

PLANNING COMMISSION

Mike Simone, Chairperson
Bushrod White, Vice-Chairperson
Carlos Barron
Thomas Holton
Kathy Kvasnicka
Thomas Meyers
Paul Weber

**Planning Commission Agenda
Regular Meeting
Fort Lupton City Hall – 130 S. McKinley Ave.*
Thursday, October 14, 2021
6:00 P.M.**

(Order & Contents Subject to Change by Action of the Commission)

** Login information on how to attend this meeting virtually (optional) is on the second page of this Agenda.*

Call to Order – Roll Call

Approval of Agenda

Consent Agenda – Consent Agenda items are considered routine and will be enacted by one motion and vote. There will be no separate discussion of Consent Agenda items unless a Commission member so requests, in which case the item may be removed from the Consent Agenda and considered at the end of the Consent Agenda.

- a. Approval of the Minutes of the September 23, 2021 Meeting

Public Comment – This portion of the Agenda is provided to allow members of the audience to present comments to the Planning Commission related to items not otherwise listed on the Agenda.

Action Items

- a. **P2021-025 Cottonwood Greens Filing No. 4 Preliminary Plat & PUD Plan**

Discussion Items

- a. Review of Meeting Discussion
- b. Development Code Update

Future Business

- a. Planning Commission Meeting on Wednesday, November 3, 2021 at 6:00 PM
- b. Planning Commission Meeting on Thursday, November 18, 2021 at 6:00 PM

Adjourn

VIRTUAL MEETING (OPTIONAL) LOG-IN INSTRUCTIONS
Please join my meeting from your computer, tablet or smartphone.
<https://global.gotomeeting.com/join/247460885>

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Access Code: 247-460-885

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Virtual Meeting Instructions

If you would like to participate remotely, we encourage you to test the phone number and links provided above prior to the start of the meeting, as each device requires initial adjustment. It is also recommended to log into the meeting early, and if you encounter any issues to call 303-304-4498 or email PlanningDept@fortluptonco.gov immediately.

When calling in, please be sure to mute your microphone on your computer, phone or tablet. Planning staff and/or the Chairman of the Planning Commission will provide instructions on when and how comments can be made by the public virtually.

**RECORD OF PROCEEDINGS
FORT LUPTON PLANNING COMMISSION
September 23, 2021**

The Planning Commission of the City of Fort Lupton met in session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the Planning Commission and virtually via GoToMeeting, on Thursday, September 23, 2021.

Chair Mike Simone called the meeting to order at 6:06 p.m. and gave the following advisement:

Tonight's meeting shall have the option of virtual appearances so as to ensure the health and safety of the general public and the City of Fort Lupton Planning Commission and staff.

The intent and purpose of the virtual appearance option is to allow the City to be innovative in providing the general public the most meaningful access possible in light of the current challenges present as a result of the Covid-19 pandemic. Therefore, members of the general public will be offered the opportunity to be electronically present for meetings at the City, subject to existing health conditions.

An electronic link has been made available for tonight's meeting on the City's website and social media platforms and as posted at City Hall, so that the general public, Planning Commission and staff may choose to participate electronically via the internet or on the phone.

ROLL CALL

Roll was taken and those present were Chair Mike Simone, Vice Chair Bush White and Commission Members Carlos Barron, Kathy Kvasnicka, Thomas Holton and Thomas Meyers. Also in attendance were Planning Director Todd Hodges, Planner Alyssa Knutson and Administrative Assistant Magaly Morales-Tejada.

APPROVAL OF AGENDA

A motion to approve the agenda was moved by Bush White and seconded by Thomas Meyers.

CONSENT AGENDA

A motion to approve the consent agenda was moved by Bush White and seconded by Kathy Kvasnicka.

PUBLIC COMMENT

Chair Simone asked if there was anyone who would like to comment on an item not on the agenda tonight. There was no public comment. Chair Simone took this time to present former commissioner Lynne Derby with a plaque in honor of her many years of service with the Planning Commission.

ACTION ITEMS

P2021-021 Lupton Village Townhomes Lot 2 Block 7 Preliminary Plat

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September 23, 2021**

Planning Director Todd Hodges presented this item. He stated that this property is located on the Southwest corner of S. Rollie Ave. and CR 12. This is an additional piece to the Lupton Village PUD development and consists of 61 units. The final plat is being reviewed concurrently and will be presented to City Council along with this preliminary plat. All referrals have been addressed and all notification requirements have been met.

Applicant, Zach Cesar, provided a brief presentation. He stated that this development is within the Lupton Village Metro District on the corner of County Road 12 and S. Rollie Ave. The proposed plat consists of 13 buildings with four & five-plex townhomes for a total 61 units with 2 car attached garages on each unit and 65 additional off-street parking spaces. The landscape coverage of the community will be 39% of the overall space. The community will be maintained by the metro district. This project will include improvements to County Road 12 and will include trails throughout the development. There have been updates to the lighting fixtures on the included materials as a new lighting fixture became available that better meets the design criteria.

Chair Simone opened up the public comment portion of the Hearing for the action item. Hearing none, he closed the public comment.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions.

Member Meyers asked for clarification on condition of approval "B" on Resolution P2021-021.

Public Works Director, Roy Vestal, stated that he requested that the meters line up against the curb rather than being staggered.

Member Holton asked if there would be improvements to the railroad crossing on County Road 12 as part of this project to handle increased traffic.

Mr. Vestal stated that the lanes will be tapered in the interim but that the process with Union Pacific has begun to widen that section to four lanes.

Chair Simone requested that the applicant present rear-elevations to City Council, this was added as a condition of approval.

Member Carlos Barron moved to approve P2021-021 as amended and Bush White seconded. This motion passed unanimously.

P2021-022 Pearson Park Change of Zone

Planner Alyssa Knutson presented this item. She stated that this change of zone is for Pearson Park located on the corner of Highway 85 and Highway 52 proposes a change from I-1 to Parks & Open Space zoning. This zoning better aligns with the current use and with the City's comprehensive plan. The WWTP change of zone proposes a change from I-1 to Agricultural zoning. All notification requirements have been met.

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Chair Simone opened up the public comment portion of the Hearing for the action item. Hearing none, he closed the public comment.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions.

Member Barron asked if there would be any change to the public use allowed at Pearson Park as a result of this zoning change.

Knutson stated that the zoning does not change anything that is currently occurring at the site.

Member Bush White moved to approve P2021-022 as amended and Thomas Holton seconded. This motion passed unanimously.

P2021-023 WWTP Change of Zone

Planner Alyssa Knutson presented this item. This property is located on the north lot of the Pearson Park subdivision and is currently zoned I-1. The proposed zoning change is to Agricultural, this is the only zoning that allows gravel mining as a special use permit, which is the item being reviewed next. The comprehensive plan stated that parks should consist of open space and water storage, which directly aligns with the future proposed use. All notification requirements have been met and staff recommends approval.

Chair Simone opened up the public comment portion of the Hearing for the action item. Hearing none, he closed the public comment.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions.

Member Holton asked for clarification on the rezoning of this lot before and after the proposed use is in place.

Planner Knutson stated that this would stay as agricultural if approved.

Member Bush White moved to approve P2021-023 and Kathy Kvasnicka seconded. This motion passed unanimously.

P2021-024 Inouye Gravel Mine Amended Special Use Permit

Planner Alyssa Knutson presented this item. She stated that this application is for a property located approximately 0.37 mile north of State Highway 52 and west of U.S. Highway 85 and includes the parcel that was just approved for a change of zone. Gravel mining for this piece has been previously approved and this application is an amendment to include City property. All notification requirements have been met and staff recommends approval.

Chair Simone addressed the applicant's representative, Andy Rodriguez, and asked if he understood that some members of this hearing may be appearing tonight via virtual connection and will not be appearing in-

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FORT LUPTON PLANNING COMMISSION
September 23, 2021**

person. He asked if they consented to the applicable members voting on the submittal and if they voluntarily signed and submitted the written waiver and consent to proceed electronically tonight in the hybrid planning commission meeting.

Mr. Rodriguez stated yes to all questions.

Mr. Rodriguez provided a brief presentation. He stated that the property is located north of State Highway 52 and directly west and adjacent to the South Platte River. The intent is to amend the Inouye Gravel Mine special use permit and include city property into the gravel mine. The project will be a slurry wall line, about 6,000 linear feet and the intent is to extract 1.5 to 2 million tons of aggregate, move it to the existing Inouye site and reclaim the site to a water storage reservoir. This use aligns with the adjacent land uses that include gravel mining, oil & gas and agricultural use. It is expected to mine 350,000 to 500,000 tons per year in 200-25 acre sections to minimize disturbance. Truck and material will access the site through WCR 14.5. Several permits have been acquired for this project, including permits from DRMS, State Engineer, CDPHE, WQCD, EPA and Fort Lupton. The site is below grade and should have no floodplain issues; there will be no on site fuel storage. This site will be buffered and is conducive to heavy machinery operations. The miner will be regulated and will maintain site conditions with no expected disturbance to wildlife. Surrounding groundwater will not be affected, there is potential for some mounding, however the river is a natural drainage, which will facilitate keeping the groundwater level. There is potential for recreational use on the trail corridor along this project.

Chair Simone addressed the applicant, Andy Rodriguez. He asked if he felt he had a full and fair opportunity to participate in tonight's public hearing

Mr. Rodriguez stated yes

Chair Simone asked if there was anything he would have liked to present that he felt he was prevented from doing.

Mr. Rodriguez stated no.

Chair Simone opened up the public comment portion of the Hearing for the action item. Hearing none, he closed the public comment.

Chair Simone opened up the hearing to Planning Commissioners' comments and questions.

Member Holton asked for clarification on the current ownership of the Inouye Mine and the WWTP site, plans for long-term private usage and whether the mineral lease includes a liner for the pit.

Applicant Robb VanderSchaaff stated that the Inouye Mine is owned by Tricycle Lane Ranches, which is a sister company of BURNO, the WWTP site is owned by the City.

Public Works Director stated that the lease does include the slurry wall liner.

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Member Holton asked for clarification on the distance of the pit from the river.

Director Vestal stated that the existing lagoons, which are about 10 feet deep, are about 50 feet from the river bottom and mining will not get any closer.

Member Meyers asked for clarification on what will drain into the river.

Director Vestal stated that the drainage that will occur into the river would be excess irrigation water due to the natural drainage path and the mining permit prevents anything else from being drained into the river.

Member Thomas Holton moved to approve P2021-024 and Carlos Barron seconded. This motion passed unanimously.

DISCUSSION ITEMS

Review of Meeting Discussion

A review of meeting discussions took place.

Development Code Update

A discussion of the Development Code Update took place.

FUTURE BUSINESS

The next meeting of the Planning Commission will be on October 14, 2021 at 6:00pm

ADJOURNMENT

Chair Simone adjourned the meeting at 7:04 PM.

Submitted by

Magaly Morales-Tejada, Administrative Assistant

Approved by Planning Commission

Mike Simone, Chair

RESOLUTION NO. P2021-025

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF THE COTTONWOOD GREENS PUD FILING NO. 4 PRELIMINARY PUD PLAT AND PRELIMINARY PUD PLAN LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, Arbor Capital Partners, LLC (“Applicant”) has applied for approval of the Cottonwood Greens PUD Filing No. 4 Preliminary Plat and Preliminary PUD Plan for single family attached (townhome) residential units (the “Application”); and

WHEREAS, pursuant to Section 16-45(c)(3) of the Fort Lupton Zoning Regulations, PUD development plan applications shall be processed in the same manner as set forth in the Fort Lupton Subdivision Regulations; and

WHEREAS, the Planning Commission held a public meeting on October 14, 2021 for the purpose of reviewing the Cottonwood Greens PUD Filing No. 4 Preliminary Plat and Preliminary PUD Plan; and

WHEREAS, after review of the Application and consideration of staff comments, Applicant’s presentation and any public input, Planning Commission finds the request for the Cottonwood Greens PUD Filing No. 4 Preliminary Plat and Preliminary PUD Plan conforms with City codes and requirements and policies therein; and

WHEREAS, all legal notification requirements have been met, including publishing the time and place of the public hearings in the Fort Lupton Press, posting notice at least fifteen (15) days before the hearings on the property, mailing notice to property owners within five-hundred (500) feet of the property and to oil and gas lessees on the property; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration staff comments, the applicant presentation, all referral comments and any citizen testimony in response to this application. Based upon the review of applicable policies and goals in the Fort Lupton Comprehensive Plan, review of the Subdivision and Zoning Regulations, and the facts presented on this date, the Planning Commission hereby recommends approval of Cottonwood Greens PUD Filing No. 4 Preliminary Plat and Preliminary PUD Plan for a planned unit development located in the Southeast Quarter of Section 33, Township 2 North, Range 66 West of the 6th Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado, with the following conditions:

- I. Prior to finalizing the Preliminary Plat:

- A. The title of the Preliminary PUD Plat shall include the Project No.: LUP2021-0019 & Plan No.: PPL2021-0004.
 - B. Update the Preliminary Plat and Preliminary PUD Plan with any redlined changes provided by staff.
- II. As part of the Final PUD Plat submittal:
- A. Finalize the Preliminary PUD Plat with the comments provided by City staff noted under Section I(B) of this Resolution.
 - B. Written evidence shall be provided to show that the comments from United Power have been adequately addressed.
 - C. Written evidence shall be provided to show that the comments from Xcel Energy (Public Service Company) have been adequately addressed.
 - D. Written evidence shall be provided to show that any comments from the Public Works Director have been adequately addressed.
 - E. Applicant shall finalize a subdivision improvements agreement for review by City staff and approval by City Council.
 - F. Provide information concerning any existing surface use agreements and provide detail how the agreements have been addressed on the design of the development.
 - G. Provide information concerning any existing metro district and/or planned homeowners association.

