting the Jewish community in 2023. As we have continued into 2024, this unfortunate upward trend in threats continues.

As we reviewed the plans for Bonai Shalom, we discussed a range of security concerns and matters regarding the new construction. Of significant concern is any construction matter which can produce a predictable and potentially recurring security risk that can be exploited by a threat actor targeting the facility. In assessing the parking lot access for Bonai Shalom, the current parking lot structure presents a significant potential risk. In the current plan, there is only one vehicle ingress/egress point into the Bonai Shalom parking lot from Oreg Avenue. As we discussed, this will create considerable congestion within the access point and the parking lot during times of high use, as well as potential congestion along Oreg Avenue immediately outside of the facility. Further elevating this vulnerability is that these times of significant congestion within the access point and parking lot will be predictable and readily visible to even the most limited pre-attack surveillance. A routine and highly predictable traffic congestion pattern within a Jewish facility is a critical vulnerability. In exploiting this vulnerability, a threat actor targeting Bonai Shalom would have a high volume of potential victims essentially trapped within a traffic pattern that would not allow efficient vehicle egress. Further, potential victims seeking to exit their vehicles and potentially egress by foot would be caught in an open and vulnerable area.

To remedy this, I recommend reviewing the plans for the new parking lot to consider the possibility of adding a second access point, potentially for egress only. This would ensure a more reasonable flow of traffic within the facility and alleviate the potential for routine and predictable overwhelming traffic congestion at Bonai Shalom. Given the high level of threat against the Jewish community that continues to exist, this adjustment could effectively add to a more secure and safe environment for Bonai Shalom.

Please let me know if you have any questions regarding this matter. Thanks once again for allowing SCN to assist you in the construction of your new facility.

Respectfully,

Kevin Farrington
 Regional Security Advisor-Colorado



Executive Director Letter

re: security considerations

Karli Sherwinter & Allison Schwartz

Interim Executive Directors
 Congregation Bonai Shalom
 1527 Cherryvale Road
 Boulder, CO 80303

Date: May 1, 2025

To:

Boulder City Planning Office
 1101 Arapahoe Ave
 Boulder, CO 80302

Subject: Request for Security Considerations in Bonai Shalom Synagogue Building Plans

Dear Members of the Boulder City Planning Office,

We are writing on behalf of Congregation Bonai Shalom to respectfully request that specific safety and security features be incorporated into the planning and approval process for our new synagogue building. These features include perimeter fencing, positioning the main entrance away from major streets, and the use of natural barriers to entry. While we understand that these elements may not align with general city planning guidelines, we believe they are essential for the safety and well-being of our congregation.

Security Guidance from the Secure Community Network (SCN)

Our security recommendations are based on guidance from the Secure Community Network (SCN), the official safety and security organization for the Jewish community in North America. Established in 2004 under the auspices of The Jewish Federations of North America and the Conference of Presidents of Major American Jewish Organizations, SCN works on behalf of over 300 independent communities to ensure the safety, security, and resiliency of Jewish institutions.

SCN's expertise in risk assessment and security planning for Jewish facilities is widely recognized. Their recommendations for physical security measures, such as controlled access points, perimeter barriers, and strategic landscaping, are designed to mitigate potential threats and enhance the safety of congregants.

Rising Antisemitic Incidents

The necessity for these security measures is underscored by the alarming rise in antisemitic incidents across the United States. According to the Anti-Defamation League (ADL), there were over 10,000 antisemitic incidents in the U.S. in the year following the October 7, 2023, Hamas attack on Israel, marking the highest number ever recorded in a single year since the ADL

began tracking in 1979. This surge includes acts of harassment, vandalism, and violence targeting Jewish individuals and institutions.

In Colorado, Jewish communities have experienced a 42% increase in antisemitic incidents in 2024, reaching 279 incidents, a record high since ADL began tracking. Vandalism nearly doubled (+98%) from the previous year. Incidents at Jewish institutions increased by 93%, heightening concerns about the security of Jewish congregations and underscoring the importance of proactive measures to protect our members.

Proposed Security Features

To address these concerns, we propose the following security features for our new synagogue building:

- Perimeter Fencing:** Establishing a secure boundary around the property to control access and deter unauthorized entry.
- Main Entrance Placement:** Positioning the primary entrance away from major streets to reduce visibility and potential targeting.
- Natural Barriers:** Utilizing landscaping elements, such as dense shrubbery or decorative walls, to create additional obstacles for unauthorized access while maintaining aesthetic appeal.

These measures are not only aligned with SCN's recommendations but are also consistent with best practices for securing places of worship in the current threat environment.

Conclusion

We recognize the importance of adhering to city planning standards and are committed to working collaboratively with your office to find solutions that balance aesthetic considerations with the imperative of congregational safety. We respectfully request that the unique security needs of our community be taken into account during the planning and approval process for our new synagogue building.

Thank you for your attention to this matter and for your continued support of the diverse communities that enrich the city of Boulder.

Sincerely,

Karli Sherwinter & Allison Schwartz
 Interim Executive Directors
 Congregation Bonai Shalom





Stantec Architecture Inc.
1881 9th Street, Suite 303
Boulder, CO 80302

September 10, 2025

Project: Congregation Bonai Shalom at Boulder Jewish Commons (6018 Oreg Ave.)

Boulder Planning and Development Services
1101 Arapahoe Ave
Boulder, CO 80302

Dear Boulder Planning and Development Services,

Reference: LUR2025-00031 Site Review Amendment, Modification Request

Request for Modification

The applicant would like to request a variance to the perimeter fence located on the west side of the site, along Cherryvale Drive. Please see attached exhibit which highlights the request.

There is a utility easement located along Cherryvale Road, inside the project site, that runs along the public sidewalk. Per code, the fence must be located outside of the utility easement as well as a minimum of 18 inches away from the edge of the existing sidewalk. Based on these two requirements, the fence would need to be located 10' inside the property line, which severely impacts the amount of available occupiable open space within the project site. The applicant is requesting that the fence be located directly along the interior edge of the sidewalk to increase the amount of occupiable open space within the project area.

City of Boulder Design and Construction Standards

Response: *The following responses have been provided to demonstrate how the request meets the criteria.*

1.05 Alterations, Modifications, and Waivers

(B) Criteria

No alteration, modification, or waiver of the strict application of any provision of these Standards shall be granted unless the applicant clearly demonstrates and the Director finds that the following conditions exist:

- (1) The strict application of the provisions of these Standards would deprive an individual of 1-16 DESIGN AND CONSTRUCTION STANDARDS Effective: June 20, 2019 the reasonable use of land or structure, and
Response: In order to maintain the utility easement, the fence would have to shift 10' interior of the property line which would deprive the reasonable use of that land, owned by a non-profit organization, as it would become public right of way instead of usable area for the applicant.
- (2) Special circumstances peculiar to such land or development justify the requested alteration, modification, or waiver, and

Reference: LUR2025-00031 Site Review Amendment, Modification Request

Response: Placing the fence outside of the utility easement, interior to the project area, creates two separate open space areas. This location reduces the amount of occupiable open space within the project area as well as creating a separate, unusable space in excess of 2,000 square feet outside of the fence that will require additional maintenance by the applicant. If the fence were permitted to be located directly along the sidewalk, the open space in question would remain one contiguous area that is both occupiable by users as well as easier to maintain.

(3) Any alteration, modification, or waiver would result in a solution consistent with the goals of the underlying zoning district, a Boulder Valley Comprehensive Plan goal, a specific neighborhood plan, or an adopted design guideline, and

Response: There are no neighborhood plans or adopted design guidelines for this area. However, the proposed modification meets the BVCP Criteria (2) Site Design Criteria for B. Open Space as Outdoor gatherings are at the heart of the congregation's culture. If the backyard space is reduced by 2,000 sf, it will greatly reduce the functionality and programmatic needs of the congregation.

(4) Any alteration, modification, or waiver represents the minimum variance from these Standards that will accomplish the intended purpose, and

Response: The minimum variance requested locates the fence in the only available space within the property boundary of the site that doesn't restrict the backyard space by the 2,000 sf as mentioned above. The current fence configuration observed on site has the fence located directly off the edge of the sidewalk.

(5) Any alteration or modification will at least equal the suitability, strength, effectiveness, fire resistance, durability, safety, and sanitation performance requirements prescribed in these Standards, and

Response: Locating the fence directly along the sidewalk edge would allow for contiguous open space, which will be easier to maintain, increasing the health and longevity of the landscape area.

(6) Any alteration, modification, or waiver will not harm the adjacent land owners, the neighborhood, or the welfare of the public at large, and

Response: Adjacent land owners, the neighborhood and the welfare of the public will not be harmed by adjusting the fence location to be along the sidewalk edge.

(7) Any alteration, modification, or waiver will not create an additional maintenance or financial burden for the affected property owners or the City.

Response: Maintenance would be easier if the fence were to be located directly off the sidewalk edge, which would keep the open space area contiguous rather than separated.

Thank you very much for your time to review our project's request for modification. We look forward to continued coordination with city staff.

Thank you,

Stantec Architecture Inc.



Suzanne Serna
Landscape Architect

Reference: LUR2025-00031 Site Review Amendment, Modification Request

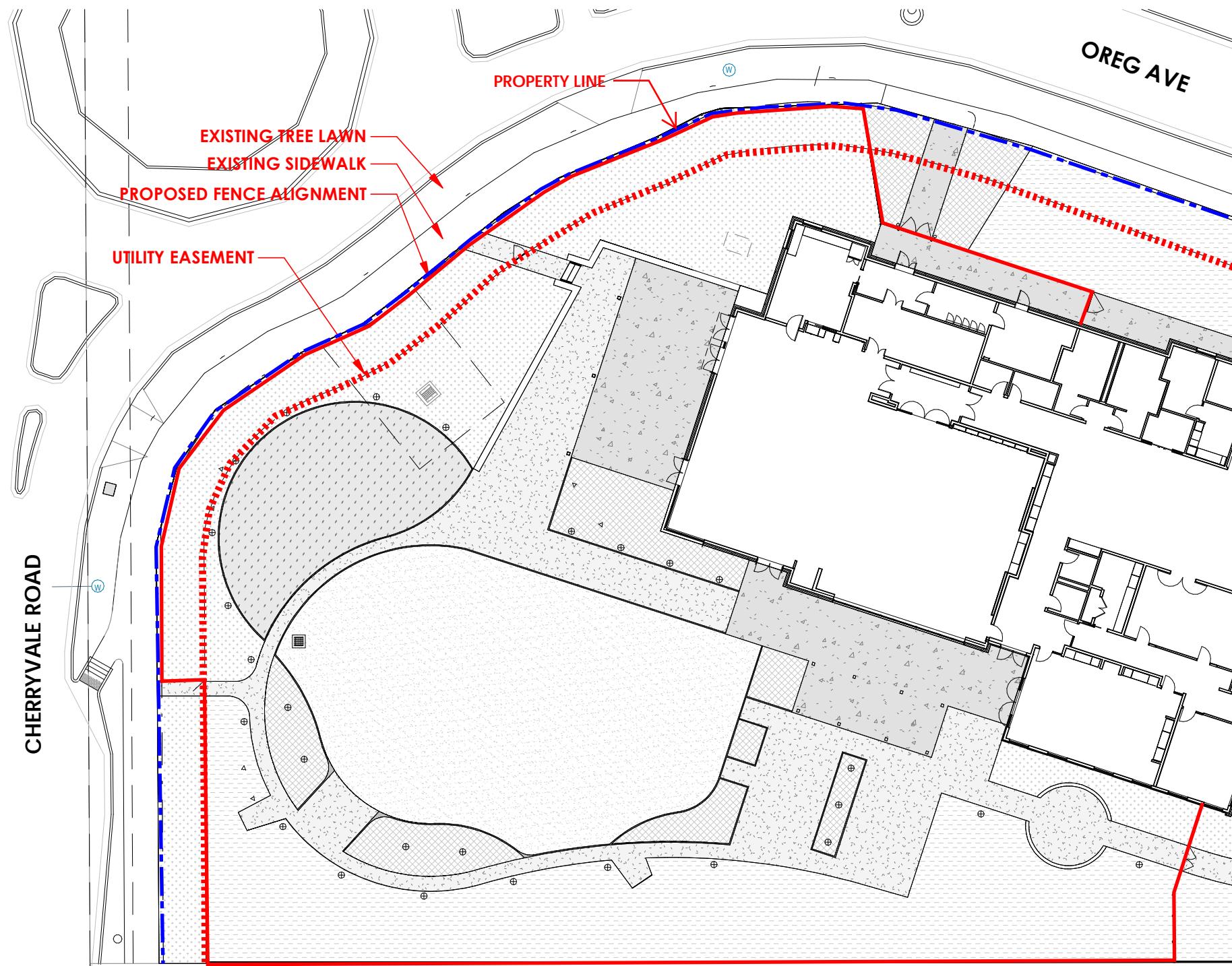
Phone: (720) 266-3672

Suzanne.serna@stantec.com

DATE
09.10.2025

STANTEC

1881 9th St.
Suite 303
Boulder, CO
80302



EXHIBIT_PERIMETER FENCE ALIGNMENT





Stantec Architecture Inc.
1881 9th Street, Suite 303
Boulder, CO 80302

September 10, 2025

Project: Congregation Bonai Shalom at Boulder Jewish Commons (6018 Oreg Ave.)

Boulder Planning and Development Services
1101 Arapahoe Ave
Boulder, CO 80302

Dear Boulder Planning and Development Services,

Reference: LUR2025-00031 Site Review Amendment, Modification Request

Request for Modification

The applicant would like to request a variance to the required landscape setback north of the parking lot. Please see attached exhibit which highlights the request.

In response to the letter from the neighbors, Renfroes and Fergusons dated Monday June 23, 2025, the applicant's intention is to request a landscape setback variance to save the two rows of spruces on the south side of the proposed parking lot. The updated site plan preserves all but three of the Spruce trees on the west end of the parking lot. To support this variance request, the applicant is working with the arborist to update the tree survey to reflect the preservation of the second row of trees.

City of Boulder Design and Construction Standards

Response: *The following responses have been provided to demonstrate how the request meets the criteria.*

1.05 Alterations, Modifications, and Waivers

(B) Criteria

No alteration, modification, or waiver of the strict application of any provision of these Standards shall be granted unless the applicant clearly demonstrates and the Director finds that the following conditions exist:

- (1) The strict application of the provisions of these Standards would deprive an individual of 1-16 DESIGN AND CONSTRUCTION STANDARDS Effective: June 20, 2019 the reasonable use of land or structure, and

Response: *The strict application of the required parking lot screening would require the applicant to remove a row of existing spruce trees which were promised to the neighbors as mentioned above by the JCC in the initial site review submittal.*

- (2) Special circumstances peculiar to such land or development justify the requested alteration, modification, or waiver, and

Response: *To save many of the existing spruce trees along the south side of the parking lot, the parking lot needs to shift north which encroaches upon the landscape setback by roughly 4.5'.*

Reference: LUR2025-00031 Site Review Amendment, Modification Request

These existing spruce trees were promised to the adjacent neighbors by the JCC in the initial site review submittal for the JCC project, primarily to screen the neighboring properties from automobile lights in the parking lots on the JCC campus.

- (3) Any alteration, modification, or waiver would result in a solution consistent with the goals of the underlying zoning district, a Boulder Valley Comprehensive Plan goal, a specific neighborhood plan, or an adopted design guideline, and
Response: The neighbors directly south of the project site are impacted by the addition of the new building and outdoor program. Saving the trees along the south side of the property allows for substantial screening with the existing, well-established tree canopy. This aligns with the BVCP goal G. Environmental Preservation to save as many healthy long-lived trees as possible.
- (4) Any alteration, modification, or waiver represents the minimum variance from these Standards that will accomplish the intended purpose, and
Response: The required shift north of the parking lot to save the southern existing line of trees was executed with minimal encroachment within the landscape setback.
- (5) Any alteration or modification will at least equal the suitability, strength, effectiveness, fire resistance, durability, safety, and sanitation performance requirements prescribed in these Standards, and
Response: By shifting the parking lot north, we will save 45 established trees, ensuring the longevity of the existing canopy and continuing to provide habitat, screening, and carbon sequestration from the existing tree canopy.
- (6) Any alteration, modification, or waiver will not harm the adjacent land owners, the neighborhood, or the welfare of the public at large, and
Response: Saving the trees is a direct request from the neighbors to the south of the project site.
- (7) Any alteration, modification, or waiver will not create an additional maintenance or financial burden for the affected property owners or the City.
Response: No additional maintenance or financial burden is anticipated.

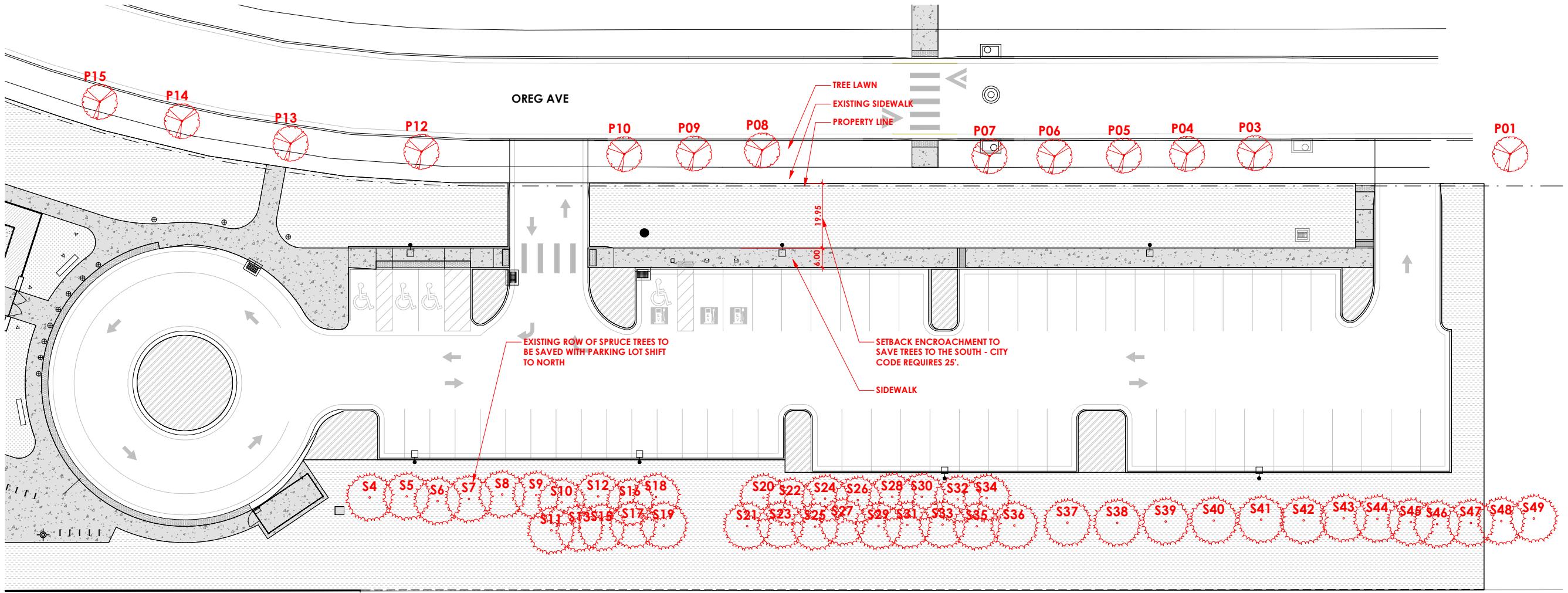
Thank you very much for your time to review our project's request for modification. We look forward to continued coordination with city staff.

Thank you,

Stantec Architecture Inc.



Suzanne Serna
Landscape Architect
Phone: (720) 266-3672
Suzanne.serna@stantec.com

DATE
09.10.2025

EXHIBIT_LANDSCAPE SETBACK AT PARKING LOT

STANTEC

1881 9th St.
Suite 303
Boulder, CO
80302CONGREGATION
BONAI SHALOM
ההילוי בבי שalom



thank you!

CRITERIA CHECKLIST AND COMMENT FORM

SITE REVIEW

SECTION 9-2-14(h)

LUR2025-00031

ADDRESS: 6018 Oreg. Ave.

DATE: 2/17/2026

CRITERIA APPLICABLE TO ALL SITE REVIEW APPLICATIONS

(1) Boulder Valley Comprehensive Plan (BVCP) criteria: *Meets criteria*

(A) BVCP Land Use Map and Policies: *Yes*

The proposed project is consistent with the BVCP land use map and, on balance, with the goals and policies of the BVCP particularly those that address the built environment. In applying this, the approving authority shall consistently interpret and apply this criterion and consider whether a particular goal or policy is intended to be applied to individual development projects or is to guide city policy decisions, such as regulatory actions. The BVCP does not prioritize goals and policies, and no project must satisfy one particular goal or policy or all of them.

Staff Response:

The BVCP land use designations for the site are Low Density Residential and Very Low Density Residential. The proposed site review is for a religious assembly which is allowed use in the RE and RR-1 zoning districts. The proposed use, location, building design, and transportation amenities complement many of the policies regarding Design Quality (chapter 2), Urban Environmental Quality (chapter 3), Complete Transportation System (chapter 6), Social Equity, and Safety & Community Health (chapter 8).

(B) Subcommunity and Area Plans or Design Guidelines: *N/A*

If the project is subject to an adopted subcommunity or area plan or adopted design guidelines, the project is consistent with the applicable plan and guidelines.

Staff Response:

The property is not subject to any subcommunity, area plans, or design guidelines.

(C) Reducing Greenhouse Gas Emissions: *N/A*

Any new commercial building greater than 30,000 square feet in floor area and any 30,000 square feet or greater addition to a commercial building shall either have a net site energy usage index (EUI) of zero or is designed to achieve a net site EUI that is 10 percent lower than required under the City of Boulder Energy Conservation Code. It shall be a condition of approval that the applicant demonstrate compliance with this criterion at time of building permit. For the purpose of this requirement, "commercial building" shall have the meaning defined in the City of Boulder Energy Conservation Code.

Staff Response:

The proposed building is less than 30,000 square feet in floor area.

(D) Urban Edge Design: *Yes*

If the project is located within the urbanizing areas along the boundaries between Area I and Area II or III of the BVCP, the building and site design provide for a well-defined urban edge, and, if, in addition, the project is located on a major street shown in Appendix A of this title, the buildings and site design establish a sense of entry and arrival to the city by creating a defined urban edge through site and building design elements visible upon entry to the city.

Staff Response:

The site is in Area I of the BVCP and adjacent to Area II, to the south. The site is not located along a major street. The adjacent properties to the south are single-family homes located outside city limits. Heading north along Cherryvale Road, traffic will enter the existing roundabout with the proposed building on the right, aligned to the north side of Oreg Ave. and across from the JCC.

(E) Historic or Cultural Resources: N/A

If present, the project protects significant historic and cultural resources. The approving authority may require application and good faith pursuit of local landmark designation.

Staff Response:

The site does not contain any significant historic or cultural resources.

(F) Housing Diversity and Bedroom Unit Types: N/A

Except in the RR, RE and RL-1 zoning districts, projects that are more than 50 percent residential by measure of floor area, not counting enclosed parking areas, meet the following housing and bedroom unit type requirements in (i) through (vi). For the purposes of this subparagraph, qualifying housing type shall mean duplexes, attached dwelling units, townhouses, live-work units, or efficiency living units, and bedroom type shall mean studios, one-bedroom units, two-bedroom units, or three-bedroom units.

Staff Response:

Housing is not proposed in this project.

(G) Environmental Preservation: Yes

- (i) The project provides for the preservation of or mitigation of adverse impacts to natural features, including, without limitation, healthy long-lived trees, significant plant communities, ground and surface water, wetlands, riparian areas, drainage areas, and species on the federal Endangered Species List and "Species of Special Concern in Boulder County" designated by Boulder County and their habitat. *Yes*
- (ii) Where excavation occurs, the location and design of buildings conforms to the natural contours of the land with tiered floor plates, and the site design avoids over-engineered tabling of land. Slopes greater than 50 percent should be avoided and, to the extent practicable, any such areas shall be stabilized with vegetation. *Yes*

Staff Response:

The applicant proposes to preserve 72 existing trees on site, as shown on the landscape plan. There are no wetlands or riparian areas on the site. The site is relatively flat and does not require significant grading or changes to the natural contours.

(2) Site Design Criteria: Meets criteria

The project creates safe, convenient, and efficient connections for all modes of travel, promotes safe pedestrian, bicycle, and other modes of alternative travel with the goal of lowering motor vehicle miles traveled. Usable open space is arranged to be accessible; designed to be functional, encourage use, and enhance the attractiveness of the project; and meets the needs of the anticipated residents, occupants, tenants, and visitors to the project. Landscaping aesthetically enhances the project, minimizes use of water, is sustainable, and improves the quality of the environment. Operational elements are screened to mitigate negative visual impacts. In determining whether this is met, the approving agency will consider the following factors:

(A) Access, Transportation, and Mobility:

- (i) The project enables or provides vehicular and pedestrian connectivity between sites consistent with adopted connections plans relative to the transportation needs and impacts of the project, including but not limited to construction of new streets, bike lanes, on-street parking, sidewalks, multi-use paths, transit stops, streetscape planting strips, and dedication of public right-of-way or public access

easements, as applicable considering the scope of the project. Where no adopted connections plan applies, the applicant shall, in good faith, and in coordination with the city manager, attempt to coordinate with adjacent property owners to establish, where practicable, reasonable and useful pedestrian connections or vehicular circulation connections, such as between parking lots on abutting properties, considering existing connections, infrastructure, and topography. *Yes*

Staff Response:

The site contains an existing multi-use path near the roundabout on Cherryvale Rd. and a detached sidewalk along the south side of Oreg Ave. A marked crosswalk will be installed to facility safe pedestrian travel to the JCC, across the street.

(ii) Alternatives to the automobile are promoted by incorporating site design techniques, land use patterns, and infrastructure that support and encourage walking, biking, and other alternatives to the single-occupant vehicle. *Yes*

Staff Response:

As part of the proposed Transportation Demand Management plan, rideshares will be encouraged for visitors to the site and Eco-passes will be offered to staff. A scooter parking pad will be installed along the sidewalk near the street, and short- and long-term bike parking will be provided onsite.

(iii) A transportation demand management (TDM) plan will be complied with including methods that result in a significant shift away from single-occupant vehicle use to alternate modes. *Yes*

Staff Response:

Rideshare information for visitors, Eco-passes for staff, a scooter pad, and short- and long-term bike parking are methods outlined in the TDM plan to encourage alternate modes of transportation.

(iv) Streets, bikeways, pedestrian ways, trails, open space, buildings, and parking areas are designed and located to optimize safety of all modes and provide connectivity and functional permeability through the site. *Yes*

Staff Response:

The existing sidewalk and multiuse path network constructed when the JCC was built is sufficient for the proposed use. A new crosswalk will be installed on Oreg Ave. to connect the proposed synagogue to the JCC, across the street to the north.

(v) The design of vehicular circulation and parking areas make efficient use of the land and minimize the amount of pavement necessary to meet the circulation and parking needs of the project. *Yes*

Staff Response:

The proposed vehicular circulation on site includes a parking lot with 61 vehicle spaces, and a one-way circular drive aisle near the main entrance. The drive aisle was reduced in size through the review process from what was initially proposed and is sized accordingly to allow for a stripped drop-off lane and a travel lane for vehicles to pass through. It is also sized accordingly to allow for large emergency vehicles to drive around and access the building.

(vi) Where practicable and needed in the area and subject to coordination with the city manager, the project provides curbside parking or loading or both consistent with city policies on curbside management. *Yes*

Staff Response:

Curbside parking or loading is not proposed along the street on Oreg Ave., nor is it required by the site design or neighborhood context.

(B) Open Space:

- (i) Useable open space is arranged to be accessible and designed to encourage use by incorporating quality landscaping, a mixture of sun and shade, hardscape areas and green spaces for gathering. *Yes*

Staff Response:

The site will provide 55 percent usable open space which includes gardens and landscaping, a kids play area, and a turf area for outdoor use by the congregation.

- (ii) The open space will meet the needs of the anticipated residents, occupants, tenants, and visitors of the property. In mixed-use projects, the open space provides for a balance of private and common areas for the residential uses and includes common open space that is available for use by residents of the residential uses and their visitors and by tenants, occupants, customers, and visitors of the non-residential uses. *Yes*

Staff Response:

A fenced in area behind the synagogue will provide outdoor open space for the congregation members and guests which will include a kids play area, flexible use lawn area, an outdoor sanctuary and garden, and paved patios and gathering areas.

- (iii) If the project includes more than 50 dwelling units, including the addition of units that causes a project to exceed this threshold, and is more than one mile walking distance to a public park with any of the amenities described herein, at least 30 percent of the required outdoor open space is designed for active recreational purposes. *N/A*

Staff Response:

The project does not include any dwelling units.

- (iv) On-site open space is linked to adjacent public spaces, multi-use paths, city parks, or public open space if consistent with Department of Open Space and Mountain Parks or Department of Parks and Recreation plans and planning for the area, as applicable. *Yes*

Staff Response:

The site is not adjacent to any city parks or public open spaces. The outdoor open space for the congregation will be fully fenced for security and safety purposes.

(C) Landscaping and Screening:

- (i) The project exceeds the minimum landscaping requirements of Section 9-9-12, "Landscaping and Screening Standards," B.R.C. 1981, by at least fifteen percent in terms of planting quantities, includes a commensurate area to accommodate the additional plantings, and, where practical, preserves healthy long-lived trees. *Yes*

Staff Response:

The overall planting quantities will exceed the required amount by approximately 18 percent. A front yard landscape setback modification is requested in front of the parking lot to preserve 44 existing evergreen trees along the south side of the property so they can be used for parking lot screening from the adjacent properties. Approximately 25 existing street trees will also be preserved.

- (ii) The landscaping design includes a variety of plants providing a variety of colors and contrasts in terms of texture and seasonality and high-quality hard surface materials, such as stone, flagstone, porous pavers, and decorative concrete. *Yes*

Staff Response:

The landscaping proposed includes a variety of trees and shrubs which include evergreens, seasonal blooms, and varying leaf colors. Hardscape materials include concrete patios with decorative saw

cuts and crushed granite paths, that lead to outdoor seating area with log benches. The use of boulders throughout the landscaped gardens and stone fencing materials provides contrast between natural elements.

- (iii) The landscaping design conserves water through use of native and adaptive plants, reduction of exotic plant materials, and landscaping within stormwater detention facilities to create bioswales or rain gardens, or other similar design strategies. *Yes*

Staff Response:

The proposed landscaping materials include native and adaptive plant species. Runoff from the parking will be filtered through a planting area located in the front landscaped setback area.

- (iv) Operational elements, such as electrical transformers, trash storage and recycling areas, parking, and vehicular circulation, are screened from the public realm through design elements, such as landscaping, fencing, or placement of structures, to mitigate negative visual impacts. *Yes*

Staff Response:

The trash enclosure will be fully fenced and screened from view. Existing evergreen trees along the south side of the property will be preserved and used for parking lot screening to the south, in addition to a seven-foot-tall fence along the entire southern boundary of the property. The fence will wrap around the west side of the property, screening the outdoor gathering space and side of the building. Landscape setbacks along Oreg Ave. include parking lot screening provided through a variety of planting types.

(3) Building Siting and Design Criteria: *Meets criteria*

Building siting and design are consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, are compatible with the character of the area or improves upon that character, consistent with the intent specified in this paragraph. Buildings are positioned and oriented towards the public realm to promote a safe and vibrant pedestrian experience including welcoming, well-defined entries and facades. Building exteriors are designed with a long-lasting appearance and high-quality materials. Building design is simple and to a human scale, it creates visual interest and a vibrant pedestrian experience. Building roof design contributes to a city skyline that has a variety of roof forms and heights. In determining whether this is met, the approving agency will consider the following factors:

(A) Building Siting and Public Realm Interface:

- (i) New buildings and, to the extent practicable, additions to existing buildings are positioned towards the street, respecting the existing conditions or the context anticipated by adopted plans or guidelines. In urban contexts, buildings are positioned close to the property line and sidewalk along a street; whereas, in lower intensity contexts, a greater landscaped setback may be provided to match the surrounding context. *Yes*

Staff Response:

The proposed building is oriented along Oreg Ave. and the area is not an urban context. The building is within the prescribed 25-foot front yard setback of the RR-1 and RE zones, matching the surrounding context of the neighborhood which is predominately low density single-unit residential uses.

- (ii) Wherever practical considering the scope of the project, parking areas are located behind buildings or set back further from the streetscape than the building façade. *Yes*

Staff Response:

The shape of the lot does not allow for the parking area to be located fully behind the building. The parking area is on the east end of the site, and obscured from sight when viewed from Cherryvale Rd.

- (iii) Along the public realm, building entries are emphasized by windows and architectural features that include one or more of the following: increased level of detail, protruding or recessed elements, columns, pilasters, protruding bays, reveals, fins, ribs, balconies, cornices, eaves, increased window glazing, or changes in building materials or color. *Yes*

Staff Response:

The site design includes a wooden perimeter fence for security purposes around the building entrances and outdoor gathering spaces. The main entrance is located on the east side of the building within a secure front garden space located under a large canopy overhang. The main entrances on the east and north sides are highlighted by gates with pergolas to define their locations. As shown on the architectural plans, the building design includes increased levels of detail above the fence height, including protruding and recessed elements, parapet details, mechanical screening to match the design of the fence, and various building material types and colors. The building materials include wood, stone, brick, metal, cement, and stucco siding.

- (iv) Defined entries connect the building to the public realm. Unless inconsistent with the context and building's use, along the public realm, one defined entry is provided every 50 feet. Buildings designed for residential or industrial uses may have fewer defined entries. *Yes*

Staff Response:

For security purposes, the main entrance to the building is located on the east side of the site, adjacent to the parking lot. The proposed design is based on best practice recommendations from a security consultant to ensure the safety of the community. The entrance is defined by a courtyard with stone, wood, and metal elements with a canopy over the building entrance and a landscaped garden gathering area. A second entrance is located along the north side of the building and leads to a service area and long-term bike storage within the synagogue.

- (v) If the project is adjacent to a zoning district of lower intensity in terms of allowable use, density, massing, or scale, the project is designed with an appropriate transition to the adjacent properties considering adopted subcommunity and area plans or design guidelines applicable to the site, and, if none apply, the existing development pattern. Appropriate transitions may be created through design elements such as building siting and design or open space siting and design. *Yes*

Staff Response:

The site is across from the JCC to the north, and adjacent to a low density single-family residential neighborhood to the south. There are no area plans or design guidelines applicable to the site. The scale of the project was designed to fit with the context of the neighborhood with a building height of approximately 26-feet, staying below the 35-foot maximum height allowed by the zoning code. The 7-foot perimeter fence along the west side of the site provides privacy and limits visible outdoor activity, while landscaped open spaces areas including trees will break up the building massing and provide a compatible transition to the residential neighborhood to the south.

- (vi) The building's siting and relationship to the public realm is consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, is compatible with the character of the area or improves upon that character, consistent with the intent of paragraph (3), Building Design Criteria. *Yes*

Staff Response:

There are no adopted plans or design guidelines applicable to the site. The synagogue building is located near the street, within the prescribed 25-foot setback of the zoning district. Landscaping and high-quality building materials create a vibrant pedestrian experience that leads to a defined entrance on the east side of the building. The building materials include wood, metal, brick, stone, and cement siding which are considered high quality materials according to the site review

criteria. The 26-foot building height keeps the size to a human scale and varied roof forms and heights create visual interest in the skyline while also allowing mature trees to provide a natural scale and not be overshadowed by the building.

(B) Building Design:

(i) Larger floor plate buildings and projects with multiple buildings have a variety of forms and heights. *N/A*

Staff Response:

A large floor plate design is not proposed.

(ii) To the extent practical considering their function, mechanical appurtenances are located within or concealed by the building. If they cannot be located within or concealed by the building, their visibility from the public realm and adjacent properties is minimized. *Yes*

Staff Response:

Mechanical equipment is screened from view by a screening that matches the design of the wooden perimeter fence. Appurtenances are located towards the back of the building to reduce any visibility to the public realm.

(iii) On each floor of the building, windows create visual interest, transparency, and a sense of connection to the public realm. In urban, pedestrian main street-built environments, it is a best practice to design at least 60 percent of each ground floor façade facing the street as window area. Otherwise, it is a best practice to design at least 20 percent of the wall on each floor of a building as window area. Blank walls along the most visible portions of the building are avoided. *Yes*

Staff Response:

The building is not with an urban, pedestrian main street-built environment. Window area along the street facing façade is limited for security reasons, and blank walls along the most visible portion of the building are avoided.

(iv) Simple detailing is incorporated into the façades to create visual interest, without making the façade overly complicated. This detailing may include cornices, belt courses, reveals, alternating brick or stone patterns, expression line offsets, window lintels and sills, and offsets in window glass from surrounding materials. *Yes*

Staff Response:

The detailing on the building includes brick soldier courses and reveals to create visual interest. The relatively low height of the building keeps the façade detailing simple.

(v) Balconies on buildings with attached dwelling units are integrated into the form of the building in that exterior walls partially enclose the balcony. Balcony platform undersides are finished. *N/A*

Staff Response:

Balconies are not proposed with this project.

(vi) The building's design, including but not limited to use of materials, color, roof forms, and style, is consistent with the character established in any adopted plans or guidelines applicable to the site or, if none apply, is compatible with the character of the area or improves upon that character, consistent with the intent of paragraph (3), Building Design Criteria. *Yes*

Staff Response:

There are no adopted plans or design guidelines applicable to the site. As part of the Boulder Jewish Commons site review, the applicant proposes similar materials as the Jewish Community Center to the north. Materials include brick, stone, and metal canopies.

(C) Building Materials:

- (i) Building facades are composed of high-quality, durable, human-scaled materials. High-quality materials include brick, stone, polished concrete masonry units, wood, architectural high pressure laminate panels, cementitious or composite siding, architectural metal panels, or any combination of these materials. Split-faced concrete masonry units, stucco, vinyl siding, EIFS, and unfinished or untreated wood are not considered durable, high-quality materials, but may be used on a limited basis and not on facades facing the public realm. High quality materials are focused on the ground floor facades on all sides of a building and on all floors of facades facing the public realm, and, overall, comprise the vast majority of all building facades. *Yes*

Staff Response:

The proposed materials facing the public realm include wood, brick, stone, and metal. Stucco is used in limited portions of the building that not facing the public realm.

- (ii) Monolithic roofing membranes, like Thermoplastic Polyolefin, are not used on roof surfaces that are visible from the street level. *Yes*

Staff Response:

The flat roof surfaces are not visible from the public realm.

- (iii) The number of building material types is limited, and the building materials are applied to complement the building form and function. The organization of the building materials logically expresses primary building features, such as the spatial layout, building entries, private and common spaces, anchor corners, stairwells, and elevators. *Yes*

Staff Response:

The building materials and colors were chosen to complement each other and building entries are accentuated with decorative entry gates using wood and natural stone.

- (iv) Building cladding materials turn convex corners and continue to the inset wall. This criterion does not apply to changes that occur at an interior corner nor to detailing elements, such as cornices, belt courses, reveals, offsets in expression lines, lintels, and windowsills. Building cladding materials do not change in-plane unless there is at least a 12-inch wall offset. *Yes*

Staff Response:

The building cladding continues around corners, and material changes only occur at major building offsets greater than 12-inches.

- (v) Any newly constructed building that includes residential units and is located within 200 feet of a railroad, freeway, or expressway is designed to achieve an interior day-night average noise level of no more than forty-five decibels. Noise shall be measured in a manner that is consistent with the federal Housing and Urban Development's standards in Sections 24 CFR §§ 51.100 to 51.106 for the "measure of external noise environments," or similar standard adopted by the city manager in the event that such rule is repealed. The applicant shall provide written certification prior to the issuance of a certificate of occupancy that the sound abatement and attenuation measures were incorporated in the construction and site design as recommended by a professional engineer. *N/A*

Staff Response:

Residential units are not proposed.

Travel Demand Management Plan

CONGREGATION BONAI SHALOM

Boulder, Colorado

Prepared for

Stantec
1881 9th Suite 303
Boulder, CO 80302

Prepared by

LSC Transportation Consultants, Inc.
1889 York Street
Denver, CO 80206
(303) 333-1105

May 7, 2025
Updated: July 30, 2025
Updated: September 10, 2025
LSC #230590



Introduction

This Travel Demand Management (TDM) Plan has been prepared for the Congregation Bonai Shalom development in Boulder, Colorado. The site is located south of Oreg Avenue and east of Cherryvale Road. The site is proposed to include a synagogue with about 150 seats and a hebrew school with about 150 students. One full movement and one egress only access are proposed from Oreg Avenue.

The location of the site with respect to the surrounding land uses and roadway system is shown in Figure 1. The conceptual site plan is shown in Figure 2.

This TDM Plan supports a 20 percent alternative travel mode reduction and a 20 percent parking reduction supported by the various TDM alternatives available in the City of Boulder and the TDM measures proposed by the applicant.

Existing Alternate Travel Modes Description

The following existing conditions contribute to the transportation demand management goals of the City of Boulder. The site is well-positioned to make good use of these existing opportunities.

Existing Transit Service

The Regional Transportation District (RTD) is the governing body responsible for fixed-route transit (public transportation) service throughout the Denver metropolitan area, including Boulder. Figure 3 shows the existing bus stops and transit routes within the vicinity of the site, including the following routes:

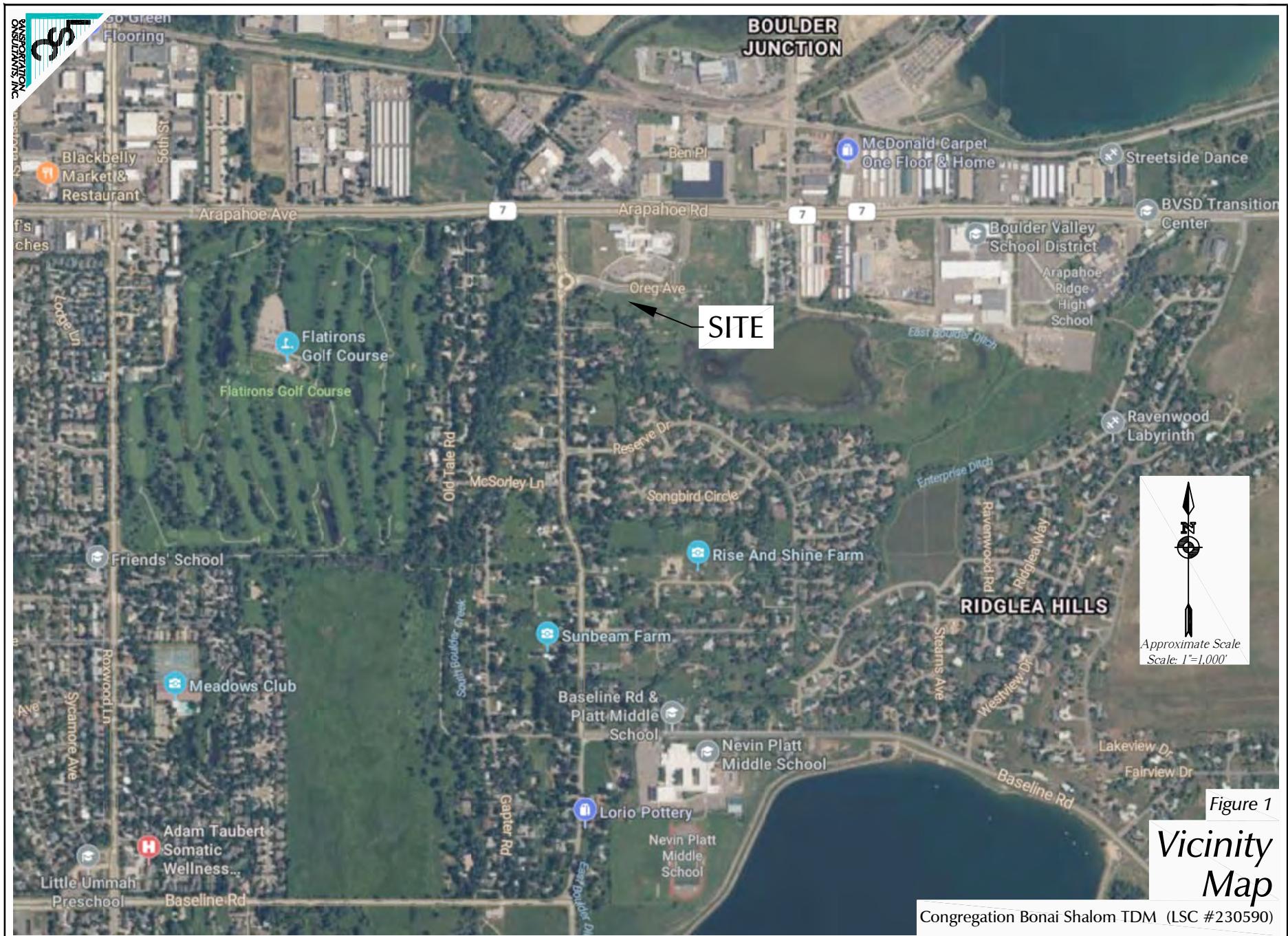
- JUMP

Demand-responsive services are available to both seniors and persons with disabilities through Via (formerly Special Transit). Established in 1979, this non-profit provides safe and affordable rides in accessible buses to people with limited mobility. Rides are scheduled in advance and have a 30-minute pick-up window.

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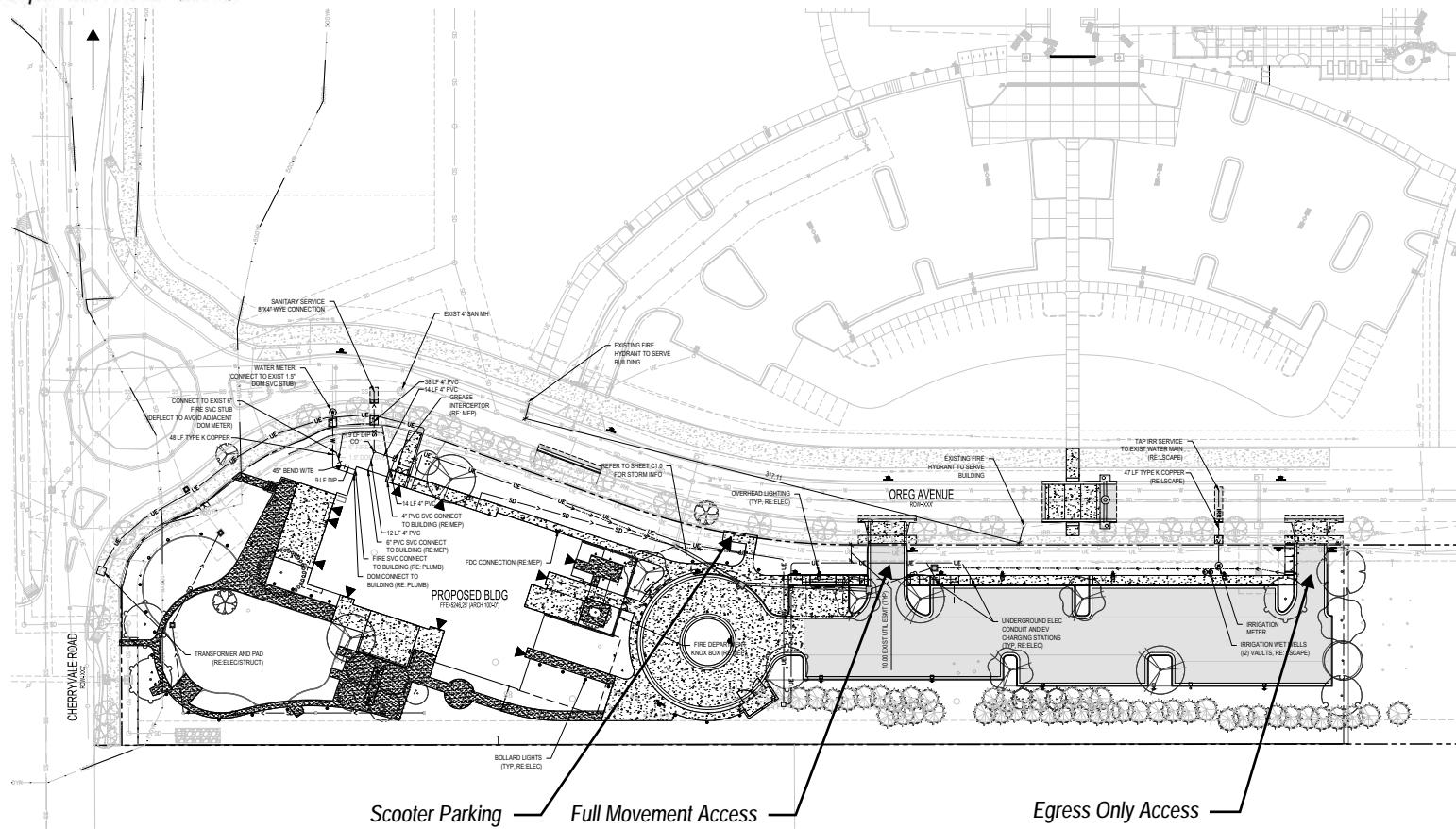
Existing Bicycle and Pedestrian Network

The City of Boulder maintains an extensive bicycle and pedestrian network throughout the City. Figure 4 shows bicycle and pedestrian routes within the vicinity of the site. In addition, many of the streets in the project vicinity have attached or detached sidewalks.





To Arapahoe Avenue (SH 7)



Approximate Scale
Scale: NTS

Note: Typically the City of Boulder only permits one access per property. A second, egress only access is proposed based on the letter provided by Kevin Farrington from Secure Community Network. The letter is included in the report appendix for reference.

Figure 2

Site Plan

Congregation Bonai Shalom TDM (LSC #230590)

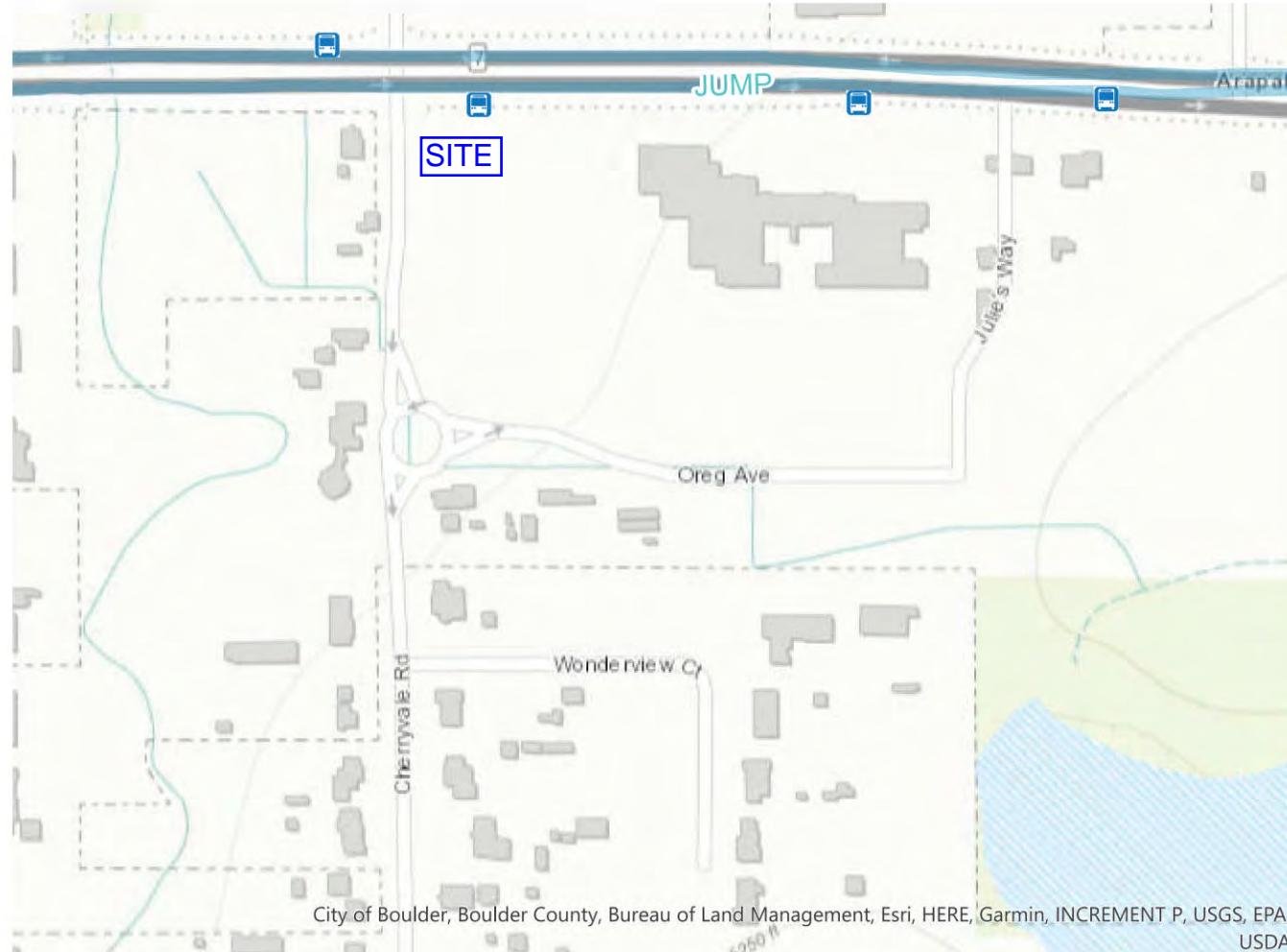


Figure 3

Existing Bus Stops and Transit Routes

Congregation Bonai Shalom TDM (LSC #230590)



- B** = Bridge
- U** = Underpass
- ◆** = Enhanced Pedestrian Crossing

- B** = B-cycle Location
- ◆** = Bike Shop

LEGEND:	
—	On-Street Bike Lane
—	Designated Bike Route
—	Multi-Use Path



Figure 4

Existing Bike and Pedestrian Routes

Congregation Bonai Shalom (LSC #230590)

Transportation Demand Management (TDM) Strategy for Commercial Space

The site is proposed to include a synagogue with about 150 seats and a hebrew school with about 150 students.

Table 1 shows the actions the applicant intends to take to increase the percentage of alternative travel modes utilized by the site.

An alternative travel mode reduction of 20 percent and a parking reduction of 20 percent is supported by the TDM measures proposed by the applicant combined with the proposed use and location consistent with the *Boulder Revised Code*.

Table 1
Congregation Bonai Shalom TDM Plan Proposed Measures

TDM Measures		TDM Measures Details
CORE ELEMENTS	Meet Short-Term Bicycle Parking Code	The applicant is proposing 24 short-term bicycle parking spaces which exceeds the requirement of 20 short-term bicycle parking spaces.
	Meet Long-Term Bicycle Parking Code	The applicant is proposing 8 long-term secure and covered bicycle parking spaces which exceeds the requirement of 6 long-term bicycle parking spaces.
	Ratio of MOV Mode Share	The applicant will include ridesharing information in its employee orientation packets. This may include Colorado Car Share, B-Cycle, E-Scooters, DRCOG's RideArrangers, and ride sharing with Uber/Lyft. The applicant has an active WhatsApp group with multiple subgroups. The applicant will create a carpooling subgroup to encourage carpooling.
	Pedestrian Enhancements	Connections will be made to the existing sidewalks on Oreg Avenue which connects west to Cherryvale Road and north to Arapahoe Avenue (SH 7).
	Bike Enhancements	The site has connections to the existing sidewalks and paths in the vicinity of the site including connections to the existing multi-use paths along Arapahoe Avenue.
	Scooter Enhancements	A concrete pad for scooter parking is provided on site.
	Showers - Conditional	The proposed building does not include showers for employees.
	Changing Facilities - Conditional	The proposed restrooms will serve as suitable changing facilities.
	Transportation Information Center/ Access/Employee Transportation Coordinator (ETC) Network	The site will include transportation information in its employee packets/employee orientation process.
PACKAGE ELEMENTS	BECO Pass Participation	BECO-Passes will be funded and provided to employees for a period of three years. Coordination will be needed with City staff to determine the appropriate size of the program. The Applicant expects there to be five employees.
	Managed Off-Street Parking - Conditional	The applicant is proposing 61 parking spaces which is less than the requirement of 76 parking spaces required by Code. This results in a request for a 20 percent parking reduction.



May 7, 2025

Ms. Shannon Jones
Stantec
1881 9th Street, Suite 303
Boulder, CO 80302

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lscdenver@lsctrans.com

Re: Congregation Bonai Shalom
Boulder, CO
LSC #230590

Dear Ms. Jones:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Congregation Bonai Shalom development in Boulder, Colorado. As shown on Figure 1, the site is located south of Oreg Avenue and east of Cherryvale Road.

REPORT CONTENTS

The report contains the following: the existing roadway and traffic conditions in the vicinity of the site including the lane geometries, traffic controls, posted speed limits, etc.; the existing weekday peak-hour traffic volumes; the typical weekday site-generated traffic volume projections for the site; the assignment of the projected traffic volumes to the area roadways; the projected background and resulting total traffic volumes on the area roadways; the site's projected traffic impacts; and any recommended roadway improvements to mitigate growth in background traffic or from the impact of the site. All work was completed in accordance with the approved traffic study initial parameters - the form and its supporting information is attached for reference.

LAND USE AND ACCESS

The site is proposed to include a synagogue with about 150 seats and a hebrew school with about 150 students. One full movement and one egress only access are proposed from Oreg Avenue as shown in the conceptual site plan in Figure 2. Typically, the City of Boulder would only allow one access per property. A second, egress only, access is proposed based on the letter provided by Kevin Farmington from Secure Community Network. The letter is part of the supporting information from the approved traffic study initial parameters.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **Oreg Avenue** is an east-west, two-lane local roadway north of the site. The intersection with Cherryvale Road is roundabout controlled. There is no posted speed limit.
- **Cherryvale Road** is a north-south, two-lane collector roadway west of the site. The intersection with Oreg Avenue is roundabout controlled and the intersection with Arapahoe Avenue (SH 7) is signalized with auxiliary turn lanes. The posted speed limit in the vicinity of the site is 30 mph.
- **Arapahoe Avenue (SH 7)** is an east-west, four-lane major arterial roadway north of the site. The intersection with Cherryvale Road is signalized with auxiliary lanes and the intersection with Julie's Way is stop-sign controlled. The posted speed limit in the vicinity of the site is 45 mph.
- **Julie's Way** is a north-south, two-lane local road east of the site. The intersection with Arapahoe Avenue (SH 7) is stop-sign controlled and limited to right-in/right-out movement. There is no posted speed limit.

Existing Traffic Conditions

Figure 3 shows the existing traffic volumes, existing traffic control, and lane geometry in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in April, 2024.

2027 and 2045 Background Traffic

Figure 4 shows the estimated 2027 background traffic and Figure 5 shows the estimated 2045 background traffic. The background traffic assumes a 0.60 percent annual growth based on approved Traffic Study Initial Parameters form.

Existing, 2027, and 2045 Background Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A is indicative of little congestion or delay and LOS F is indicative of a high level of congestion or delay. Attached are specific level of service definitions for signalized and unsignalized intersections.

The intersections in the study area were analyzed as appropriate to determine the existing, 2027, and 2045 background levels of service using Synchro Version 11. Table 1 shows the level of service analysis results. The level of service reports are attached.

1. **Arapahoe Avenue (SH 7)/Cherryvale Road:** This signalized intersection currently operates at an overall LOS "B" during both morning and afternoon peak-hours on the average weekday and an overall LOS "A" during the Saturday mid-day peak-hour and is expected to do so through 2045.
2. **Arapahoe Avenue (SH 7)/Julie's Way:** All movements at this unsignalized right-in/right-out intersection currently operate at LOS "B" or better during both morning and afternoon peak-hours and the Saturday mid-day peak-hour and are expected to do so through 2027.

By 2045, all movements are expected to operate at LOS "C" or better during all peak-hours.

3. **Cherryvale Road/Oreg Avenue:** This roundabout controlled intersection currently operates at an overall LOS "A" during all peak-hours and is expected to do so through 2045.
4. **Oreg Avenue/West Site Access:** This intersection was analyzed only in the total traffic scenarios.
5. **Oreg Avenue/East Egress Only Site Access:** This intersection was analyzed only in the total traffic scenarios.
6. **Oreg Avenue/Julie's Way:** All movements at this stop-sign controlled intersection currently operate at LOS "A" or better during both morning and afternoon peak-hours and the Saturday mid-day peak-hour and are expected to do so through 2045.

TRIP GENERATION AND TRAFFIC DEMAND MANAGEMENT (TDM) PLAN

Table 2 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation for the proposed site based on information from the applicant based on a busy day - typical conditions are expected to generate fewer trips.

The site is projected to generate about 450 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 23 vehicles would enter and about 3 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 102 vehicles would enter and about 112 vehicles would exit.

On the average Saturday, the site is projected to about 450 vehicle-trips, with about half entering and half exiting during a 24-hour period. During the Saturday mid-day peak-hour, which generally occurs for one hour between 12:00 and 1:00 p.m., about 30 vehicles would enter and about 125 vehicles would exit the site.

The applicant has prepared a separate Travel Demand Management (TDM) plan to help increase the alternative travel mode percentage.

TRIP DISTRIBUTION

Figure 6 shows the estimated directional distribution of the site-generated traffic volumes on the area roadways. The estimates were based on the location of the site with respect to the regional population, employment, and activity centers; the site's proposed land use; and the Traffic Study Initial Parameters form.

TRIP ASSIGNMENT

Figure 7 shows the site-generated traffic volumes which are the directional distribution percentages (from Figure 6) applied to the trip generation estimate (from Table 2).

2027 AND 2045 TOTAL TRAFFIC

Figure 8 shows the 2027 total traffic which is the sum of the 2027 background traffic volumes (from Figure 4) and the site-generated traffic volumes (from Figure 7). Figure 8 also shows the 2027 total traffic lane geometry and traffic control.

Figure 9 shows the 2045 total traffic which is the sum of the 2045 background traffic volumes (from Figure 5) and the site-generated traffic volumes (from Figure 7). Figure 9 also shows the 2045 total traffic lane geometry and traffic control.

PROJECTED LEVELS OF SERVICE

The intersections in the study area were analyzed to determine the 2027 and 2045 total levels of service. Table 1 shows the level of service analysis results for each movement or lane group. The level of service reports are attached.

1. **Arapahoe Avenue (SH 7)/Cherryvale Road:** This signalized intersection is expected to operate at an overall LOS "B" during both morning and afternoon peak-hours and the Saturday mid-day peak-hour through 2045.
2. **Arapahoe Avenue (SH 7)/Julie's Way:** All movements at this unsignalized right-in/right-out intersection are expected to operate at LOS "C" or better during both morning and afternoon peak-hours and the Saturday mid-day peak-hour through 2045.
3. **Cherryvale Road/Oreg Avenue:** This roundabout controlled intersection is expected to operate at an overall LOS "A" during all peak-hours and is expected to do so through 2045.
4. **Oreg Avenue/West Site Access:** All movements at this unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours and the Saturday mid-day peak-hour through 2045.
5. **Oreg Avenue/East Egress Only Site Access:** All movements at this unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours and the Saturday mid-day peak-hour through 2045.
6. **Oreg Avenue/Julie's Way:** All movements at this unsignalized intersection are expected to operate at LOS "A" during both morning and afternoon peak-hours and the Saturday mid-day peak-hour through 2045.

CONCLUSIONS AND RECOMMENDATIONS**Trip Generation**

1. The site is projected to generate about 450 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, about 23 vehicles would enter and about 3 vehicles would exit the site. During the afternoon peak-hour, about 102 vehicles would enter and about 112 vehicles would exit.

Ms. Shannon Jones

Page 5

May 7, 2025
Congregation Bonai Shalom

2. On the average Saturday, the site is projected to about 450 vehicle-trips, with about half entering and half exiting during a 24-hour period. During the Saturday mid-day peak-hour, about 30 vehicles would enter and about 125 vehicles would exit the site.

Projected Levels of Service

3. The signalized Arapahoe Avenue (SH 7)/Cherryvale Road intersection is expected to operate at an overall LOS "B" or better through 2045.
4. All movements at the unsignalized intersections analyzed are expected to operate LOS "C" or better during all peak-hours through 2045.

Conclusions

5. The impact of the Congregation Bonai Shalom development can be accommodated by the existing and planned roadway network with the following recommendations.

Recommendations

6. The recommended improvements are shown in Figures 8 and 9.

* * * * *

We trust our findings will assist you in gaining approval of the proposed Congregation Bonai Shalom development. Please contact me if you have any questions or need further assistance.

Respectfully submitted,

LSC Transportation Consultants, Inc.

By:

Christopher S. McGranahan, P.E.
Principal/President



CSM/wc

5-7-25

Enclosures: Tables 1 and 2
Figures 1 - 9
Traffic Study Initial Parameters Form (which includes the Secure Community Network Letter)
Traffic Count Reports
Level of Service Definitions
Level of Service Reports

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Table 1a
Intersection Levels of Service Analysis - Existing and 2027
Congregation Bonai Shalom
Boulder, Colorado
LSC #230590; May, 2025

Intersection No. & Location	Traffic Control	Existing Traffic						2027 Background Traffic						2027 Total Traffic					
		Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay		
		AM	PM	Saturday	Mid-Day	AM	PM	Saturday	Mid-Day	AM	PM	Saturday	Mid-Day	AM	PM	Saturday	Mid-Day		
1) <u>Arapahoe Avenue (SH 7)/Cherryvale Road</u>	Signalized																		
EB Left		A	9.5	A	8.3	A	4.1	A	9.9	A	8.7	A	4.3	A	9.9	A	9.8		
EB Through			A	9.4	B	11.8	A	4.7	A	9.6	B	12.5	A	4.9	A	9.7	B	14.1	
EB Right			A	8.7	B	13.2	A	4.2	A	8.9	B	14.1	A	4.4	A	9.0	B	17.1	
WB Left			A	6.8	B	10.0	A	3.0	A	6.9	B	10.9	A	3.2	A	7.0	B	13.1	
WB Through/Right			A	7.1	A	5.3	A	2.5	A	7.3	A	5.7	A	2.7	A	7.4	A	6.4	
NB Left			D	46.8	D	48.8	D	50.3	D	46.7	D	48.7	D	50.3	D	46.7	D	47.6	
NB Through/Right			D	38.8	D	39.6	D	46.5	D	38.5	D	38.9	D	46.0	D	38.4	D	36.9	
SB Left/Through			D	38.3	D	42.1	D	47.1	D	37.3	D	41.8	D	46.9	D	37.2	D	39.6	
SB Right			D	35.1	D	38.5	D	46.0	C	34.8	D	37.6	D	45.6	C	34.8	D	35.8	
Entire Intersection Delay (sec /veh)			14.7		15.0		9.0		14.9		15.6		9.3		14.9		17.3		
Entire Intersection LOS			B		B		A		B		B		A		B		B		
2) <u>Arapahoe Avenue (SH 7)/Julie's Way</u>	TWSC																		
NB Right		B	10.7	B	14.7	A	0.0	B	10.8	B	14.9	A	0.0	B	10.8	C	15.3		
3) <u>Cherryvale Road/Oreg Avenue</u>	Roundabout																		
WB Approach		A	4.0	A	3.3	A	3.4	A	4.1	A	3.5	A	3.5	A	4.2	A	4.5		
NB Approach		A	5.7	A	4.0	A	3.3	A	6.0	A	4.3	A	3.5	A	6.3	A	5.0		
SB Approach		A	3.5	A	7.6	A	3.3	A	3.7	A	8.3	A	3.6	A	3.8	B	10.1		
Entire Intersection Delay (sec /veh)			5.1		6.6		3.4		5.4		7.2		3.5		5.6		8.2		
Entire Intersection LOS			A		A		A		A		A		A		A		A		
4) <u>Oreg Avenue/West Site Access</u>	TWSC																		
NB Approach		--	--	--	--	--	--	--	--	--	--	--	--	A	8.7	A	9.6		
WB Left/Through		--	--	--	--	--	--	--	--	--	--	--	--	A	0.0	A	0.0		
5) <u>Oreg Avenue/East Site Access</u>	TWSC																		
NB Approach		--	--	--	--	--	--	--	--	--	--	--	--	A	8.6	A	8.9		
6) <u>Oreg Avenue/Julie's Way</u>	TWSC																		
EB Left/Through		A	7.2	A	0.0	A	0.0	A	7.2	A	7.2	A	7.2	A	7.2	A	7.3		
SB Approach		A	0.0	A	0.0	A	0.0	A	8.5	A	8.5	A	8.5	A	8.5	A	8.6		

Table 1b
Intersection Levels of Service Analysis - 2045
Congregation Bonai Shalom
Boulder, Colorado
LSC #230590; May, 2025

Intersection No. & Location	Traffic Control	2045 Background Traffic						2045 Total Traffic					
		Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay	Level of Service	Movement Delay
		AM	PM	Saturday	Mid-Day	AM	PM	Saturday	Mid-Day	AM	PM	Saturday	Mid-Day
1) Arapahoe Avenue (SH 7)/Cherryvale Road	Signalized												
EB Left		B	11.9	A	9.6	A	4.6	B	11.9	B	10.7	A	5.3
EB Through		B	10.7	B	14.4	A	5.3	B	10.8	B	16.2	A	6.2
EB Right		A	9.8	B	16.6	A	4.6	A	9.9	C	20.3	A	5.5
WB Left		A	7.8	B	16.5	A	3.4	A	7.8	C	21.6	A	4.1
WB Through/Right		A	8.5	A	6.2	A	2.9	A	8.5	A	7.0	A	3.5
NB Left		D	46.1	D	48.3	D	50.0	D	46.0	D	47.1	D	48.8
NB Through/Right		D	37.1	D	38.0	D	45.5	D	37.1	D	36.0	D	42.9
SB Left/Through		D	35.8	D	40.9	D	46.4	D	35.8	D	38.8	D	43.9
SB Right		C	33.2	C	36.5	D	45.0	C	33.2	C	34.7	D	42.6
Entire Intersection Delay (sec /veh)			15.6		17.0		9.4		15.6		19.1		11.2
Entire Intersection LOS			B		B		A		B		B		B
2) Arapahoe Avenue (SH 7)/Julie's Way	TWSC												
NB Right		B	11.1	C	16.1	A	0.0	B	11.1	C	16.6	A	0.0
3) Cherryvale Road/Oreg Avenue	Roundabout												
WB Approach		A	4.4	A	3.6	A	3.6	A	4.5	A	4.6	A	4.6
NB Approach		A	6.5	A	4.5	A	3.6	A	6.7	A	5.2	A	3.8
SB Approach		A	3.8	A	9.2	A	3.7	A	3.9	B	11.5	A	4.1
Entire Intersection Delay (sec /veh)			5.7		7.9		3.6		5.9		9.3		4.2
Entire Intersection LOS			A		A		A		A		A		A
4) Oreg Avenue/West Site Access	TWSC												
NB Approach		--	--	--	--	--	--	A	8.7	A	9.6	A	9.4
WB Left/Through		--	--	--	--	--	--	A	0.0	A	0.0	A	0.0
5) Oreg Avenue/East Site Access	TWSC												
NB Approach		--	--	--	--	--	--	A	8.6	A	8.9	A	8.9
6) Oreg Avenue/Julie's Way	TWSC												
EB Left/Through		A	7.2	A	7.2	A	7.2	A	7.2	A	7.3	A	7.3
SB Approach		A	8.5	A	8.5	A	8.5	A	8.5	A	8.6	A	8.6