DONE THIS 14th DAY OF OCTOBER, 2021, BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Chairman

ATTEST:

Planning Director

**COTTONWOOD GREENS PUD FILING NO. 4 PRELIMINARY PLAT & PRELIMINARY PUD PLAN
STAFF REPORT
LUP2021-0019 & PPL2021-0004**

PROJECT DESCRIPTION

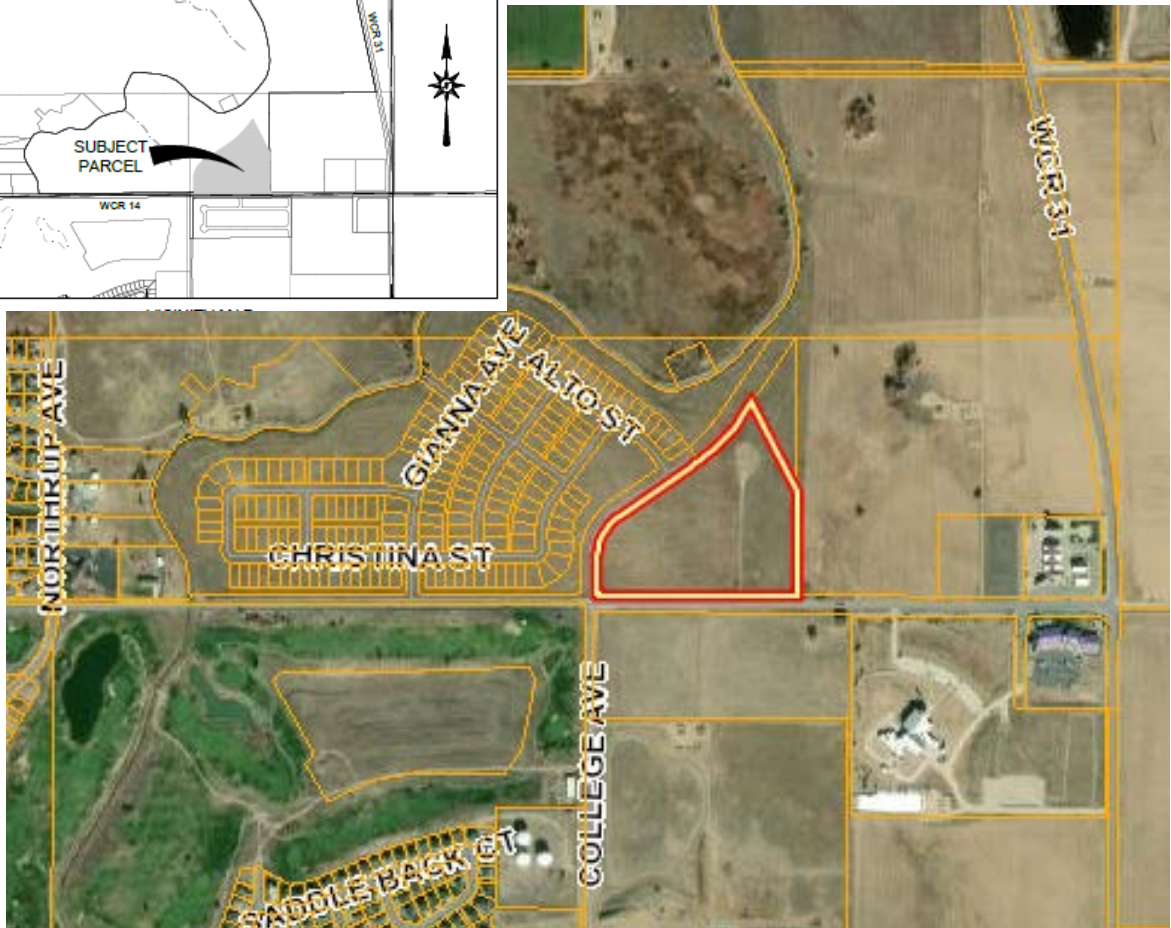
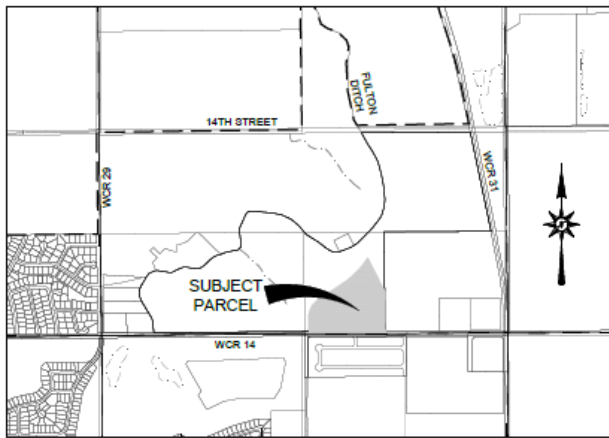
Project Nos.: LUP2021-0019 & PPL2021-0004

Project Name: Cottonwood Greens PUD Filing No. 4 Preliminary Plat & Preliminary PUD Plan

Applicant's Name: Arbor Capital Partners, LLC ("Applicant")

Location of Request:

The site consists of land located north and adjacent to 9th Street and west and adjacent to County Road 31 (the "Property"). The Property is located in the Southeast Quarter of Section 33, Township 2 North, Range 66 West of the 6th Principal Meridian, City of Fort Lupton., County of Weld, State of Colorado.



Nature of Request:

The Applicant has submitted a request for a preliminary plat and preliminary PUD plan for 137 single family attached (townhouse) residential units, and will include common areas and interconnecting trails.

Site Size: 16.22 acres, more or less.

Zone District: PUD Planned Unit Development.

Proposed Use: Residential uses to include 137 single family attached (townhouse) residential units, including common areas and interconnecting trails.

Existing Use: Vacant.

Hearing Dates: Planning Commission – October 14, 2021 at 6:00 PM; and
City Council – November 2, 2021 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado, with an option to attend virtually via GoToMeeting.

Staff Recommendation: Approval with conditions, as shown on the proposed resolution.

SUMMARY OF PREVIOUS APPLICATIONS

In 2006, the City Council approved a metropolitan district, final plat, subdivision improvement agreement, and PUD development plan for this property. However, the subdivision was never developed, and the property ownership became fragmented. The metropolitan district remains in effect, however each separate ownership parcel(s) will be required to start the development process over.

On May 6, 2019, the Fort Lupton City Council approved the Cottonwood Greens Sketch PUD Plat (Resolution No. 2019R034), and on December 16, 2019, the PUD Development Plan and Preliminary PUD Plat for the overall Cottonwood Greens Development was approved (Resolution No 2019R090).

On May 19, 2020, City Council approved the Final PUD Development Plan and Final Plats for Filing Nos. 1 – 3 (Resolution No. 2020R048). The Subdivision Improvements Agreement was approved on June 2, 2020 (Resolution No. 2020R050).

APPLICATION PROCESS

The Applicant is requesting approval of a preliminary plat and preliminary PUD plan for a residential subdivision that will include 137 single family attached homes, including common areas and interconnecting trails.

Under the Fort Lupton Municipal Code, after required public notice of the preliminary plat and PUD plan, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the preliminary plat. The Planning Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the preliminary plat and preliminary PUD plan, referral agency comments, Planning Commission recommendation and any public testimony.

City Council shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

References to the Preliminary PUD Plan establishes the unique regulations and standards for development on the Property. This includes, but is not limited to, any deviations from the City's Zoning Regulations, Residential Design Standards and Specification for Design and Construction of Public Improvements and Zoning Regulations.

NOTIFICATION REQUIREMENTS

The Subdivision Regulations require published notice of the hearings in a timely manner prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton press on September 29, 2021.

Notice of the public hearings were posted on the Property on September 29, 2021, pursuant to the Subdivision Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbor within 500 feet of the Property, and owners and lessees of mineral interests on September 28, 2021.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The area is zoned PUD Planned Unit Development with residential uses. The objective of a PUD is to provide for the planning and development of substantial tracts of land, suitable in location and character for the uses proposed, as unified and integrated entities in accordance with detailed development plans.

The Preliminary Plat and Preliminary PUD Plan is for a residential subdivision to include 137 single family attached (townhouse) residential units, including common areas and interconnecting trails. The Applicant has submitted the required documents pursuant to the Code.

Approval of a PUD Plan is being reviewed concurrently with the Preliminary Plat. All development within a PUD zone district must be in accordance with a PUD plan. PUD plans shall contain unique district regulations that apply to the PUD zone district. All provisions of the City's Code and adopted standards and specifications shall apply within PUD zone districts, unless specifically modified in the PUD plan. Deviations from the City's standards are noted on the Preliminary Plat and Preliminary PUD Plan map.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Future Land Use Map designates this area as Single-Family Detached land use. The Single-Family Detached designation allows for neighborhoods of predominantly single family detached homes on individual lots. This can consist of a variety of development types, including higher density homes within the City's urban core and planned subdivisions within residential growth areas. In addition to single family units, these neighborhoods may include scattered single family attached and multi-family housing options, as well as public and semi-public uses. Given market demand, single family neighborhoods are likely to remain the primary residential designation within Fort Lupton and should see considerable growth in the future.

The proposed development plans for single family attached homes within Filing No. 4. Filing Nos. 1 – 3 included single family detached homes. The application complies with and meets the intent of the Comprehensive Plan by including a mix of residential types including townhomes, as well as single family detached homes.

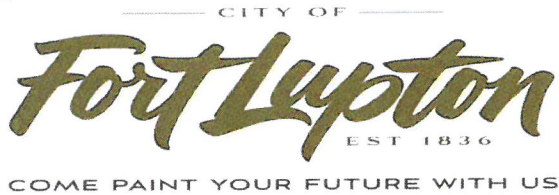
The proposal also complies with the Parks and Trails Master Plan, which identifies the Fulton Ditch Trail along the College Avenue. A proposed 10-foot concrete sidewalk is proposed along this roadway. There is also a connection trail identified in the Plan along 9th Street, and a planned community trail is included in the plans. The proposal includes plans for other interconnecting trails and common areas for the residents of the subdivision.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

Buildings/Grounds Manager	City Attorney	Police Chief
Public Works Director	Building Inspector	Recreation Manager
Golf Course Manager	Wastewater Treatment Plant Manager	GIS Specialist
Finance Director	Fort Lupton Fire Protection District	CDOT
Colorado Parks & Wildlife	Division of Water Resources	United Power
Comcast	CenturyLink	Xcel Energy
Postmaster	Weld County Department of Planning	Weld County Public Works
Weld County School District RE-8	NCWCD	Fulton Ditch Company

***For more information on this development, please refer to the Planning Commission packet provided.
Additional documents are available for review at the Fort Lupton City Hall.***



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortlupton.org

Project No. _____

Land Use Application Form

A. CONTACT INFORMATION

- 1) Property Owner Name: Cottonwood Development Partners LLC.
 Company: _____
 Phone: (949) 230-1496 Email: tdharris@arborcapitalpartners.com
 Address: 4040 MacArthur Blvd., Ste. 250 Newport Beach, CA 92660
 Preferred method of contact? Email: ☒ Phone: ☐ Mail: ☐
- 2) Representative Name: Kristin Turner
 Company: TB Group
 Phone: 970.532.5891 Email: kristin@tbgroup.us
 Address: 444 Mountain Avenue Berthoud, CO 80513
 Preferred method of contact? Email: ☒ Phone: ☐ Mail: ☐
- 3) Billing Contact (where invoices should be directed to): Attn: Gloria Morales
 Billing Company: Cottonwood Development Partners LLC
 Phone: (949)566-8163 Email: Gloria@rfcomsites.com
 Address: 4040 MacArthur Blvd., Ste. 250 Newport Beach, CA 92660

B. SITE DESCRIPTION

Site Address: Vacant Land, County Road 14 Fort Lupton, CO 80621
 Parcel Number: 130933416019
 Existing Zone Classification: PUD Proposed Zone Classification: PUD
 Water Type: Municipal Name: Fort Lupton
 Sewage Type: Municipal District Name or Location Hauled to: _____

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

- | | | |
|--|--|---|
| ☐ Sketch Plat | ☐ Administrative Site Plan | ☐ PUD Plan (Preliminary & Final) |
| ☒ Preliminary Plat | ☐ Special Use Permit | ☐ Variance |
| ☐ Final Plat | ☐ Oil & Gas Permit | ☐ Administrative Variance |
| ☐ Minor Subdivision | ☐ Annexation & Initial Zone | ☐ Appeal |
| ☐ Amended Plat | ☐ Change of Zone | ☐ Other: _____ |
| ☐ Site Plan | ☐ Comp Plan Amendment | |

Project No. _____

D. PROJECT DESCRIPTION

Project Name: Cottonwood Greens

Please provide a short description of the proposed project in the space provided below:

This is a proposal for development of a future development tract (outlot A) within the
Cottonwood Greens subdivision. The site has existing PUD zoning. Single family attached
(townhomes) are proposed for this portion of the site.

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: _____ Date: 6/4/21

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I hereby authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: _____ Date: 6/16/21

For Office Use Only

Received Date: _____

If the application is not complete, state reasons why it is incomplete:

Deemed Complete Date: _____

Fees Submitted: _____ Escrow Submitted: _____

Instructions for Submitting the Land Use Application Form

DEFINITIONS

Words in the singular include the plural and words in the plural include the singular.

Application refers to the official submittal to the City of Fort Lupton's Planning Department for review of the proposed land use development identified in the land use application form. The application includes the form, all materials submitted for review of the project, including those documents required under the Land Use Regulations of the Municipal Code, and any additional information provided.

Project refers to the land use development identified on the land use application form and application materials.

Property refers to the land that is being proposed for development as described in the land use application form and application materials.

A. CONTACT INFORMATION

- 1) Provide contact information for all owners of any property that is the subject of the application. If the contact information for all property owners will not fit on the space provided, submit a separate sheet for the additional owners.
- 2) Provide contact information for all persons, firms or businesses that are authorized by the owners identified in Section A(1) to work on the land use application, including, but not limited to, discussing the project, submitting application materials, and attending meeting and hearings. If the contact information for all representatives will not fit on the space provided, submit a separate sheet for the additional representatives.
- 3) Provide contact and mailing information for the person that should receive all invoices for the project. If this person changes at any time, contact the Planning Department immediately to update this information.

B. SITE DESCRIPTION

Provide all information requested. Parcel numbers and address information may be found at the Weld County Property Portal at <https://www.co.weld.co.us/maps1/propertyportal/>. Current zoning can be found at <http://www.fortlupton.org/405/Zoning>.

C. APPLICATION TYPE

Select the land use application that is applicable to the project. If there are multiple land use application types being submitted to run concurrently, select all that apply. The land use application types will be identified during the required pre-application meeting. If you have any questions about this, please contact the Planning Department at 303.857.6694 or planningdept@fortlupton.org.

D. PROJECT DESCRIPTION

Please select a project name that will be referenced throughout the project and a description of what the project entails. If you need more space for the project description, please attach a separate sheet.

E. REQUIRED DOCUMENTS

Required documents will be discussed during the pre-application meeting with the Planning Department. If any documents are missing, the acceptance of the application may be delayed until the submittal is complete.

F. CERTIFICATIONS

Representative Certification. Provide the signature of all authorized representatives in this section.

Owner Certification. Provide the signature of all owners of properties included in the application in this section.

For any other questions, please contact the Planning Department at 303.857.6694 or planningdept@fortlupton.org.

Cottonwood Greens PUD No. 4: Preliminary/Final Plat Narrative

June 21, 2021

General Description/Site Features and Proposed Land Uses

The property is located on the north side of 9th street and west of College Avenue. The property is approximately 16.22 acres with existing PUD zoning. Proposed uses will include 137 single family attached residential units. The overall project density is approximately 8.4 du/ac. The development will include common areas and interconnecting trails.

Compliance with the City of Fort Lupton Comprehensive Plan

The proposed development integrates the goals set out in the Town Comprehensive Plan in the following ways:

Growth and Development

The proposed development is designed to provide connections at pre-determined locations to existing and adjacent neighborhoods. In addition, the layout provides continuous, direct, convenient, and safe pedestrian pathways to adjacent subdivisions and proposed parks. The site is well situated for housing per the Comprehensive Plan. The plan also provides for diversity in housing types for the community.

Transportation and Mobility

This plan provides a safe and efficient transportation network that accommodates pedestrians, vehicles and bicycles. Two connections to College Avenue will extend through the site. Designated as a collector roadway, it will provide convenient access to local streets for vehicles, bicycles, and pedestrians. The project is planned as a pedestrian oriented and walkable community with sidewalks, street trees and connections throughout the community, to future and existing adjacent neighborhoods.

Parks, Open Space and Environmental Features

The open space and trails within the development will provide high quality recreational opportunities for neighborhood residents and create connections to future and existing neighborhoods and uses beyond our project boundaries. This project will construct the Connector Trail proposed along 9th Street. Trail connections will be provided throughout the site with extensions to all sides of the development tract. A neighborhood park was designed as part of Cottonwood Greens PUD No. 1, to serve the overall development. In addition, a trail head with access to multiple Town trails is located across the street from this development.

Public Facilities and Services

The proposed development is a logical extension of the City of Fort Lupton public services without placing additional burdens on existing residents and businesses. Infrastructure will be provided so as to meet the requirements of the Comprehensive Plan and/or the Land Use Code.

Water will be provided by the Town of Fort Lupton by connecting to an existing 16" water main in 9th Street and an existing 12" water main Weld County Road 31. There will also be a network of 8" mains throughout the site. Irrigation flows will be provided by a separate irrigation system.

Sewer will be provided by the Town of Fort Lupton through three connection points: one to the northwest in Northrop Avenue, one in the center of the site, and one in 14th Street. The existing mains have capacity for the proposed development.