Table 2
ESTIMATED TRAFFIC GENERATION
Congregation Bonai Shalom
Boulder, CO
LSC #230590; May, 2025

Trip Generating Category	Quantity	Total Trips Generated ⁽¹⁾								
		Average Weekday	AM Peak-Hour		PM Peak-Hour		Average Saturday	Saturday Mid-Day		
			In	Out	In	Out		12 - 1 PM	In	Out
Based on Detailed Feedback from Applicant										
Synagogue ⁽²⁾	150 Seats	200	22	3	2	12	400	15	100	
Hebrew School ⁽³⁾	150 Students	250	1	0	100	100	50	15	25	
	Total =	450	23	3	102	112	450	30	125	

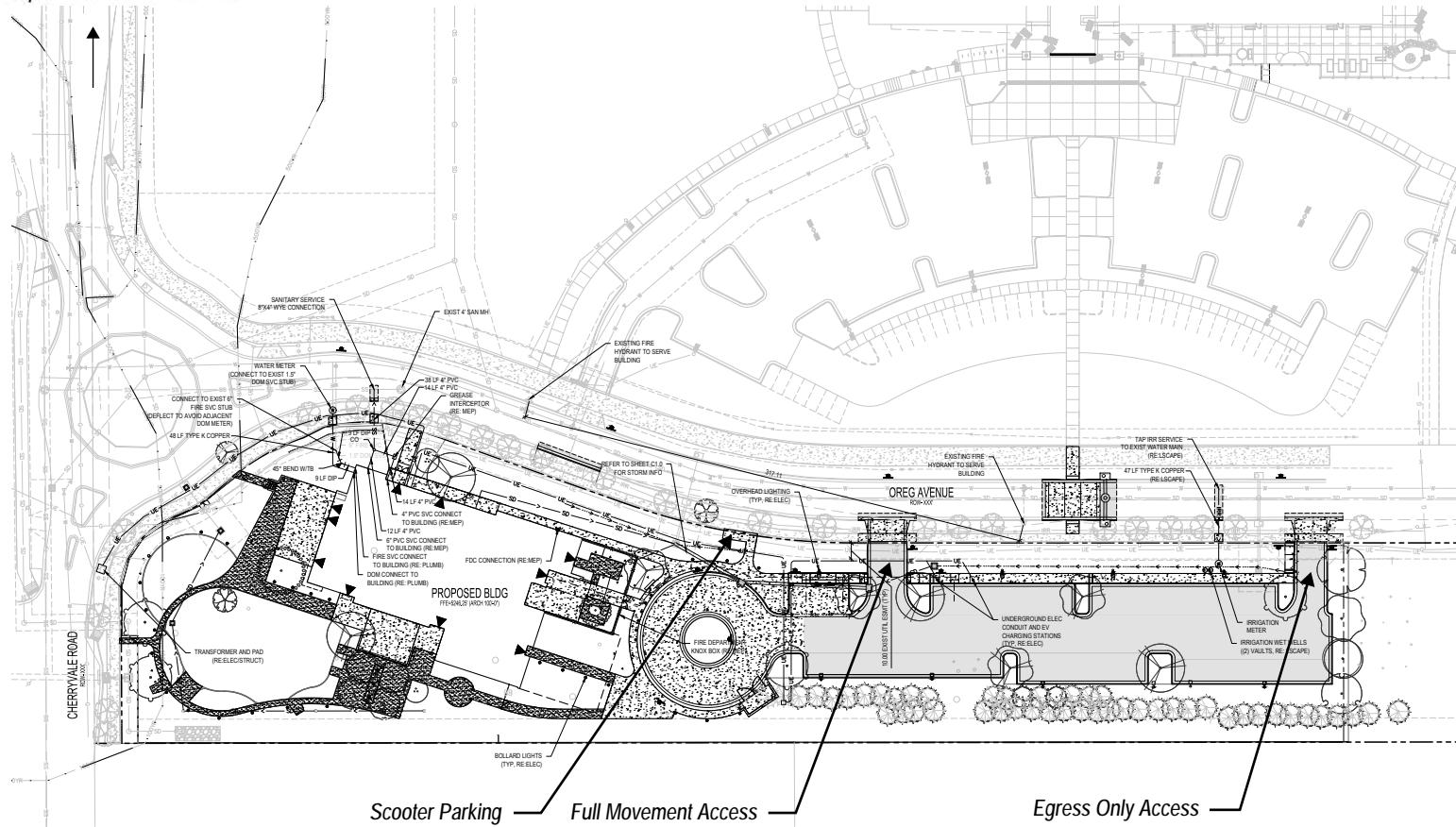
Notes:

- (1) Based on information provided by the applicant based on a busy day - typical conditions are expected to generate fewer trips.
- (2) Assumes 1.5 occupants per vehicle and ten percent are dropped off/picked up. These assumptions are based on the estimated schedule from the applicant. The schedule is attached for reference.
- (3) Assumes 1.5 children per vehicle and all are dropped off/picked up with the release near the end of the weekday afternoon peak-hour. The future school is expected to have an opening enrollment of about 100 students. This analysis is based on the future capacity of 150 students. The Hebrew School students on Saturday are mostly assumed to arrive with others and not generate independent trips. 25 percent of students were assumed to be independent trips.





To Arapahoe Avenue (SH 7)



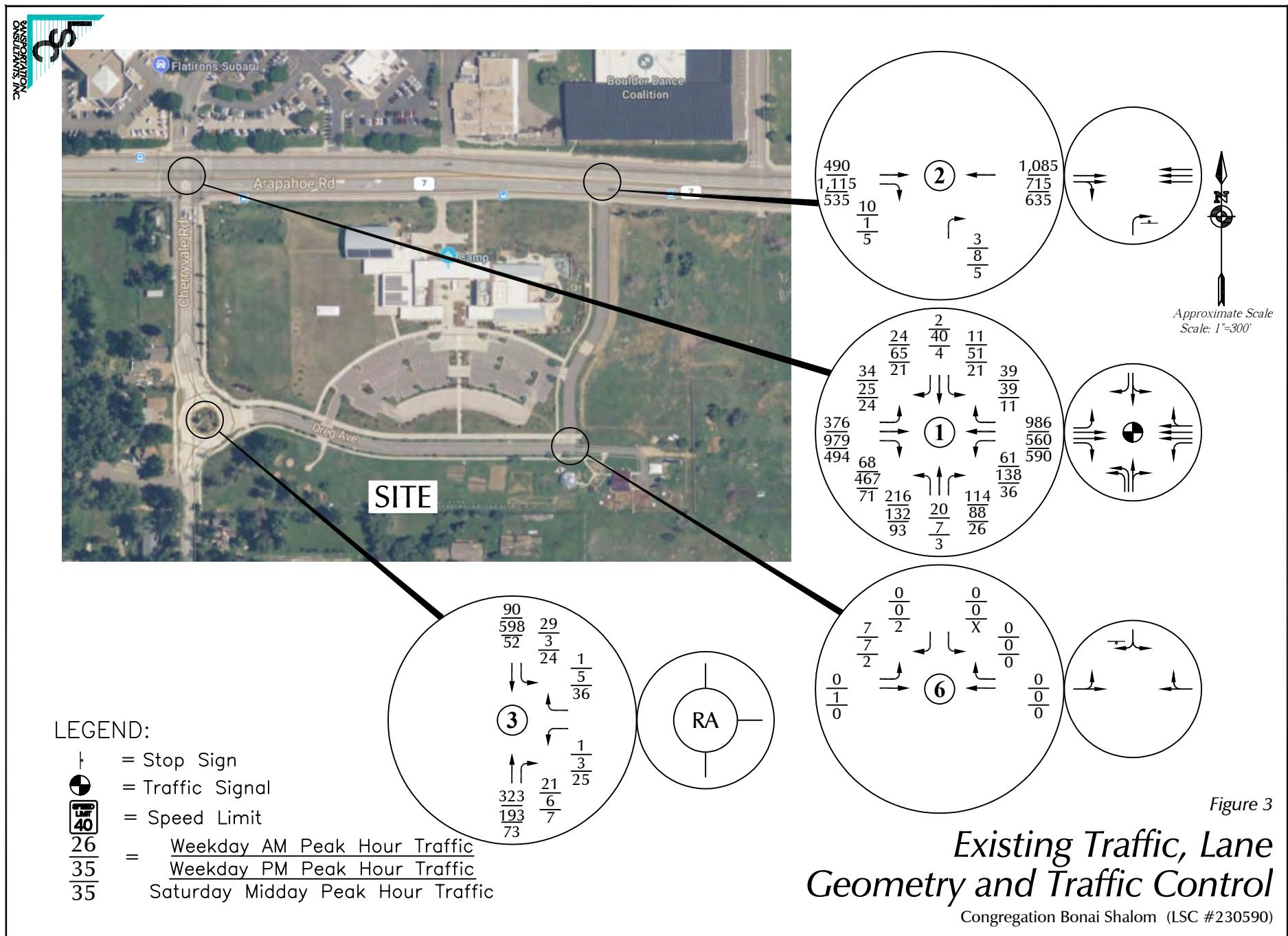
Approximate Scale
Scale: NTS

Note: Typically the City of Boulder only permits one access per property. A second, egress only access is proposed based on the letter provided by Kevin Farrington from Secure Community Network. The letter is included in the report appendix for reference.

Figure 2

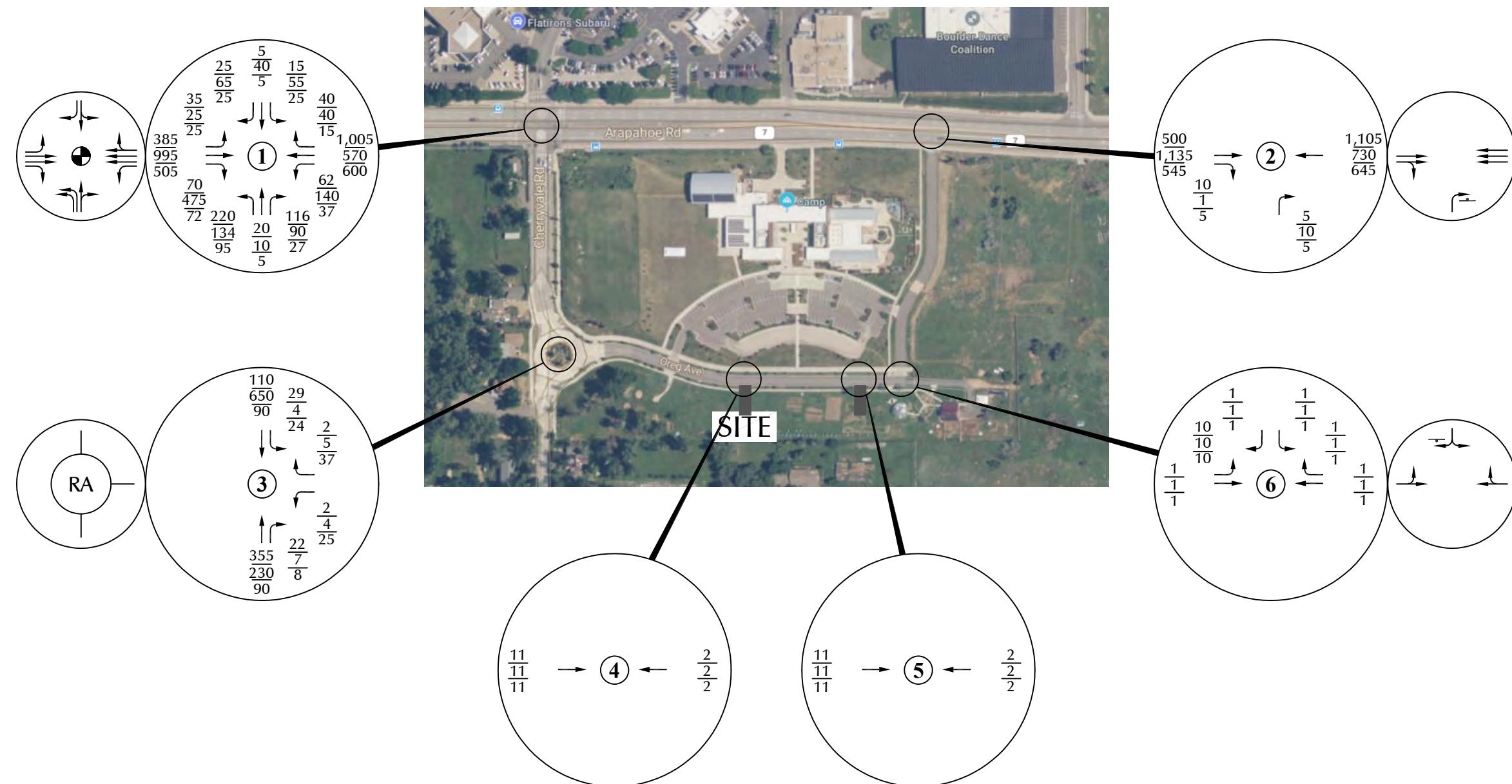
Site Plan

Congregation Bonai Shalom TDM (LSC #230590)





Approximate Scale
Scale: 1"=300'



Note: Assumes 0.60 percent annual growth based on approved Traffic Study Parameters form.

LEGEND:

- ↑ = Stop Sign
- = Traffic Signal

$\frac{26}{35}$ = Weekday AM Peak Hour Traffic
 $\frac{35}{35}$ = Weekday PM Peak Hour Traffic
 $\frac{35}{35}$ = Saturday Midday Peak Hour Traffic

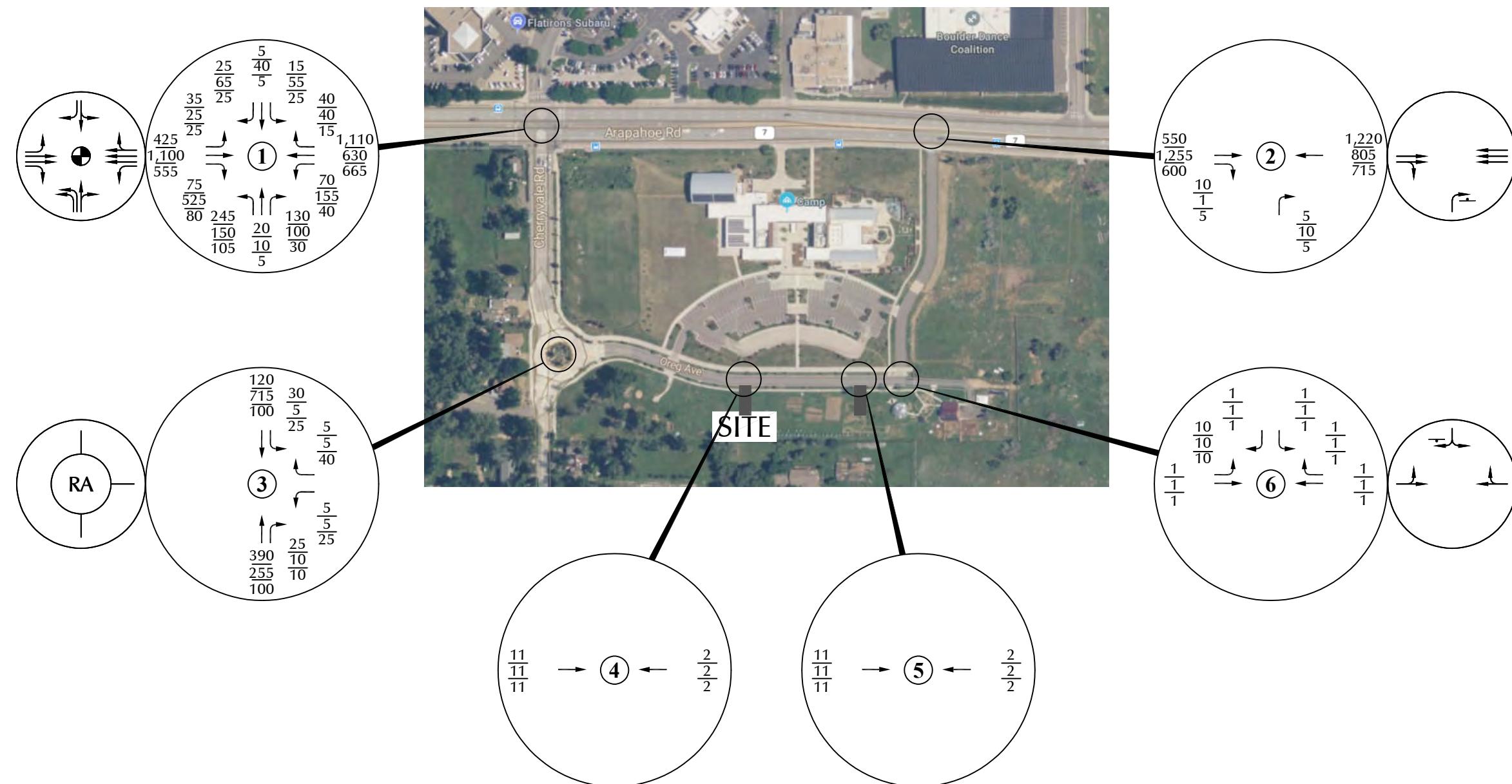
Figure 4

Year 2027 Background Traffic, Lane Geometry and Traffic Control

Congregation Bona Shalom (LSC #230590)



Approximate Scale
Scale: 1"=300'



Note: Assumes 0.60 percent annual growth based on approved Traffic Study Parameters form.

LEGEND:

- ↑ = Stop Sign
- = Traffic Signal
- $\frac{26}{35}$ = Weekday AM Peak Hour Traffic
- $\frac{35}{35}$ = Weekday PM Peak Hour Traffic
- $\frac{26}{35}$ = Saturday Midday Peak Hour Traffic

Figure 5

Year 2045 Background Traffic, Lane Geometry and Traffic Control

Congregation Bona Shalom (LSC #230590)



Approximate Scale
Scale: 1=1,000'

LEGEND:

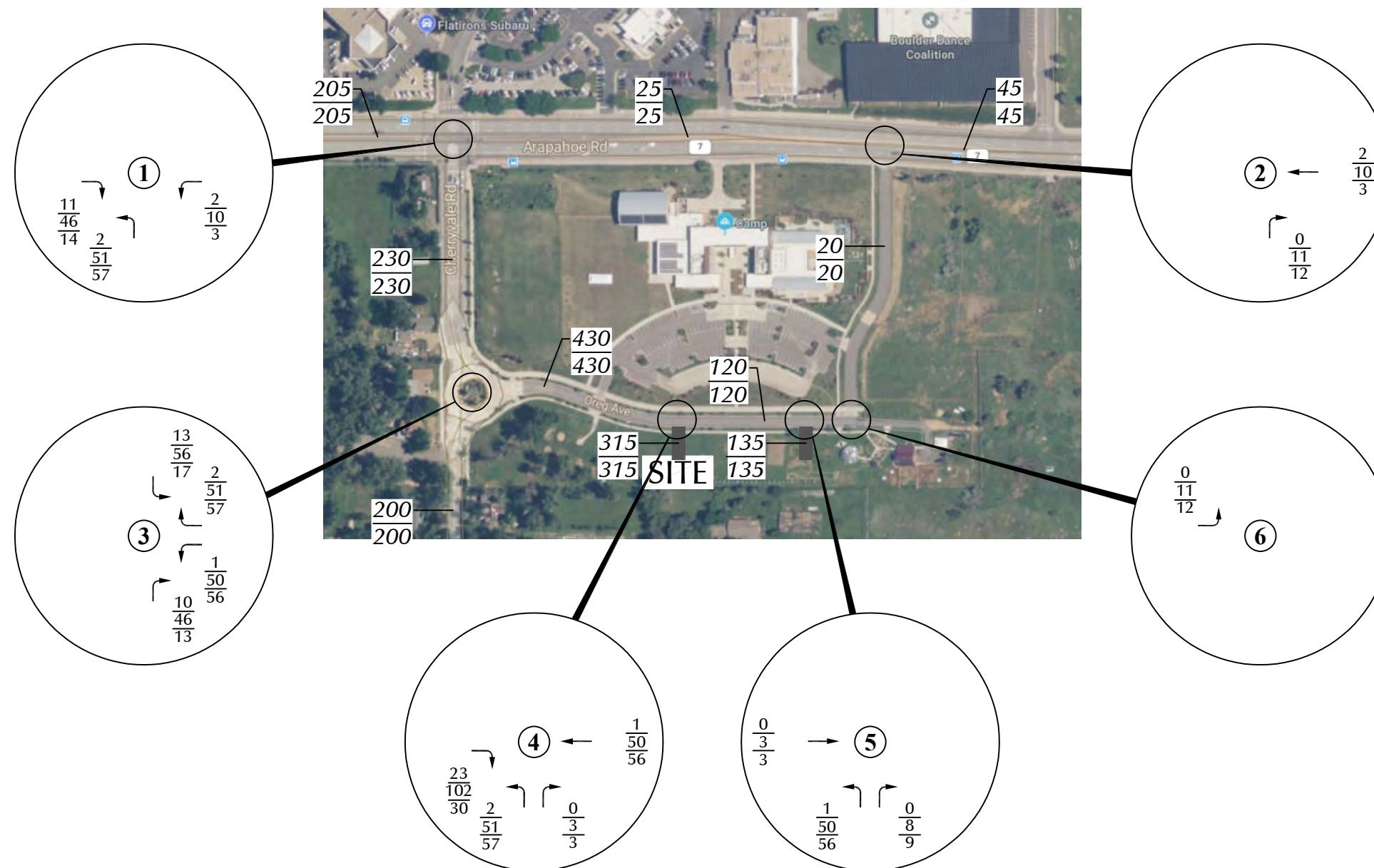
= Percent Directional Distribution

Figure 6
*Directional Distribution
of Site-Generated Traffic*

Congregation Bonai Shalom (LSC #230590)



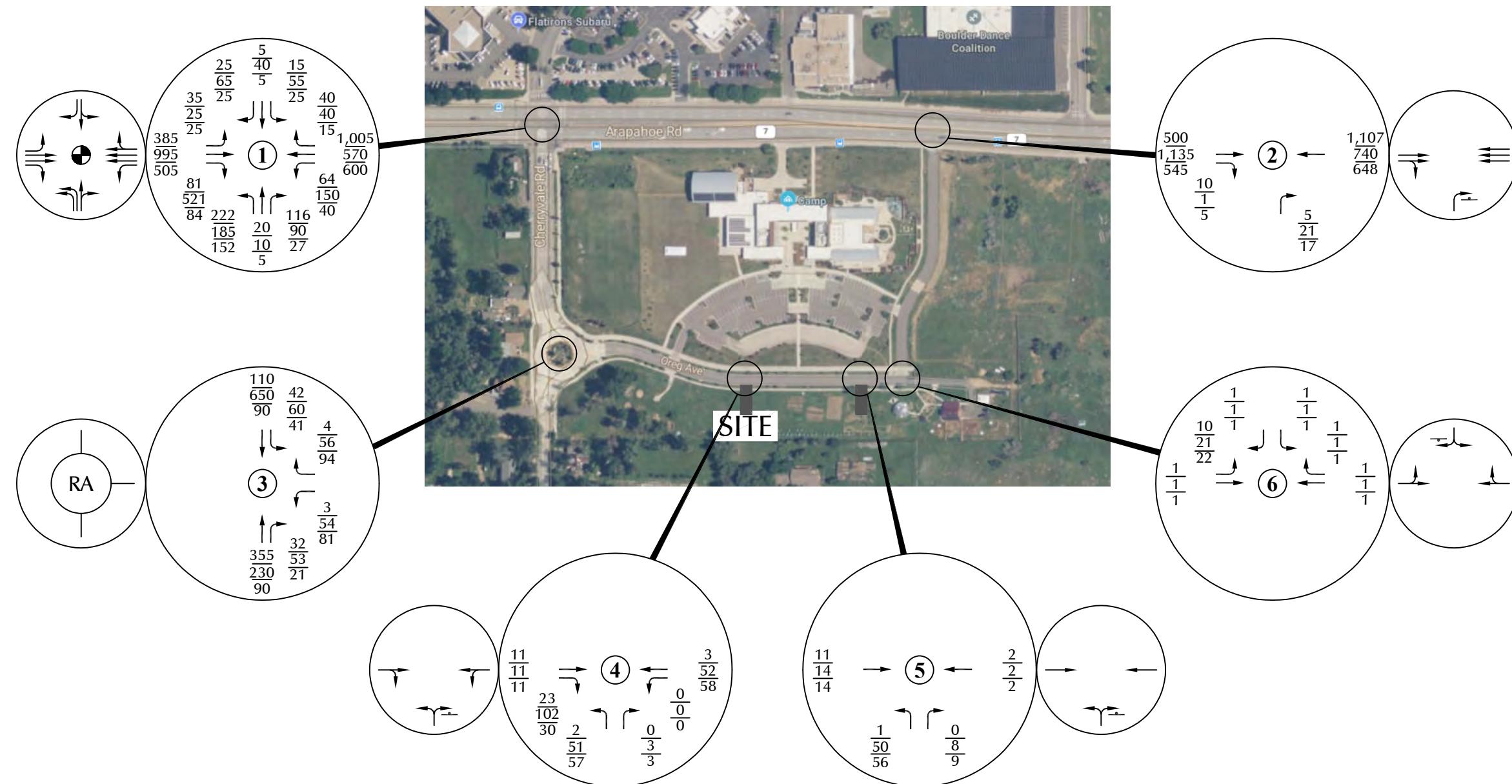
Approximate Scale
Scale: 1"=300'



LEGEND:

$\frac{26}{35}$ = Weekday AM Peak Hour Traffic
 $\frac{35}{35}$ = Weekday PM Peak Hour Traffic
 $\frac{35}{35}$ = Saturday Midday Peak Hour Traffic
 $\frac{200}{200}$ = Average Weekday Daily Traffic
 $\frac{200}{200}$ = Average Saturday Daily Traffic

Figure 7



Note: These volumes are the sum of the volumes in Figures 4 and 7.

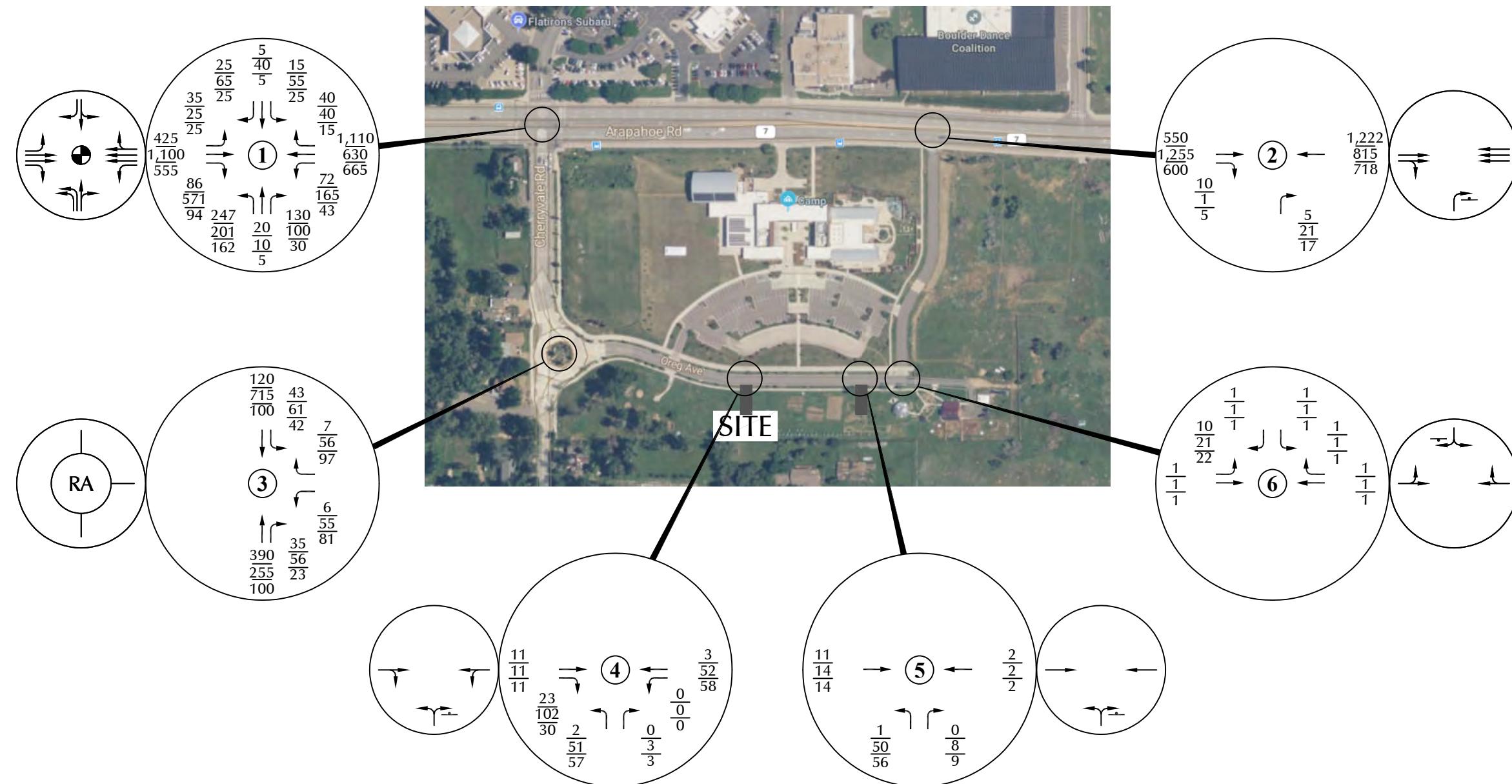
LEGEND:

- ↑ = Stop Sign
- ◐ = Traffic Signal
- 26 = Weekday AM Peak Hour Traffic
- 35 = Weekday PM Peak Hour Traffic
- 35 = Saturday Midday Peak Hour Traffic

Figure 8

Year 2027 Total Traffic, Lane Geometry and Traffic Control

Congregation Bonai Shalom (LSC #230590)



Note: These volumes are the sum of the volumes in Figures 5 and 7.

LEGEND:

- ↑ = Stop Sign
- = Traffic Signal
- $\frac{26}{35}$ = Weekday AM Peak Hour Traffic
- $\frac{35}{35}$ = Weekday PM Peak Hour Traffic
- $\frac{35}{35}$ = Saturday Midday Peak Hour Traffic

Attachment C - Applicant's TDM Plan and Traffic Study
Traffic Study Initial Parameters

<i>Last Revised (date)</i>	<i>October 30th, 2023</i>
Purpose	The purpose of this document is to outline the initial study parameters for traffic studies conducted as a part of a development project in the city pursuant to section 2.01 (E) of the City of Boulder Design and Construction Standards.
Scope	Please submit this document to your assigned review engineer prior to initial drafting of the traffic study and/or Site Review. This document is designed to only outline initial study parameters and parameters may change through the course of traffic analysis conducted during the study.

PROJECT INFORMATION	
Project Name:	Project Address: 6007 Oreg Avenue
Applied Subarea Plans:	Project Use (Residential Vs Non-residential): Non-Residential

Prepared by Chris McGranahan, LSC Transportation Consultants, Inc. (Submitted 03/28/24)

TRAFFIC DATA AND ANALYSIS CRITERIA						
Study Area Boundary:	North: Arapahoe Avenue (SH 7)		South: Oreg Avenue			
	East: Julie's Way		West: Cherryvale Road			
Study Years:	Short-Term (buildout):	2027	Long-Range: 20 years	2044		
Study Intersections (Please provide Level of Service Analysis for Each):	1. Access Driveways		6.			
	2. Arapahoe Ave (SH 7)/Cherryvale Road		7.			
	3. Arapahoe Ave (SH 7)/Julie's Way		8.			
	4. Cherryvale Road/Oreg Avenue		9.			
	5. Oreg Avenue/Julie's Way		10.			
Traffic Counts:	Data Collection Method (Visual, devices to be used, etc): Manual turning movement counts					
	Collection Times: Typical weekday 6:30-8:30 AM and 4:00-6:00 PM Typical Saturday 11:30 AM to 1:30 PM					
	Special Considerations for Counts (Schools in session, events going on in the area during counts, etc): Confirm BVSD and CU are both in session					
Background Traffic Growth Rates: From Historic City Count data e/o 75 th Street	Short-Term:	0.60 %	Long-Range:	0.60 %		
Trip Generation Rates: Estimates by LSC based on details provided by the Applicant - see attached trip generation table	ITE Data					
	Code?	Specify ITE Code	Use Type?	Provide Use Description		
Trip Generation Rates:	ITE Data					
	Code?	Specify ITE Code	Use Type?	Provide Use Description		

Trip Generation Rates:		ITE Data				
		Code?	Specify ITE Code		Use Type?	Provide Use Description
Trip Adjustment Factors (Provide Supporting Data):	Passby Trips:	NA	Diverted Trips:	NA	Internal Capture:	NA
Trip Distribution:	45% south on Cherryvale; 45% west on Arapahoe (SH 7); 10% east on Arapahoe (SH 7) based on membership data provided by the Applicant					

OTHER STUDY ITEMS AND CONSIDERATIONS		
Hazard Assessment:	<input checked="" type="checkbox"/> Does the Project have an immediate Frontage on a High Risk Network Street as detailed in the most recent version of the Vision Zero Action Plan? Arapahoe (SH 7) at Cherryvale is a High Risk Network Street. <input checked="" type="checkbox"/> Has the project site been identified by the city as a high-hazard area for any other reason? Not that we are aware of. (Outline areas to assess if any boxes checked above) <u>The Arapahoe Avenue (SH 7) intersections with Cherryvale Road and Julie's Way are proposed to be included in the study area.</u>	
To be addressed with City Staff and applicant during Scoping Meeting.	(Required improvements to be outlined by staff) None	
Transportation Master Plan (TMP) Identified Improvements:	A plan is required to be submitted which outlines strategies to mitigate traffic impacts created by the proposed development and implementable measures for promoting alternate modes of travel. The applicant must submit the TDM plan as a separate document with Site Review submittal in addition to incorporating the TDM Plan into the traffic impact study as an appendix to the study. BRC 9-2-14(h)(2)(D), DCS 2.03(l)	
Transportation Demand Management Plan (TDM): To be addressed with City Staff and applicant during Scoping Meeting.	TDM Measures to Utilize: The applicant is working with JCC to negotiate a shared parking agreement - more to come	<input checked="" type="checkbox"/> Parking Management Strategies <input checked="" type="checkbox"/> Enhanced Design and Amenities <input type="checkbox"/> Financial Incentives <input type="checkbox"/> Trip Reduction Programs and Policies <input checked="" type="checkbox"/> Marketing and Outreach <input type="checkbox"/> Other _____
Other Considerations:	Trip Reduction Percent: Two access points are shown in the attached site plan. Typically the City only allows one access per parcel unless supported by a traffic study. <u>In this case the proposed use requires two access points</u> from a safety perspective. Please see the attached security report from Secure Community Network that recommends two access points to reduce the site's vulnerability from an attack.	

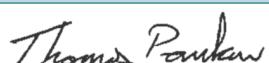
Reviewed By		
Date:	4/17/2024	
Traffic Division Representative :	Tom Pankau	
	Printed Name	Signature
Applicant Representative:		
	Printed Name	Signature

Table 1
ESTIMATED TRAFFIC GENERATION
Congregation Bonai Shalom
Boulder, CO
LSC #230590; March, 2024

Trip Generating Category	Quantity	Average Weekday	Total Trips Generated ⁽¹⁾				Saturday Mid-Day	
			AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Average Saturday	12 - 1 PM In
Based on Detailed Feedback from Applicant								
Synagogue ⁽²⁾	150 Seats	200	22	3	2	12	400	15
Hebrew School ⁽³⁾	150 Students	250	1	0	100	100	50	15
	Total =	450	23	3	102	112	450	30
								125

Notes:

- (1) Based on information provided by the applicant
- (2) Assumes 1.5 occupants per vehicle and ten percent are dropped off/picked up. These assumptions are based on the estimated schedule from the applicant. The schedule is attached for reference.
- (3) Assumes 1.5 children per vehicle and all are dropped off/picked up with the release near the end of the weekday afternoon peak-hour. The future school is expected to have an opening enrollment of about 100 students. This analysis is based on the future capacity of 150 students. The Hebrew School students on Saturday are mostly assumed to arrive with others and not generate independent trips. 25 percent of students were assumed to be independent trips.



Mr. Eric Shafran
SII LLC
600 South Cherry Street, Suite 1125
Denver, CO 80246

March 24, 2024

Mr. Shafran,

Thank you for the opportunity to discuss the ongoing new construction for Bonai Shalom Congregation in Boulder, Colorado. I hope the security items we discussed can assist you and the Congregation in building a suitable and safe new facility.

Secure Community Network (herein SCN) is the official safety and security organization for the Jewish community within the United States. As SCN's Regional Security Advisor, I provide security support to over 100 Jewish facilities throughout Colorado. This support includes security training, facility risk and vulnerability assessments, assistance to security related federal and state grant applications, and liaison with federal, state, and local law enforcement and intelligence agencies throughout the state of Colorado and the United States. Prior to joining SCN, I served 25 years as a Special Agent with the Federal Bureau of Investigation and retired as the Assistant Special Agent in Charge (ASAC) over Crisis Response and Crisis Management matters in the FBI Denver's field office. In that capacity, I directly oversaw all FBI SWAT operations in both Colorado and Wyoming, as well as led the FBI's Evidence Response Team, Bomb Technicians, Crisis Management Team, and other related elements. I served for 15 years as an FBI SWAT operator, 3 of which I served as the Senior Team Leader over an FBI SWAT Team. I was also an FBI-certified Tactical Instructor, in which I trained FBI Special Agents in proper procedures for planning and conducting tactical operations to include arrests, search warrants, and other tactical operations. I have led and/or participated in over 200 FBI tactical operations in various parts of the United States. Prior to joining the FBI, I

was an officer in the United States Marine Corps for 5 years and am a graduate of the United States Naval Academy.

As you are well aware, following the October 7, 2023 attacks in Israel, the threat against the Jewish community is at an extremely elevated level. While the Jewish community makes up only 2% of the United States' population, it is the target of over 60% of the religion-based hate crimes within the United States. In 2023, there was a 112% increase in security incidents against the Jewish community reported to SCN. In addition, there was a 774% increase in swatting and hoax bomb threats targeting the Jewish community in 2023. As we have continued into 2024, this unfortunate upward trend in threats continues.

As we reviewed the plans for Bonai Shalom, we discussed a range of security concerns and matters regarding the new construction. Of significant concern is any construction matter which can produce a predictable and potentially recurring security risk that can be exploited by a threat actor targeting the facility. In assessing the parking lot access for Bonai Shalom, the current parking lot structure presents a significant potential risk. In the current plan, there is only one vehicle ingress/egress point into the Bonai Shalom parking lot from Oreg Avenue. As we discussed, this will create considerable congestion within the access point and the parking lot during times of high use, as well as potential congestion along Oreg Avenue immediately outside of the facility. Further elevating this vulnerability is that these times of significant congestion within the access point and parking lot will be predictable and readily visible to even the most limited pre-attack surveillance. A routine and highly predictable traffic congestion pattern within a Jewish facility is a critical vulnerability. In exploiting this vulnerability, a threat actor targeting Bonai Shalom would have a high volume of potential victims essentially trapped within a traffic pattern that would not allow efficient vehicle egress. Further, potential victims seeking to exit their vehicles and potentially egress by foot would be caught in an open and vulnerable area.

To remedy this, I recommend reviewing the plans for the new parking lot to consider the possibility of adding a second access point, potentially for egress only. This would ensure a more reasonable flow of traffic within the facility and alleviate the potential for routine and predictable overwhelming traffic congestion at Bonai Shalom. Given the high level of threat against the Jewish community that continues to exist, this adjustment could effectively add to a more secure and safe environment for Bonai Shalom.

Please let me know if you have any questions regarding this matter. Thanks once again for allowing SCN to assist you in the construction of your new facility.

Respectfully,

Kevin Farrington
Regional Security Advisor-Colorado
Secure Community Network

Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: ARAPAHOE AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERARAPAHOE
Site Code : 00000020
Start Date : 4/23/2024
Page No : 1

Groups Printed- VEHICLES

Start Time	CHERRYVALE RD Southbound				ARAPAHOE AVE Westbound				CHERRYVALE RD Northbound				ARAPAHOE AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
06:30 AM	0	0	2	1	3	134	1	2	11	1	16	0	3	43	8	0	225
06:45 AM	0	0	0	0	5	136	3	27	10	6	29	3	6	68	7	1	301
Total	0	0	2	1	8	270	4	29	21	7	45	3	9	111	15	1	526
07:00 AM	0	0	0	0	17	130	14	14	24	5	9	0	7	75	8	0	303
07:15 AM	2	0	2	0	12	159	17	14	27	11	21	0	17	76	15	0	373
07:30 AM	7	0	8	0	19	241	11	12	26	6	19	0	8	76	23	2	458
07:45 AM	3	0	2	0	11	255	12	3	50	4	28	0	6	96	10	0	480
Total	12	0	12	0	59	785	54	43	127	26	77	0	38	323	56	2	1614
08:00 AM	1	1	6	0	13	229	8	2	68	8	38	0	14	99	14	0	501
08:15 AM	0	1	8	0	18	261	8	4	72	2	29	2	6	105	21	0	537
Total	1	2	14	0	31	490	16	6	140	10	67	2	20	204	35	0	1038
04:00 PM	2	2	6	0	15	32	1	1	5	0	6	0	6	77	24	0	177
04:15 PM	11	9	17	0	33	145	3	2	34	4	18	0	9	240	104	0	629
04:30 PM	18	13	7	0	36	155	9	12	25	1	29	3	7	245	135	2	697
04:45 PM	12	6	17	0	32	138	1	20	33	2	21	1	5	262	112	0	662
Total	43	30	47	0	116	470	14	35	97	7	74	4	27	824	375	2	2165
05:00 PM	10	12	24	0	37	122	3	9	40	0	20	1	4	232	116	0	630
05:15 PM	5	10	15	0	28	123	0	4	36	2	14	4	11	239	102	0	593
05:30 PM	7	4	8	1	24	128	4	3	26	0	17	1	3	236	73	0	535
05:45 PM	8	2	5	1	17	142	2	11	13	0	18	1	5	232	47	0	504
Total	30	28	52	2	106	515	9	27	115	2	69	7	23	939	338	0	2262
Grand Total	86	60	127	3	320	2530	97	140	500	52	332	16	117	2401	819	5	7605
Apprch %	31.2	21.7	46.0	1.1	10.4	82.0	3.1	4.5	55.6	5.8	36.9	1.8	3.5	71.8	24.5	0.1	
Total %	1.1	0.8	1.7	0.0	4.2	33.3	1.3	1.8	6.6	0.7	4.4	0.2	1.5	31.6	10.8	0.1	

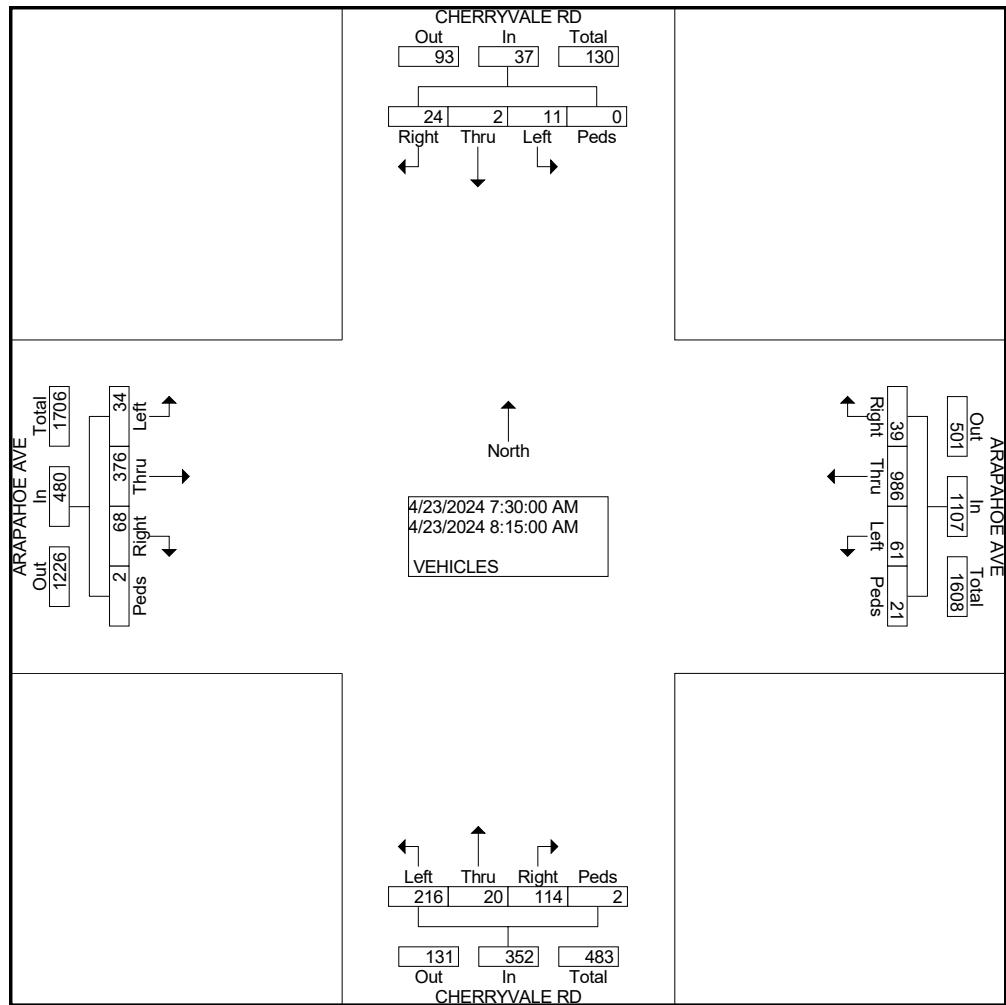
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: ARAPAHOE AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERARAPAHOE
Site Code : 00000020
Start Date : 4/23/2024
Page No : 2

Start Time	CHERRYVALE RD Southbound					ARAPAHOE AVE Westbound					CHERRYVALE RD Northbound					ARAPAHOE AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection 07:30 AM	11	2	24	0	37	61	986	39	21	1107	216	20	114	2	352	34	376	68	2	480	1976
Volume	29.	5.4	64.	9	0.0	5.5	89.	3.5	1.9		61.	5.7	32.	0.6		7.1	78.	14.	0.4		
Percent	7					1					4		4			3		2			
08:15	0	1	8	0	9	18	261	8	4	291	72	2	29	2	105	6	105	21	0	132	537
Volume																					0.920
Peak Factor																					
High Int. 07:30 AM																					
Volume	7	0	8	0	15	18	261	8	4	291	68	8	38	0	114	6	105	21	0	132	0.90
Peak Factor					0.61					0.95					0.77						9
	7				1					1					2						



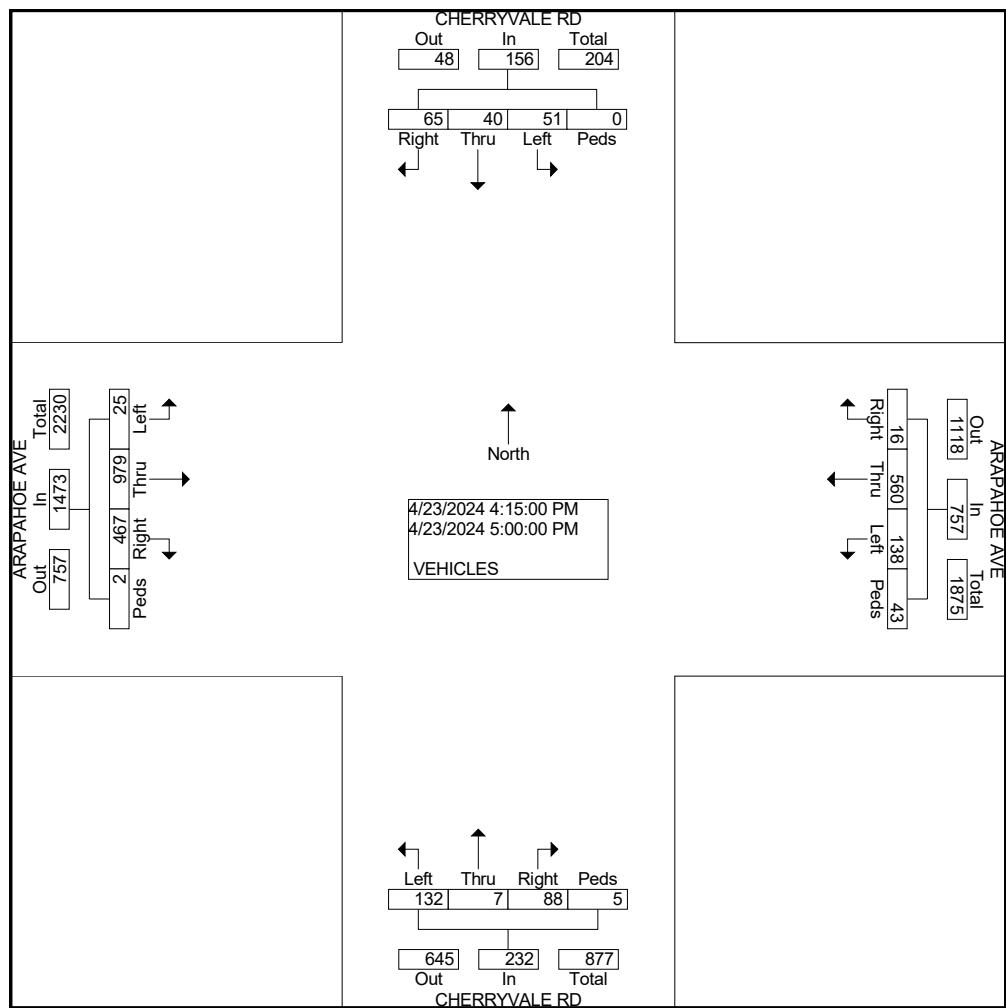
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: ARAPAHOE AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERARAPAHOE
Site Code : 00000020
Start Date : 4/23/2024
Page No : 3

Start Time	CHERRYVALE RD Southbound					ARAPAHOE AVE Westbound					CHERRYVALE RD Northbound					ARAPAHOE AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection 04:15 PM																					
Volume	51	40	65	0	156	138	560	16	43	757	132	7	88	5	232	25	979	467	2	1473	2618
Percent	32.7	25.6	41.7	0.0		18.2	74.0	2.1	5.7		56.9	3.0	37.9	2.2		1.7	66.5	31.7	0.1		
04:30 Volume	18	13	7	0	38	36	155	9	12	212	25	1	29	3	58	7	245	135	2	389	697
Peak Factor																					0.939
High Int. Volume	05:00 PM					04:30 PM					05:00 PM					04:30 PM					
Peak Factor	10	12	24	0	46	36	155	9	12	212	40	0	20	1	61	7	245	135	2	389	0.94
					0.84					0.89					0.95					7	
					8					3					1						



Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: OREG AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERROREG
Site Code : 00000005
Start Date : 4/23/2024
Page No : 1

Groups Printed- VEHICLES

Start Time	CHERRYVALE RD Southbound				OREG AVE Westbound				CHERRYVALE RD Northbound				NO ACCESS Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	39
06:30 AM	0	10	0	1	0	0	0	0	0	28	0	0	0	0	0	0	57
06:45 AM	3	9	0	0	0	0	0	0	0	44	1	0	0	0	0	0	96
Total	3	19	0	1	0	0	0	0	0	72	1	0	0	0	0	0	346
07:00 AM	7	12	0	0	0	0	1	0	0	31	1	0	0	0	0	0	52
07:15 AM	20	8	0	0	1	0	0	0	0	57	6	0	0	0	0	0	92
07:30 AM	18	22	0	0	0	0	0	0	0	55	11	1	0	0	0	0	107
07:45 AM	7	12	0	0	0	0	0	0	0	71	4	0	1	0	0	0	95
Total	52	54	0	0	1	0	1	0	0	214	22	1	1	0	0	0	346
08:00 AM	3	23	0	0	0	0	0	0	0	95	3	0	0	0	0	0	124
08:15 AM	1	33	0	0	1	0	1	0	0	102	3	0	0	1	0	0	142
Total	4	56	0	0	1	0	1	0	0	197	6	0	0	1	0	0	266
04:00 PM	0	95	0	0	3	0	3	0	0	58	0	0	0	0	0	0	159
04:15 PM	2	142	0	0	1	0	3	0	0	42	1	0	0	0	0	0	191
04:30 PM	0	162	0	0	0	0	1	0	0	52	1	4	0	0	0	0	220
04:45 PM	1	147	0	0	1	0	1	0	0	47	1	0	0	0	0	0	198
Total	3	546	0	0	5	0	8	0	0	199	3	4	0	0	0	0	768
05:00 PM	0	147	0	1	1	0	0	0	0	52	3	1	0	0	0	0	205
05:15 PM	1	136	0	0	2	0	3	0	1	35	0	1	0	0	0	0	179
05:30 PM	0	89	0	0	0	0	0	0	0	34	0	0	0	0	0	0	123
05:45 PM	0	55	0	0	1	0	0	0	0	28	0	0	0	0	0	0	84
Total	1	427	0	1	4	0	3	0	1	149	3	2	0	0	0	0	591
Grand Total	63	1102	0	2	11	0	13	0	1	831	35	7	1	1	0	0	2067
Apprch %	5.4	94.4	0.0	0.2	45.8	0.0	54.2	0.0	0.1	95.1	4.0	0.8	50.0	50.0	0.0	0.0	
Total %	3.0	53.3	0.0	0.1	0.5	0.0	0.6	0.0	0.0	40.2	1.7	0.3	0.0	0.0	0.0	0.0	

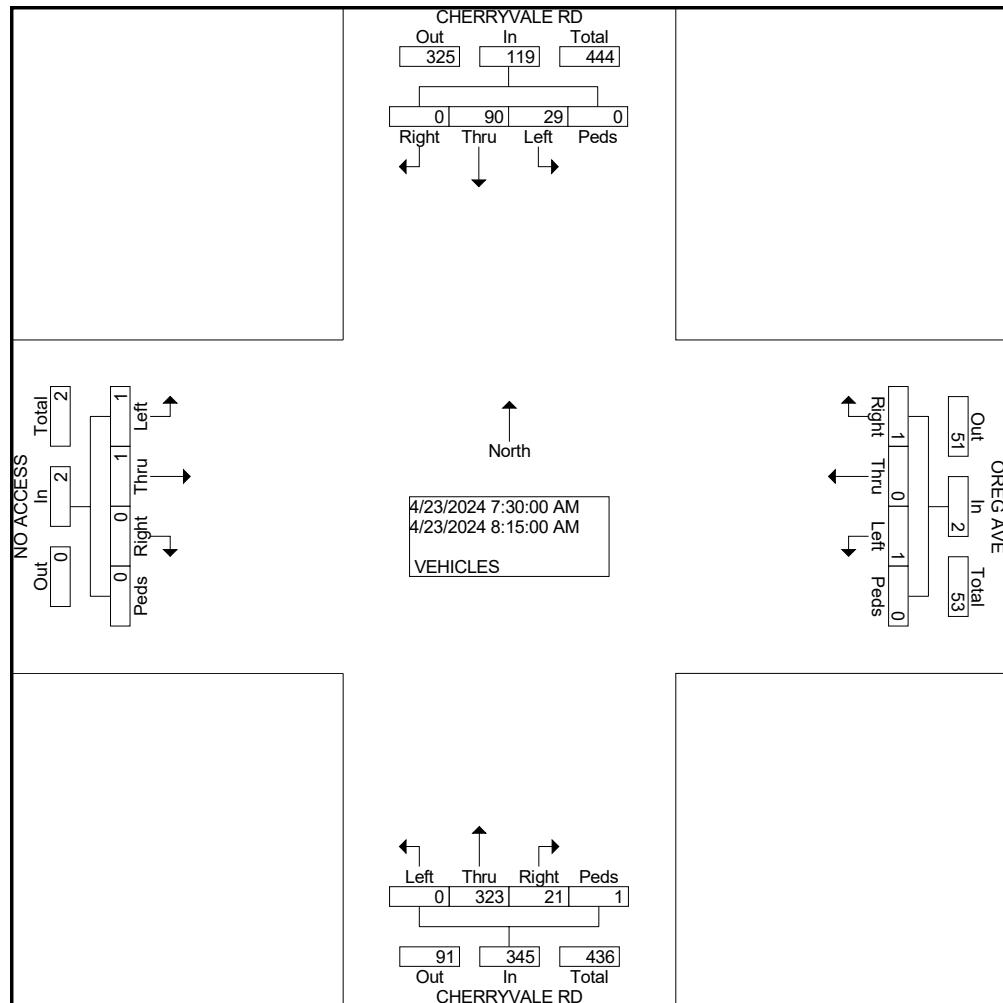
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: OREG AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERROREG
Site Code : 00000005
Start Date : 4/23/2024
Page No : 2

Start Time	CHERRYVALE RD Southbound					OREG AVE Westbound					CHERRYVALE RD Northbound					NO ACCESS Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection 07:30 AM																					
Volume	29	90	0	0	119	1	0	1	0	2	0	323	21	1	345	1	1	0	0	2	468
Percent	24.	75.	0.0	0.0		50.	0.0	50.	0.0		0.0	93.	6	6.1	0.3	50.	50.	0.0	0.0	0.0	
08:15 Volume Peak Factor	1	33	0	0	34	1	0	1	0	2	0	102	3	0	105	0	1	0	0	1	142
High Int. 07:30 AM						08:15 AM					08:15 AM					07:45 AM					
Volume Peak Factor	18	22	0	0	40	1	0	1	0	2	0	102	3	0	105	0.82	1	0	0	0	0.50
					0.74					0.25					1					0	



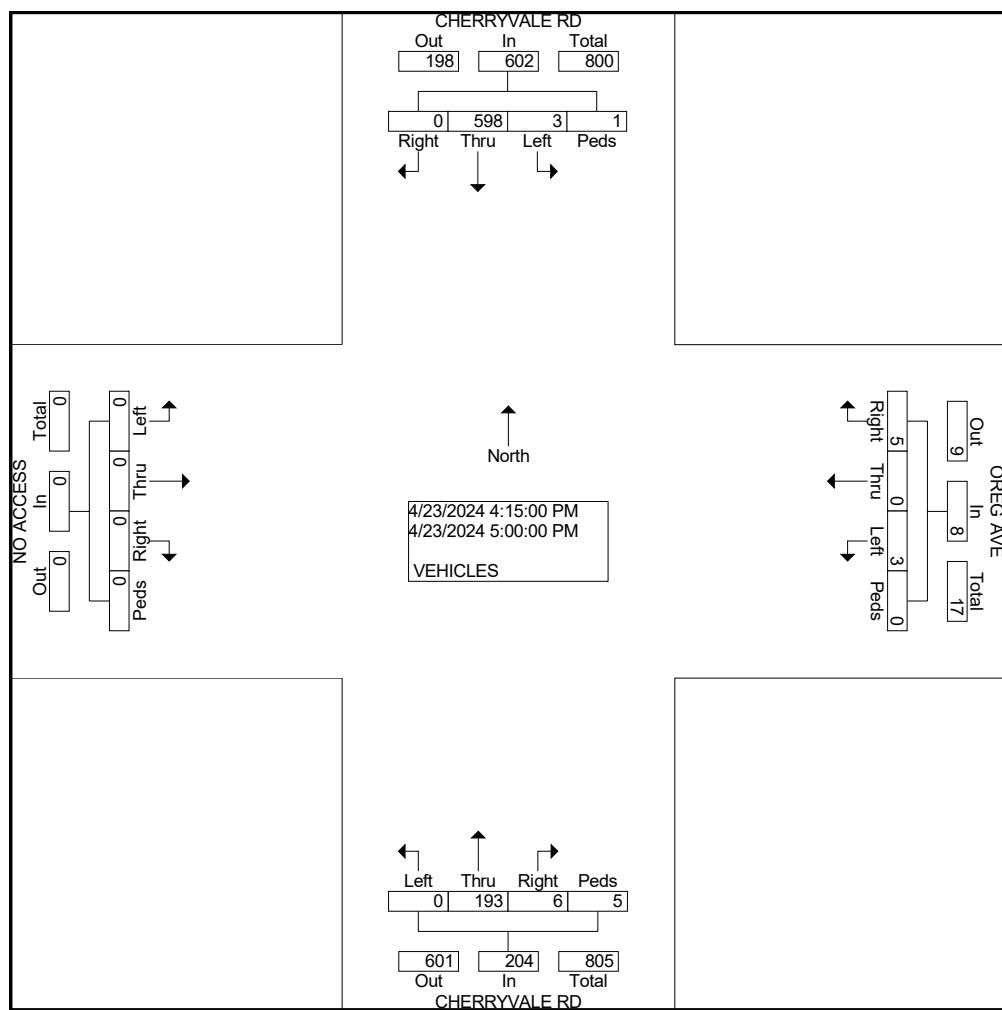
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: OREG AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERROREG
Site Code : 00000005
Start Date : 4/23/2024
Page No : 3

Start Time	CHERRYVALE RD Southbound					OREG AVE Westbound					CHERRYVALE RD Northbound					NO ACCESS Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection 04:15 PM																					
Volume	3	598	0	1	602	3	0	5	0	8	0	193	6	5	204	0	0	0	0	0	814
Percent	0.5	99.3	0.0	0.2		37.5	0.0	62.5	0.0		0.0	94.6	2.9	2.5		0.0	0.0	0.0	0.0	0.0	
04:30 Volume	0	162	0	0	162	0	0	1	0	1	0	52	1	4	57	0	0	0	0	0	220
Peak Factor																					0.925
High Int. 04:30 PM						04:15 PM					04:30 PM										
Volume	0	162	0	0	162	1	0	3	0	4	0	52	1	4	57	0	0.50	0.89	0.89	0.89	
Peak Factor						0.92					0										
						9															



Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: ARAPAHOE AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYARAPAHOE
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 1

Groups Printed- Bank 2

Start Time	NO ACCESS Southbound				ARAPAHOE AVE Westbound				JULIE'S WAY Northbound				ARAPAHOE AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	5
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	13	0	15
08:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3
Total	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4
04:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	0	10	0	0	0	1	0	11
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Grand Total	0	0	0	0	0	0	0	0	0	0	14	0	0	0	20	0	34
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	58.8	0.0	

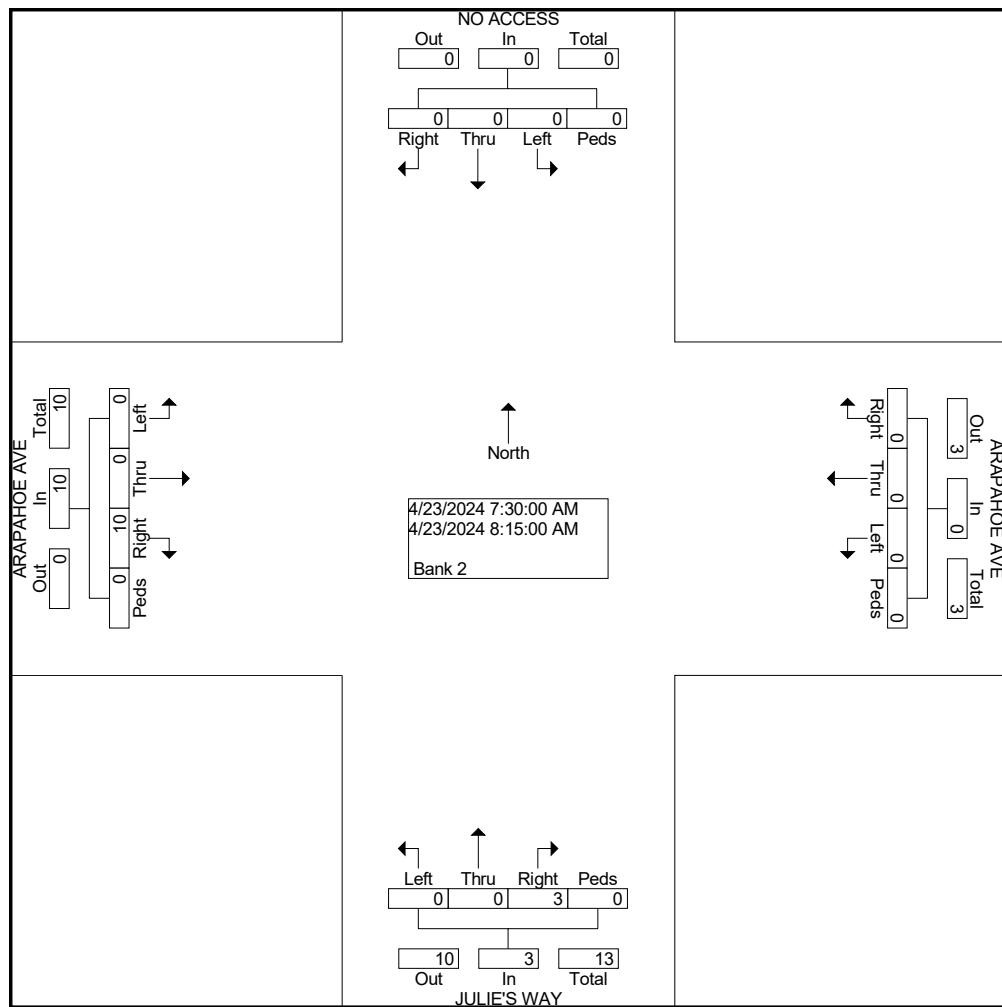
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: ARAPAHOE AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYARAPAHOE
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 2

Start Time	NO ACCESS Southbound					ARAPAHOE AVE Westbound					JULIE'S WAY Northbound					ARAPAHOE AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	10	0	10	13
Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	
07:30 Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	7
High Int. Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	7	0	7	0.464



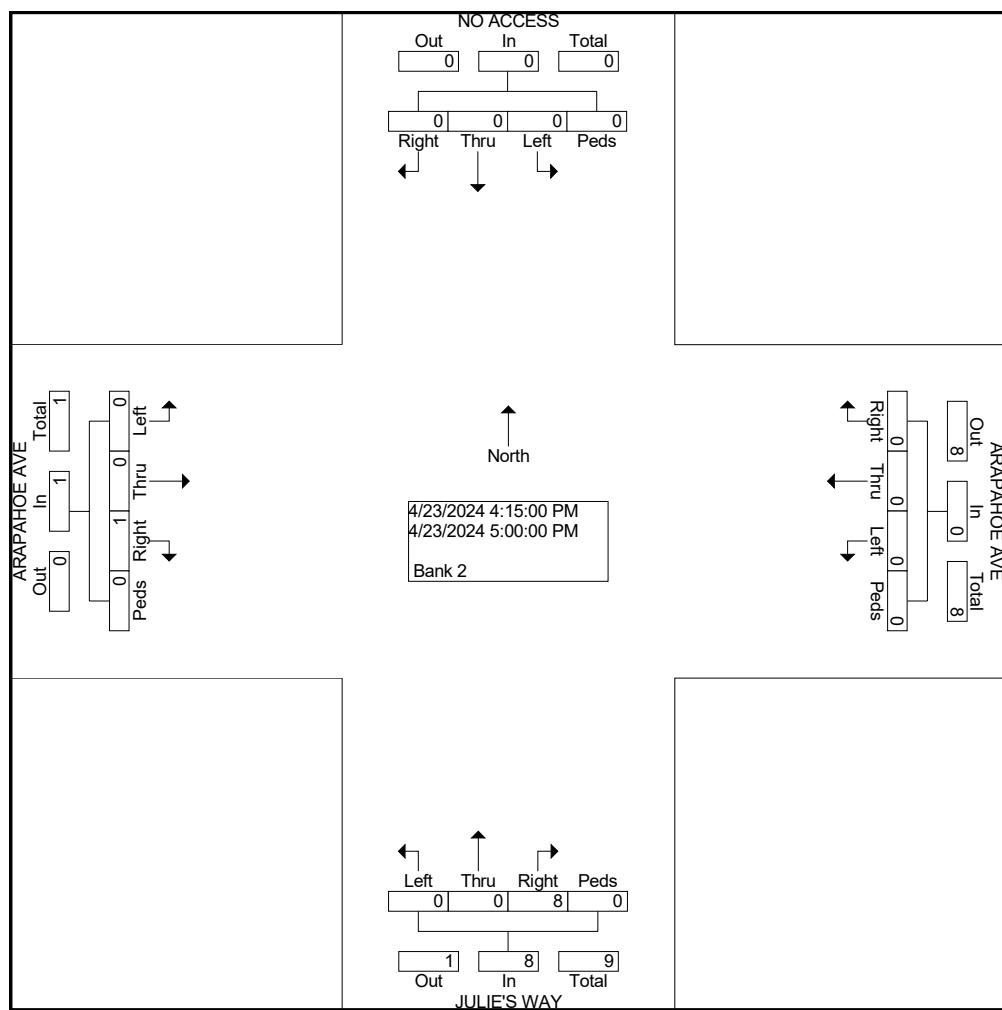
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: ARAPAHOE AVE
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1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYARAPAHOE
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 3

Start Time	NO ACCESS Southbound				ARAPAHOE AVE Westbound				JULIE'S WAY Northbound				ARAPAHOE AVE Eastbound				Int. Total
	Left	Thru	Right	Ped s	Left	Thru	Right	Ped s	Left	Thru	Right	Ped s	Left	Thru	Right	Ped s	
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																	
Intersection 04:15 PM	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	9
Volume	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0
Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0
04:45 Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
High Int. Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0.750
												0.66					0.250
												7					0



Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: OREG AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYOREG
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 1

Groups Printed- Bank 1

Start Time	JULIE'S WAY Southbound				PRIVATE DRIVE Westbound				NO ACCESS Northbound				OREG AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5
07:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	11	0	0	0	12
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	0	0	1	0	0	0	0	0	0	0	0	0	21	0	0	0	22
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
04:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
04:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3
04:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
04:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3
Total	0	0	4	0	0	0	0	0	0	0	0	0	6	0	0	0	10
05:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	3
05:15 PM	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
05:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	4	0	0	1	0	0	0	0	0	0	1	1	0	0	7
Grand Total	0	0	9	0	0	1	0	0	0	0	0	0	30	1	0	0	41
Apprch %	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	96.8	3.2	0.0	0.0	
Total %	0.0	0.0	22.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	73.2	2.4	0.0	0.0	