Stormwater will be treated using appropriate water quality measures, with on-site detention being utilized throughout the site to maintain stormwater releases at or below historic rates from the site. The release will be to a single pipe to be constructed through the site to the west adjacent to the existing sanitary sewer. The project area is not located within any FEMA regulated floodplain.

Planned Phasing

The development is proposed in one phase.

Statement of Commercial Mineral Deposits

There are currently oil & gas facilities within the property but there are no known commercial mineral deposits on-site.

PROJECT NO. LUP2021-XXXX / PLAN NO. PPL2021-XXXX

LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



AGRICULTURAL USERS OF THE LAND SHOULD NOT BE EXPECTED TO CHANGE THEIR LONG-ESTABLISHED AGRICULTURAL PRACTICES TO ACCOMMODATE THE INTRUSIONS OF URBAN USERS INTO A RURAL AREA. WELL-RUN AGRICULTURAL ACTIVITIES WILL GENERATE OFF-SITE IMPACTS, INCLUDING NOISE FROM TRACTORS AND EQUIPMENT; SLOW-MOVING FARM VEHICLES ON RURAL ROADS; DUST FROM ANIMAL PENS, FIELD WORK, HARVEST AND GRAVEL ROADS; ODOR FROM ANIMAL CONFINEMENT, SILAGE AND MANURE; SMOKE FROM DITCH BURNING; FLIES AND MOSQUITOES; HUNTING AND TRAPPING ACTIVITIES; SHOOTING SPORTS, LEGAL HAZING OF NUISANCE WILDLIFE; AND THE USE OF PESTICIDES AND FERTILIZERS IN THE FIELDS, INCLUDING THE USE OF AERIAL SPRAYING. IT IS COMMON PRACTICE FOR AGRICULTURAL OPERATIONS TO CONCENTRATE ON MISCELLANEOUS AGRICULTURAL MATERIALS OFTEN PRODUCED AT A VISUAL DISPARITY BETWEEN RURAL AND URBAN AREAS OF THE COUNTY. SECTION 35-3.5-102, C.R.S., PROVIDES THAT AN AGRICULTURAL OPERATION SHALL NOT BE FOUND TO BE A PUBLIC OR PRIVATE NUISANCE IF THE AGRICULTURAL OPERATION ALLEGED TO BE A NUISANCE EMPLOYS METHODS OR PRACTICES THAT ARE COMMONLY OR REASONABLY ASSOCIATED WITH AGRICULTURAL PRODUCTION.

WELD COUNTY COVERS A LAND AREA OF APPROXIMATELY FOUR THOUSAND (4,000) SQUARE MILES IN SIZE (TWICE THE SIZE OF THE STATE OF DELAWARE) WITH MORE THAN THREE THOUSAND SEVEN HUNDRED (3,700) MILES OF STATE AND COUNTY ROADS OUTSIDE OF MUNICIPALITIES. THE SHEER MAGNITUDE OF THE AREA TO BE SERVED STRETCHES AVAILABLE RESOURCES. LAW ENFORCEMENT IS BASED ON RESPONSES TO EMERGENCIES, INCLUDING VARIOUS TYPES OF ACCIDENTS, AND THE DISTANCES WHICH MUST BE TRAVELED MAY DELAY ALL EMERGENCY RESPONSES, INCLUDING LAW ENFORCEMENT. UNBALANCED FIRST RESPONDER RESPONSES TO EMERGENCIES BY VOLUNTEERS WHO MUST LEAVE THEIR JOBS AND FAMILIES TO RESPOND TO EMERGENCIES, COUNTY GRAVEL ROADS, NO MATTER HOW OFTEN THEY ARE GRADED, WILL NOT PROVIDE THE SAME KIND OF SURFACE EXPECTED FROM A PAVED ROAD. SNOW REMOVAL PRIORITIES MEAN THAT ROADS FROM SUBDIVISIONS TO ARTERIALS MAY NOT BE CLEARED FOR SEVERAL DAYS AFTER A MAJOR SNOWSTORM. SERVICES IN RURAL AREAS, IN MANY CASES, WILL NOT BE EQUIVALENT TO MUNICIPAL SERVICES. RURAL DWELLERS MUST, BY NECESSITY, BE MORE SELF-SUFFICIENT THAN URBAN DWELLERS.

RECORDER'S CERTIFICATE

THIS PLAT WAS FILED FOR RECORD IN THE OFFICE OF THE COUNTY CLERK AND RECORDER OF WELD COUNTY, COLORADO

AT _____ M. ON THE DAY OF _____, A.D. 20_____

IN BOOK _____, PAGE _____, RECEPTION NO. _____

COUNTY CLERK AND RECORDER

DEPUTY

LEGAL DESCRIPTION

TRACT D AND OUTLOT A, COTTONWOOD GREENS PUD FILING NO. 3
COUNTY OF WELD, STATE OF COLORADO

RECORDED AT RECEPTION NO. 4681486, WELD COUNTY RECORDS

SAID PARCEL OF LAND CONTAINS 706,426 SQUARE FEET, OR 16.22 ACRES, MORE OR LESS (±).

DEVELOPER/APPLICANT

COTTONWOOD DEVELOPMENT PARTNERS
JIM RIGHEIMER
4040 MACARTHUR BLVD., #250
NEWPORT BEACH, CA 92660 (303)-905-3496

SITE ENGINEER

ATWELL, LLC
DANIEL RODRIGUEZ, P.E.
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, COLORADO 80228 (303) 462-1100

SURVEYOR

ATWELL, LLC
MICHAEL LLOYD POOL, PLS
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, COLORADO 80228 (303) 462-1100

PUD ZONING REQUIREMENTS:

PARCEL	PUD ZONING	R3 ZONING
ALLOWABLE LAND USE	SFD, MFD	SFD, MFD
MINIMUM LOT SIZE (SF)	5,000 SF	5,000 SF
MINIMUM LOT WIDTH	30'	30'
MAXIMUM LOT COVERAGE	N/A	N/A
PRIMARY USES		
MAXIMUM HEIGHT	35'	35'
MINIMUM FRONT YARD SETBACK (PRINCIPLE STRUCTURE)	15' TO HOUSE/20' TO GARAGE	25'
MINIMUM SIDE YARD SETBACK	5'	5'
MINIMUM REAR YARD SETBACK	15'	20'
MINIMUM SIDE YARD (CORNER) SETBACK	15'	20'
MINIMUM DWELLING SIZE (SF)	750 SF (SFD)/ 500 SF (MFD)	750 SF (SFD)/500 SF (MFD)
ACCESSORY USE		
HEIGHT	35'	35'
FRONT SETBACK	N/A	N/A
SIDE SETBACK	5'	20'
REAR SETBACK	5'	N/A

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY ATWELL, LLC TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. ATWELL, LLC RELIED UPON (TITLE COMPANY), COMMITMENT FILE NO: XX DATED XX IN THE PROCESS OF THIS SURVEY TO AID IN EASEMENT AND OWNERSHIP RESEARCH.
2. GROSS LAND AREA IS 619,698 SQUARE FEET, OR 14.23 ACRES, MORE OR LESS.
3. THE LINEAR UNIT OF MEASUREMENT FOR THIS SURVEY IS U.S. SURVEY FEET.
4. THE BASIS OF BEARINGS IS, THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 33 AS BEARING NORTH 00° 09' 31" WEST, AND MONUMENTED AS SHOWN ON DRAWING.
5. CURRENT ZONING: PUD
6. UTILITY EASEMENTS ARE DEDICATED TO THE CITY FORT LUPTON FOR THE BENEFIT OF THE APPLICABLE UTILITY PROVIDERS FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF ELECTRIC, GAS, TELEVISION, CABLE, AND TELECOMMUNICATIONS FACILITIES (DRY UTILITIES). UTILITY EASEMENTS SHALL ALSO BE GRANTED WITHIN ANY ACCESS EASEMENTS AND PRIVATE STREETS IN THE SUBDIVISION. PERMANENT STRUCTURES, IMPROVEMENTS, OBJECTS, BUILDINGS, WELLS, WATER METERS AND OTHER OBJECTS THAT MAY INTERFERE WITH THE UTILITY FACILITIES OR USE THEREOF (INTERFERING OBJECTS) SHALL NOT BE PERMITTED WITHIN SAID UTILITY EASEMENTS AND THE UTILITY PROVIDERS, AS GRANTEES, MAY REMOVE ANY INTERFERING OBJECTS AT NO COST TO SUCH GRANTEES, INCLUDING, WITHOUT LIMITATION, VEGETATION. PUBLIC SERVICE COMPANY OF COLORADO (PSCO) AND ITS SUCCESSORS RESERVE THE RIGHT TO REQUIRE ADDITIONAL EASEMENTS AND TO REQUIRE THE PROPERTY OWNER TO GRANT PSCO AN EASEMENT ON ITS STANDARD FORM.

SURVEY CERTIFICATION

I, MICHAEL LLOYD POOL, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAT WAS MADE UNDER MY SUPERVISION, AND THE MONUMENTS SHOWN HEREIN ACTUALLY EXIST, AND THIS PLAT ACCURATELY REPRESENTS SAID SURVEY.



MICHAEL LLOYD POOL, PLS
COLORADO REG. NO. 38304
FOR AND ON BEHALF OF ATWELL, LLC

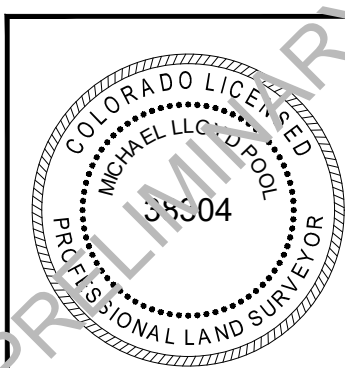
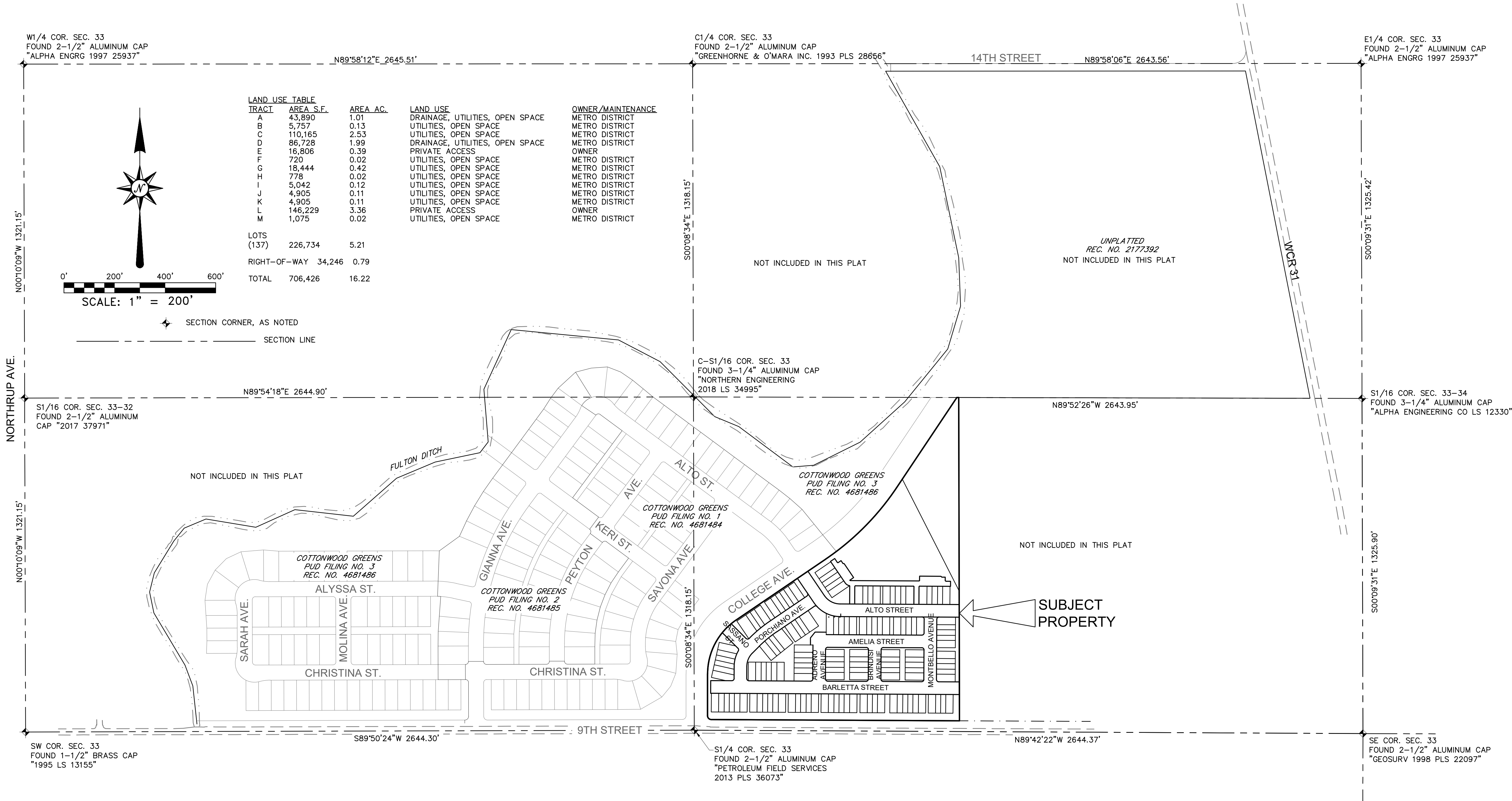
NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATE SHOWN HEREON.