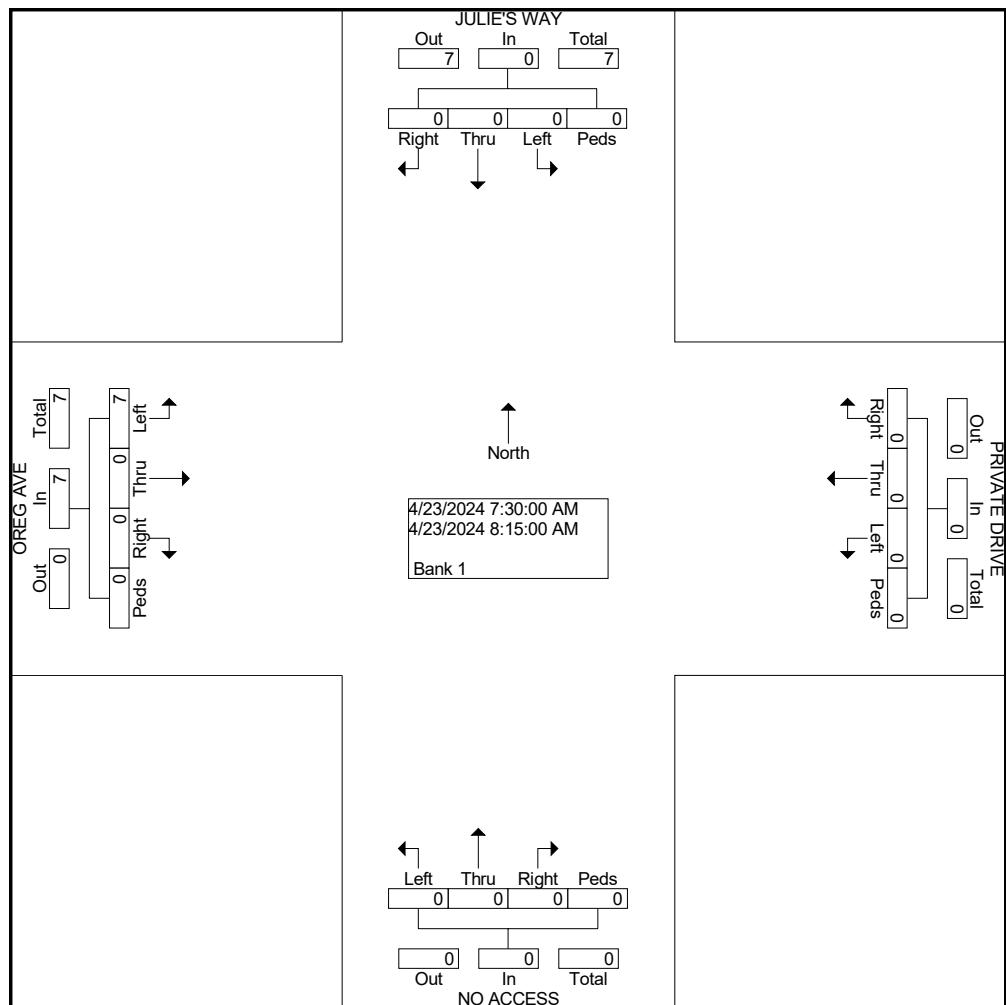
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: OREG AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYOREG
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 2

Start Time	JULIE'S WAY Southbound					PRIVATE DRIVE Westbound					NO ACCESS Northbound					OREG AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7
Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
07:30 Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
High Int. Volume Peak Factor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0.438
																07:30 AM					
																					0.438
																					0.438



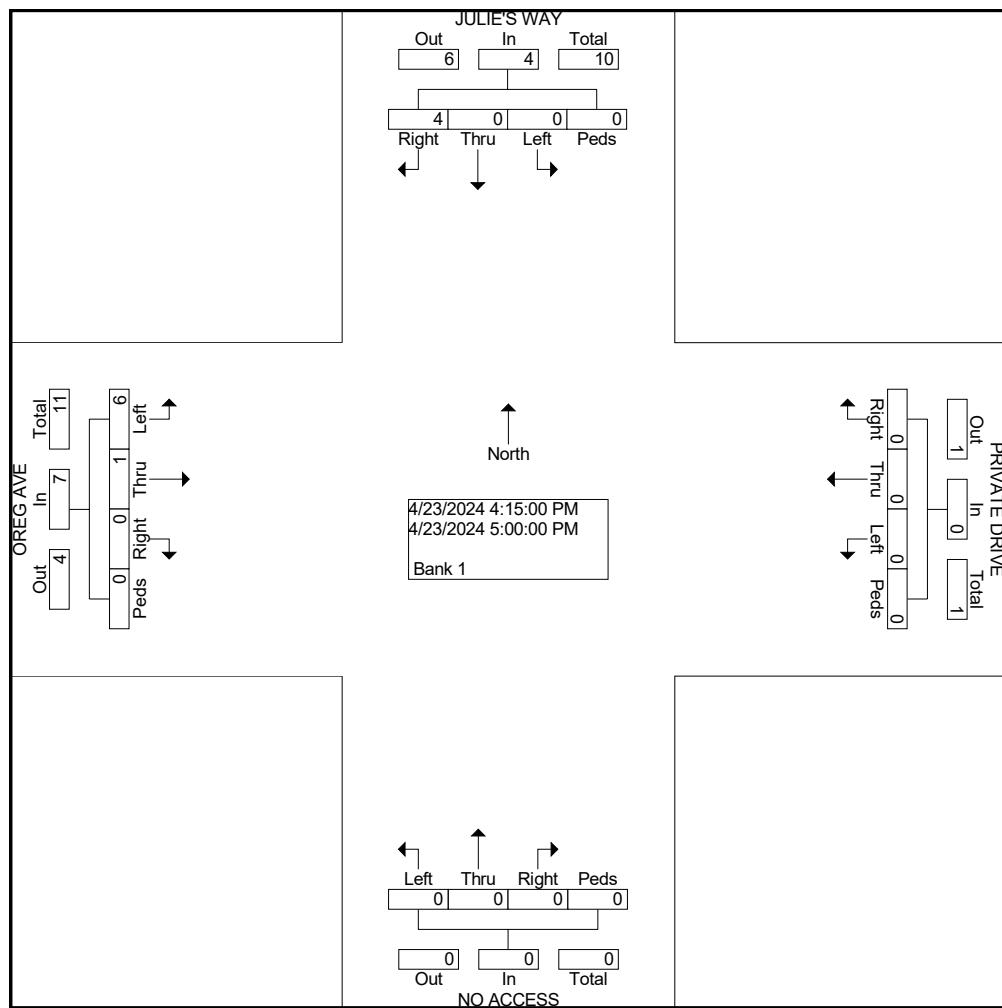
Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: JULIE'S WAY
 E/W STREET: OREG AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : JULIESWAYOREG
 Site Code : 00000005
 Start Date : 4/23/2024
 Page No : 3

Start Time	JULIE'S WAY Southbound					PRIVATE DRIVE Westbound					NO ACCESS Northbound					OREG AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection 04:15 PM																					
Volume	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	6	1	0	0	7	11
Percent	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.7	14.3	0.0	0.0	0.0	
05:00 Volume	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3
Peak Factor																					0.917
High Int. 04:15 PM																04:15 PM					
Volume Peak Factor	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0.87
						1.00										0	2	0	0	0	5



Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: ARAPAHOE AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERARAPAHOE2
Site Code : 00000008
Start Date : 4/27/2024
Page No : 1

Groups Printed- VEHICLES

Start Time	CHERRYVALE RD Southbound				ARAPAHOE AVE Westbound				CHERRYVALE RD Northbound				ARAPAHOE AVE Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	317
11:30 AM	4	1	15	0	8	143	5	0	11	12	5	0	9	92	12	0	317
11:45 AM	5	2	6	0	8	141	3	0	23	1	6	0	6	122	15	0	338
Total	9	3	21	0	16	284	8	0	34	13	11	0	15	214	27	0	655
12:00 PM	5	0	8	0	6	163	1	0	26	2	3	0	6	111	21	0	352
12:15 PM	5	1	2	0	8	137	6	0	24	0	11	0	7	122	19	0	342
12:30 PM	6	1	5	0	14	149	1	0	20	0	6	0	5	139	16	0	362
12:45 PM	3	0	6	0	9	145	2	1	23	2	9	0	5	106	13	0	324
Total	19	2	21	0	37	594	10	1	93	4	29	0	23	478	69	0	1380
01:00 PM	2	0	9	0	5	115	2	0	27	1	7	0	6	145	12	0	331
01:15 PM	4	0	6	0	9	111	3	0	24	1	8	0	4	122	16	0	308
Grand Total	34	5	57	0	67	1104	23	1	178	19	55	0	48	959	124	0	2674
Apprch %	35.4	5.2	59.4	0.0	5.6	92.4	1.9	0.1	70.6	7.5	21.8	0.0	4.2	84.8	11.0	0.0	
Total %	1.3	0.2	2.1	0.0	2.5	41.3	0.9	0.0	6.7	0.7	2.1	0.0	1.8	35.9	4.6	0.0	

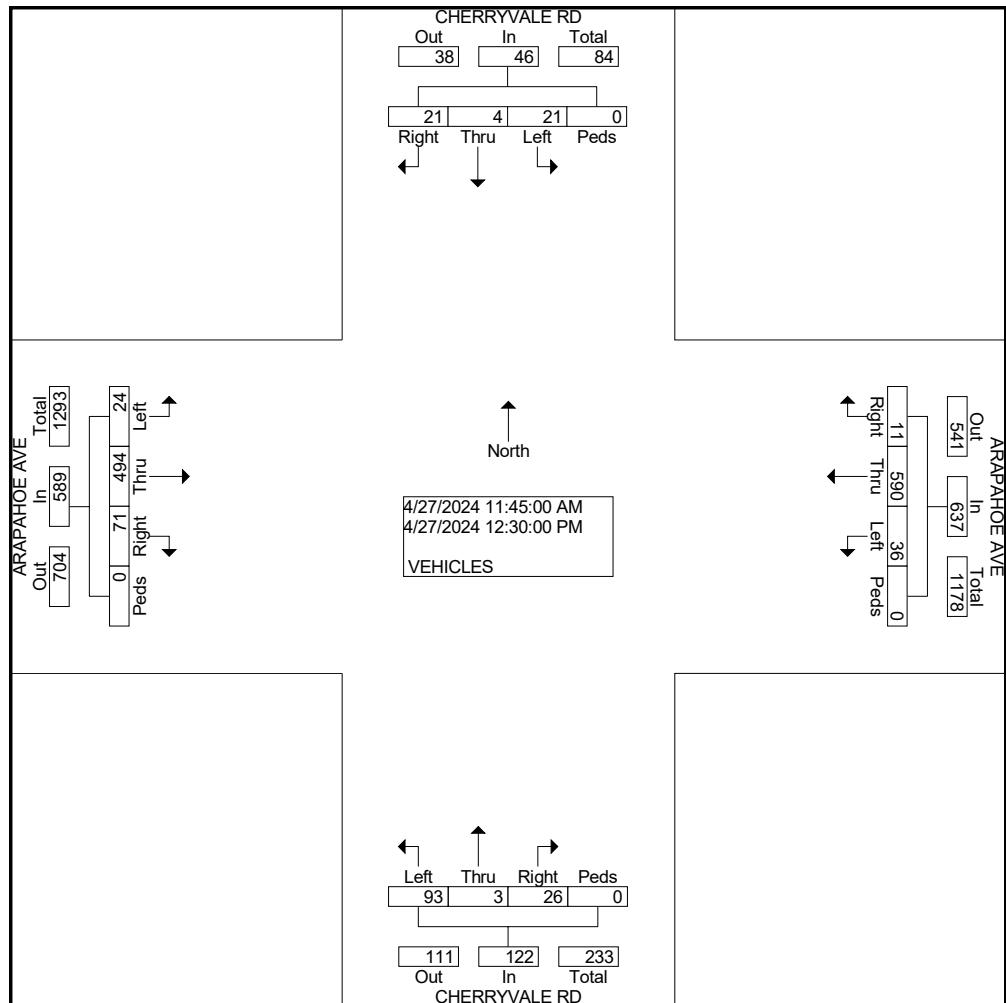
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COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: ARAPAHOE AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHERARAPAHOE2
Site Code : 00000008
Start Date : 4/27/2024
Page No : 2

Start Time	CHERRYVALE RD Southbound					ARAPAHOE AVE Westbound					CHERRYVALE RD Northbound					ARAPAHOE AVE Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 11:30 AM to 01:15 PM - Peak 1 of 1																					
Intersection 11:45 AM	21	4	21	0	46	36	590	11	0	637	93	3	26	0	122	24	494	71	0	589	1394
Volume	45.	7	45.	0.0		5.7	92.	1.7	0.0		76.	2	2.5	21.	0.0	4.1	83.	12.	1	0.0	
Percent	7	8.7	7			5.7	92.	1.7	0.0		76.	2	2.5	21.	0.0	4.1	83.	12.	1	0.0	
12:30 Volume Peak Factor	6	1	5	0	12	14	149	1	0	164	20	0	6	0	26	5	139	16	0	160	362
High Int. 11:45 AM						12:00 PM					12:15 PM					12:30 PM					0.963
Volume Peak Factor	5	2	6	0	13	6	163	1	0	170	24	0	11	0	35	5	139	16	0	160	0.92
					0.88					0.93					0.87					0	
					5					7					1						



Attachment C - Applicant's TDM Plan and Traffic Study
COUNTER MEASURES INC.

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 E/W STREET: OREG AVE
 CITY: BOULDER
 COUNTY: BOULDER

1889 YORK STREET
 DENVER, COLORADO
 303-333-7409

File Name : CHEROREGAVE
 Site Code : 00000008
 Start Date : 4/27/2024
 Page No : 1

Groups Printed- Bank 1

Start Time	CHERRYVALE RD Southbound				OREG AVE Westbound				CHERRYVALE RD Northbound				NO ACCESS Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	42
11:30 AM	3	14	0	0	3	0	5	0	0	11	6	0	0	0	0	0	42
11:45 AM	10	12	0	0	9	0	11	0	0	23	1	0	0	0	0	0	66
Total	13	26	0	0	12	0	16	0	0	34	7	0	0	0	0	0	108
12:00 PM	3	12	0	0	4	0	8	0	0	12	4	0	0	0	0	0	43
12:15 PM	5	11	0	0	7	0	11	0	0	19	2	0	0	0	0	0	55
12:30 PM	6	17	0	0	5	0	6	0	0	19	0	0	0	0	0	0	53
12:45 PM	5	9	0	0	0	0	4	0	0	19	1	0	0	0	0	0	38
Total	19	49	0	0	16	0	29	0	0	69	7	0	0	0	0	0	189
01:00 PM	2	14	0	0	4	0	7	0	0	28	0	0	0	0	0	0	55
01:15 PM	3	10	0	0	8	0	7	0	0	25	0	0	0	0	0	0	53
Grand Total	37	99	0	0	40	0	59	0	0	156	14	0	0	0	0	0	405
Apprch %	27.2	72.8	0.0	0.0	40.4	0.0	59.6	0.0	0.0	91.8	8.2	0.0	0.0	0.0	0.0	0.0	
Total %	9.1	24.4	0.0	0.0	9.9	0.0	14.6	0.0	0.0	38.5	3.5	0.0	0.0	0.0	0.0	0.0	

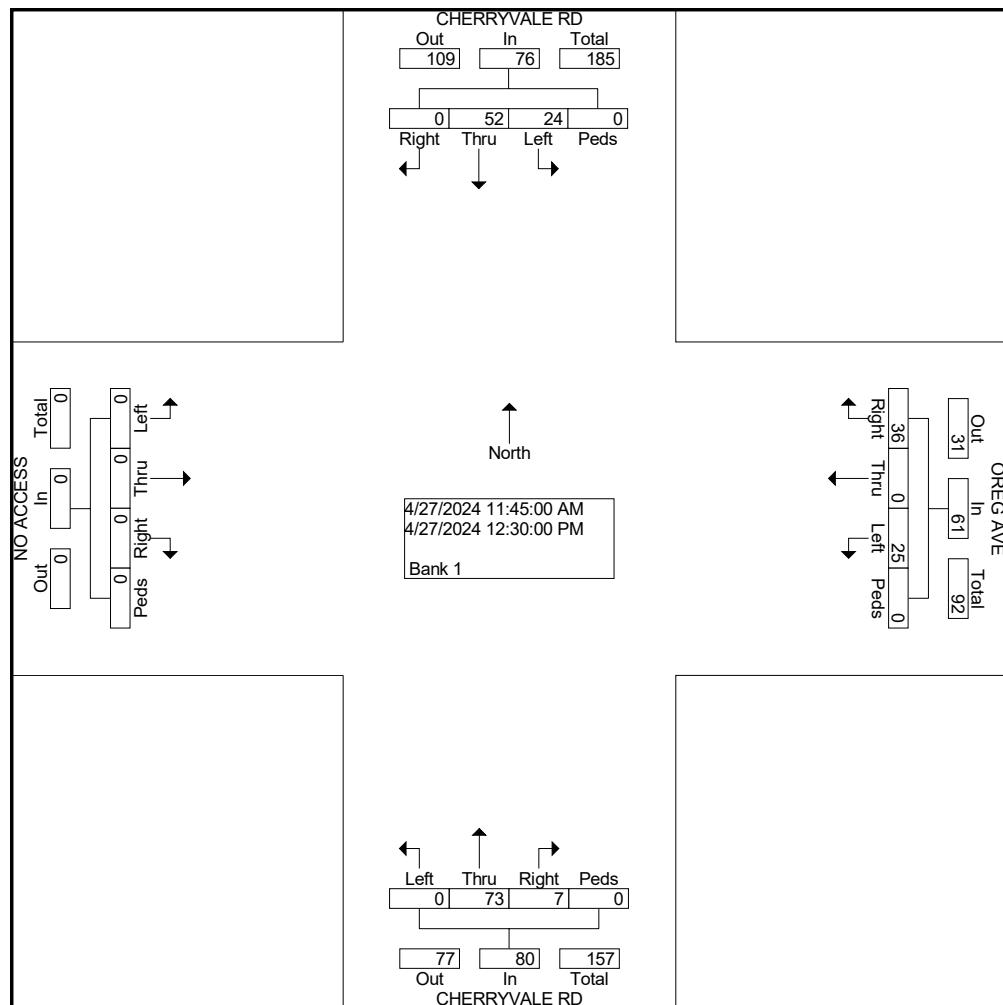
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COUNTER MEASURES INC.

N/S STREET: CHERRYVALE RD
E/W STREET: OREG AVE
CITY: BOULDER
COUNTY: BOULDER

1889 YORK STREET
DENVER, COLORADO
303-333-7409

File Name : CHEROREGAVE
Site Code : 00000008
Start Date : 4/27/2024
Page No : 2

Start Time	CHERRYVALE RD Southbound					OREG AVE Westbound					CHERRYVALE RD Northbound					NO ACCESS Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 11:30 AM to 01:15 PM - Peak 1 of 1																					
Intersection 11:45 AM																					
Volume	24	52	0	0	76	25	0	36	0	61	0	73	7	0	80	0	0	0	0	0	217
Percent	31.	68.	0.0	0.0		41.	0.0	59.	0.0		0.0	91.	8.8	0.0		0.0	0.0	0.0	0.0	0.0	
11:45 Volume Peak Factor	10	12	0	0	22	9	0	11	0	20	0	23	1	0	24	0	0	0	0	0	66
High Int. 12:30 PM						11:45 AM					11:45 AM					11:15:00 AM					0.822
Volume Peak Factor	6	17	0	0	23	9	0	11	0	20	0	23	1	0	24	0.82	0.76	0.83	0.83	0.83	



LEVEL OF SERVICE DEFINITIONS
From *Highway Capacity Manual*, Transportation Research Board

SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

<u>LOS</u>	<u>Average Vehicle Delay</u> sec/vehicle	<u>Operational Characteristics</u>
A	<10 seconds	Describes operations with low control delay, up to 10 sec/veh. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	10 to 20 seconds	Describes operations with control delay greater than 10 seconds and up to 20 sec/veh. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20 to 35 seconds	Describes operations with control delay greater than 20 and up to 35 sec/veh. These higher delays may result from only fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles, and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	35 to 55 seconds	Describes operations with control delay greater than 35 and up to 55 sec/veh. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55 to 80 seconds	Describes operations with control delay greater than 55 and up to 80 sec/veh. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
F	>80 seconds	Describes operations with control delay in excess of 80 sec/veh. This level, considered unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

LEVEL OF SERVICE DEFINITIONS
From *Highway Capacity Manual*, Transportation Research Board

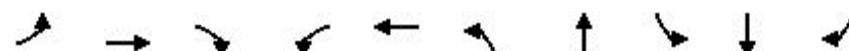
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

Applicable to Two-Way Stop Control, All-Way Stop Control, and Roundabouts

LOS	Average Vehicle Control Delay	Operational Characteristics
A	<10 seconds	Normally, vehicles on the stop-controlled approach only have to wait up to 10 seconds before being able to clear the intersection. Left-turning vehicles on the uncontrolled street do not have to wait to make their turn.
B	10 to 15 seconds	Vehicles on the stop-controlled approach will experience delays before being able to clear the intersection. <u>The delay could be up to 15 seconds.</u> Left-turning vehicles on the uncontrolled street may have to wait to make their turn.
C	15 to 25 seconds	Vehicles on the stop-controlled approach can expect delays in the range of 15 to 25 seconds before clearing the intersection. Motorists may begin to take chances due to the long delays, thereby posing a safety risk to through traffic. <u>Left-turning vehicles on the uncontrolled street will now be required to wait to make their turn causing a queue to be created in the turn lane.</u>
D	25 to 35 seconds	This is the point at which a traffic signal may be warranted for this intersection. The delays for the stop-controlled intersection are not considered to be excessive. The length of the queue may begin to block other public and private access points.
E	35 to 50 seconds	The delays for all critical traffic movements are considered to be unacceptable. The length of the queues for the stop-controlled approaches as well as the left-turn movements are extremely long. <u>There is a high probability that this intersection will meet traffic signal warrants.</u> The ability to install a traffic signal is affected by the location of other existing traffic signals. Consideration may be given to restricting the accesses by eliminating the left-turn movements from and to the stop-controlled approach.
F	>50 seconds	The delay for the critical traffic movements are probably in excess of 100 seconds. The length of the queues are extremely long. Motorists are selecting alternative routes due to the long delays. <u>The only remedy for these long delays is installing a traffic signal or restricting the accesses.</u> The potential for accidents at this intersection are extremely high due to motorist taking more risky chances. If the median permits, motorists begin making two-stage left-turns.

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	34	376	68	61	986	216	20	11	2	24
Future Volume (vph)	34	376	68	61	986	216	20	11	2	24
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2		4
Permitted Phases							2	4	8	
Detector Phase					6		6	5	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	71.9	71.9	71.9	82.2	81.5	15.0	15.0		15.0	15.0
Actuated g/C Ratio	0.67	0.67	0.67	0.76	0.75	0.14	0.14		0.14	0.14
v/c Ratio	0.12	0.17	0.07	0.09	0.29	0.63	0.44		0.07	0.09
Control Delay	7.8	6.2	1.8	4.1	4.6	50.9	14.5		39.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	7.8	6.2	1.8	4.1	4.6	50.9	14.5		39.0	0.6
LOS	A	A	A	A	A	D	B		D	A
Approach Delay				5.7		4.6	36.9		14.1	
Approach LOS				A		A	D		B	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

1: Cherryvale Rd. & Arapahoe Ave.

Existing
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑	↑↑	↑	↑	↑	↑	↑
Traffic Volume (veh/h)	34	376	68	61	986	39	216	20	114	11	2	24
Future Volume (veh/h)	34	376	68	61	986	39	216	20	114	11	2	24
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	37	409	74	66	1072	42	235	22	124	12	2	26
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	374	2174	970	635	3487	137	454	49	278	200	29	320
Arrive On Green	0.61	0.61	0.61	0.03	0.69	0.69	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	506	3554	1585	1781	5042	197	2681	244	1378	685	143	1585
Grp Volume(v), veh/h	37	409	74	66	724	390	235	0	146	14	0	26
Grp Sat Flow(s), veh/h/ln	506	1777	1585	1781	1702	1835	1341	0	1622	828	0	1585
Q Serve(g_s), s	3.3	5.5	2.1	1.4	9.0	9.0	9.1	0.0	8.5	0.5	0.0	1.4
Cycle Q Clear(g_c), s	3.8	5.5	2.1	1.4	9.0	9.0	18.0	0.0	8.5	9.0	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.85	0.86		1.00
Lane Grp Cap(c), veh/h	374	2174	970	635	2355	1269	454	0	327	229	0	320
V/C Ratio(X)	0.10	0.19	0.08	0.10	0.31	0.31	0.52	0.00	0.45	0.06	0.00	0.08
Avail Cap(c_a), veh/h	374	2174	970	690	2355	1269	965	0	637	478	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.0	9.2	8.5	6.7	6.5	6.5	45.9	0.0	37.8	38.2	0.0	35.0
Incr Delay (d2), s/veh	0.5	0.2	0.2	0.1	0.3	0.6	0.9	0.0	1.0	0.1	0.0	0.1
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	0.4	1.9	0.7	0.5	2.7	3.0	3.1	0.0	3.5	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.5	9.4	8.7	6.8	6.9	7.1	46.8	0.0	38.8	38.3	0.0	35.1
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	520				1180			381			40	
Approach Delay, s/veh	9.3				6.9			43.7			36.2	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	80.6		27.4		8.6	72.0		27.4				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	11.0		20.0		3.4	7.5		11.0				
Green Ext Time (p_c), s	8.3		1.7		0.0	3.3		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			14.7									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations 

Traffic Vol, veh/h 490 10 0 1085 0 3

Future Vol, veh/h 490 10 0 1085 0 3

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 70 70 70 70 70 70

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 700 14 0 1550 0 4

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 357

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 639

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 639

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 10.7

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 639 - - -

HCM Lane V/C Ratio 0.007 - - -

HCM Control Delay (s) 10.7 - - -

HCM Lane LOS B - - -

HCM 95th %tile Q(veh) 0 - - -

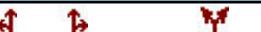
Intersection			
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	2	420	145
Demand Flow Rate, veh/h	2	429	148
Vehicles Circulating, veh/h	402	36	1
Vehicles Exiting, veh/h	63	113	403
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.0	5.7	3.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	2	429	148
Cap Entry Lane, veh/h	916	1330	1378
Entry HV Adj Factor	1.000	0.979	0.978
Flow Entry, veh/h	2	420	145
Cap Entry, veh/h	916	1303	1349
V/C Ratio	0.002	0.323	0.107
Control Delay, s/veh	4.0	5.7	3.5
LOS	A	A	A
95th %tile Queue, veh	0	1	0

Intersection

Int Delay, s/veh 6.3

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations



Traffic Vol, veh/h 7 0 0 0 0 0

Future Vol, veh/h 7 0 0 0 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 70 70 70 70 70 70

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 10 0 0 0 0 0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 1 0 - 0 21 1

Stage 1 - - - - 1 -

Stage 2 - - - - 20 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 1622 - - - 996 1084

Stage 1 - - - - 1022 -

Stage 2 - - - - 1003 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 1622 - - - 990 1084

Mov Cap-2 Maneuver - - - - 990 -

Stage 1 - - - - 1016 -

Stage 2 - - - - 1003 -

Approach EB WB SB

HCM Control Delay, s 7.2 0 0

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1622 - - - -

HCM Lane V/C Ratio 0.006 - - - -

HCM Control Delay (s) 7.2 0 - - 0

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - -

Timings

1: Cherryvale Rd. & Arapahoe Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	25	979	467	138	560	132	7	51	40	65
Future Volume (vph)	25	979	467	138	560	132	7	51	40	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases					6		2	4	8	
Detector Phase					6		5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	70.4	70.4	70.4	84.8	84.1	12.4	12.4		12.4	12.4
Actuated g/C Ratio	0.65	0.65	0.65	0.79	0.78	0.11	0.11		0.11	0.11
v/c Ratio	0.06	0.45	0.43	0.35	0.16	0.49	0.38		0.59	0.27
Control Delay	8.2	9.5	3.0	5.4	3.3	49.6	14.1		59.3	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.2	9.5	3.0	5.4	3.3	49.6	14.1		59.3	9.5
LOS	A	A	A	A	A	D	B		E	A
Approach Delay		7.4				3.7	34.7		38.6	
Approach LOS		A				A	C		D	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 10.6

Intersection LOS: B

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



CSM

Synchro 11 Report

HCM 6th Signalized Intersection Summary

1: Cherryvale Rd. & Arapahoe Ave.

Existing
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	979	467	138	560	39	132	7	88	51	40	65
Future Volume (veh/h)	25	979	467	138	560	39	132	7	88	51	40	65
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	1041	497	147	596	41	140	7	94	54	43	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	556	2202	982	306	3488	238	343	20	267	156	110	284
Arrive On Green	0.62	0.62	0.62	0.05	0.71	0.71	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	791	3554	1585	1781	4881	333	2485	111	1491	580	616	1585
Grp Volume(v), veh/h	27	1041	497	147	414	223	140	0	101	97	0	69
Grp Sat Flow(s), veh/h/ln	791	1777	1585	1781	1702	1810	1242	0	1602	1196	0	1585
Q Serve(g_s), s	1.5	17.0	18.8	3.1	4.3	4.3	5.9	0.0	6.0	4.4	0.0	4.0
Cycle Q Clear(g_c), s	1.5	17.0	18.8	3.1	4.3	4.3	16.1	0.0	6.0	10.3	0.0	4.0
Prop In Lane	1.00		1.00	1.00		0.18	1.00		0.93	0.56		1.00
Lane Grp Cap(c), veh/h	556	2202	982	306	2433	1294	343	0	287	266	0	284
V/C Ratio(X)	0.05	0.47	0.51	0.48	0.17	0.17	0.41	0.00	0.35	0.36	0.00	0.24
Avail Cap(c_a), veh/h	556	2202	982	334	2433	1294	874	0	629	586	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	11.1	11.4	8.9	5.0	5.0	48.0	0.0	38.9	41.3	0.0	38.1
Incr Delay (d2), s/veh	0.2	0.7	1.9	1.2	0.2	0.3	0.8	0.0	0.7	0.8	0.0	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	0.2	6.0	6.2	1.0	1.2	1.4	1.9	0.0	2.4	2.5	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.3	11.8	13.2	10.0	5.2	5.3	48.8	0.0	39.6	42.1	0.0	38.5
LnGrp LOS	A	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1565				784			241			166	
Approach Delay, s/veh	12.2				6.1			44.9			40.6	
Approach LOS	B				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	83.1		24.9		10.3	72.8		24.9				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	6.3		18.1		5.1	20.8		12.3				
Green Ext Time (p_c), s	4.1		1.2		0.1	9.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			15.0									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

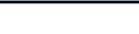
CSM

Synchro 11 Report

Intersection

Int Delay, s/veh 0.1

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations   

Traffic Vol, veh/h 1115 1 0 715 0 8

Future Vol, veh/h 1115 1 0 715 0 8

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 1394 1 0 894 0 10

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 698

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 383

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 383

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 14.7

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 383 - - -

HCM Lane V/C Ratio 0.026 - - -

HCM Control Delay (s) 14.7 - - -

HCM Lane LOS B - - -

HCM 95th %tile Q(veh) 0.1 - - -

Intersection			
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	8	217	653
Demand Flow Rate, veh/h	8	221	666
Vehicles Circulating, veh/h	214	3	3
Vehicles Exiting, veh/h	10	666	219
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.3	4.0	7.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	8	221	666
Cap Entry Lane, veh/h	1109	1376	1376
Entry HV Adj Factor	1.000	0.981	0.980
Flow Entry, veh/h	8	217	653
Cap Entry, veh/h	1109	1350	1349
V/C Ratio	0.007	0.161	0.484
Control Delay, s/veh	3.3	4.0	7.6
LOS	A	A	A
95th %tile Queue, veh	0	1	3

Intersection

Int Delay, s/veh 5.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations



Traffic Vol, veh/h 7 1 0 0 0 0

Future Vol, veh/h 7 1 0 0 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 9 1 0 0 0 0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 1 0 - 0 20 1

Stage 1 - - - - 1 -

Stage 2 - - - - 19 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 1622 - - - 997 1084

Stage 1 - - - - 1022 -

Stage 2 - - - - 1004 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 1622 - - - 991 1084

Mov Cap-2 Maneuver - - - - 991 -

Stage 1 - - - - 1016 -

Stage 2 - - - - 1004 -

Approach EB WB SB

HCM Control Delay, s 6.3 0 0

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1622 - - - -

HCM Lane V/C Ratio 0.005 - - - -

HCM Control Delay (s) 7.2 0 - - 0

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - -

Timings

1: Cherryvale Rd. & Arapahoe Ave.

Existing
Midday Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	24	494	71	36	590	93	3	21	4	21
Future Volume (vph)	24	494	71	36	590	93	3	21	4	21
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2		4
Permitted Phases							6	2	4	8
Detector Phase							6	5	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	80.3	80.3	80.3	87.9	87.2	9.3	9.3		9.3	9.3
Actuated g/C Ratio	0.74	0.74	0.74	0.81	0.81	0.09	0.09		0.09	0.09
v/c Ratio	0.04	0.20	0.06	0.05	0.15	0.42	0.18		0.22	0.10
Control Delay	4.7	4.2	1.5	2.4	2.5	51.8	20.8		49.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.7	4.2	1.5	2.4	2.5	51.8	20.8		49.4	1.0
LOS	A	A	A	A	A	D	C		D	A
Approach Delay		3.9			2.5		44.5		27.2	
Approach LOS		A			A		D		C	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 43.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



CSM

Synchro 11 Report

HCM 6th Signalized Intersection Summary

1: Cherryvale Rd. & Arapahoe Ave.