 ATWELL 866.850.4200 www.atwell-group.com 143 UNION BOULEVARD, SUITE 700 LAKEWOOD, CO 80228 303.462.1100	REVISIONS <table><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>																					SHEET 1 OF 4
	FILE NO 20002948-PRJN PLAN DATE 06/15/2021 DRAWN BY TWK CHECK BY MLP JOB NO 20002948																					

COTTONWOOD GREENS PUD FILING NO. 4

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-000X

PRELIMINARY PUD PLAT
LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



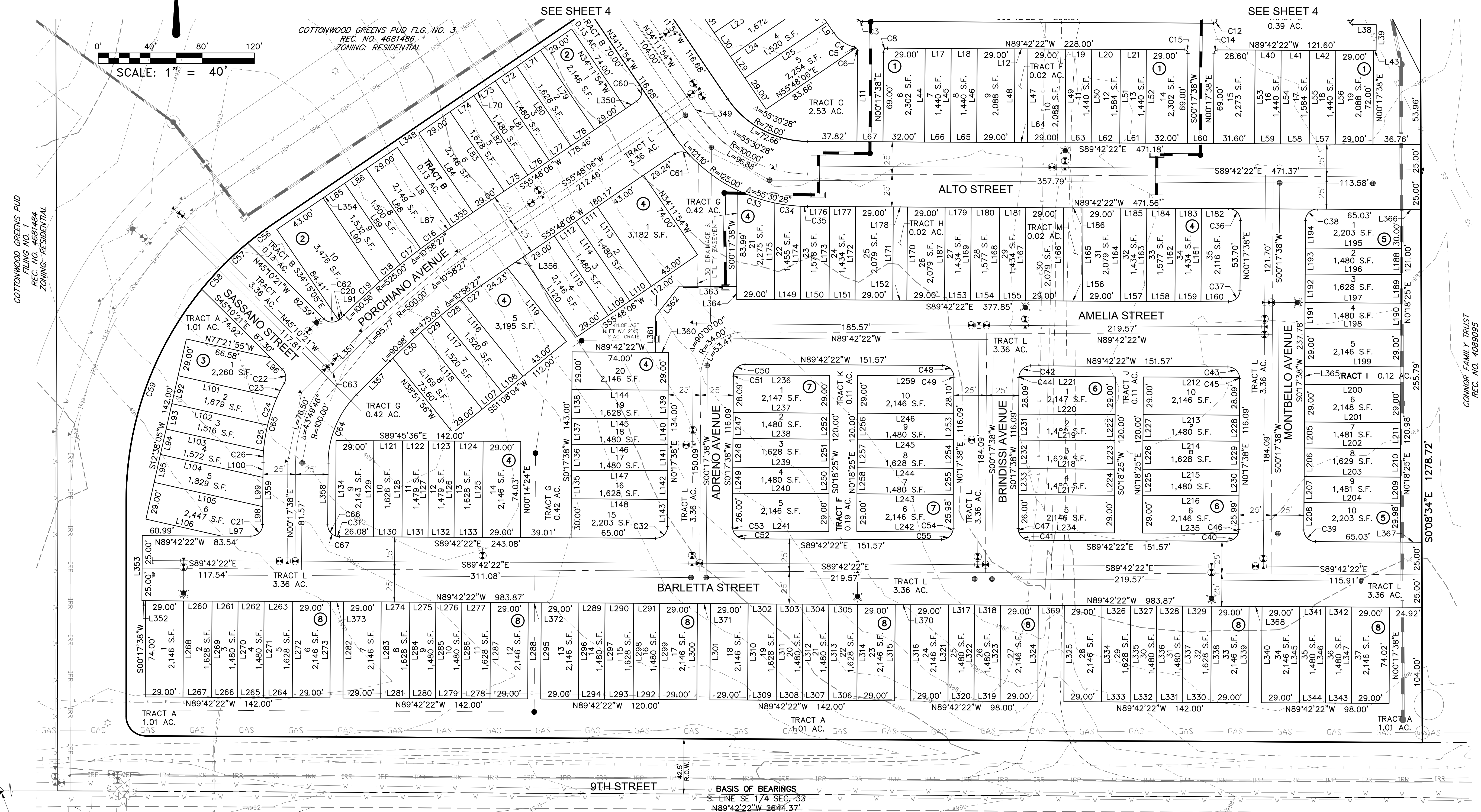
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REVISIONS		SHEET 2 OF X
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DRAWN BY TWK		CHECK BY BCR
JOB NO. 19003254		

COTTONWOOD GREENS PUD FILING NO. 4

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-00XX

PRELIMINARY PUD PLAT
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2
NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



S1/4 COR. SEC. 33
FOUND 3-1/4" ALUMINUM CAP
"2017 LS 38091"

SE COR. SEC. 33
FOUND 2-1/2" ALUMINUM CAP
"GEOSURV 1988 PLS 22097"

LEGEND

SECTION CORNER, AS NOTED	PROPERTY BOUNDARY	LOT LINE
OIL/GAS WELL	SECTION LINE	R.O.W. CENTER LINE
FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"	MATCH LINE	R.O.W. LINE
20.0' REFERENCE MONUMENT	UTILITY EASEMENT LINE	WETLAND SETBACK LINE
FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"	DRAINAGE EASEMENT LINE	WETLAND LINE
FOUND #4 REBAR		

PROPOSED UTILITIES

PROPOSED STORM SEWER

PROPOSED WATER LINE

PROPOSED IRRIGATION LINE

PROPOSED SANITARY SEWER

EXISTING UTILITIES

GAS

W

OHE

SS

FO

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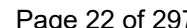
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REVISED 02/28/2020

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LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2
NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO

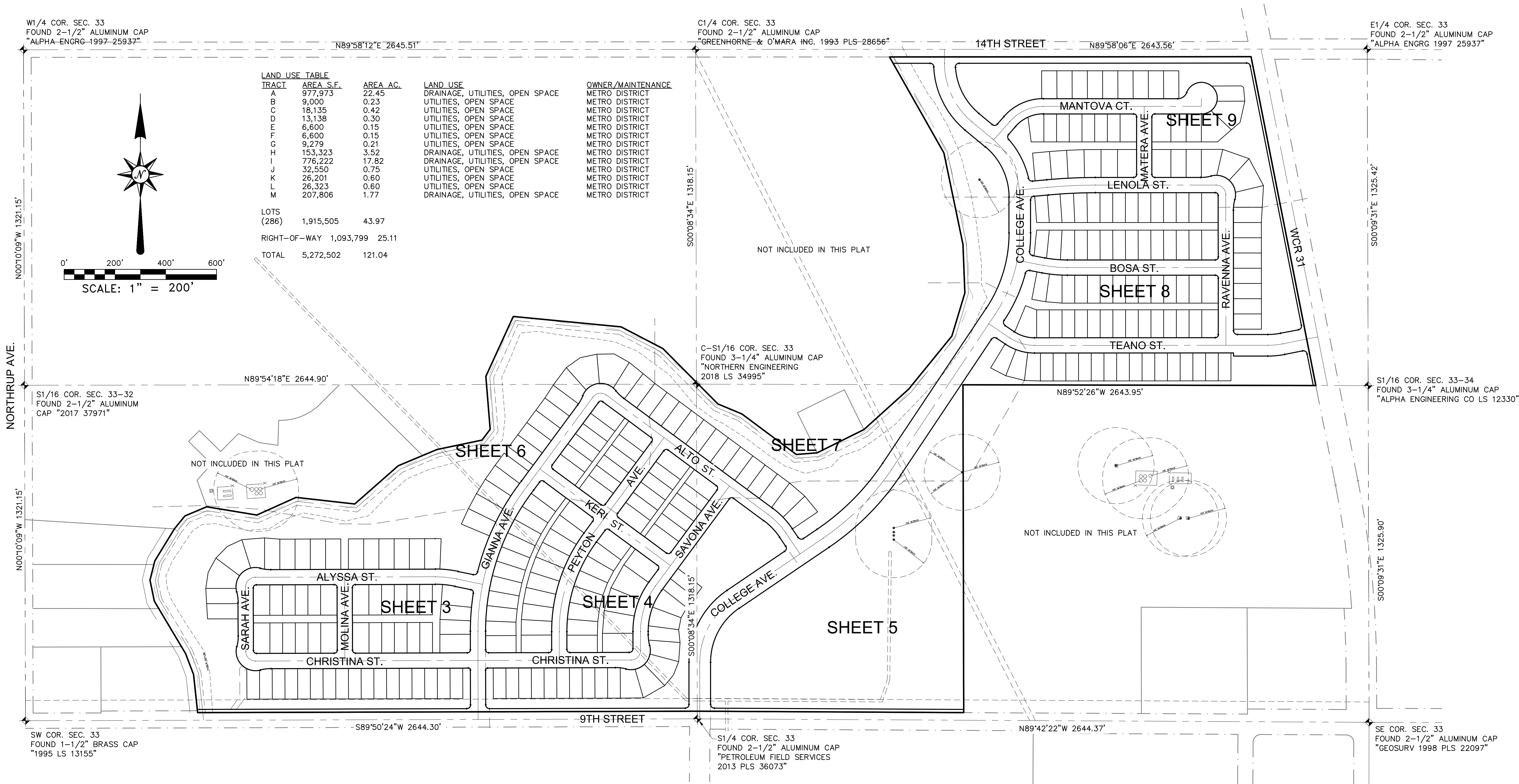


COTTONWOOD GREENS

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



LAND USE TABLE			
TRACT	AREA S.F.	AREA AC.	LAND USE
A	977,973	22.45	DRAINAGE, UTILITIES, OPEN SPACE
B	9,000	0.23	UTILITIES, OPEN SPACE
C	18,135	0.42	UTILITIES, OPEN SPACE
D	13,138	0.30	UTILITIES, OPEN SPACE
E	6,600	0.15	UTILITIES, OPEN SPACE
F	6,600	0.15	UTILITIES, OPEN SPACE
G	9,279	0.21	UTILITIES, OPEN SPACE
H	153,323	3.52	DRAINAGE, UTILITIES, OPEN SPACE
I	776,222	17.82	DRAINAGE, UTILITIES, OPEN SPACE
J	32,550	0.75	UTILITIES, OPEN SPACE
K	26,201	0.60	UTILITIES, OPEN SPACE
L	26,323	0.60	UTILITIES, OPEN SPACE
M	207,806	1.77	DRAINAGE, UTILITIES, OPEN SPACE
LOTS (286)	1,915,505	43.97	
RIGHT-OF-WAY	1,093,799	25.11	
TOTAL	5,272,502	121.04	

SECTION CORNER, AS NOTED
SECTION LINE
SHEET MATCH LINE



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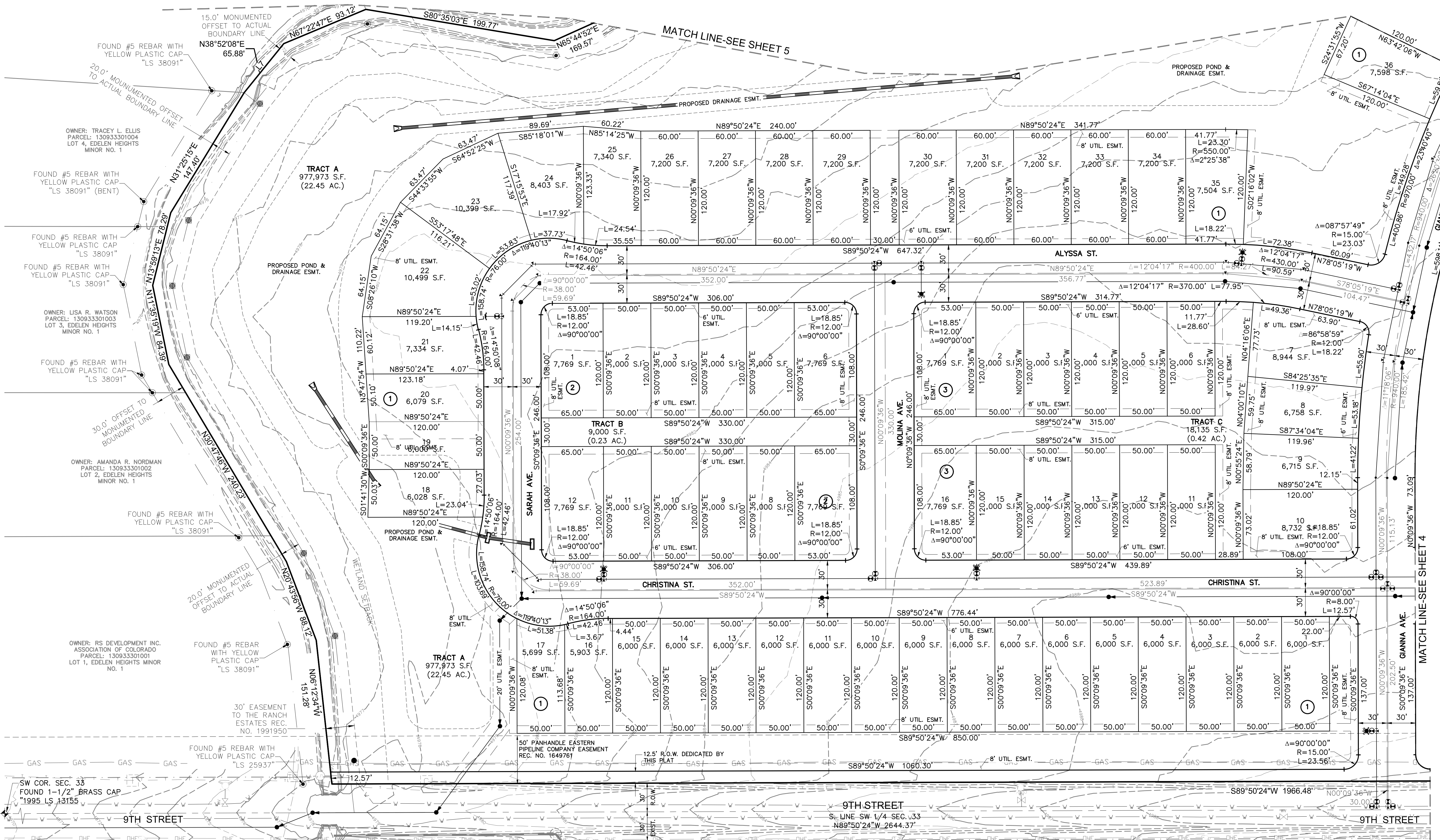
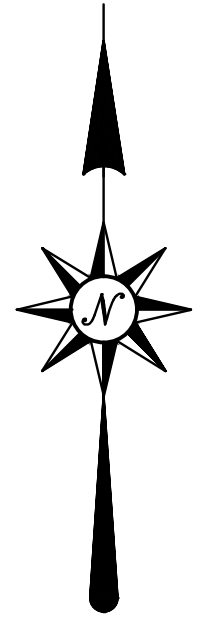
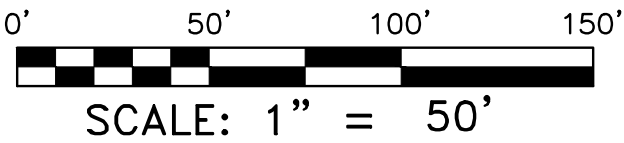
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COTTONWOOD GREENS

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

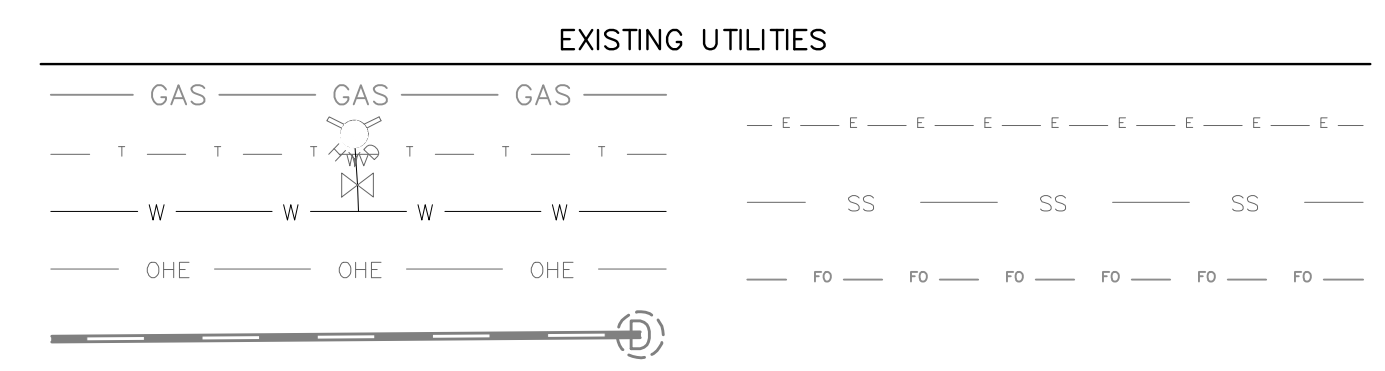
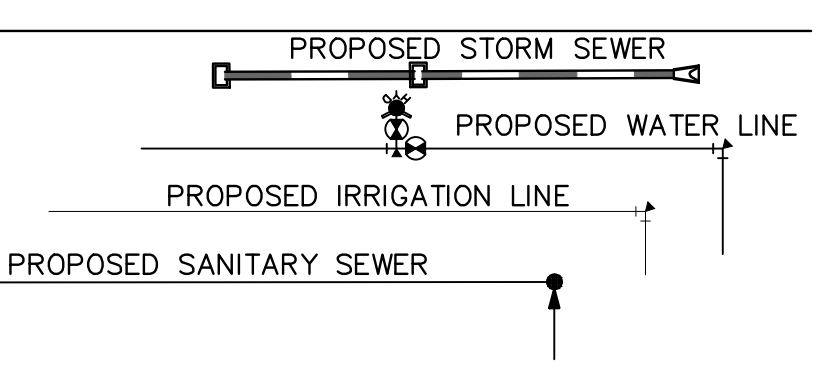
PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



LEGEND

SECTION CORNER, AS NOTED	PROPERTY BOUNDARY	LOT LINE
FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"	SECTION LINE	R.O.W. CENTER LINE
20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"	MATCH LINE	R.O.W. LINE
FOUND #4 REBAR	UTILITY EASEMENT LINE	WETLAND SETBACK LINE
	DRAINAGE EASEMENT LINE	WETLAND LINE



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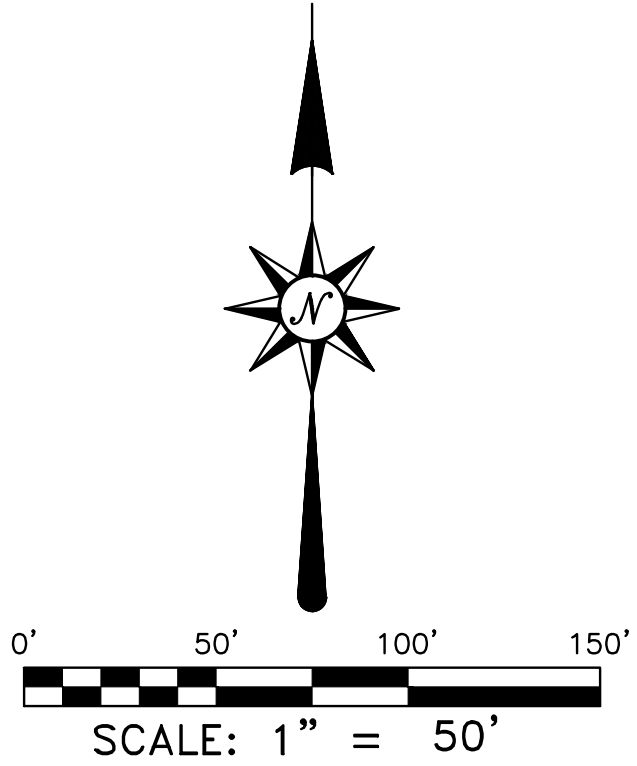
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REVISED 01/28/2020	FILE NO. 190033-PRM.PLT	
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COTTONWOOD GREENS

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



LEGEND

SECTION CORNER, AS NOTED	PROPERTY BOUNDARY	LOT LINE
	SECTION LINE	R.O.W. CENTER LINE
	MATCH LINE	R.O.W. LINE
	UTILITY EASEMENT LINE	WETLAND SETBACK LINE
20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"	DRAINAGE EASEMENT LINE	WETLAND LINE
	EXISTING UTILITIES	
FOUND #4 REBAR	GAS	GAS
	W	W
	OHE	OHE
	SS	SS
FO		

PROPOSED STORM SEWER
PROPOSED WATER LINE
PROPOSED IRRIGATION LINE
PROPOSED SANITARY SEWER

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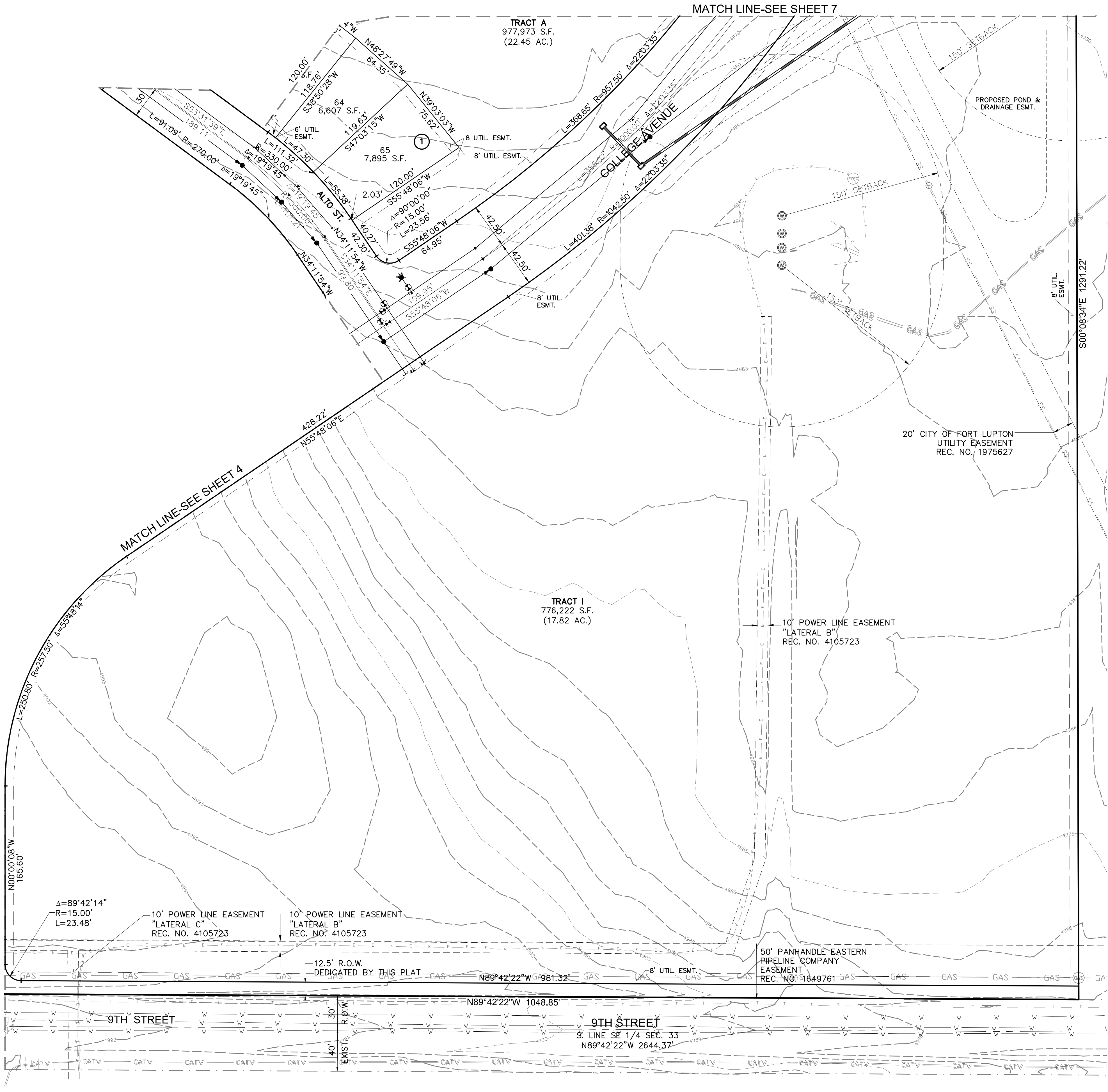
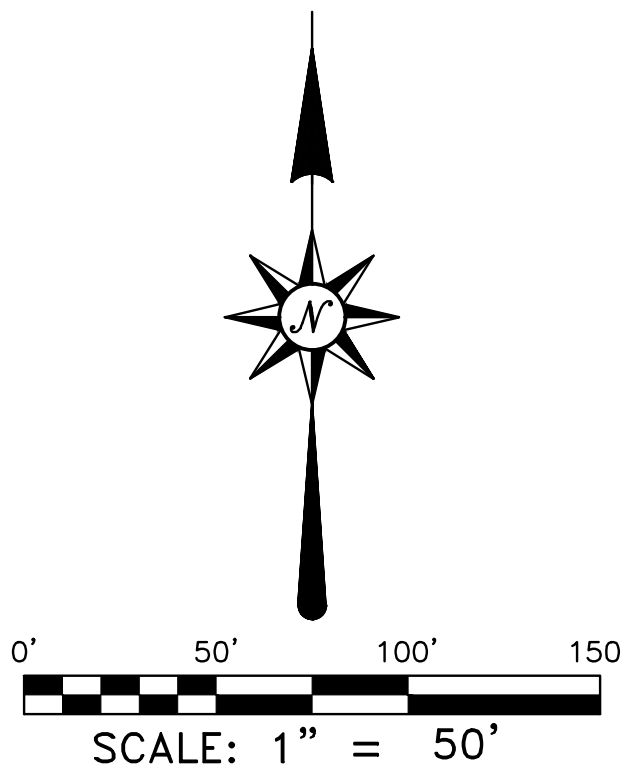
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COTTONWOOD GREENS

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002



LEGEND		
SECTION CORNER, AS NOTED OIL/GAS WELL FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330" 20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM" FOUND #4 REBAR	PROPERTY BOUNDARY SECTION LINE MATCH LINE UTILITY EASEMENT LINE DRAINAGE EASEMENT LINE	LOT LINE R.O.W. CENTER LINE R.O.W. LINE WETLAND SETBACK LINE WETLAND LINE
	EXISTING UTILITIES	
	GAS W OHE SS FO	
	PROPOSED STORM SEWER PROPOSED WATER LINE PROPOSED IRRIGATION LINE PROPOSED SANITARY SEWER	

SE. COR. SEC. 33
FOUND 2-1/2" ALUMINUM CAP
"GEOSURV 1988 PLS 22097"



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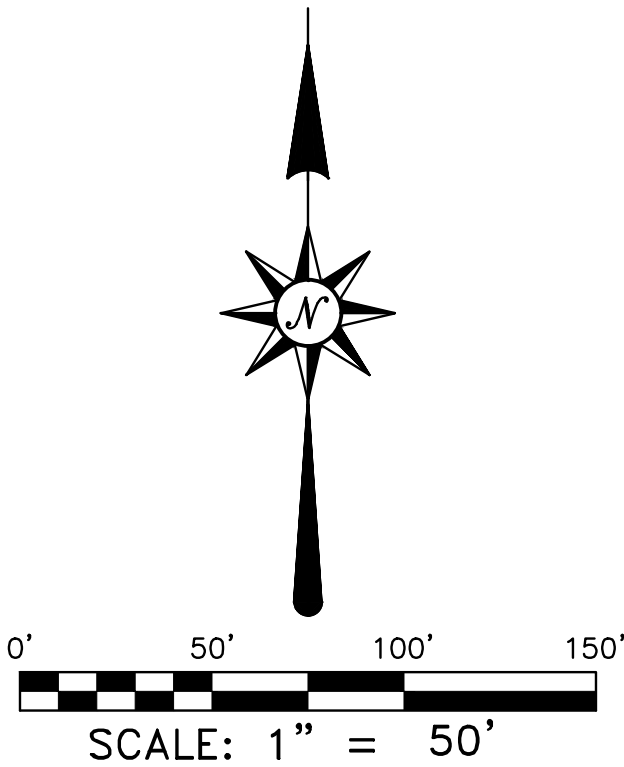
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COTTONWOOD GREENS

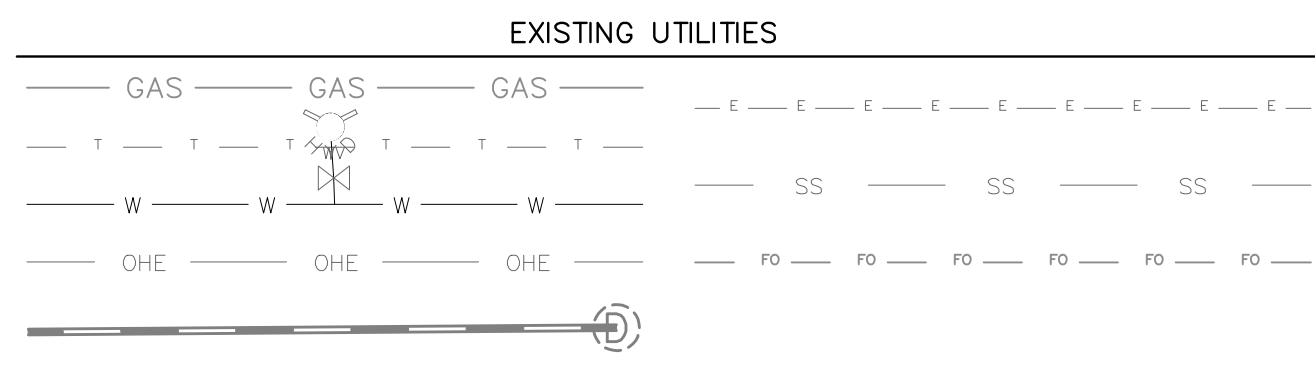
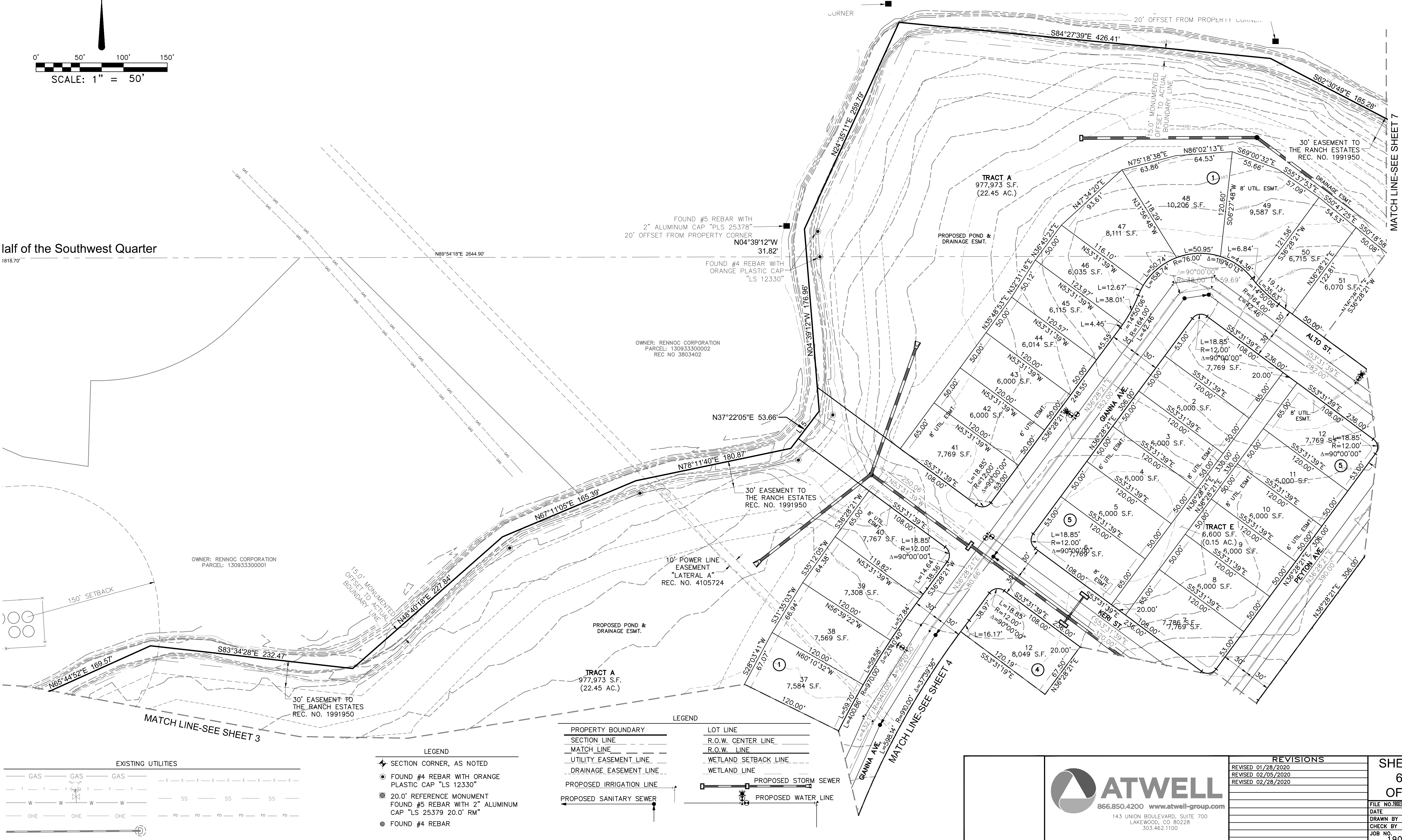
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PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



half of the Southwest Quarter



- LEGEND
- SECTION CORNER, AS NOTED
 - FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"
 - 20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"
 - FOUND #4 REBAR