Existing
Midday Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	24	494	71	36	590	11	93	3	26	21	4	21
Future Volume (veh/h)	24	494	71	36	590	11	93	3	26	21	4	21
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	25	515	74	38	615	11	97	3	27	22	4	22
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	652	2601	1160	679	4160	74	290	14	128	148	22	140
Arrive On Green	0.73	0.73	0.73	0.03	0.81	0.81	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	799	3554	1585	1781	5166	92	2686	161	1449	980	250	1585
Grp Volume(v), veh/h	25	515	74	38	405	221	97	0	30	26	0	22
Grp Sat Flow(s), veh/h/ln	799	1777	1585	1781	1702	1854	1343	0	1610	1230	0	1585
Q Serve(g_s), s	0.9	4.9	1.4	0.5	2.8	2.8	3.8	0.0	1.9	1.4	0.0	1.4
Cycle Q Clear(g_c), s	1.0	4.9	1.4	0.5	2.8	2.8	7.0	0.0	1.9	3.2	0.0	1.4
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.90	0.85		1.00
Lane Grp Cap(c), veh/h	652	2601	1160	679	2741	1493	290	0	142	170	0	140
V/C Ratio(X)	0.04	0.20	0.06	0.06	0.15	0.15	0.33	0.00	0.21	0.15	0.00	0.16
Avail Cap(c_a), veh/h	652	2601	1160	747	2741	1493	1108	0	632	608	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.0	4.5	4.1	3.0	2.3	2.3	49.7	0.0	45.7	46.7	0.0	45.5
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	0.1	0.2	0.7	0.0	0.7	0.4	0.0	0.5
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	0.1	1.4	0.4	0.1	0.6	0.7	1.3	0.0	0.8	0.7	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.1	4.7	4.2	3.0	2.4	2.5	50.3	0.0	46.5	47.1	0.0	46.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	614				664			127			48	
Approach Delay, s/veh	4.6				2.5			49.4			46.6	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+R _c), s	92.9		15.1		7.9		85.0		15.1			
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2		* 5.9		5.6			
Max Green Setting (Gmax), s	* 54		42.4		* 6.8		* 42		42.4			
Max Q Clear Time (g_c+l1), s	4.8		9.0		2.5		6.9		5.2			
Green Ext Time (p_c), s	4.0		0.5		0.0		3.8		0.2			
Intersection Summary												
HCM 6th Ctrl Delay			9.0									
HCM 6th LOS			A									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

CSM

Synchro 11 Report

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations   

Traffic Vol, veh/h 535 0 0 635 0 0

Future Vol, veh/h 535 0 0 635 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 669 0 0 794 0 0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 335

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 661

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 661

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 0

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) - - - -

HCM Lane V/C Ratio - - - -

HCM Control Delay (s) 0 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) - - - -

Intersection			
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	74	98	92
Demand Flow Rate, veh/h	76	100	94
Vehicles Circulating, veh/h	91	30	31
Vehicles Exiting, veh/h	39	95	136
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.4	3.3	3.3
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	76	100	94
Cap Entry Lane, veh/h	1258	1338	1337
Entry HV Adj Factor	0.974	0.982	0.976
Flow Entry, veh/h	74	98	92
Cap Entry, veh/h	1224	1314	1305
V/C Ratio	0.060	0.075	0.070
Control Delay, s/veh	3.4	3.3	3.3
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection

Int Delay, s/veh 0

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	1	0	-	0	1	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	-	1022	1084
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1022	1084
Mov Cap-2 Maneuver	-	-	-	-	1022	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	-	-

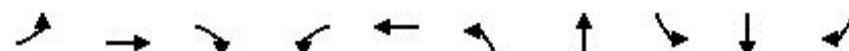
Approach EB WB SB

HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	1	2	1	1	2	1	2	1	2	1
Traffic Volume (vph)	35	385	70	62	1005	220	20	15	5	25
Future Volume (vph)	35	385	70	62	1005	220	20	15	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	8
Permitted Phases					6		2	4	8	8
Detector Phase					6		5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	71.5	71.5	71.5	81.8	81.1	15.4	15.4		15.4	15.4
Actuated g/C Ratio	0.66	0.66	0.66	0.76	0.75	0.14	0.14		0.14	0.14
v/c Ratio	0.13	0.18	0.07	0.09	0.30	0.62	0.44		0.11	0.09
Control Delay	8.0	6.4	1.9	4.2	4.8	50.4	14.1		39.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.0	6.4	1.9	4.2	4.8	50.4	14.1		39.4	0.6
LOS	A	A	A	A	A	D	B		D	A
Approach Delay		5.9			4.8		36.5		17.6	
Approach LOS		A			A		D		B	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2027 Background

1: Cherryvale Rd. & Arapahoe Ave.

AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	35	385	70	62	1005	40	220	20	116	15	5	25
Future Volume (veh/h)	35	385	70	62	1005	40	220	20	116	15	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	418	76	67	1092	43	239	22	126	16	5	27
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	365	2161	964	625	3470	137	458	49	283	188	51	325
Arrive On Green	0.61	0.61	0.61	0.03	0.69	0.69	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	496	3554	1585	1781	5040	198	2672	241	1381	631	250	1585
Grp Volume(v), veh/h	38	418	76	67	737	398	239	0	148	21	0	27
Grp Sat Flow(s), veh/h/ln	496	1777	1585	1781	1702	1835	1336	0	1622	881	0	1585
Q Serve(g_s), s	3.6	5.6	2.1	1.4	9.3	9.3	9.3	0.0	8.6	0.6	0.0	1.5
Cycle Q Clear(g_c), s	4.3	5.6	2.1	1.4	9.3	9.3	18.4	0.0	8.6	9.1	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.85	0.76		1.00
Lane Grp Cap(c), veh/h	365	2161	964	625	2343	1263	458	0	333	240	0	325
V/C Ratio(X)	0.10	0.19	0.08	0.11	0.31	0.31	0.52	0.00	0.44	0.09	0.00	0.08
Avail Cap(c_a), veh/h	365	2161	964	680	2343	1263	959	0	637	492	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.3	9.4	8.7	6.8	6.7	6.7	45.8	0.0	37.5	37.1	0.0	34.7
Incr Delay (d2), s/veh	0.6	0.2	0.2	0.1	0.4	0.7	0.9	0.0	0.9	0.2	0.0	0.1
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	0.4	2.0	0.7	0.5	2.8	3.2	3.1	0.0	3.5	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	9.6	8.9	6.9	7.0	7.3	46.7	0.0	38.5	37.3	0.0	34.8
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h	532				1202			387			48	
Approach Delay, s/veh	9.5				7.1			43.6			35.9	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	80.3		27.7		8.7	71.6		27.7				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	11.3		20.4		3.4	7.6		11.1				
Green Ext Time (p_c), s	8.5		1.8		0.0	3.4		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			14.9									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

CSM

Synchro 11 Report

HCM 6th TWSC
2: Julie's Way & Arapahoe Ave.

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	500	10	0	1105	0	5
Future Vol, veh/h	500	10	0	1105	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	714	14	0	1579	0	7
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	364
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	633
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	633
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	10.8			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	633	-	-	-		
HCM Lane V/C Ratio	0.011	-	-	-		
HCM Control Delay (s)	10.8	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0	-	-	-		

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 5.4

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	4	460	169
Demand Flow Rate, veh/h	4	470	173
Vehicles Circulating, veh/h	442	36	2
Vehicles Exiting, veh/h	64	139	444
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.1	6.0	3.7
Approach LOS	A	A	A

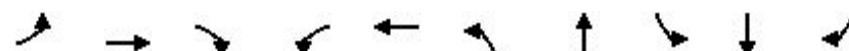
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	4	470	173
Cap Entry Lane, veh/h	879	1330	1377
Entry HV Adj Factor	1.000	0.979	0.979
Flow Entry, veh/h	4	460	169
Cap Entry, veh/h	879	1303	1348
V/C Ratio	0.005	0.353	0.126
Control Delay, s/veh	4.1	6.0	3.7
LOS	A	A	A
95th %tile Queue, veh	0	2	0

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	31	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	983	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	994	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	974	1082
Mov Cap-2 Maneuver	-	-	-	-	974	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	994	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1620	-	-	-	1025	
HCM Lane V/C Ratio	0.009	-	-	-	0.003	
HCM Control Delay (s)	7.2	0	-	-	8.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	25	995	475	140	570	134	10	55	40	65
Future Volume (vph)	25	995	475	140	570	134	10	55	40	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2		4
Permitted Phases							4		8	
Detector Phase					6		6	5	4	4
Switch Phase									8	8
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6		5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	69.7	69.7	69.7	84.3	83.6	12.9	12.9		12.9	12.9
Actuated g/C Ratio	0.65	0.65	0.65	0.78	0.77	0.12	0.12		0.12	0.12
v/c Ratio	0.06	0.46	0.44	0.36	0.17	0.48	0.39		0.63	0.26
Control Delay	8.7	10.0	3.2	5.7	3.5	49.1	14.6		61.1	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.7	10.0	3.2	5.7	3.5	49.1	14.6		61.1	9.2
LOS	A	A	A	A	A	D	B		E	A
Approach Delay					7.8		3.9	34.3		40.2
Approach LOS					A		C		D	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 61.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



CSM

Synchro 11 Report

HCM 6th Signalized Intersection Summary

2027 Background

1: Cherryvale Rd. & Arapahoe Ave.

PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	995	475	140	570	40	134	10	90	55	40	65
Future Volume (veh/h)	25	995	475	140	570	40	134	10	90	55	40	65
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	1059	505	149	606	43	143	11	96	59	43	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	543	2166	966	298	3436	242	347	31	271	165	107	298
Arrive On Green	0.61	0.61	0.61	0.05	0.71	0.71	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	782	3554	1585	1781	4870	343	2485	166	1445	597	570	1585
Grp Volume(v), veh/h	27	1059	505	149	422	227	143	0	107	102	0	69
Grp Sat Flow(s), veh/h/ln	782	1777	1585	1781	1702	1809	1242	0	1610	1167	0	1585
Q Serve(g_s), s	1.5	17.9	19.7	3.2	4.5	4.6	6.0	0.0	6.2	5.0	0.0	4.0
Cycle Q Clear(g_c), s	1.6	17.9	19.7	3.2	4.5	4.6	17.0	0.0	6.2	11.1	0.0	4.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.90	0.58		1.00
Lane Grp Cap(c), veh/h	543	2166	966	298	2402	1276	347	0	302	272	0	298
V/C Ratio(X)	0.05	0.49	0.52	0.50	0.18	0.18	0.41	0.00	0.35	0.38	0.00	0.23
Avail Cap(c_a), veh/h	543	2166	966	324	2402	1276	855	0	632	575	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.6	11.7	12.1	9.6	5.3	5.3	47.9	0.0	38.2	41.0	0.0	37.2
Incr Delay (d2), s/veh	0.2	0.8	2.0	1.3	0.2	0.3	0.8	0.0	0.7	0.9	0.0	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	0.3	6.4	6.6	1.1	1.3	1.5	1.9	0.0	2.5	2.6	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.7	12.5	14.1	10.9	5.5	5.7	48.7	0.0	38.9	41.8	0.0	37.6
LnGrp LOS	A	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1591				798			250			171	
Approach Delay, s/veh	13.0				6.5			44.5			40.1	
Approach LOS	B				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	82.1		25.9		10.4	71.7		25.9				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	6.6		19.0		5.2	21.7		13.1				
Green Ext Time (p_c), s	4.2		1.2		0.1	9.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			15.6									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
2: Julie's Way & Arapahoe Ave.

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1135	1	0	730	0	10
Future Vol, veh/h	1135	1	0	730	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1419	1	0	913	0	13
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	710
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	376
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	376
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	14.9			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	376	-	-	-		
HCM Lane V/C Ratio	0.033	-	-	-		
HCM Control Delay (s)	14.9	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 7.2

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	9	258	711
Demand Flow Rate, veh/h	9	263	725
Vehicles Circulating, veh/h	255	4	4
Vehicles Exiting, veh/h	12	725	260
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.5	4.3	8.3
Approach LOS	A	A	A

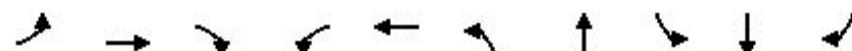
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	9	263	725
Cap Entry Lane, veh/h	1064	1374	1374
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	9	258	711
Cap Entry, veh/h	1064	1348	1347
V/C Ratio	0.008	0.191	0.528
Control Delay, s/veh	3.5	4.3	8.3
LOS	A	A	A
95th %tile Queue, veh	0	1	3

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	29	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	27	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	986	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	978	1082
Mov Cap-2 Maneuver	-	-	-	-	978	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	996	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1620	-	-	-	1027	
HCM Lane V/C Ratio	0.008	-	-	-	0.002	
HCM Control Delay (s)	7.2	0	-	-	8.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	25	505	72	37	600	95	5	25	5	25
Future Volume (vph)	25	505	72	37	600	95	5	25	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases						6	2	4	8	
Detector Phase						6	5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	80.2	80.2	80.2	87.8	87.1	9.4	9.4		9.4	9.4
Actuated g/C Ratio	0.74	0.74	0.74	0.81	0.81	0.09	0.09		0.09	0.09
v/c Ratio	0.05	0.20	0.06	0.06	0.16	0.43	0.20		0.26	0.12
Control Delay	4.8	4.3	1.5	2.4	2.5	51.9	21.5		50.5	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	4.8	4.3	1.5	2.4	2.5	51.9	21.5		50.5	1.2
LOS	A	A	A	A	A	D	C		D	A
Approach Delay				3.9		2.5	44.3		28.0	
Approach LOS				A		A	D		C	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 44.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2027 Background

1: Cherryvale Rd. & Arapahoe Ave.

Midday Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	505	72	37	600	15	95	5	27	25	5	25
Future Volume (veh/h)	25	505	72	37	600	15	95	5	27	25	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	526	75	39	625	16	99	5	28	26	5	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	639	2580	1151	667	4094	105	293	23	129	152	24	149
Arrive On Green	0.73	0.73	0.73	0.03	0.80	0.80	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	788	3554	1585	1781	5120	131	2674	246	1377	967	257	1585
Grp Volume(v), veh/h	26	526	75	39	415	226	99	0	33	31	0	26
Grp Sat Flow(s), veh/h/ln	788	1777	1585	1781	1702	1847	1337	0	1623	1223	0	1585
Q Serve(g_s), s	1.0	5.1	1.5	0.6	3.0	3.0	3.9	0.0	2.0	1.7	0.0	1.6
Cycle Q Clear(g_c), s	1.0	5.1	1.5	0.6	3.0	3.0	7.6	0.0	2.0	3.7	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.85	0.84		1.00
Lane Grp Cap(c), veh/h	639	2580	1151	667	2722	1477	293	0	152	176	0	149
V/C Ratio(X)	0.04	0.20	0.07	0.06	0.15	0.15	0.34	0.00	0.22	0.18	0.00	0.17
Avail Cap(c_a), veh/h	639	2580	1151	733	2722	1477	1092	0	637	605	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.2	4.8	4.3	3.2	2.5	2.5	49.6	0.0	45.3	46.4	0.0	45.1
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	0.1	0.2	0.7	0.0	0.7	0.5	0.0	0.6
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	0.1	1.5	0.4	0.1	0.6	0.7	1.3	0.0	0.8	0.8	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.3	4.9	4.4	3.2	2.6	2.7	50.3	0.0	46.0	46.9	0.0	45.6
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	627				680			132			57	
Approach Delay, s/veh	4.8				2.7			49.2			46.3	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5		6		8			
Phs Duration (G+Y+R _c), s	92.3		15.7		8.0		84.3		15.7			
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2		* 5.9		5.6			
Max Green Setting (Gmax), s	* 54		42.4		* 6.8		* 42		42.4			
Max Q Clear Time (g_c+l1), s	5.0		9.6		2.6		7.1		5.7			
Green Ext Time (p_c), s	4.1		0.5		0.0		3.9		0.2			
Intersection Summary												
HCM 6th Ctrl Delay			9.3									
HCM 6th LOS			A									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

CSM

Synchro 11 Report

HCM 6th TWSC
2: Julie's Way & Arapahoe Ave.

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	545	0	0	645	0	0
Future Vol, veh/h	545	0	0	645	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	681	0	0	806	0	0
Major/Minor						
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	341
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	655
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	655
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach						
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	0			
HCM LOS			A			
Minor Lane/Major Mvmt						
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	0	-	-	-		
HCM Lane LOS	A	-	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th Roundabout

3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 3.5

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	75	120	139
Demand Flow Rate, veh/h	77	122	142
Vehicles Circulating, veh/h	112	30	31
Vehicles Exiting, veh/h	40	143	158
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.5	3.5	3.6
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	77	122	142
Cap Entry Lane, veh/h	1231	1338	1337
Entry HV Adj Factor	0.974	0.982	0.977
Flow Entry, veh/h	75	120	139
Cap Entry, veh/h	1199	1314	1307
V/C Ratio	0.063	0.091	0.106
Control Delay, s/veh	3.5	3.5	3.6
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	29	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	27	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	986	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	978	1082
Mov Cap-2 Maneuver	-	-	-	-	978	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	996	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1620	-	-	-	1027	
HCM Lane V/C Ratio	0.008	-	-	-	0.002	
HCM Control Delay (s)	7.2	0	-	-	8.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

1: Cherryvale Rd. & Arapahoe Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	35	385	81	64	1005	222	20	15	5	25
Future Volume (vph)	35	385	81	64	1005	222	20	15	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5		4	
Permitted Phases							2		4	
Detector Phase							4		8	
Switch Phase									8	
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag									
Lead-Lag Optimize?	Yes									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	71.3	71.3	71.3	81.7	81.0	15.5	15.5		15.5	15.5
Actuated g/C Ratio	0.66	0.66	0.66	0.76	0.75	0.14	0.14		0.14	0.14
v/c Ratio	0.13	0.18	0.08	0.10	0.30	0.63	0.44		0.10	0.09
Control Delay	8.1	6.4	2.0	4.3	4.8	50.4	14.1		39.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	8.1	6.4	2.0	4.3	4.8	50.4	14.1		39.3	0.6
LOS	A	A	A	A	A	D	B		D	A
Approach Delay					5.8		4.8		36.6	17.5
Approach LOS					A		D		B	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2027 Total

AM Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	385	81	64	1005	40	222	20	116	15	5	25
Future Volume (veh/h)	35	385	81	64	1005	40	222	20	116	15	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	38	418	88	70	1092	43	241	22	126	16	5	27
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	364	2157	962	619	3466	136	460	50	284	189	52	326
Arrive On Green	0.61	0.61	0.61	0.03	0.69	0.69	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	496	3554	1585	1781	5040	198	2672	241	1381	633	250	1585
Grp Volume(v), veh/h	38	418	88	70	737	398	241	0	148	21	0	27
Grp Sat Flow(s), veh/h/ln	496	1777	1585	1781	1702	1835	1336	0	1622	884	0	1585
Q Serve(g_s), s	3.6	5.7	2.5	1.5	9.3	9.3	9.4	0.0	8.6	0.6	0.0	1.5
Cycle Q Clear(g_c), s	4.3	5.7	2.5	1.5	9.3	9.3	18.4	0.0	8.6	9.1	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.85	0.76		1.00
Lane Grp Cap(c), veh/h	364	2157	962	619	2341	1262	460	0	334	241	0	326
V/C Ratio(X)	0.10	0.19	0.09	0.11	0.31	0.32	0.52	0.00	0.44	0.09	0.00	0.08
Avail Cap(c_a), veh/h	364	2157	962	673	2341	1262	959	0	637	492	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.3	9.5	8.8	6.9	6.7	6.7	45.7	0.0	37.5	37.0	0.0	34.6
Incr Delay (d2), s/veh	0.6	0.2	0.2	0.1	0.4	0.7	0.9	0.0	0.9	0.2	0.0	0.1
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	0.4	2.0	0.8	0.5	2.8	3.2	3.2	0.0	3.5	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.9	9.7	9.0	7.0	7.1	7.4	46.7	0.0	38.4	37.2	0.0	34.8
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h	544				1205			389			48	
Approach Delay, s/veh	9.6				7.2			43.5			35.8	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	80.2		27.8		8.7	71.5		27.8				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	11.3		20.4		3.5	7.7		11.1				
Green Ext Time (p_c), s	8.5		1.8		0.0	3.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			14.9									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC

2: Julie's Way & Arapahoe Ave.

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations 

Traffic Vol, veh/h 500 10 0 1107 0 5

Future Vol, veh/h 500 10 0 1107 0 5

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 70 70 70 70 70 70

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 714 14 0 1581 0 7

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 364

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 633

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 633

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 10.8

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 633 - - -

HCM Lane V/C Ratio 0.011 - - -

HCM Control Delay (s) 10.8 - - -

HCM Lane LOS B - - -

HCM 95th %tile Q(veh) 0 - - -

CSM

Synchro 11 Report

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection			
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	9	472	185
Demand Flow Rate, veh/h	9	482	189
Vehicles Circulating, veh/h	442	52	4
Vehicles Exiting, veh/h	92	141	447
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.2	6.3	3.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	9	482	189
Cap Entry Lane, veh/h	879	1309	1374
Entry HV Adj Factor	1.000	0.980	0.980
Flow Entry, veh/h	9	472	185
Cap Entry, veh/h	879	1282	1347
V/C Ratio	0.010	0.368	0.138
Control Delay, s/veh	4.2	6.3	3.8
LOS	A	A	A
95th %tile Queue, veh	0	2	0

HCM 6th TWSC

4: West Site Access & Oreg Ave

Intersection

Int Delay, s/veh 0.4

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	11	23	0	3	2	0
Future Vol, veh/h	11	23	0	3	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	33	0	4	3	0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	49	0	37	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1558	-	975	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1558	-	975	1041
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1019	-

Approach EB WB NB

HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	975	-	-	1558	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	11	0	0	2	1	0
Future Vol, veh/h	11	0	0	2	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	0	0	3	1	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	19 16
Stage 1	-	-	-	-	16 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0 0	-	998 1063	
Stage 1	-	0 0	-	1007 -	
Stage 2	-	0 0	-	1020 -	
Platoon blocked, %	-				
Mov Cap-1 Maneuver	-	-	-	998 1063	
Mov Cap-2 Maneuver	-	-	-	998 -	
Stage 1	-	-	-	1007 -	
Stage 2	-	-	-	1020 -	

Approach	EB	WB	NB
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HCM Control Delay, s 0 0 8.6

HCM LOS A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	998	-	-
HCM Lane V/C Ratio	0.001	-	-
HCM Control Delay (s)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

HCM 6th TWSC

6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	1	1	1	1

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	31	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	983	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	994	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	974	1082
Mov Cap-2 Maneuver	-	-	-	-	974	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	994	-

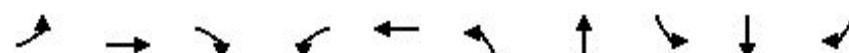
Approach EB WB SB

HCM Control Delay, s	6.6	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1025
HCM Lane V/C Ratio	0.009	-	-	-	0.003
HCM Control Delay (s)	7.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	25	995	521	150	570	185	10	55	40	65
Future Volume (vph)	25	995	521	150	570	185	10	55	40	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases							2	4	8	
Detector Phase							6	4	8	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	67.6	67.6	67.6	83.1	82.4	14.1	14.1		14.1	14.1
Actuated g/C Ratio	0.63	0.63	0.63	0.77	0.76	0.13	0.13		0.13	0.13
v/c Ratio	0.06	0.48	0.48	0.38	0.17	0.61	0.37		0.56	0.25
Control Delay	9.4	11.0	3.6	6.3	3.8	51.8	13.9		55.5	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	9.4	11.0	3.6	6.3	3.8	51.8	13.9		55.5	8.7
LOS	A	B	A	A	A	D	B		E	A
Approach Delay		8.5			4.3		38.4		36.6	
Approach LOS		A			A		D		D	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2027 Total

PM Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	995	521	150	570	40	185	10	90	55	40	65
Future Volume (veh/h)	25	995	521	150	570	40	185	10	90	55	40	65
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	27	1059	554	160	606	43	197	11	96	59	43	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	524	2081	928	288	3341	235	402	34	300	183	120	329
Arrive On Green	0.59	0.59	0.59	0.05	0.69	0.69	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	782	3554	1585	1781	4870	343	2485	166	1445	627	579	1585
Grp Volume(v), veh/h	27	1059	554	160	422	227	197	0	107	102	0	69
Grp Sat Flow(s), veh/h/ln	782	1777	1585	1781	1702	1809	1242	0	1610	1206	0	1585
Q Serve(g_s), s	1.6	19.0	24.1	3.7	4.8	4.9	8.3	0.0	6.1	4.8	0.0	3.9
Cycle Q Clear(g_c), s	1.7	19.0	24.1	3.7	4.8	4.9	19.0	0.0	6.1	10.8	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.19	1.00		0.90	0.58		1.00
Lane Grp Cap(c), veh/h	524	2081	928	288	2336	1241	402	0	334	303	0	329
V/C Ratio(X)	0.05	0.51	0.60	0.56	0.18	0.18	0.49	0.00	0.32	0.34	0.00	0.21
Avail Cap(c_a), veh/h	524	2081	928	307	2336	1241	863	0	632	577	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	13.2	14.3	11.2	6.1	6.1	46.6	0.0	36.3	39.0	0.0	35.5
Incr Delay (d2), s/veh	0.2	0.9	2.8	1.9	0.2	0.3	0.9	0.0	0.5	0.7	0.0	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	0.3	7.0	8.3	1.3	1.5	1.6	2.6	0.0	2.4	2.5	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.8	14.1	17.1	13.1	6.2	6.4	47.6	0.0	36.9	39.6	0.0	35.8
LnGrp LOS	A	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1640				809			304			171	
Approach Delay, s/veh	15.0				7.7			43.8			38.1	
Approach LOS	B				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	80.0		28.0		10.9	69.1		28.0				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	6.9		21.0		5.7	26.1		12.8				
Green Ext Time (p_c), s	4.2		1.4		0.0	8.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			17.3									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Synchro 11 Report

CSM

HCM 6th TWSC

2: Julie's Way & Arapahoe Ave.

Intersection

Int Delay, s/veh 0.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations 

Traffic Vol, veh/h 1135 1 0 740 0 21

Future Vol, veh/h 1135 1 0 740 0 21

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 1419 1 0 925 0 26

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 710

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 376

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 376

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 15.3

HCM LOS C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 376 - - -

HCM Lane V/C Ratio 0.07 - - -

HCM Control Delay (s) 15.3 - - -

HCM Lane LOS C - - -

HCM 95th %tile Q(veh) 0.2 - - -

CSM

Synchro 11 Report

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 8.2

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	120	308	772
Demand Flow Rate, veh/h	122	314	787
Vehicles Circulating, veh/h	255	66	60
Vehicles Exiting, veh/h	125	781	317
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.5	5.0	10.1
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	122	314	787
Cap Entry Lane, veh/h	1064	1290	1298
Entry HV Adj Factor	0.984	0.981	0.981
Flow Entry, veh/h	120	308	772
Cap Entry, veh/h	1046	1265	1273
V/C Ratio	0.115	0.243	0.606
Control Delay, s/veh	4.5	5.0	10.1
LOS	A	A	B
95th %tile Queue, veh	0	1	4

HCM 6th TWSC

4: West Site Access & Oreg Ave

Intersection

Int Delay, s/veh 2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↓	↔		
Traffic Vol, veh/h	11	102	0	52	51	3
Future Vol, veh/h	11	102	0	52	51	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	128	0	65	64	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	142	0	143 78
Stage 1	-	-	-	-	78 -
Stage 2	-	-	-	-	65 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1441	-	850 983
Stage 1	-	-	-	-	945 -
Stage 2	-	-	-	-	958 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1441	-	850 983
Mov Cap-2 Maneuver	-	-	-	-	850 -
Stage 1	-	-	-	-	945 -
Stage 2	-	-	-	-	958 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1441	-
HCM Lane V/C Ratio	0.079	-	-	-	-
HCM Control Delay (s)	9.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	14	0	0	2	50	8
Future Vol, veh/h	14	0	0	2	50	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	0	3	63	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	21 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	996 1061
Stage 1	-	0	0	-	1005 -
Stage 2	-	0	0	-	1020 -
Platoon blocked, %	-				
Mov Cap-1 Maneuver	-	-	-	-	996 1061
Mov Cap-2 Maneuver	-	-	-	-	996 -
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	NB
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HCM Control Delay, s 0 0 8.9

HCM LOS A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1004	-	-
HCM Lane V/C Ratio	0.072	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

CSM

Synchro 11 Report

HCM 6th TWSC

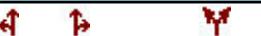
6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations



Traffic Vol, veh/h 21 1 1 1 1 1

Future Vol, veh/h 21 1 1 1 1 1

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 26 1 1 1 1 1

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 2 0 - 0 55 2

Stage 1 - - - - 2 -

Stage 2 - - - - 53 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 1620 - - - 953 1082

Stage 1 - - - - 1021 -

Stage 2 - - - - 970 -

Platoon blocked, % - - -

Mov Cap-1 Maneuver 1620 - - - 938 1082

Mov Cap-2 Maneuver - - - - 938 -

Stage 1 - - - - 1005 -

Stage 2 - - - - 970 -

Approach EB WB SB

HCM Control Delay, s 6.9 0 8.6

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1620 - - - 1005

HCM Lane V/C Ratio 0.016 - - - 0.002

HCM Control Delay (s) 7.3 0 - - 8.6

HCM Lane LOS A A - - A

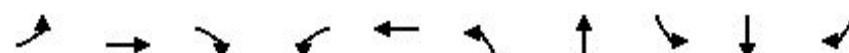
HCM 95th %tile Q(veh) 0 - - - 0

CSM

Synchro 11 Report

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	25	505	84	40	600	152	5	25	5	25
Future Volume (vph)	25	505	84	40	600	152	5	25	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases							6	2	4	
Detector Phase							6	5	4	
Switch Phase									8	
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	77.7	77.7	77.7	85.4	84.7	11.8	11.8		11.8	11.8
Actuated g/C Ratio	0.72	0.72	0.72	0.79	0.78	0.11	0.11		0.11	0.11
v/c Ratio	0.05	0.21	0.08	0.06	0.16	0.54	0.16		0.21	0.11
Control Delay	5.6	5.0	1.6	3.1	3.1	52.1	19.4		45.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	5.6	5.0	1.6	3.1	3.1	52.1	19.4		45.8	0.9
LOS	A	A	A	A	A	D	B		D	A
Approach Delay		4.6				3.1	46.5		25.3	
Approach LOS		A				A	D		C	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 9.8

Intersection LOS: A

Intersection Capacity Utilization 45.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



CSM

Synchro 11 Report

HCM 6th Signalized Intersection Summary

2027 Total

Midday Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	505	84	40	600	15	152	5	27	25	5	25
Future Volume (veh/h)	25	505	84	40	600	15	152	5	27	25	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	26	526	88	42	625	16	158	5	28	26	5	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	620	2496	1113	639	3978	102	356	29	160	180	29	185
Arrive On Green	0.70	0.70	0.70	0.03	0.78	0.78	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	788	3554	1585	1781	5120	131	2674	246	1377	1018	253	1585
Grp Volume(v), veh/h	26	526	88	42	415	226	158	0	33	31	0	26
Grp Sat Flow(s), veh/h/ln	788	1777	1585	1781	1702	1847	1337	0	1623	1271	0	1585
Q Serve(g_s), s	1.1	5.6	1.9	0.7	3.3	3.4	6.2	0.0	2.0	1.6	0.0	1.6
Cycle Q Clear(g_c), s	1.1	5.6	1.9	0.7	3.3	3.4	9.8	0.0	2.0	3.6	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.85	0.84		1.00
Lane Grp Cap(c), veh/h	620	2496	1113	639	2645	1435	356	0	189	209	0	185
V/C Ratio(X)	0.04	0.21	0.08	0.07	0.16	0.16	0.44	0.00	0.17	0.15	0.00	0.14
Avail Cap(c_a), veh/h	620	2496	1113	704	2645	1435	1095	0	637	606	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.0	5.6	5.1	3.8	3.1	3.1	48.2	0.0	43.0	44.1	0.0	42.8
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	0.1	0.2	0.9	0.0	0.4	0.3	0.0	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	0.2	1.7	0.5	0.2	0.8	0.9	2.1	0.0	0.8	0.8	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.1	5.8	5.2	3.9	3.2	3.3	49.1	0.0	43.5	44.4	0.0	43.2
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	640				683			191			57	
Approach Delay, s/veh	5.7				3.3			48.1			43.8	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	89.8		18.2		8.1	81.8		18.2				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	5.4		11.8		2.7	7.6		5.6				
Green Ext Time (p_c), s	4.1		0.8		0.0	3.9		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC

2: Julie's Way & Arapahoe Ave.

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations 

Traffic Vol, veh/h 545 0 0 648 0 0

Future Vol, veh/h 545 0 0 648 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 681 0 0 810 0 0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 341

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 655

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 655

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 0

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) - - - -

HCM Lane V/C Ratio - - - -

HCM Control Delay (s) 0 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) - - - -

Intersection

Intersection Delay, s/veh 4.1

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	214	136	160
Demand Flow Rate, veh/h	218	139	163
Vehicles Circulating, veh/h	112	51	101
Vehicles Exiting, veh/h	78	213	229
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.5	3.7	4.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	218	139	163
Cap Entry Lane, veh/h	1231	1310	1245
Entry HV Adj Factor	0.982	0.977	0.980
Flow Entry, veh/h	214	136	160
Cap Entry, veh/h	1208	1280	1220
V/C Ratio	0.177	0.106	0.131
Control Delay, s/veh	4.5	3.7	4.0
LOS	A	A	A
95th %tile Queue, veh	1	0	0

HCM 6th TWSC

4: West Site Access & Oreg Ave

Intersection

Int Delay, s/veh 3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↓	↔		
Traffic Vol, veh/h	11	30	0	58	57	3
Future Vol, veh/h	11	30	0	58	57	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	38	0	73	71	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	52	0	106 33
Stage 1	-	-	-	-	33 -
Stage 2	-	-	-	-	73 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1554	-	892 1041
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	950 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	892 1041
Mov Cap-2 Maneuver	-	-	-	-	892 -
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	950 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	899	-	-	1554	-
HCM Lane V/C Ratio	0.084	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	14	0	0	2	56	9
Future Vol, veh/h	14	0	0	2	56	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	0	3	70	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	21 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	996 1061
Stage 1	-	0	0	-	1005 -
Stage 2	-	0	0	-	1020 -
Platoon blocked, %	-				
Mov Cap-1 Maneuver	-	-	-	-	996 1061
Mov Cap-2 Maneuver	-	-	-	-	996 -
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1005	-	-
HCM Lane V/C Ratio	0.081	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC

6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	1	1	1	1	1
Future Vol, veh/h	22	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	1	1	1	1	1

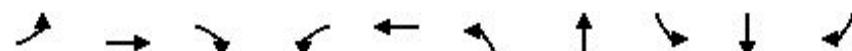
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	59	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	57	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	948	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	932	1082
Mov Cap-2 Maneuver	-	-	-	-	932	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	966	-

Approach	EB	WB	SB
HCM Control Delay, s	6.9	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1001
HCM Lane V/C Ratio	0.017	-	-	-	0.002
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	35	425	75	70	1110	245	20	15	5	25
Future Volume (vph)	35	425	75	70	1110	245	20	15	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2		4
Permitted Phases							4		8	
Detector Phase					6		6	5	4	4
Switch Phase									8	8
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	69.9	69.9	69.9	80.5	79.8	16.7	16.7		16.7	16.7
Actuated g/C Ratio	0.65	0.65	0.65	0.75	0.74	0.15	0.15		0.15	0.15
v/c Ratio	0.15	0.20	0.08	0.11	0.33	0.64	0.44		0.10	0.09
Control Delay	9.1	7.0	2.1	4.8	5.5	49.5	12.9		37.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	9.1	7.0	2.1	4.8	5.5	49.5	12.9		37.8	0.6
LOS	A	A	A	A	A	D	B		D	A
Approach Delay				6.5		5.5	35.6		16.8	
Approach LOS				A		A	D		B	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2045 Background

1: Cherryvale Rd. & Arapahoe Ave.

AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	35	425	75	70	1110	40	245	20	130	15	5	25
Future Volume (veh/h)	35	425	75	70	1110	40	245	20	130	15	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	462	82	76	1207	43	266	22	141	16	5	27
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	318	2093	934	580	3393	121	487	49	312	198	54	354
Arrive On Green	0.59	0.59	0.59	0.03	0.67	0.67	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	445	3554	1585	1781	5062	180	2672	218	1400	623	243	1585
Grp Volume(v), veh/h	38	462	82	76	812	438	266	0	163	21	0	27
Grp Sat Flow(s), veh/h/ln	445	1777	1585	1781	1702	1838	1336	0	1618	866	0	1585
Q Serve(g_s), s	4.4	6.6	2.4	1.7	11.1	11.1	10.4	0.0	9.4	0.6	0.0	1.5
Cycle Q Clear(g_c), s	6.9	6.6	2.4	1.7	11.1	11.1	20.1	0.0	9.4	9.9	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.87	0.76		1.00
Lane Grp Cap(c), veh/h	318	2093	934	580	2282	1232	487	0	361	252	0	354
V/C Ratio(X)	0.12	0.22	0.09	0.13	0.36	0.36	0.55	0.00	0.45	0.08	0.00	0.08
Avail Cap(c_a), veh/h	318	2093	934	633	2282	1232	940	0	635	478	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	10.5	9.6	7.7	7.7	7.7	45.1	0.0	36.2	35.7	0.0	33.2
Incr Delay (d2), s/veh	0.8	0.2	0.2	0.1	0.4	0.8	1.0	0.0	0.9	0.1	0.0	0.1
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	0.5	2.4	0.8	0.6	3.5	3.9	3.5	0.0	3.8	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.9	10.7	9.8	7.8	8.1	8.5	46.1	0.0	37.1	35.8	0.0	33.2
LnGrp LOS	B	B	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h					1326			429				48
Approach Delay, s/veh	10.7				8.2			42.7				34.4
Approach LOS	B				A			D				C
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	78.3		29.7		8.8	69.5		29.7				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	13.1		22.1		3.7	8.9		11.9				
Green Ext Time (p_c), s	9.7		1.9		0.0	3.9		0.2				

Intersection Summary

HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

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

CSM

Synchro 11 Report

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	550	10	0	1220	0	5
Future Vol, veh/h	550	10	0	1220	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	786	14	0	1743	0	7
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	400
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	600
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	600
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	11.1			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	600	-	-	-		
HCM Lane V/C Ratio	0.012	-	-	-		
HCM Control Delay (s)	11.1	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0	-	-	-		

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 5.7

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	12	506	183
Demand Flow Rate, veh/h	12	517	187
Vehicles Circulating, veh/h	486	38	6
Vehicles Exiting, veh/h	69	155	492
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.4	6.5	3.8
Approach LOS	A	A	A

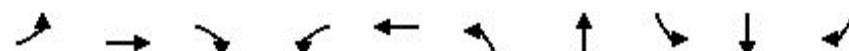
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	12	517	187
Cap Entry Lane, veh/h	841	1327	1371
Entry HV Adj Factor	1.000	0.980	0.979
Flow Entry, veh/h	12	506	183
Cap Entry, veh/h	841	1300	1343
V/C Ratio	0.014	0.389	0.136
Control Delay, s/veh	4.4	6.5	3.8
LOS	A	A	A
95th %tile Queue, veh	0	2	0

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	31	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	983	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	994	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	974	1082
Mov Cap-2 Maneuver	-	-	-	-	974	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	994	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1620	-	-	-	1025	-
HCM Lane V/C Ratio	0.009	-	-	-	0.003	-
HCM Control Delay (s)	7.2	0	-	-	8.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑	↑	↑↑	↑
Traffic Volume (vph)	25	1100	525	155	630	150	10	55	40	65
Future Volume (vph)	25	1100	525	155	630	150	10	55	40	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases							2	4	8	
Detector Phase							5	2	4	
Switch Phase								4	8	
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag									
Lead-Lag Optimize?	Yes									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	66.9	66.9	66.9	84.1	83.4	13.1	13.1		13.1	13.1
Actuated g/C Ratio	0.62	0.62	0.62	0.78	0.77	0.12	0.12		0.12	0.12
v/c Ratio	0.06	0.53	0.50	0.41	0.18	0.53	0.41		0.65	0.26
Control Delay	9.9	12.2	4.5	6.5	3.6	50.4	14.3		63.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	9.9	12.2	4.5	6.5	3.6	50.4	14.3		63.3	9.1
LOS	A	B	A	A	A	D	B		E	A
Approach Delay		9.7				4.1		35.1		41.5
Approach LOS		A				A		D		D

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 12.2

Intersection LOS: B

Intersection Capacity Utilization 64.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2045 Background

1: Cherryvale Rd. & Arapahoe Ave.

PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	1100	525	155	630	40	150	10	100	55	40	65
Future Volume (veh/h)	25	1100	525	155	630	40	150	10	100	55	40	65
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	1170	559	165	670	43	160	11	106	59	43	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	503	2105	939	271	3401	217	366	30	291	170	111	317
Arrive On Green	0.59	0.59	0.59	0.05	0.69	0.69	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	737	3554	1585	1781	4905	313	2485	151	1457	588	555	1585
Grp Volume(v), veh/h	27	1170	559	165	464	249	160	0	117	102	0	69
Grp Sat Flow(s), veh/h/ln	737	1777	1585	1781	1702	1814	1242	0	1608	1143	0	1585
Q Serve(g_s), s	1.7	21.6	24.0	3.7	5.2	5.3	6.7	0.0	6.8	4.9	0.0	3.9
Cycle Q Clear(g_c), s	1.8	21.6	24.0	3.7	5.2	5.3	18.2	0.0	6.8	11.6	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.17	1.00		0.91	0.58		1.00
Lane Grp Cap(c), veh/h	503	2105	939	271	2361	1258	366	0	322	281	0	317
V/C Ratio(X)	0.05	0.56	0.60	0.61	0.20	0.20	0.44	0.00	0.36	0.36	0.00	0.22
Avail Cap(c_a), veh/h	503	2105	939	288	2361	1258	844	0	631	565	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.4	13.4	13.9	13.1	5.9	5.9	47.4	0.0	37.3	40.2	0.0	36.1
Incr Delay (d2), s/veh	0.2	1.1	2.8	3.4	0.2	0.4	0.8	0.0	0.7	0.8	0.0	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	0.3	7.9	8.2	1.5	1.6	1.8	2.1	0.0	2.7	2.5	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	14.4	16.6	16.5	6.1	6.2	48.3	0.0	38.0	40.9	0.0	36.5
LnGrp LOS	A	B	B	B	A	A	D	A	D	D	A	D
Approach Vol, veh/h	1756				878			277			171	
Approach Delay, s/veh	15.1				8.1			43.9			39.1	
Approach LOS	B				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	80.8		27.2		10.9	69.9		27.2				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	7.3		20.2		5.7	26.0		13.6				
Green Ext Time (p_c), s	4.7		1.3		0.0	9.2		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			17.0									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC
2: Julie's Way & Arapahoe Ave.

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1255	1	0	805	0	10
Future Vol, veh/h	1255	1	0	805	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1569	1	0	1006	0	13
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	785
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	336
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	336
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	16.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	336	-	-	-		
HCM Lane V/C Ratio	0.037	-	-	-		
HCM Control Delay (s)	16.1	-	-	-		
HCM Lane LOS	C	-	-	-		
HCM 95th %tile Q(veh)	0.1	-	-	-		

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 7.9

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	10	288	782
Demand Flow Rate, veh/h	10	294	798
Vehicles Circulating, veh/h	283	5	5
Vehicles Exiting, veh/h	16	798	288
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.6	4.5	9.2
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	10	294	798
Cap Entry Lane, veh/h	1034	1373	1373
Entry HV Adj Factor	1.000	0.981	0.981
Flow Entry, veh/h	10	288	782
Cap Entry, veh/h	1034	1347	1346
V/C Ratio	0.010	0.214	0.581
Control Delay, s/veh	3.6	4.5	9.2
LOS	A	A	A
95th %tile Queue, veh	0	1	4

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	29	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	27	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	986	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	978	1082
Mov Cap-2 Maneuver	-	-	-	-	978	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	996	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1620	-	-	-	1027	-
HCM Lane V/C Ratio	0.008	-	-	-	0.002	-
HCM Control Delay (s)	7.2	0	-	-	8.5	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	-

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	25	555	80	40	665	105	5	25	5	25
Future Volume (vph)	25	555	80	40	665	105	5	25	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases							2	4	8	
Detector Phase							5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	79.8	79.8	79.8	87.4	86.7	9.8	9.8		9.8	9.8
Actuated g/C Ratio	0.74	0.74	0.74	0.81	0.80	0.09	0.09		0.09	0.09
v/c Ratio	0.05	0.22	0.07	0.06	0.17	0.45	0.21		0.25	0.12
Control Delay	5.0	4.5	1.5	2.5	2.7	52.0	20.5		49.6	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	5.0	4.5	1.5	2.5	2.7	52.0	20.5		49.6	1.1
LOS	A	A	A	A	A	D	C		D	A
Approach Delay		4.2			2.7		44.1		27.5	
Approach LOS		A			A		D		C	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 45.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	555	80	40	665	15	105	5	30	25	5	25
Future Volume (veh/h)	25	555	80	40	665	15	105	5	30	25	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	26	578	83	42	693	16	109	5	31	26	5	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	599	2556	1140	628	4076	94	304	22	139	157	25	158
Arrive On Green	0.72	0.72	0.72	0.03	0.79	0.79	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	740	3554	1585	1781	5135	118	2674	225	1394	959	251	1585
Grp Volume(v), veh/h	26	578	83	42	459	250	109	0	36	31	0	26
Grp Sat Flow(s), veh/h/ln	740	1777	1585	1781	1702	1849	1337	0	1619	1210	0	1585
Q Serve(g_s), s	1.1	5.9	1.7	0.6	3.5	3.5	4.3	0.0	2.2	1.7	0.0	1.6
Cycle Q Clear(g_c), s	1.1	5.9	1.7	0.6	3.5	3.5	8.2	0.0	2.2	3.9	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.86	0.84		1.00
Lane Grp Cap(c), veh/h	599	2556	1140	628	2702	1468	304	0	161	182	0	158
V/C Ratio(X)	0.04	0.23	0.07	0.07	0.17	0.17	0.36	0.00	0.22	0.17	0.00	0.16
Avail Cap(c_a), veh/h	599	2556	1140	693	2702	1468	1088	0	636	602	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.4	5.1	4.5	3.4	2.7	2.7	49.3	0.0	44.8	45.9	0.0	44.5
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	0.1	0.3	0.7	0.0	0.7	0.4	0.0	0.5
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	0.2	1.8	0.5	0.2	0.7	0.9	1.5	0.0	0.9	0.8	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	4.6	5.3	4.6	3.4	2.8	2.9	50.0	0.0	45.5	46.4	0.0	45.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	687				751			145			57	
Approach Delay, s/veh	5.2				2.9			48.9			45.7	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	91.7		16.3		8.1	83.6		16.3				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	5.5		10.2		2.6	7.9		5.9				
Green Ext Time (p_c), s	4.6		0.6		0.0	4.3		0.2				

Intersection Summary

HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

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

HCM 6th TWSC
2: Julie's Way & Arapahoe Ave.

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	600	0	0	715	0	0
Future Vol, veh/h	600	0	0	715	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	750	0	0	894	0	0
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	-	-	-	375
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	623
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	623
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0	0			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	0	-	-	-		
HCM Lane LOS	A	-	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

HCM 6th Roundabout

3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 3.6

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	79	134	152
Demand Flow Rate, veh/h	81	136	155
Vehicles Circulating, veh/h	124	31	31
Vehicles Exiting, veh/h	43	155	174
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.6	3.6	3.7
Approach LOS	A	A	A

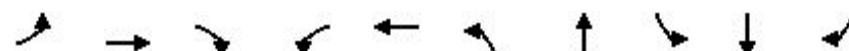
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	81	136	155
Cap Entry Lane, veh/h	1216	1337	1337
Entry HV Adj Factor	0.975	0.982	0.978
Flow Entry, veh/h	79	134	152
Cap Entry, veh/h	1186	1313	1307
V/C Ratio	0.067	0.102	0.116
Control Delay, s/veh	3.6	3.6	3.7
LOS	A	A	A
95th %tile Queue, veh	0	0	0

HCM 6th TWSC
6: Oreg Ave & Julie's Way

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1	1	1	1	1
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	29	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	27	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	986	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	996	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	978	1082
Mov Cap-2 Maneuver	-	-	-	-	978	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	996	-
Approach	EB	WB	SB			
HCM Control Delay, s	6.6	0	8.5			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1620	-	-	-	1027	
HCM Lane V/C Ratio	0.008	-	-	-	0.002	
HCM Control Delay (s)	7.2	0	-	-	8.5	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	35	425	86	72	1110	247	20	15	5	25
Future Volume (vph)	35	425	86	72	1110	247	20	15	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2		4
Permitted Phases							6	2	4	8
Detector Phase							6	5	4	8
Switch Phase									8	8
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag									
Lead-Lag Optimize?	Yes									
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	69.9	69.9	69.9	80.4	79.7	16.8	16.8		16.8	16.8
Actuated g/C Ratio	0.65	0.65	0.65	0.74	0.74	0.16	0.16		0.16	0.16
v/c Ratio	0.15	0.20	0.09	0.11	0.33	0.64	0.44		0.10	0.09
Control Delay	9.2	7.1	2.0	4.8	5.5	49.5	12.9		37.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	9.2	7.1	2.0	4.8	5.5	49.5	12.9		37.7	0.5
LOS	A	A	A	A	A	D	B		D	A
Approach Delay				6.4		5.5	35.6		16.8	
Approach LOS				A		A	D		B	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2045 Total

AM Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	425	86	72	1110	40	247	20	130	15	5	25
Future Volume (veh/h)	35	425	86	72	1110	40	247	20	130	15	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	38	462	93	78	1207	43	268	22	141	16	5	27
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	318	2090	932	575	3390	121	489	49	313	199	55	355
Arrive On Green	0.59	0.59	0.59	0.03	0.67	0.67	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	445	3554	1585	1781	5062	180	2672	218	1400	625	244	1585
Grp Volume(v), veh/h	38	462	93	78	812	438	268	0	163	21	0	27
Grp Sat Flow(s), veh/h/ln	445	1777	1585	1781	1702	1838	1336	0	1618	868	0	1585
Q Serve(g_s), s	4.4	6.6	2.8	1.8	11.2	11.2	10.4	0.0	9.4	0.6	0.0	1.5
Cycle Q Clear(g_c), s	6.9	6.6	2.8	1.8	11.2	11.2	20.2	0.0	9.4	9.9	0.0	1.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.87	0.76		1.00
Lane Grp Cap(c), veh/h	318	2090	932	575	2280	1231	489	0	362	253	0	355
V/C Ratio(X)	0.12	0.22	0.10	0.14	0.36	0.36	0.55	0.00	0.45	0.08	0.00	0.08
Avail Cap(c_a), veh/h	318	2090	932	628	2280	1231	940	0	635	478	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	10.5	9.7	7.7	7.7	7.7	45.1	0.0	36.2	35.6	0.0	33.1
Incr Delay (d2), s/veh	0.8	0.2	0.2	0.1	0.4	0.8	1.0	0.0	0.9	0.1	0.0	0.1
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	0.5	2.4	0.9	0.6	3.5	3.9	3.5	0.0	3.8	0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.9	10.8	9.9	7.8	8.2	8.5	46.0	0.0	37.1	35.8	0.0	33.2
LnGrp LOS	B	B	A	A	A	A	D	A	D	D	A	C
Approach Vol, veh/h		593			1328			431			48	
Approach Delay, s/veh		10.7			8.3			42.6			34.3	
Approach LOS		B			A			D			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+R _c), s		78.2		29.8	8.8	69.4		29.8				
Change Period (Y+R _c), s		* 5.9		5.6	* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s		* 54		42.4	* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s		13.2		22.2	3.8	8.9		11.9				
Green Ext Time (p_c), s		9.7		2.0	0.0	3.9		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				15.6								
HCM 6th LOS				B								
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC

2: Julie's Way & Arapahoe Ave.

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations 

Traffic Vol, veh/h 550 10 0 1222 0 5

Future Vol, veh/h 550 10 0 1222 0 5

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 70 70 70 70 70 70

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 786 14 0 1746 0 7

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 400

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 600

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 600

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 11.1

HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 600 - - -

HCM Lane V/C Ratio 0.012 - - -

HCM Control Delay (s) 11.1 - - -

HCM Lane LOS B - - -

HCM 95th %tile Q(veh) 0 - - -

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection			
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	16	519	198
Demand Flow Rate, veh/h	16	530	202
Vehicles Circulating, veh/h	486	53	7
Vehicles Exiting, veh/h	97	156	495
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.5	6.7	3.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	16	530	202
Cap Entry Lane, veh/h	841	1307	1370
Entry HV Adj Factor	1.000	0.980	0.981
Flow Entry, veh/h	16	519	198
Cap Entry, veh/h	841	1281	1343
V/C Ratio	0.019	0.405	0.147
Control Delay, s/veh	4.5	6.7	3.9
LOS	A	A	A
95th %tile Queue, veh	0	2	1

HCM 6th TWSC

4: West Site Access & Oreg Ave

Intersection

Int Delay, s/veh 0.4

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations						
Traffic Vol, veh/h	11	23	0	3	2	0
Future Vol, veh/h	11	23	0	3	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	33	0	4	3	0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	49	0	37	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	4	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1558	-	975	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1558	-	975	1041
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1019	-

Approach EB WB NB

HCM Control Delay, s 0 0 8.7

HCM LOS A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	975	-	-	1558	-
HCM Lane V/C Ratio	0.003	-	-	-	-
HCM Control Delay (s)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	11	0	0	2	1	0
Future Vol, veh/h	11	0	0	2	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	0	0	3	1	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	19 16
Stage 1	-	-	-	-	16 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0 0	-	998 1063	
Stage 1	-	0 0	-	1007 -	
Stage 2	-	0 0	-	1020 -	
Platoon blocked, %	-				
Mov Cap-1 Maneuver	-	-	-	998	1063
Mov Cap-2 Maneuver	-	-	-	998	-
Stage 1	-	-	-	1007	-
Stage 2	-	-	-	1020	-

Approach	EB	WB	NB
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HCM Control Delay, s 0 0 8.6

HCM LOS A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	998	-	-
HCM Lane V/C Ratio	0.001	-	-
HCM Control Delay (s)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

CSM

Synchro 11 Report

HCM 6th TWSC

6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	1	1	1	1	1
Future Vol, veh/h	10	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	1	1	1	1	1

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	31	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	983	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	994	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	974	1082
Mov Cap-2 Maneuver	-	-	-	-	974	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	994	-

Approach EB WB SB

HCM Control Delay, s	6.6	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1025
HCM Lane V/C Ratio	0.009	-	-	-	0.003
HCM Control Delay (s)	7.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Timings

1: Cherryvale Rd. & Arapahoe Ave.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑	↑	↑↑	↑
Traffic Volume (vph)	25	1100	571	165	630	201	10	55	40	65
Future Volume (vph)	25	1100	571	165	630	201	10	55	40	65
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	
Permitted Phases					6		2	4	8	
Detector Phase					6		5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	63.5	63.5	63.5	82.3	81.6	14.9	14.9		14.9	14.9
Actuated g/C Ratio	0.59	0.59	0.59	0.76	0.76	0.14	0.14		0.14	0.14
v/c Ratio	0.07	0.56	0.55	0.43	0.19	0.62	0.37		0.56	0.24
Control Delay	11.3	14.2	5.3	7.3	4.1	51.4	13.0		54.4	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	11.3	14.2	5.3	7.3	4.1	51.4	13.0		54.4	8.4
LOS	B	B	A	A	A	D	B		D	A
Approach Delay		11.2				4.7	37.8		35.9	
Approach LOS		B				A	D		D	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 13.5

Intersection LOS: B

Intersection Capacity Utilization 65.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



CSM

Synchro 11 Report

HCM 6th Signalized Intersection Summary

2045 Total

PM Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑		↑↑	↑		↑	↑	↑
Traffic Volume (veh/h)	25	1100	571	165	630	40	201	10	100	55	40	65
Future Volume (veh/h)	25	1100	571	165	630	40	201	10	100	55	40	65
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00			1.00	1.00		1.00	1.00	1.00
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	27	1170	607	176	670	43	214	11	106	59	43	69
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	485	2020	901	264	3307	211	421	33	320	188	124	348
Arrive On Green	0.57	0.57	0.57	0.06	0.67	0.67	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	737	3554	1585	1781	4905	313	2485	151	1457	617	565	1585
Grp Volume(v), veh/h	27	1170	607	176	464	249	214	0	117	102	0	69
Grp Sat Flow(s), veh/h/ln	737	1777	1585	1781	1702	1814	1242	0	1608	1182	0	1585
Q Serve(g_s), s	1.8	22.9	28.9	4.2	5.6	5.6	9.0	0.0	6.6	4.8	0.0	3.8
Cycle Q Clear(g_c), s	1.9	22.9	28.9	4.2	5.6	5.6	20.2	0.0	6.6	11.3	0.0	3.8
Prop In Lane	1.00		1.00	1.00			0.17	1.00		0.91	0.58	1.00
Lane Grp Cap(c), veh/h	485	2020	901	264	2295	1223	421	0	353	312	0	348
V/C Ratio(X)	0.06	0.58	0.67	0.67	0.20	0.20	0.51	0.00	0.33	0.33	0.00	0.20
Avail Cap(c_a), veh/h	485	2020	901	274	2295	1223	852	0	631	567	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.5	15.0	16.3	15.8	6.6	6.6	46.2	0.0	35.5	38.2	0.0	34.4
Incr Delay (d2), s/veh	0.2	1.2	4.0	5.8	0.2	0.4	0.9	0.0	0.5	0.6	0.0	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	0.3	8.5	10.2	2.2	1.7	1.9	2.8	0.0	2.6	2.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.7	16.2	20.3	21.6	6.8	7.0	47.1	0.0	36.0	38.8	0.0	34.7
LnGrp LOS	B	B	C	C	A	A	D	A	D	D	A	C
Approach Vol, veh/h	1804				889			331			171	
Approach Delay, s/veh	17.5				9.8			43.2			37.1	
Approach LOS	B				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	78.7		29.3		11.4	67.3		29.3				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	7.6		22.2		6.2	30.9		13.3				
Green Ext Time (p_c), s	4.7		1.5		0.0	7.3		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			19.1									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 6th TWSC

2: Julie's Way & Arapahoe Ave.

Intersection

Int Delay, s/veh 0.2

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations   

Traffic Vol, veh/h 1255 1 0 815 0 21

Future Vol, veh/h 1255 1 0 815 0 21

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 1569 1 0 1019 0 26

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 785

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 336

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 336

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 16.6

HCM LOS C

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) 336 - - -

HCM Lane V/C Ratio 0.078 - - -

HCM Control Delay (s) 16.6 - - -

HCM Lane LOS C - - -

HCM 95th %tile Q(veh) 0.3 - - -

CSM

Synchro 11 Report

HCM 6th Roundabout
3: Cherryvale Rd. & Oreg Ave

Intersection

Intersection Delay, s/veh 9.3

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	121	338	843
Demand Flow Rate, veh/h	123	345	860
Vehicles Circulating, veh/h	283	67	61
Vehicles Exiting, veh/h	129	854	345
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	5.2	11.5
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	123	345	860
Cap Entry Lane, veh/h	1034	1289	1297
Entry HV Adj Factor	0.984	0.981	0.981
Flow Entry, veh/h	121	338	843
Cap Entry, veh/h	1017	1264	1272
V/C Ratio	0.119	0.268	0.663
Control Delay, s/veh	4.6	5.2	11.5
LOS	A	A	B
95th %tile Queue, veh	0	1	5

HCM 6th TWSC

4: West Site Access & Oreg Ave

Intersection

Int Delay, s/veh 2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	11	102	0	52	51	3
Future Vol, veh/h	11	102	0	52	51	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	128	0	65	64	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	142	0	143	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1441	-	850	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1441	-	850	983
Mov Cap-2 Maneuver	-	-	-	-	850	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	857	-	-	1441	-
HCM Lane V/C Ratio	0.079	-	-	-	-
HCM Control Delay (s)	9.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	14	0	0	2	50	8
Future Vol, veh/h	14	0	0	2	50	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	0	3	63	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	21 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	996 1061
Stage 1	-	0	0	-	1005 -
Stage 2	-	0	0	-	1020 -
Platoon blocked, %	-				-
Mov Cap-1 Maneuver	-	-	-	-	996 1061
Mov Cap-2 Maneuver	-	-	-	-	996 -
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1004	-	-
HCM Lane V/C Ratio	0.072	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-

HCM 6th TWSC

6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6.5

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations		↓	↑	↔	↙	↗
Traffic Vol, veh/h	21	1	1	1	1	1
Future Vol, veh/h	21	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	1	1	1	1	1

Major/Minor Major1 Major2 Minor2

Conflicting Flow All	2	0	-	0	55	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	53	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	953	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	970	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	938	1082
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	970	-

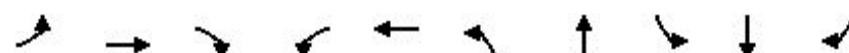
Approach EB WB SB

HCM Control Delay, s	6.9	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1005
HCM Lane V/C Ratio	0.016	-	-	-	0.002
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Timings

1: Cherryvale Rd. & Arapahoe Ave.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	1	2	1	1	2	1	1	1	1	1
Traffic Volume (vph)	25	555	94	43	665	162	5	25	5	25
Future Volume (vph)	25	555	94	43	665	162	5	25	5	25
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	NA	Perm	NA	Perm
Protected Phases					6		5	2	4	8
Permitted Phases					6		2	4	8	8
Detector Phase					6		5	2	4	8
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	4.0	10.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	24.3	24.3	24.3	10.2	27.9	37.6	37.6	23.6	23.6	23.6
Total Split (s)	48.0	48.0	48.0	12.0	60.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	44.4%	44.4%	44.4%	11.1%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.3	4.3	4.3	3.2	4.3	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.6	1.6	1.6	2.0	1.6	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	5.9	5.2	5.9	5.6	5.6	5.6	5.6	5.6
Lead/Lag	Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	None	None	None	None	None
Act Effect Green (s)	75.0	75.0	75.0	84.9	84.2	12.3	12.3		12.3	12.3
Actuated g/C Ratio	0.69	0.69	0.69	0.79	0.78	0.11	0.11		0.11	0.11
v/c Ratio	0.05	0.24	0.09	0.07	0.18	0.56	0.17		0.20	0.10
Control Delay	6.2	5.8	1.6	3.2	3.3	52.0	18.5		45.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	6.2	5.8	1.6	3.2	3.3	52.0	18.5		45.0	0.8
LOS	A	A	A	A	A	D	B		D	A
Approach Delay		5.2			3.3		46.1		24.8	
Approach LOS		A			A		D		C	

Intersection Summary

Cycle Length: 108

Actuated Cycle Length: 108

Offset: 41 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 47.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Cherryvale Rd. & Arapahoe Ave.



HCM 6th Signalized Intersection Summary

2045 Total

Midday Peak

1: Cherryvale Rd. & Arapahoe Ave.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	555	94	43	665	15	162	5	30	25	5	25
Future Volume (veh/h)	25	555	94	43	665	15	162	5	30	25	5	25
Initial Q (Q _b), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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	26	578	98	45	693	16	169	5	31	26	5	26
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	581	2471	1102	601	3958	91	369	28	171	185	30	194
Arrive On Green	0.70	0.70	0.70	0.03	0.77	0.77	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	740	3554	1585	1781	5135	118	2674	225	1394	1009	248	1585
Grp Volume(v), veh/h	26	578	98	45	459	250	169	0	36	31	0	26
Grp Sat Flow(s), veh/h/ln	740	1777	1585	1781	1702	1849	1337	0	1619	1258	0	1585
Q Serve(g_s), s	1.2	6.4	2.2	0.7	3.9	3.9	6.6	0.0	2.2	1.6	0.0	1.6
Cycle Q Clear(g_c), s	1.2	6.4	2.2	0.7	3.9	3.9	10.4	0.0	2.2	3.8	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.86	0.84		1.00
Lane Grp Cap(c), veh/h	581	2471	1102	601	2624	1425	369	0	199	216	0	194
V/C Ratio(X)	0.04	0.23	0.09	0.07	0.17	0.18	0.46	0.00	0.18	0.14	0.00	0.13
Avail Cap(c_a), veh/h	581	2471	1102	664	2624	1425	1091	0	636	603	0	622
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(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.2	6.0	5.3	4.1	3.3	3.3	47.9	0.0	42.5	43.6	0.0	42.3
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.1	0.1	0.3	0.9	0.0	0.4	0.3	0.0	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	0.2	2.0	0.6	0.2	0.9	1.1	2.3	0.0	0.9	0.8	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	5.3	6.2	5.5	4.1	3.4	3.5	48.8	0.0	42.9	43.9	0.0	42.6
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h	702				754			205			57	
Approach Delay, s/veh	6.1				3.5			47.8			43.3	
Approach LOS	A				A			D			D	
Timer - Assigned Phs	2		4		5	6		8				
Phs Duration (G+Y+R _c), s	89.2		18.8		8.2	81.0		18.8				
Change Period (Y+R _c), s	* 5.9		5.6		* 5.2	* 5.9		5.6				
Max Green Setting (Gmax), s	* 54		42.4		* 6.8	* 42		42.4				
Max Q Clear Time (g_c+l1), s	5.9		12.4		2.7	8.4		5.8				
Green Ext Time (p_c), s	4.6		0.8		0.0	4.4		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									
Notes												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations   

Traffic Vol, veh/h 600 0 0 718 0 0

Future Vol, veh/h 600 0 0 718 0 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - - 0

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 80 80 80 80 80 80

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 750 0 0 898 0 0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All 0 0 - - - 375

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - - - - - 6.94

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - - - - - 3.32

Pot Cap-1 Maneuver - - 0 - 0 623

Stage 1 - - 0 - 0 -

Stage 2 - - 0 - 0 -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - - - - - 623

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB WB NB

HCM Control Delay, s 0 0 0

HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBT

Capacity (veh/h) - - - -

HCM Lane V/C Ratio - - - -

HCM Control Delay (s) 0 - - -

HCM Lane LOS A - - -

HCM 95th %tile Q(veh) - - - -

Intersection

Intersection Delay, s/veh 4.2

Intersection LOS A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	217	150	173
Demand Flow Rate, veh/h	221	153	176
Vehicles Circulating, veh/h	124	52	101
Vehicles Exiting, veh/h	81	225	244
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	3.8	4.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	221	153	176
Cap Entry Lane, veh/h	1216	1309	1245
Entry HV Adj Factor	0.982	0.978	0.981
Flow Entry, veh/h	217	150	173
Cap Entry, veh/h	1194	1279	1221
V/C Ratio	0.182	0.117	0.141
Control Delay, s/veh	4.6	3.8	4.1
LOS	A	A	A
95th %tile Queue, veh	1	0	0

Intersection

Int Delay, s/veh 3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑		↓	↔		
Traffic Vol, veh/h	11	30	0	58	57	3
Future Vol, veh/h	11	30	0	58	57	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	38	0	73	71	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	52	0	106 33
Stage 1	-	-	-	-	33 -
Stage 2	-	-	-	-	73 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1554	-	892 1041
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	950 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1554	-	892 1041
Mov Cap-2 Maneuver	-	-	-	-	892 -
Stage 1	-	-	-	-	989 -
Stage 2	-	-	-	-	950 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	899	-	-	1554	-
HCM Lane V/C Ratio	0.084	-	-	-	-
HCM Control Delay (s)	9.4	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC

5: East Site Access & Oreg Ave

Intersection

Int Delay, s/veh 7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Traffic Vol, veh/h	14	0	0	2	56	9
Future Vol, veh/h	14	0	0	2	56	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	0	3	70	11

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	21 18
Stage 1	-	-	-	-	18 -
Stage 2	-	-	-	-	3 -
Critical Hdwy	-	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	-	0	0	-	996 1061
Stage 1	-	0	0	-	1005 -
Stage 2	-	0	0	-	1020 -
Platoon blocked, %	-				
Mov Cap-1 Maneuver	-	-	-	-	996 1061
Mov Cap-2 Maneuver	-	-	-	-	996 -
Stage 1	-	-	-	-	1005 -
Stage 2	-	-	-	-	1020 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1005	-	-
HCM Lane V/C Ratio	0.081	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-

HCM 6th TWSC

6: Oreg Ave & Julie's Way

Intersection

Int Delay, s/veh 6.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	1	1	1	1	1
Future Vol, veh/h	22	1	1	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	1	1	1	1	1

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	59	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	57	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	948	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	932	1082
Mov Cap-2 Maneuver	-	-	-	-	932	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	966	-

Approach EB WB SB

HCM Control Delay, s	6.9	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1001
HCM Lane V/C Ratio	0.017	-	-	-	0.002
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

Pichacz, Alex

From: judrenfroe <judrenfroe@aol.com>
Sent: Monday, June 23, 2025 6:04 PM
To: Pichacz, Alex
Cc: alex ferguson; david ferguson
Subject: UR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave

Follow Up Flag: Follow up
Flag Status: Completed

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To: Alex Pichacz

The unavoidable timing of this response is unfortunate in view of the recent attacks on our Jewish neighbors and friends. However, it is already late in terms of notifying the City that we, the adjacent neighbors, have major objections to the plan as submitted.

We were surprised and extremely disappointed to discover, from the City web site, that Bonai has submitted their plan without addressing our concerns and objections. We will elaborate more on this later and make other comments on other issues, but want to make you aware of our major objections now.

The Renfroes (1460 Wonderview Court) and Fergusons (1468 Cherryvale Road) have had three meetings with Bonai representatives. As far as we know other neighborhood residents are not aware of the proposal unless they are involved via Bonai. This email summarizes the initial concerns of the adjacent two residences on the south of the property in question. I am sure other neighbors would be concerned if this were to be approved and considered a precedent for similar projects in our neighborhood. We know there is at least one pending.

Blue Spruce Trees and buffering of the Renfroe property:

At each meeting referenced above the importance of the Blue Spruce Trees planted along the south fence to buffer the Renfroe property was been mentioned by the Renfroes. At the first two meetings I reminded Bonai and a JCC representative who was present that they need to replace some of those trees that they have permitted to die. My reminder was met only with excuses about the cost and the difficulty of getting matching trees. Never once was a plan to remove any or all of them mentioned.

During the third meeting just days before the applicants submitted this plan, and only after some contentions questioning, they admitted they plan to remove one of the rows of Blue Spruce. The claimed they had to in order to have enough parking and to meet the city requirements regarding distance between the parking lot and a sidewalk along Oreg Ave. However, they represented that they would include in their application a request for a variation in that application in order to not have to remove them. They didn't.

Not only is such a request not included, the Tree Survey submitted by Arborist Richard Wilson, on page 2, section entitled "Trees to be Removed," states that "Along the south side of the property there are 50 small Spruce trees, all less than 6" in diameter. Removal of these trees is pending final design." In other words, they plan to remove ALL of the Blue Spruce trees that were planted as a condition of approval of the JCC. Neither removal plan, of one or both rows, was voluntarily mentioned to the adjacent neighbors. This is unconscionable.

Those Spruce trees were a very important part of our agreement with the approval of the JCC. It is unacceptable for them to be removed now. Initially they were much smaller than we had been lead to expect. Only now are they getting large enough to fulfill part of their original purpose. There were several facets to the purpose, and they cannot all be fulfilled by a cedar fence. (a) They were to block the lighting from the JCC parking lot and the building. Both are frequently left on late at night. (b) They were to block vehicle lights shining directly into the Renfroe house. It will be yet another 20 years before the trees alone could do that. The fence helps with that, providing it is maintained. It will have to be reinforced to block close up car lights. (c) They were to help block the view of blocky urban style buildings from the neighboring rural

residential homes. (d) They were to help muffle the sounds of all kinds coming from the JCC – vehicles, talking, outside music, etc. (e) The trees help disrupt the flow of exhaust from the JCC vehicles. They will be even more important for all of these reasons, and more, if there is a parking lot and traffic directly north of the Renfroe house. That was NOT in the original expected use of this property. (f) They were to provide visual and sound privacy to the backyard of the Renfroes. (g) There were to provide general buffering between a quiet rural residential property and an urban uses of the JCC and help maintain a sense of privacy and tranquility on the residential property.