- LEGEND
- PROPERTY BOUNDARY
 - SECTION LINE
 - MATCH LINE
 - UTILITY EASEMENT LINE
 - DRAINAGE EASEMENT LINE
 - PROPOSED IRRIGATION LINE
 - PROPOSED SANITARY SEWER
 - LOT LINE
 - R.O.W. CENTER LINE
 - R.O.W. LINE
 - WETLAND SETBACK LINE
 - WETLAND LINE
 - PROPOSED STORM SEWER
 - PROPOSED WATER LINE

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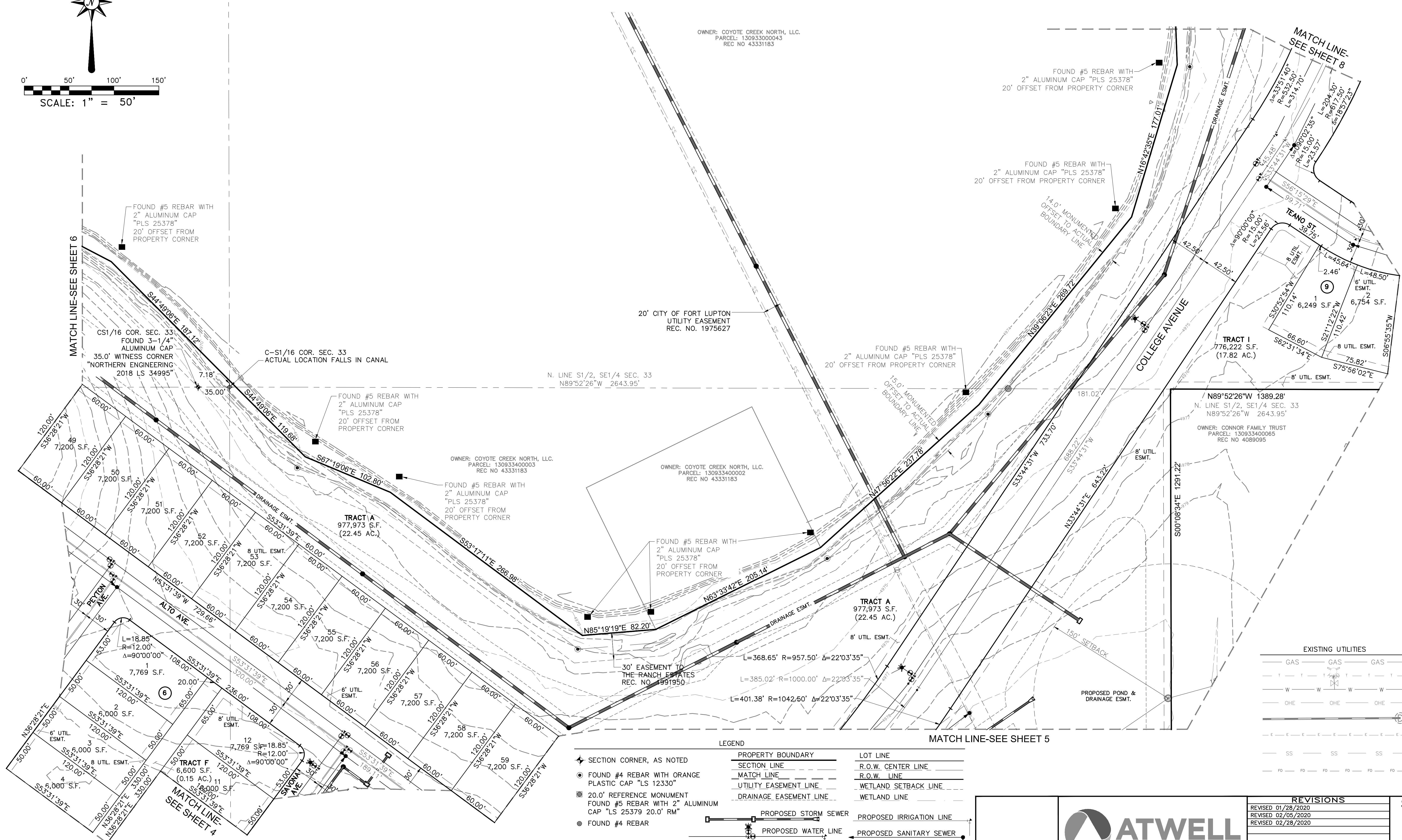
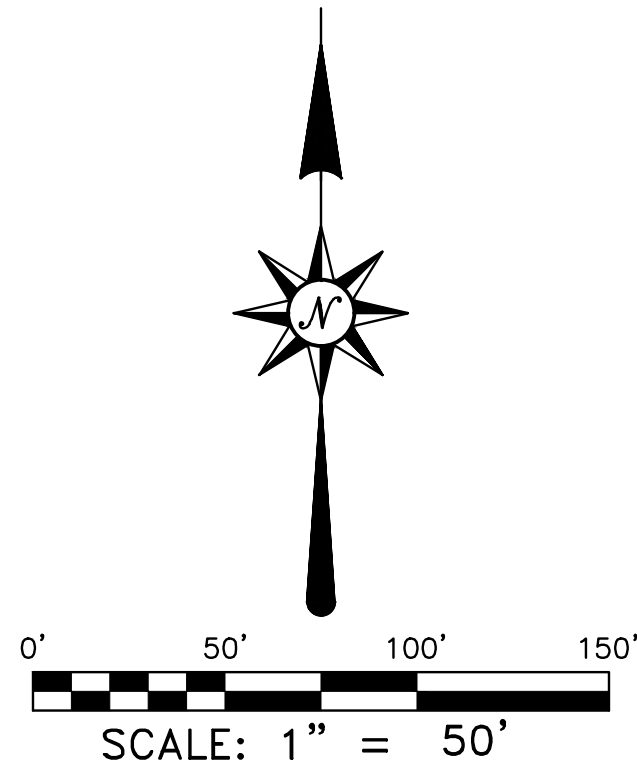
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COTTONWOOD GREENS

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



- SECTION CORNER, AS NOTED
- FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"
- 20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"
- FOUND #4 REBAR

- PROPERTY BOUNDARY
- SECTION LINE
- MATCH LINE
- UTILITY EASEMENT LINE
- DRAINAGE EASEMENT LINE
- LOT LINE
- R.O.W. CENTER LINE
- R.O.W. LINE
- WETLAND SETBACK LINE
- WETLAND LINE
- PROPOSED STORM SEWER
- PROPOSED WATER LINE
- PROPOSED IRRIGATION LINE
- PROPOSED SANITARY SEWER

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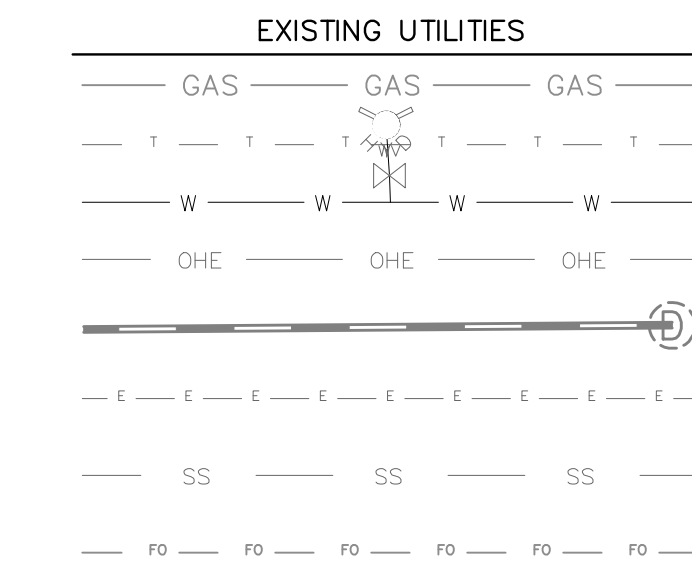
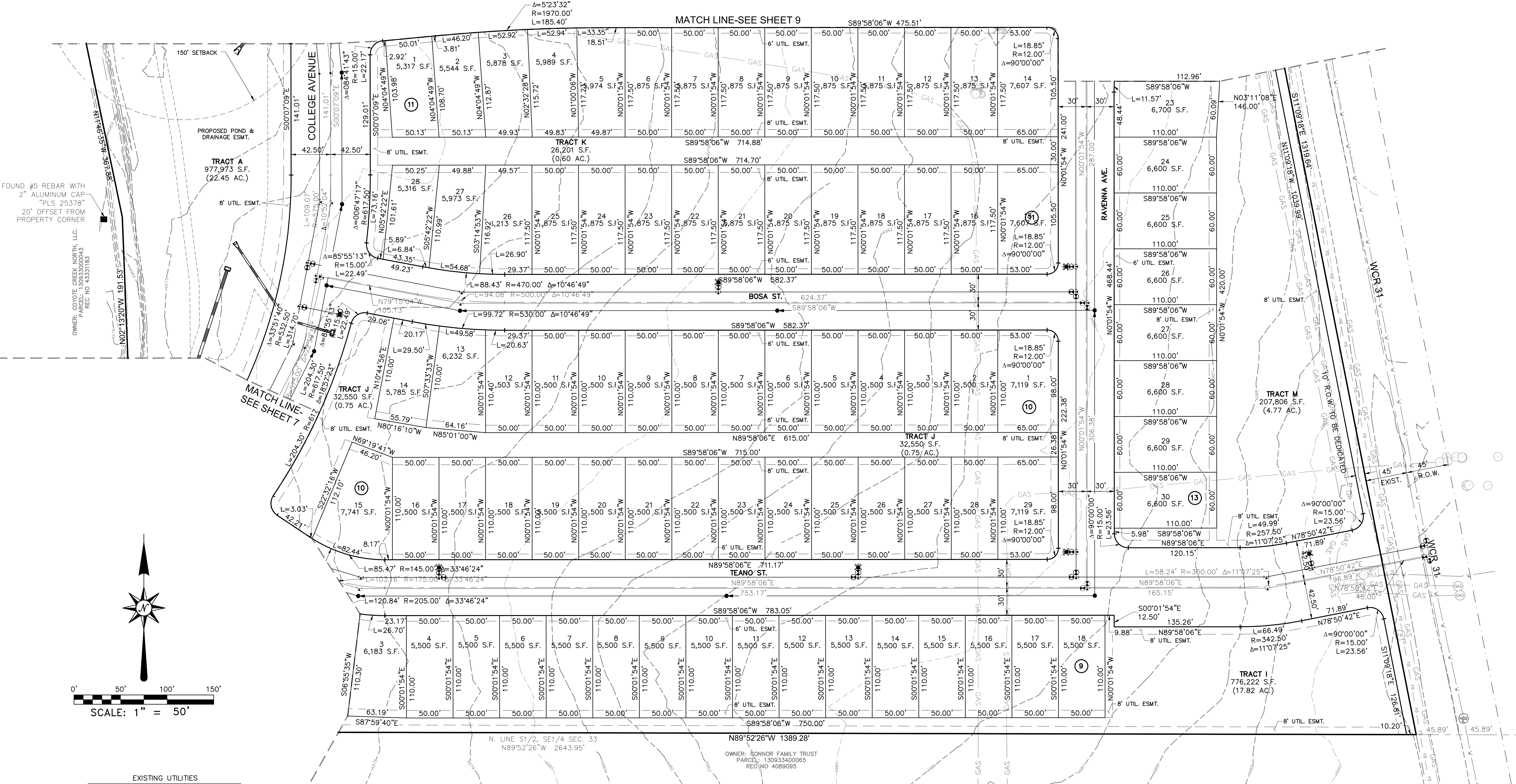
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DATE 10/01/19
DRAWN BY TWK
CHECK BY BCR
JOB NO. 19003254

COTTONWOOD GREENS

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



- LEGEND
- SECTION CORNER, AS NOTED
 - FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"
 - 20.0' REFERENCE MONUMENT FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"
 - FOUND #4 REBAR
- PROPERTY BOUNDARY
SECTION LINE
MATCH LINE
UTILITY EASEMENT LINE
DRAINAGE EASEMENT LINE
- LOT LINE
R.O.W. CENTER LINE
R.O.W. LINE
WETLAND SETBACK LINE
WETLAND LINE

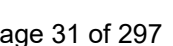


REVISIONS	
REVISED 01/28/2020	
REVISED 02/05/2020	
REVISED 02/28/2020	

SHEET	
8	
OF 9	
FILE NO.	19003254
DATE	10/01/19
DRAWN BY	TKW
CHECK BY	BCR
JOB NO.	19003254

PROJECT NO. LUP2019-0033 / PLAN NO. PPL2019-0002

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



PROJECT NO. LUP2021-XXXX / PLAN NO. PPL2021-XXXX

LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



WELD COUNTY IS ONE OF THE MOST PRODUCTIVE AGRICULTURAL COUNTIES IN THE UNITED STATES, TYPICALLY RANKING IN THE TOP TEN COUNTY IN THE COUNTRY IN TOTAL MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD. THE RURAL AREAS OF WELD COUNTY MAY BE OPEN AND SPACIOUS, BUT THEY ARE INTENSIVELY USED FOR AGRICULTURE. PERSONS MOVING INTO A RURAL AREA MUST RECOGNIZE AND ACCEPT THERE ARE DRAWBACKS, INCLUDING CONFLICTS WITH LONG-STANDING AGRICULTURAL PRACTICES AND A LOWER LEVEL OF SERVICES THAN IN TOWN. ALONG WITH THE DRAWBACKS COME THE INCENTIVES WHICH ATTRACT URBAN DWELLERS TO RELOCATE TO RURAL AREAS: OPEN VIEWS, SPACIOUSNESS, WILDLIFE, LACK OF CITY NOISE AND CONGESTION, AND THE RURAL ATMOSPHERE AND WAY OF LIFE. WITHOUT NEIGHBORING FARMS, THOSE FEATURES WHICH ATTRACT URBAN DWELLERS TO RURAL WELD COUNTY WOULD QUICKLY BE GONE FOREVER.

AGRICULTURAL USERS OF THE LAND SHOULD NOT BE EXPECTED TO CHANGE THEIR LONG-ESTABLISHED AGRICULTURAL PRACTICES TO ACCOMMODATE THE INTRUSIONS OF URBAN USERS INTO A RURAL AREA. WELL-RUN AGRICULTURAL ACTIVITIES WILL GENERATE OFF-SITE IMPACTS, INCLUDING NOISE FROM TRACTORS AND EQUIPMENT; SLOW-MOVING FARM VEHICLES ON RURAL ROADS; DUST FROM ANIMAL PENS, FIELD WORK, HARVEST AND GRAVEL ROADS; ODOR FROM ANIMAL CONFINEMENT, SILAGE AND MANURE; SMOKE FROM DITCH BURNING; FLIES AND MOSQUITOES; HUNTING AND TRAPPING ACTIVITIES; SHOOTING SPORTS, LEGAL HAZING OF NUISANCE WILDLIFE; AND THE USE OF PESTICIDES AND FERTILIZERS IN THE FIELDS, INCLUDING THE USE OF AERIAL SPRAYING. IT IS COMMON PRACTICE FOR RURAL PUBLIC UTILITIES TO MAINTAIN AND OPERATE UNDERGROUND AND OVERHEAD POWER LINES AND TELEPHONE LINES. AGRICULTURAL OPERATIONS, A CONCENTRATION OF MISCELLANEOUS AGRICULTURAL MATERIALS OFTEN PRODUCES A VISUAL DISPARITY BETWEEN RURAL AND URBAN AREAS OF THE COUNTY. SECTION 35-3.5-102, C.R.S., PROVIDES THAT AN AGRICULTURAL OPERATION SHALL NOT BE FOUND TO BE A PUBLIC OR PRIVATE NUISANCE IF THE AGRICULTURAL OPERATION ALLEGED TO BE A NUISANCE EMPLOYS METHODS OR PRACTICES THAT ARE COMMONLY OR REASONABLY ASSOCIATED WITH AGRICULTURAL PRODUCTION.

WATER HAS BEEN, AND CONTINUES TO BE, THE LIFELINE FOR THE AGRICULTURAL COMMUNITY. IT IS UNREALISTIC TO ASSUME THAT DITCHES AND RESERVOIRS MAY SIMPLY BE MOVED "OUT OF THE WAY" OF RESIDENTIAL DEVELOPMENT. WHEN MOVING TO THE COUNTY, PROPERTY OWNERS AND RESIDENTS MUST REALIZE THEY CANNOT TAKE WATER FROM IRRIGATION DITCHES, LAKES OR OTHER STRUCTURES, UNLESS THEY HAVE AN ADJUDICATED RIGHT TO THE WATER.

WELD COUNTY COVERS A LAND AREA OF APPROXIMATELY FOUR THOUSAND (4,000) SQUARE MILES IN SIZE (TWICE THE SIZE OF THE STATE OF DELAWARE) WITH MORE THAN THREE THOUSAND SEVEN HUNDRED (3,700) MILES OF STATE AND COUNTY ROADS OUTSIDE OF MUNICIPALITIES. THE SHEER MAGNITUDE OF THE AREA TO BE SERVED STRETCHES AVAILABLE RESOURCES. LAW ENFORCEMENT IS BASED ON THE NEED TO MAINTAIN MORE THAN ONE HUNDRED (100) STATIONS WHICH MUST BE MAINTAINED BY THE MAJOR DELAY ALL EMERGENCY RESPONSES. DURING ENFORCEMENT, AMBULANCE AND FIRE, FIRE PROTECTION IS USUALLY PROVIDED BY MAINTAINING PEOPLE WHO MUST LEAVE THEIR JOBS AND FAMILIES TO RESPOND TO EMERGENCIES. COUNTY GRAVEL ROADS, NO MATTER HOW OFTEN THEY ARE BLADED, WILL NOT PROVIDE THE SAME KIND OF SURFACE EXPECTED FROM A PAVED ROAD. SNOW REMOVAL PRIORITIES MEAN THAT ROADS FROM SUBDIVISIONS TO ARTERIALS MAY NOT BE CLEARED FOR SEVERAL DAYS AFTER A MAJOR SNOWSTORM. SERVICES IN RURAL AREAS, IN MANY CASES, WILL NOT BE EQUIVALENT TO MUNICIPAL SERVICES. RURAL DWELLERS MUST, BY NECESSITY, BE MORE SELF-SUFFICIENT THAN URBAN DWELLERS.

PEOPLE ARE EXPOSED TO DIFFERENT HAZARDS IN THE COUNTY THAN IN AN URBAN OR SUBURBAN SETTING. FARM EQUIPMENT AND OIL FIELD EQUIPMENT, PONDS AND IRRIGATION DITCHES, ELECTRICAL POWER FOR PUMPS AND CENTER PIVOT OPERATIONS, HIGH-SPEED TRAFFIC, SAND BURS, PUNCTURE VINES, TERRITORIAL FARM DOGS AND LIVESTOCK AND OPEN BURNING PRESENT REAL THREATS. CONTROLLING CHILDREN'S ACTIVITIES IS IMPORTANT, NOT ONLY FOR THEIR SAFETY, BUT ALSO FOR THE PROTECTION OF THE FARMER'S LIVELIHOOD. (WELD COUNTY CODE ORDINANCE 2002-6; WELD COUNTY CODE ORDINANCE 2008-13)

RECORDER'S CERTIFICATE

THIS PLAT WAS FILED FOR RECORD IN THE OFFICE OF THE COUNTY CLERK AND RECORDER OF WELD COUNTY, COLORADO

AT _____ M. ON THE DAY OF _____, A.D. 20____

IN BOOK _____, PAGE _____, RECEPTION NO. _____

COUNTY CLERK AND RECORDER

DEPUTY

 ATWELL 866.850.4200 www.atwell-group.com 143 UNION BOULEVARD, SUITE 700 LAKEWOOD, CO 80228 303.462.1100	REVISIONS <table><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr><tr><td> </td><td> </td></tr></table>																					SHEET 1 OF 4 FILE NO. 20002948-PRIM PLAN DATE 06/15/2021 DRAWN BY TWK CHECK BY MLP JOB NO. 20002948

LEGAL DESCRIPTION

TRACT D AND OUTLOT A, COTTONWOOD GREENS PUD FILING NO. 3
COUNTY OF WELD, STATE OF COLORADO

RECORDED AT RECEPTION NO. 4681486, WELD COUNTY RECORDS

SAID PARCEL OF LAND CONTAINS 706,426 SQUARE FEET, OR 16.22 ACRES, MORE OR LESS (±).

DEVELOPER/APPLICANT

COTTONWOOD DEVELOPMENT PARTNERS
JIM RIGHEIMER
4040 MACARTHUR BLVD., #250
NEWPORT BEACH, CA 92660 (303)-905-3496

SITE ENGINEER

ATWELL, LLC
DANIEL RODRIGUEZ, P.E.
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, COLORADO 80228 (303) 462-1100

SURVEYOR

ATWELL, LLC
MICHAEL LLOYD POOL, PLS
143 UNION BOULEVARD, SUITE 700
LAKEWOOD, COLORADO 80228 (303) 462-1100

PUD ZONING REQUIREMENTS:

PARCEL	PUD ZONING	R3 ZONING
ALLOWABLE LAND USE	SFD, MFD	SFD, MFD
MINIMUM LOT SIZE (SF)	5,000 SF	5,000 SF
MINIMUM LOT WIDTH	30'	30'
MAXIMUM LOT COVERAGE	N/A	N/A
PRIMARY USES		
MAXIMUM HEIGHT	35'	35'
MINIMUM FRONT YARD SETBACK (PRINCIPLE STRUCTURE)	15' TO HOUSE/20' TO GARAGE	25'
MINIMUM SIDE YARD SETBACK	5'	5'
MINIMUM REAR YARD SETBACK	15'	20'
MINIMUM SIDE YARD (CORNER) SETBACK	15'	20'
MINIMUM DWELLING SIZE (SF)	750 SF (SFD)/ 500 SF (MFD)	750 SF (SFD)/500 SF (MFD)
ACCESSORY USE		
HEIGHT	35'	35'
FRONT SETBACK	N/A	N/A
SIDE SETBACK	5'	20'
REAR SETBACK	5'	N/A

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY ATWELL, LLC TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. ATWELL, LLC RELIED UPON (TITLE COMPANY), COMMITMENT FILE NO: XX DATED XX IN THE PROCESS OF THIS SURVEY TO AID IN EASEMENT AND OWNERSHIP RESEARCH.
2. GROSS LAND AREA IS 619,698 SQUARE FEET, OR 14.23 ACRES, MORE OR LESS.
3. THE LINEAR UNIT OF MEASUREMENT FOR THIS SURVEY IS U.S. SURVEY FEET.
4. THE BASIS OF BEARINGS IS, THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 33 AS BEARING NORTH 00° 09' 31" WEST, AND MONUMENTED AS SHOWN ON DRAWING.
5. CURRENT ZONING: PUD
6. UTILITY EASEMENTS ARE DEDICATED TO THE CITY FORT LUPTON FOR THE BENEFIT OF THE APPLICABLE UTILITY PROVIDERS FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF ELECTRIC, GAS, TELEVISION, CABLE, AND TELECOMMUNICATIONS FACILITIES (DRY UTILITIES). UTILITY EASEMENTS SHALL ALSO BE GRANTED WITHIN ANY ACCESS EASEMENTS AND PRIVATE STREETS IN THE SUBDIVISION. PERMANENT STRUCTURES, IMPROVEMENTS, OBJECTS, BUILDINGS, WELLS, WATER METERS AND OTHER OBJECTS THAT MAY INTERFERE WITH THE UTILITY FACILITIES OR USE THEREOF (INTERFERING OBJECTS) SHALL NOT BE PERMITTED WITHIN SAID UTILITY EASEMENTS AND THE UTILITY PROVIDERS, AS GRANTEES, MAY REMOVE ANY INTERFERING OBJECTS AT NO COST TO SUCH GRANTEES, INCLUDING, WITHOUT LIMITATION, VEGETATION. PUBLIC SERVICE COMPANY OF COLORADO (PSCO) AND ITS SUCCESSORS RESERVE THE RIGHT TO REQUIRE ADDITIONAL EASEMENTS AND TO REQUIRE THE PROPERTY OWNER TO GRANT PSCO AN EASEMENT ON ITS STANDARD FORM.

SURVEY CERTIFICATION

I, MICHAEL LLOYD POOL, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAT WAS MADE UNDER MY SUPERVISION, AND THE MONUMENTS SHOWN HEREIN ACTUALLY EXIST, AND THIS PLAT ACCURATELY REPRESENTS SAID SURVEY.

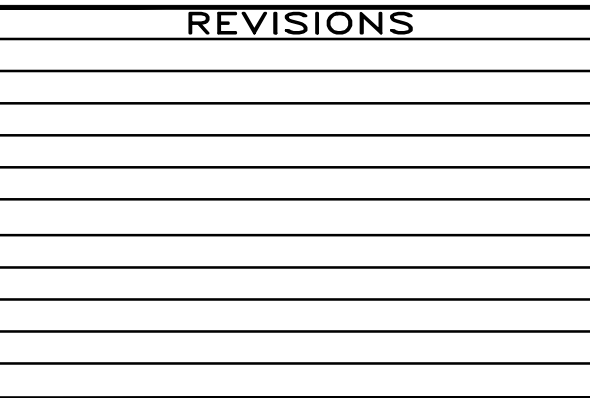


MICHAEL LLOYD POOL, PLS
COLORADO REG. NO. 38304
FOR AND ON BEHALF OF ATWELL, LLC

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

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-000X

LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



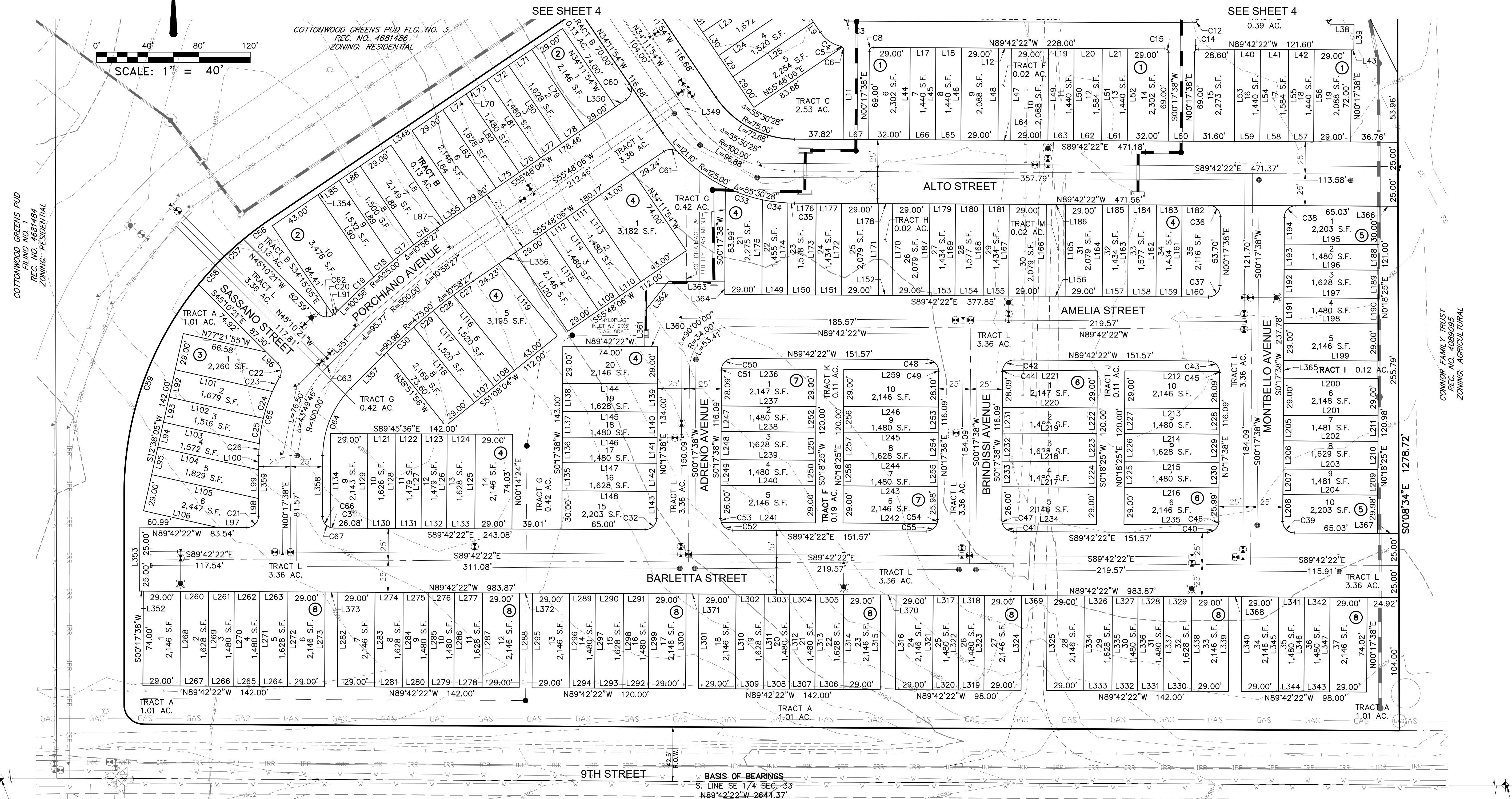
SHEET
2
OF X

E NO.19003254-PREIM PLAT
DATE 06/15/2021
DRAWN BY TWK
CHECK BY BCR
B NO. 19003254

COTTONWOOD GREENS PUD FILING NO. 4

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-00XX

FINAL PUD PLAT
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2
NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



S1/4 COR. SEC. 33
FOUND 3-1/4" ALUMINUM CAP
"2017 LS 38091"

SE COR. SEC. 33
FOUND 2-1/2" ALUMINUM CAP
"GEOSURV 1988 PLS 22097"

LEGEND

SECTION CORNER, AS NOTED	PROPERTY BOUNDARY	LOT LINE
OIL/GAS WELL	SECTION LINE	R.O.W. CENTER LINE
FOUND #4 REBAR WITH ORANGE PLASTIC CAP "LS 12330"	MATCH LINE	R.O.W. LINE
20.0' REFERENCE MONUMENT	UTILITY EASEMENT LINE	WETLAND SETBACK LINE
FOUND #5 REBAR WITH 2" ALUMINUM CAP "LS 25379 20.0' RM"	DRAINAGE EASEMENT LINE	WETLAND LINE
FOUND #4 REBAR		

PROPOSED UTILITIES

PROPOSED STORM SEWER

PROPOSED WATER LINE

PROPOSED IRRIGATION LINE

PROPOSED SANITARY SEWER

EXISTING UTILITIES

GAS

W

OHE

SS

FO

REVISIONS

REVISED 01/28/2020
REVISED 02/05/2020
REVISED 02/28/2020

SHEET 5 OF 9

FILE NO. 19003254-PRM RM

DATE 10/01/19

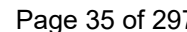
DRAWN BY TWK

CHECK BY BCR

JOB NO. 19003254

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-00XX

LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2
NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