Removal of those trees, and any neglect to justify such removal, is unconscionable.

Buffering of the Ferguson property:

The Renfroe's agree with all of the points below. The Ferguson property needs significant buffering not addressed in the current plan.

At this point there is little or no buffering in the plan. A fence has been mentioned. In the initial meeting rows of trees, at Bonai's expense, were mentioned. The position of the Ferguson family, is as follows and I am including verbatim at their request:

1) The circle and the real entrance should NOT be right next to our property. We were told that they are putting an entrance on Oreg because they have to but will not use it! There is a road that has a required entrance that MUST be used for the dropping off passages with cars. It can be placed closer to the parking lot to make for easy walking, but should absolutely face Oreg rather than right next to our back yard. This kind of traffic right next to our backyard will ruin our quiet enjoyment of backyard and our home should we want to build back there. It is incredible that they could not make the actual entrance on Oreg. They could have a half circle.

A circle or round about with the entrance on the [east] side of the building rather than on Oreg will bring traffic with cars idling right next to the backyard of the property at 1468 Cherryvale Rd. The drop off and pick up should be better placed on Oreg where the actual entrance is located. It is our understanding that by code, the entrance must be on Oreg and we would hope that this will be the actual working entrance and not just a symbolic entrance. A half circle could be placed there if needed to keep cars off the street for when some one needs to be dropped off closer to the entrance. Having the building between our backyard and the idling cars will help mitigate some of the noise, lights at night and car exhaust.

2) There should be 2 lines of evergreens all the way down the property to provide a buffer as is typical with other churches and synagogues that are a fraction of the size of this building.

3) The sheer size of the synagogue and the fact that they will have a full time school there make it much more than what is appropriate in terms of look and feel of the neighborhood. Our houses directly adjacent and the houses all around have an average an average square foot of about 3,200.

4) The height should be no taller than a 2 story house and the tree will hopefully block the light if not the sound.

I (Judy) would add the following:

It was represented to everyone at the time of the original JCC approval that Bonai would like to move its synagogue across the street and may sell the existing buildings to a smaller congregation. There was no mention of a school there. The school need was supposed to be fulfilled by the JCC building. Currently Bonai does not rent out space, even for small neighborhood meetings. In prior meetings it was stated the new building would rent space, so that needs to be addressed. In regard to parking, I clearly remember representations that a new Bonai would not need much parking because Saturday morning parking would be shared with the lots on the JCC which would not be in use on the Sabbath. If that were done, there would be much more room for buffering the Ferguson property.

Judy and Neal Renfroe
1460 Wonderview Court
720-841-3540

Pichacz, Alex

From: Alexandra Ferguson <alex michalos@yahoo.com>
Sent: Thursday, September 18, 2025 3:49 PM
To: Pichacz, Alex
Cc: david ferguson; judrenfroe
Subject: Re: UR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave

Alex Pichacz,

I am writing to provide you with some of our concerns regarding the planning for the Bonai parking lot. We have received some feedback on the plan for the parking lot from Bonai representatives which raise some concerns. While we were not part of the original planning when the JCC and the formerly rural residential property next to us was rezoned, we understand there were representations made that the JCC parking lot was large enough to accommodate Saturday services at Bonai. There were assurances that moving the current synagogue to a new building site on the formerly rural residential property would not create the need for a large parking lot or possibly any parking lot because of the already large JCC parking lot.

Nevertheless, a parking lot is added into the plans and the plan includes a circular driveway right next to our backyard. This will result in headlights, noise and exhaust from traffic from hundreds of cars regularly driving right next to our backyard. This significantly changes the feel and quiet enjoyment of our home. The circle is placed at what will be used as the actual entrance rather making use of the required entrance facing the street Oreg Avenue on which there are absolute no residential homes located.

Based on the plans submitted, the circle planned for the parking lot will be just steps from our backyard. We ask that the entrance and circular driveway face Oreg Avenue and that the double tree line of Spruce trees that currently buffer the JCC parking lot extend to incorporate the entire Bonai parking lot up to the building. Traffic from a circular driveway facing Oreg Avenue would be less imposing on our neighborhood. A double tree line of Spruce trees along with the planned 7' fencing should run along the entire parking lot up to the building. The double tree line of Spruce trees along with the proposed wood fencing will provide a much needed natural buffer from parking lot lights as well as car headlights, noise and exhaust in order to maintain the look and feel of this quiet rural residential neighborhood.

Thank you for your sincere consideration of our concerns.

Sincerely,
Alexandra and David Ferguson
1468 Cherryvale Rd.
Boulder, CO 80303

On Thursday, June 26, 2025 at 11:45:15 AM MDT, Pichacz, Alex <pichacza@bouldercolorado.gov> wrote:

Hello,

Thanks for your email, I will add it to the case file and relay your concerns to the applicant. Let me know if you have any questions.

Alex

Alex Pichacz, AICP
Senior City Planner



(303) 413-7809

pichacza@bouldercolorado.gov

From: judrenfroe <judrenfroe@aol.com>
Sent: Monday, June 23, 2025 6:04 PM
To: Pichacz, Alex <pichacza@bouldercolorado.gov>
Cc: alex ferguson <alexmichalos@yahoo.com>; david ferguson <fergus6096bz@yahoo.com>
Subject: UR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave

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The Renfroe's agree with all of the points below. The Ferguson property needs significant buffering not addressed in the current plan.

At this point there is little or no buffering in the plan. A fence has been mentioned. In the initial meeting rows of trees, at Bonai's expense, were mentioned. The position of the Ferguson family, is as follows and I am including verbatim at their request:

1) The circle and the real entrance should NOT be right next to our property. We were told that they are putting an entrance on Oreg because they have to but will not use it! There is a road that has a required entrance that MUST be used for the dropping off passages with cars. It can be placed closer to the parking lot to make for easy walking, but should absolutely face Oreg rather than right next to our back yard. This kind of traffic right next to our backyard will ruin our quiet enjoyment of backyard and our home should we want to build back there. It is incredible that they could not make the actual entrance on Oreg. They could have a half circle.

A circle or round about with the entrance on the [east] side of the building rather than on Oreg will bring traffic with cars idling right next to the backyard of the property at 1468 Cherryvale Rd. The drop off and pick up should be better placed on Oreg where the actual entrance is located. It is our understanding that by code, the entrance must be on Oreg and we would hope that this will be the actual working entrance and not just a symbolic entrance. A half circle could be placed there if needed to keep cars off the street for when some one needs to be dropped off closer to the entrance. Having the building between our backyard and the idling cars will help mitigate some of the noise, lights at night and car exhaust.

2) There should be 2 lines of evergreens all the way down the property to provide a buffer as is typical with other churches and synagogues that are a fraction of the size of this building.

3) The sheer size of the synagogue and the fact that they will have a full time school there make it much more than what is appropriate in terms of look and feel of the neighborhood. Our houses directly adjacent and the houses all around have an average an average square foot of about 3,200.

4) The height should be no taller than a 2 story house and the tree will hopefully block the light if not the sound.

I (Judy) would add the following:

It was represented to everyone at the time of the original JCC approval that Bonai would like to move its synagogue across the street and may sell the existing buildings to a smaller congregation. There was no mention of a school there. The school need was supposed to be fulfilled by the JCC building. Currently Bonai does not rent out space, even for small neighborhood meetings. In prior meetings it was stated the new building would rent space, so that needs to be addressed. In regard to parking, I clearly remember representations that a new Bonai would not need much parking because Saturday morning parking would be shared with the lots on the JCC which would not be in use on the Sabbath. If that were done, there would be much more room for buffering the Ferguson property.

Judy and Neal Renfroe

1460 Wonderview Court

720-841-3540

Pichacz, Alex

From: judrenfroe <judrenfroe@aol.com>
Sent: Monday, October 6, 2025 8:44 PM
To: jefflevy22@hotmail.com; Liz Hanson; Kuhna, Scott; Pichacz, Alex
Cc: david ferguson; alex ferguson
Subject: Re: UR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave

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CORRECTION: All of the references to 1545 Cherryvale in the following email should have been to 1599 Cherryvale.

On Monday, October 6, 2025 at 03:43:36 PM MDT, judrenfroe <judrenfroe@aol.com> wrote:

The irrigation/drainage lateral -- re brief history and obstructions

Hello everyone,

I know I have not sent you an adequate explanation of the understandings we had regarding the lateral and drainage ditch along the south property line. I will do that soon in more detail.

It short, the understanding was that the lateral was to remain as a lateral to serve the old Smith property at 1545 **1599** Cherryvale, should it re-acquire water rights (which were only recently sold before they current owners bought), AND also to be available, as it was historically, to handle flood water in the even of another 2013 or 1995 flood. Although a 100 year flood may not need to drain there, drainage across that property in 1995 and 2015 was critical. The rest of the JCC property has been elevated so that no other historic flow that direction remains. This is very serious for us.

The bottom of the lateral is supposed to be at its historic pre-development elevation. I have not physically confirmed that, and it concerns me that it may not be. I have been reassured that it is. I'm not so sure.

In addition, there is supposed to be a device in the lateral near Cherryvale where the flow can be directed either into the lateral and continue to the old Smith property, or diverted to South Boulder Creek. I have not confirmed that and do not know anything about how that is operated. I just know that on several occasions I have been assured it is there. It is likely that it will take a person to go there and change the flow from one to another. I don't know which, if either, is open to take the flow at this time. Please consult with Butch as to how this is supposed to happen. He and his engineers for the JCC are probably the only ones who know. It has been nearly buried and securely fenced off so that we are unable to confirm anything at all.

For these same reasons, it is not OK if there are obstructions on the lateral as part of the new Bonai. Although the current owners of 1545 **1599** Cherryvale have said they have no objections, they were not around at the time the JCC was built and apparently have no knowledge of the purpose of the lateral and its value to their property.

Another small issue, that is small for now. A couple of weeks ago we removed some dead trees from near our north fence line. Parts of them fell into the JCC/Bonai property. Neal went over to retrieve them a few days ago. He found other volunteer trees growing in the lateral. It has not been maintained. He cut off a couple at ground level, but that will not keep them from coming back, rapidly once they have started. Roots need to be dug out below the surface, maybe several times. I think there are a few more volunteers in the lateral and among the Blue Spruce in other locations. In particular the lateral needs to be kept free of obstructions. We can help with this in the immediate future, but we need your permission. It needs to be done before the trees grow any further. They were 3 feet tall.

Judy Renfroe

Pichacz, Alex

From: judrenfroe <judrenfroe@aol.com>
Sent: Tuesday, October 7, 2025 3:44 PM
To: Kuhna, Scott; Pichacz, Alex; jefflevy22@hotmail.com; Liz Hanson
Cc: david ferguson; alex ferguson
Subject: Drainage and Groundwater related to UR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave

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This is the explanation I have promised. I've made it as short as I can. There are some unresolved issues that were left after the JCC approval. These include issues we did not know about at the time, or that had been misrepresented to us. They are all related to water, either too little or too much.

Part One of this relates to drainage and the irrigation lateral, and concerns re impediments to flow therein.

Part Two relates to the JCC's impact on our water wells and the risk that the impact will be increased by Bonai de-watering or failing to install clay plugs in utility lines. It is related to a constant drain off of our groundwater, an ongoing process which we want to prevent from getting worse.

I would like to note that we do not have anything like the high ground water issues that exist on Gapter Road. There seemed to be some concern in the City comments on the Bonai plans that we might.

FYI, historically, a balance between the too little and too much water has generally existed in this area since it was settled in the mid to late 1800's and irrigation established. We've had too much water only twice in the past 53 years that we have lived on Wonderview Court, once in 1995 and again in 2013. Without proper planning next time could be much worse due to blocked historic drainage. Oddly, few other locations were as impacted in 1995 and that year is not even listed among memorable Boulder floods. The flood plain maps do not correlate to what happened in either event.

Part One – Drainage and the dual purpose of the lateral:

It is imperative that the capacity of the lateral along the Bonai and JCC south property line not be diminished by fences, concrete piers, pillars, iron grates or any other obstructions related to the new Bonai. It is also imperative that the lateral be maintained so its capability is maintained. It should be kept reasonably free of overgrown grass and weeds and totally free of volunteer brush and trees. Please require this as part of the Bonai approval process.

We were promised this lateral would compensate for other changes made to the drainage.

The construction of the JCC changed forever the historic drainage that comes from the south and southeast and went to the north and northwest in ways that we never imagined would be allowed. A 100 year flood is not an issue. However, the disregard for what will now happen to our property and our animals in the event of another storm like 2013, as a result of the JCC totally preventing the historic drainage across that former field, is unfathomable. We should not have had to hire our own

engineers to review technical plans and then take legal action in order to prevent this. But it was too late when we realized how bad it was anyway.

A few days into the 2013 storm we neighbors had constructed two trenches running to the north across our properties at 1460 Wonderview and 1468 Cherryvale, one across the lateral and drained into the field, and one (further west) drained into the lateral which drained to the creek, but also overflowed the lateral into the pasture. It took both to carry the water that was coming from rain and marsh overflow. The trench across the Ferguson property drained water for over a month as higher elevation soils to the east drained through the marsh. This was all before the plans for the JCC were approved.

As discovered only after construction began, the construction raised the level of the entire JCC property about 5 feet. Possibly more. I have forgotten the exact numbers. Massive amounts of dirt were trucked in. There will be no more drainage across that property, ever. The only remaining drainage to prevent our property (1460 Wonderview Court) from becoming a lake, an extension of the Marsh, is through the often mentioned lateral along their south property line, plus whatever will flow through the Ferguson property at 1468 Cherryvale Road. Both are essential.

It has been our understanding that when time came to move the Bonai Synagogue, drainage through the often mentioned lateral (which we know as the Smith lateral) would be assured. I have questioned whether it is of adequate size to carry the flow we had in 2013, and whether the bottom of that lateral as reconstructed is actually low enough in elevation to accept the water from our property, and whether the inlet is open. I have been repeatedly been assured the elevation will allow water to flow from the south, where the two trenches from the Renfroe and Ferguson property still connect to the lateral (hopefully), and the capacity is adequate. I hope the representations are correct.

So I repeat. It is imperative that the flow not be diminished by fences, concrete piers, pillars, iron grates, or any other obstructions related to the new Bonai. It is also imperative that the lateral be maintained so its capability is maintained. It should be kept reasonably free of overgrown grass and weeds and totally free of volunteer brush and trees. Please require this as part of the Bonai approval process.

The family who currently owns the land that the lateral once served was not here at the time the JCC was built or the flood occurred. They may have no idea of the importance to their property of being able to serve it with irrigation water at some time in the future.

Part Two – Groundwater:

- 1) We request that our water table not be damaged by construction dewatering as it was during the JCC construction. 2) we request that be installed in the Bonai trenches where they intersect with the existing utility trenches under Oreg Ave.**
- 3) We are also requesting that if any occasion arises to open up a sewer or storm drain trench on Bonai or JCC property, a clay plug be constructed, and that definitely be done when the undeveloped part of the JCC property is developed.**

The reasons: The issue of too little water is pressing, every year, year around. Our wells are in the South Boulder Creek aquifer. The water level rises in the spring due to the creek rising. Ground water level also rises the most in response to irrigation by property owners and the proximity of two major irrigation ditches east of Cherryvale Road. Water level seriously falls in the winter. Digging deeper wells only provides storage in the Pierre shale formation which we encounter at 9 or 10 feet.

On two different occasions construction of utility trenches has happened without installation of clay dikes, also known as clay plugs. The gravel backfill in utility trenches allows water to flow as much as a small stream would. The impact has been severely detrimental to our wells. The first time was the 1971 City sewer construction under Cherryvale Road. As a result of that, we became aware and thought we had reached an agreement with the City that clay plugs would always be installed in utility lines in this area. They were installed in the Reserve utility trenches. Yet, a second time, in a breach of trust by the City and the JCC, contrary to a direct promise made by the JCC promoters that the JCC would not impact our wells, clay plugs were omitted from the plans. *There was even a diagram of the City's standard for clay plugs on the plans, but no clay plugs in the utility lines.* We learned that after construction, and loss of water.

The only way possible to prevent drain-off of ground water is for clay plugs to be installed. The deepest trench is the storm sewer, which at Arapahoe Road is three feet lower in elevation than the bottom of the Renfroe well which is a typical depth for the area. The continuing impact year around, unrelated to irrigation, is over a 1.5 foot drop in winter water level, and a much slower rise from runoff in the spring before irrigation starts, and a much attenuated response to local irrigation, namely our own irrigation, and a much faster drop in water level when irrigation ends.

The de-watering phase for the JCC during construction nearly dried up the aquifer at this location. We barely made it through the winter, and even after recovery which took two years, our water level is one to two feet below what it has been for past years, regardless of other variables. The Sombrero Marsh totally dried up the following winter. (One of the utility trenches goes very near it on the undeveloped part of the property, and must be retrofit with plugs when that is developed.)

Note: the above is as a result of water drain-off by trenches and de-watering done over 500 feet from the two properties adjacent to the Bonai proposal. Bonai will be less than 100 feet away from the Ferguson well. We are very worried about what will happen as a result of both de-watering during construction and utility extension closer to our wells for Bonai.

We are requesting clay plugs in the Bonai trenches where they intersect with the existing utility trenches under Oreg Ave.

We are also requesting that when any occasion arises to open up a sewer or storm drain trench on Bonai or JCC property, a clay plug be constructed.

Judy Renfroe
1460 Wonderview Court

Pichacz, Alex

From: Alexandra Ferguson <alex michalos@yahoo.com>
Sent: Friday, December 12, 2025 1:38 PM
To: Pichacz, Alex
Cc: Judrenfroe; David Ferguson
Subject: LUR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave - ADA Compliance

Follow Up Flag: Follow up
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Thank you for your time Alex and Scott,

The ADA is one law I am familiar with especially in the context of public schools. I do believe the design of the circle as part of the parking lot does create an architectural design barrier and is not in compliance with the requirement that the parking spaces allotted for people with disabilities are at the closest location to the entrance.

First, as the circle is part of the parking lot, the current location of the parking spots are not the closest location to the entrance. The requirement is not the closest location from the start of the parking spaces, but rather the closest location from the parking lot to the entrance, which includes the circle.

Second, the circle creates a architectural barrier for people with disabilities to have independent access, as it creates an excessive distance between the parking spaces and the entrance. Moreover, from the drawing it looks like the person with a disability would have to go into the circle to get to the entrance, which is clearly dangerous.

It is my understanding that at least 2 modifications to the code were granted for the circle to be a possible design feature of the parking lot. 1) the entrance by code must face Oreg. The circle in the parking lot has in effect made the entrance facing the parking lot and not Oreg. To enforce the code would mean that the entrance and drop off would necessarily be on Oreg and not in our backyard and 2) 2 curb cuts were granted effectively allowing for the design of the circle. As a matter of security, it is my understanding that less access to a building by cars or vans is safer NOT more access. Again, my knowledge is from understanding the security concerns of public schools and the design of entrances to protect against violent acts.

Thank you for letting me know if there were other waivers or modifications to the code granted that allow the circle to have been incorporated into the design plan. I believe that the circle is something the designers **want** and not **need** which required modifications to the code to achieve. Therefore, it is not actually in compliance with the code.

Thank you for your consideration of our concerns with respect to the impact of this project on the quiet enjoyment of our home.

Sincerely,
Alexandra

Pichacz, Alex

From: judrenfroe <judrenfroe@aol.com>
Sent: Friday, December 12, 2025 5:29 PM
To: Pichacz, Alex; Kuhna, Scott
Cc: David Ferguson; alex ferguson
Subject: Re: LUR2025-00031, Site Review Amendment to JCC, 6018 Oreg Ave - ADA Compliance

Follow Up Flag: Follow up
Flag Status: Flagged

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Hi Alex and Scott,

Thank you for your time this morning. These are the questions I asked but was unable to hear the answers due to my hearing loss. Only these need a response:

- 1) I asked re notice that we and other neighbors were supposed to receive. Although the Bonai representatives have been discussing this with us for three years, no one that I know of has received written notice. There is a sign on the property, but there has been a sign there for several years and I have not walked over to see if it is a new one related to this application. I would just like to know what notice there should have been.
- 2) I asked you to clarify who all is involved in making the decision to approve, and whether and how we can get Planning Board to hear it. I don't understand if only Staff decides or if the City Manager then has to approve it.
- 2a) Your answer included information about an appeal and about Planning Board call-up, and I caught those words, but not the rest. Can you explain again and reference the Code sections. Also can you include information re timing.
- 3) How close are you to a decision? I caught part of that discussion.

Answers I did hear (no response required):

- 1) I asked about whether the inclusion of a school should subject the application to a Use Review, but I did understand that answer to be that a school is permitted as an accessory use to the synagogue.

Just to reiterate my major concerns re the Renfroe property (no response required):

- A) We hope the two rows of Blue Spruce trees will be required to be preserved, AND that all of those which have died for whatever reason will be required to be replaced. They should have been replaced as soon as they died. I have asked the City (before Elaine retired) and have asked the JCC several times. The requirement to do that could/should be considered as running with the land even after it technically changed owners.

B) The parking lot lights are a concern. We request you make sure the point sources of light are not visible beyond the property line, as they unfortunately are for the JCC. We would also like to see a requirement that they be turned off when the building is not in use and soon after any evening use that does occur.

C) There was an informal agreement between us and Butch Weaver that the irrigation lateral be kept open and well maintained, including two major water drain channels to it, as that ditch is now the only way our property can drain to the northeast. It has historically drained to the northeast and it has been of great concern after the floods of 2013 and 1995 that more attention was not given to that in the technical plans for the JCC and the rest of the property. I hope that Bonai will agree to that, but it needs to be a written requirement so it is not forgotten.

I share the other concerns discussed by Alexandra and Dave Ferguson but will not reiterate.

Thank you again for your time.

Judy Renfroe

February 6, 2026

Dear Alex Pichacz and Boulder Planning Department,

Congregation Bonai Shalom has been part of the Boulder community for 45 years. Many of our members have lived in Boulder and contributed to the City's civic, social, and economic life for decades. Our congregation has been located on Cherryvale Road, directly across from the proposed site, since approximately 1989—long before most current residents in the area. For context, the Fergusons – the immediately adjacent neighbors - purchased their home in April 2016, shortly before construction of the Boulder Jewish Community Center was completed later that same year.

Our congregation has been engaged in the Site Review Amendment process since May 2025—now more than eight months. During this time, we have invested hundreds of staff and volunteer hours and tens of thousands of dollars revising our application to address City comments and advance toward approval. We are eager to proceed to the Technical Documents review phase so that we may finally move forward with construction of a much-needed new home for our congregation.

Our congregation is in urgent need of a new facility—one that provides enhanced safety and security, improved energy efficiency, accessibility for congregants with disabilities or mobility challenges, protection from the ongoing risk of flooding, and sufficient space for our community to gather and fulfill its religious, spiritual, and communal needs.

We do not view this project as controversial. We are seeking an amendment to the Boulder Jewish Commons Site Review, which was approved unanimously by Planning Board in 2013 and by City Council in 2014. The proposed building is planned for a site where future development was anticipated and which received an initial RR-1 zoning designation. Religious assembly is a permitted use in the RR-1 zoning district, and our proposed building—approximately 12,189 square feet of floor area and 26' 8 ¾" at its maximum height—is well below the allowable limits of 27,664.25 square feet and 35', respectively. We also believe that a one-story building, as planned, is appropriately scaled to transition the development within the Boulder Jewish Commons into the residential neighborhood to the south.

Our current facility, which has served our congregation for over 35 years along South Boulder Creek, no longer meets our needs due to aging infrastructure, increasing maintenance costs, growth in membership, and ongoing flood risk. We would not be undertaking this move unless it were truly necessary. Since the approval of the Boulder Jewish Commons vision in 2014, it has always been understood that Congregation Bonai Shalom would eventually relocate across Cherryvale Road to co-locate with other Jewish institutions, including the Boulder Jewish Community Center.

From the earliest stages of this project in spring 2021, we made a deliberate commitment to be good neighbors and to take neighbor concerns seriously. We first met with nearby residents in April 2022 to present initial concept plans. Since then, through extensive email correspondence and multiple in-person meetings, we have consistently worked to keep neighbors informed, listen to their feedback, and modify our design where feasible. A detailed record of these communications is included as **Attachment A**.

At significant cost in both time and resources, we made numerous design changes in direct response to neighbor input, including:

- Reducing the height and overall scale of the building;
- Shifting the building further north, away from the shared property line; the dropoff point at the main entrance to the building is now 300' from the closest corner of both neighbors homes, the length of a standard city block;
- Reorienting the primary outdoor patio from the south to the west;
- Requesting a variance to the landscape setback in order to preserve existing mature spruce trees along the southern boundary of the parking area;
- Providing a seven-foot-tall vertical slat wooden fence along the entire shared boundary; and
- Most recently, in November 2025, reorganizing bicycle parking to allow for an evergreen landscape hedge south of the roundabout feature, at the request of the Fergusons.

Our most recent meeting with adjacent neighbors—the Fergusons and Ms. Judy Renfroe—took place on December 1, 2025, following a detailed email sent on November 25, 2025. That correspondence explained the rationale for the site layout and the necessity of the roundabout, addressed concerns about its potential impacts (see **Attachment B**), and presented our revised landscape buffer proposal. At no point during that meeting was an intention to appeal City approval raised.

Accordingly, we were surprised when City staff later informed us that the Fergusons intended to appeal any staff-level approval. We were also surprised to see concerns raised regarding ADA compliance related to the roundabout, as this issue had not previously been mentioned. Our architects have confirmed that the project fully complies with all applicable City, State, and Federal ADA requirements. Federal ADA standards require that accessible parking spaces be located closest to an accessible building entrance; they do not prescribe a maximum allowable distance. There are multiple examples within the City of Boulder where ADA parking is located farther from building entrances than proposed here.

In closing, we respectfully submit that Congregation Bonai Shalom has acted in good faith throughout a lengthy and challenging process, repeatedly modifying our plans to address neighbor concerns while meeting essential security, accessibility, and programmatic needs. We hope the Planning Board will recognize these efforts and allow us to move forward to the next phase of review so that we may finally begin construction of a building our congregation urgently needs.

Sincerely,

Rabbi Marc Soloway

Nate Shapiro, Executive Director

Michael Ginzberg, President, Board of Trustees

Congregation Bonai Shalom

Boulder, Colorado

Attachment A
Neighbor Correspondence

Date	Type	Purpose/Content
3/17/2022	In-Person Meeting	Review initial Concept Plan
8/19/2022	Email	Courtesy delivery of City Pre-App comments
10/14/2022	In-Person Meeting	Review updated Concept Plan - introduction of single-story plan addressing concerns raised previously
4/6/2023	Email	Response from inquiry as to project status
9/5/2023	Email	Courtesy notification of geotechnical work and update on project timeline
2/10/2025	Email	Notice from Ferguson's to JCC and Bonai with notice they were thinking of selling their house and they felt it their property could be helpful to the Bonai project.
3/5/2025	In-Person Meeting	Follow-up to Ferguson's outreach regarding possible sale of their house to Bonai or working with Bonai to execute a subdivision and leaving them with a 30K sf parcel
4/29/2025	In-Person Meeting	
5/4/2025	Text	Ferguson's inquiring if Congregation Bonai Shalom is able to move forward with purchasing their property
5/5/2025	Text	Reply saying we didn't know if we could purchase, but that we still had to find interest amongst donors
5/6/2025	Text	From Ferguson's letting us know they could provide Seller financing if Bonai were interested in purchasing their property
5/6/2025	Text	Letting Ferguson's know we've traded messages with a key leader/donor and that unfortunately we felt the price they would want for their property was well above what we thought we could offer if we could generate internal interest.
8/20/2025	In-Person Meeting	Review of current Bonai plans (as submitted to the City) and discussion of neighbor questions and concerns
9/3/2025	Email	Courtesy delivery of current City comments on Site Plan Submittal and initial answers to questions raised by neighbors at 8/20/25 mtg
9/12/2025	Email	Additional answers to questions raised by neighbors at 8/20/25 mtg plus confirmation of language submitted requesting a variance to the parking lot landscape setback
11/25/2025	Email	Update neighbors on addition to plans of a landscape tree hedge south of roundabout as attempt to address their concerns and an attempt to clarify true potential impacts from roundabout vs perceived impacts.
12/1/2025	In-Person Meeting	Update neighbors on addition to plans of a landscape tree hedge south of roundabout as attempt to address their concerns and an attempt to clarify true potential impacts from roundabout vs perceived impacts.

Attachment B

Neighbor Roundabout Concerns

1. *Neighbor Concern: Every car entering our site will enter into the roundabout (from October 21st email from Alexandra Ferguson to Alex Pichacz).*

Congregation Bonai Shalom Response:

That simply won't be the case. A fraction of the cars that enter the parking lot will enter the roundabout. Most cars entering the parking lot will simply turn left and find a parking space. Cars exiting the parking lot have two options to do so and neither will require entering the roundabout. The roundabout will be used by some parents dropping off their children for religious school which takes place one weekday afternoon/evening a week and one weekend morning a week. The roundabout will also be used by some congregants with mobility issues, whether due to old-age or medical conditions or a disability. In addition, we anticipate some of our young family congregants with newborns or toddlers may use the roundabout for drop-off or pick-up to minimize the distance they need to travel with strollers plus diaper and snack bags. To further reduce the need for the roundabout, we will be installing signage in 8-10 non-handicap parking stalls closest to the building that prioritizes use of those parking stalls for elderly congregants or those with young kids.

2. *Neighbor Concern: Headlights from cars utilizing the roundabout will shine onto our property*

Congregation Bonai Shalom Response:

The possibility of headlight pollution will only occur when the synagogue is being utilized for nighttime activities. Our programming schedule is such that nighttime use of the building will occur primarily on:

- i. Friday nights (currently we only have Friday night programs 2x/month); and,
- ii. Religious School pick-up one weeknight a week during the winter (standard time) approximately between late October and mid-March.

We believe the 7' solid wood vertical slat fence along the property line boundary south of the roundabout will be sufficient to block headlights from cars entering and exiting the roundabout during the infrequent nighttime use of the building for the following reasons:

- Low beam car headlights are designed to illuminate an area at or below the height position on the car of the headlights.
- The parking lot and roundabout will be illuminated by parking lot and building lights such that there shouldn't ever be a need for a driver to feel they need to use their high beams in this area. Thus, cars in low beam headlight mode will be the norm. If for some unexpected reason, a car is utilizing their high beams as they come around the roundabout, we still expect that the 7' fence we are installing along your property line will be sufficient to block high beam headlight light.

It is important to note that the dropoff point at the main entrance to the building is almost 300' from the nearest corners of both neighbors' existing homes; almost the length of a standard city block.

3. *Neighbor Concern: Cars idling in the roundabout will create air pollution that will drift over our property.*

Congregation Bonai Shalom Response:

While we wish all of our congregants could walk, bike, take the bus, or drive electric cars to our building, unfortunately the reality is some will drive internal combustion engine cars. Some of those internal combustion engine cars will enter the roundabout for drop-off or pick-up and some of the drivers of those cars will idle their cars while waiting for their loved ones or helping them get in or out of the car. To address this concern, we will install signage at the roundabout encouraging drivers to be respectful of our neighbors and to turn off their headlights while loading/unloading. Furthermore, as you may be aware, the prevailing winds in Boulder blow from west to east more often than any other direction. This means that car exhaust emerging from cars in the roundabout, which will be more than 300' from your house, will 80% or more of the time be blown eastward further away from your property.

4. *Neighbor Concern: Cars idling in the roundabout will emit noise audible from our property.*

Congregation Bonai Shalom Response:

As mentioned above, we will discourage idling cars through signage that will read something to the effect of "Please Respect Our Neighbors & Turn Off Your Car". If you have specific thoughts on what these signs should say, please share, we're all ears. Inevitably, and unfortunately, some drivers will ignore the signage. The average decibel level of an idling car is typically between 40 to 75 dB. For comparison, a normal conversation is about 60 dB, and a washing machine is about 70 dB. It seems unlikely that with the ambient noise in the area from traffic along Cherryvale Road and especially Arapahoe Avenue that an idling car would be a discernable and distinct sound that would negatively impact the quiet enjoyment of your property.

February 9, 2026

Dear Planning Board:

We are the homeowners of 1444 Wonderview Court, Boulder, Colorado, writing to comment on LUR2025-00031, the Site Review Amendment to the Jewish Community Center at 6018 Oreg Avenue. Our property is one lot to the south of the proposed Bonai Shalom synagogue.

We appreciate the work that City staff and the applicant have done to address concerns related to the overall scale and intensity of the project, and we also appreciate that preservation of the existing tree buffer along the south property line has now been agreed upon. As the application moves forward, we would like to emphasize several remaining items that are particularly important to maintaining compatibility with adjacent residential properties.

Remaining Requests and Concerns

1. Lighting and Zero Foot-Candle Requirement

We request clear assurance that the final lighting design will achieve zero foot-candles at the property line. The current plan appears to rely on fixtures similar to the existing JCC light poles, which historically have produced measurable light trespass. We therefore request that different fixtures, shielding, or mounting heights be required as necessary to ensure that lighting performance meets a true zero foot-candle standard for wildlife and residents.

Specific Request:

Please require, as a condition of approval, that all parking lot and building lighting achieve zero foot-candles at all adjacent residential property lines, verified through a final photometric plan. If existing JCC-style poles cannot meet this standard, alternative fixtures or shielding should be required.

2. Preservation and Augmentation of Tree Buffering

Preservation of the existing Blue Spruce to the south is essential, and we strongly support maintaining them. Given the scale of the buildings and ongoing activity, we request that the buffer be augmented with additional evergreen plantings to further protect neighboring properties from visual impacts, lighting, and noise over time and to ensure long-term compatibility with the surrounding neighborhood.

Specific Request:

Please require additional evergreen trees to be planted within the buffer area, in sufficient

number and spacing to strengthen year-round screening and light control between the development and adjacent residential properties.

3. Drainage and Groundwater Protection

A historic irrigation and drainage lateral along the south property line remains a critical drainage pathway following elevation changes associated with prior development of the JCC site. Any obstruction, reduction in capacity, or lack of maintenance could increase flood risk to adjacent properties.

Past construction activity in this area—including dewatering and utility trench work—has been associated with measurable declines in groundwater levels affecting nearby shallow residential wells. Because the proposed improvements will occur closer to existing wells than previous construction, we respectfully request continued safeguards to prevent groundwater loss. These should include ensuring that the lateral remains unobstructed and properly maintained, minimizing construction dewatering where possible, and using appropriate measures such as sealing or plugging utility trench connections so they do not create unintended pathways for groundwater drainage.

Specific Request:

Please require explicit conditions ensuring that the drainage lateral remains unobstructed and maintained, that construction dewatering is minimized and monitored, and that utility trenches are sealed or plugged as necessary to prevent unintended groundwater drainage.

We appreciate the progress that has been made through the review process. As this application moves forward, we respectfully request that the Planning Board require the above items as enforceable conditions of approval to ensure compatibility with adjacent residential properties.

Thank you for your consideration and for the opportunity to participate in the public review process.

Sincerely,

Eric Scott and Stacey Schulte
1444 Wonderview Court, Boulder, CO 80303
303-532-6628 | 303-903-9205