\\COLORADO\JOHNSON\WORK\PLAN SET\CONSTRUCTION\20002948\COVER SHEET.DWG 6/22/2021 10:35 AM GUNTHAMPE, JUNA

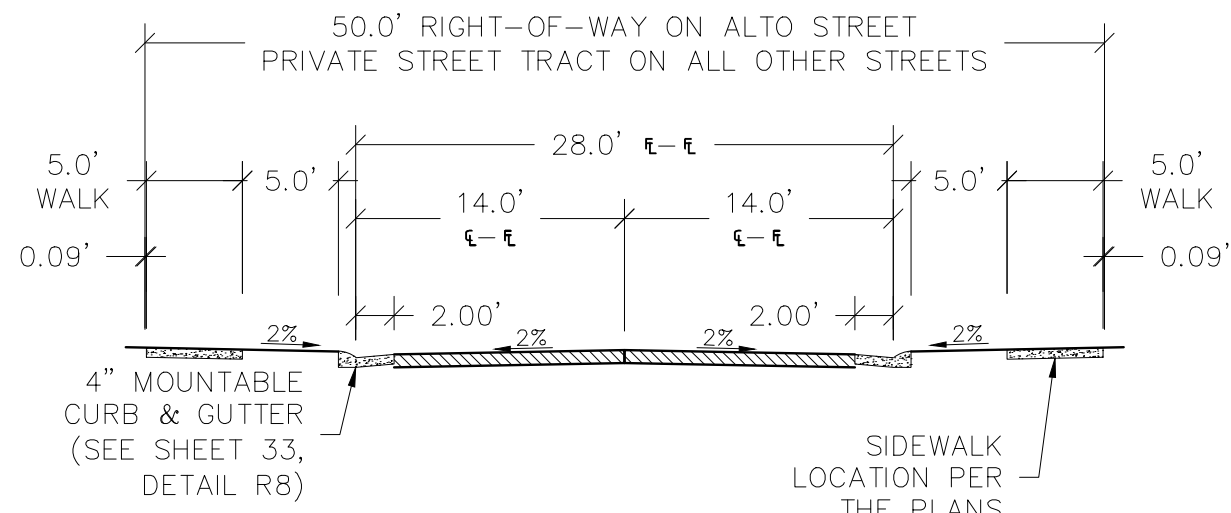
COTTONWOOD GREENS FILING NO. 4
A TRACT OF LAND LOCATED IN THE SOUTH HALF OF SECTION 33, TOWNSHIP 2 NORTH,
RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN, FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO
FILING NO. 4 CONSTRUCTION PLANS

LEGAL DESCRIPTION:

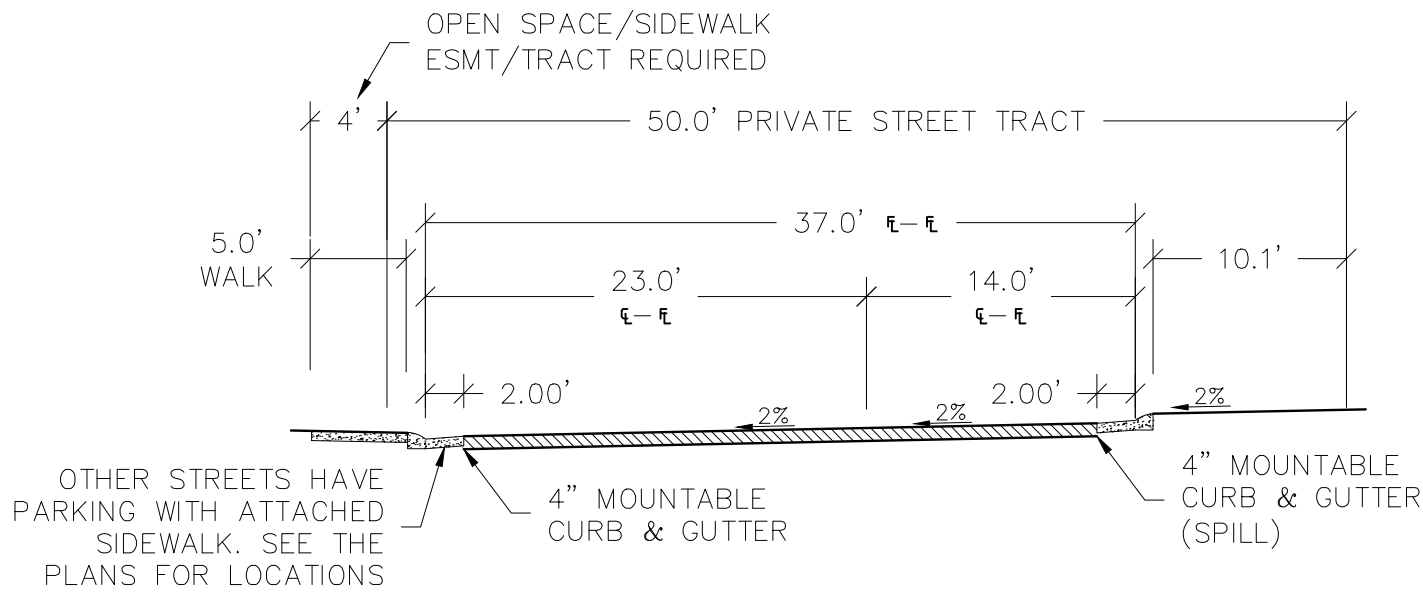
TRACT D AND OUTLOT A, COTTONWOOD GREENS PUD FILING NO. 3
COUNTY OF WELD, STATE OF COLORADO

RECORDED AT RECEPTION NO. 4681486, WELD COUNTY RECORDS

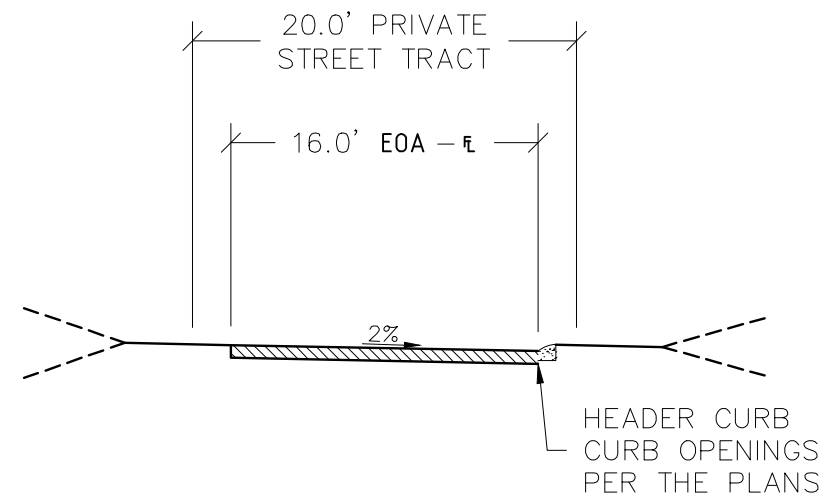
SAID PARCEL OF LAND CONTAINS 706,426 SQUARE FEET, OR 16.22 ACRES, MORE OR LESS (±).



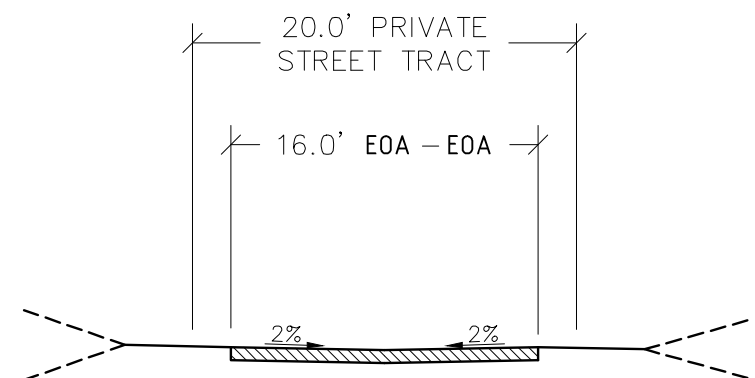
MODIFIED LOCAL STREET SECTION WITH 50' ROW / PRIVATE STREET TRACT
1:10 HOR.



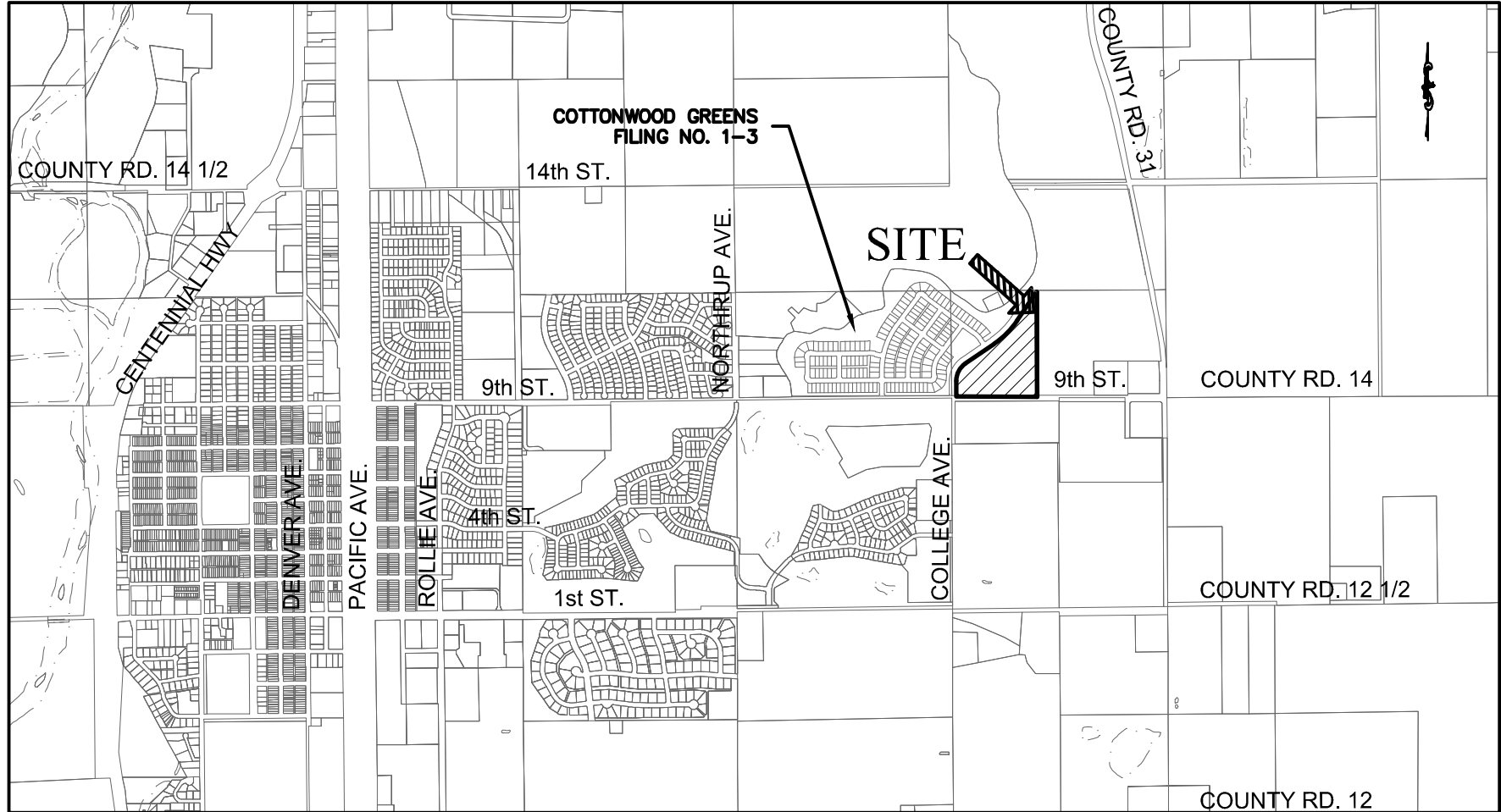
BARLETTA STREET SUPER ELEVATED WITH PARKING AND ATTACHED SIDEWALK
1:10 HOR.



PRIVATE ALLEY DRIVEWAY
1:10 HOR.



PRIVATE ALLEY DRIVEWAY
1:10 HOR.



VICINITY MAP
SCALE: 1"=2,000'

Sheet List Table	
SHEET NUMBER	SHEET TITLE
01	COVER SHEET
02	NOTES & LEGEND
GESC PLANS	
03	GESC INITIAL PLAN
04	GESC INTERIM PLAN
05	GESC FINAL PLAN
06	GESC DETAILS
07	GESC DETAILS
DETAIL GRADING	
08	DETAIL GRADING PLAN
09	DETAIL GRADING PLAN
10	DETAIL GRADING PLAN
11	DETAIL GRADING PLAN
12	DETAIL GRADING PLAN
13	DETAIL GRADING PLAN
STREET PLAN & PROFILE	
14	SASSANO ST. & PORCHIANO AVE.
15	ALTO ST.
16	MONTBELLO AVE.
17	BARLETTA ST.
18	AMELIA ST. & BRINDISI AVE.
19	ALLEY 01, 02 & 03
SANITARY SEWER PLAN & PROFILE	
20	ALTO STREET
21	PORCHIANO AVE.
22	BARLETTA ST.
23	BARLETTA ST. & AMELIA ST.
24	BARLETTA ST., AMELIA ST. & BRINDISI AVE.
25	MONTBELLO AVE.
STORM SEWER PLAN & PROFILE	
26	STORM RUN 1 & 3
27	STORM RUN 2 & 4
WATER PLAN & PROFILE	
28	SASSANO ST. & PORCHIANO AVE.
29	ALTO STREET
30	MONTBELO AVE. & AMELIA ST.
31	BARLETTA ST. & BRINDISI AVE.
IRRIGATION PLAN & PROFILE	
32	SASSANO ST. & ALTO ST.
DETAILS	
33	STREET DETAILS
34	SANITARY DETAILS
35	SANITARY DETAILS
SIGNAGE & STRIPING	
36	SIGNAGE & STRIPING

CITY ENGINEER'S APPROVAL:

APPROVED THIS ____ DAY OF _____, 2020.

CITY ENGINEER

CITY WATER AND SEWER DEPARTMENT APPROVAL:

APPROVED THIS ____ DAY OF _____, 2020.

DIRECTOR OF PUBLIC WORKS

CITY ADMINISTRATOR'S APPROVAL:

APPROVED THIS ____ DAY OF _____, 2020.

CITY ADMINISTRATOR

PLANNING COMMISSION RECOMMENDATION:

RECOMMENDED THIS ____ DAY OF _____, 2020, BY RESOLUTION NO. _____

CHAIRPERSON, FORT LUPTON
PLANNING COMMISSION

MAYOR'S CERTIFICATE:

THIS IS TO CERTIFY THAT A PLAT OF THE ABOVE-DESCRIBED PROPERTY WAS APPROVED BY [ORDINANCE/RESOLUTION] NO. _____ OF THE CITY OF FORT LUPTON PASSED AND ADOPTED ON THE ____ DAY OF _____ A.D., 2020 AND THAT THE MAYOR OF THE CITY OF FORT LUPTON, HEREBY AUTHORIZED BY SAID [ORDINANCE/RESOLUTION] ON BEHALF OF THE CITY OF FORT LUPTON, HEREBY ACKNOWLEDGES AND ADOPTS THE SAID PLAT UPON WHICH THIS CERTIFICATE IS ENDORSED FOR ALL PURPOSES INDICATED THEREON.

ATTEST: _____ MAYOR

CITY CLERK

(SEAL)

OWNER:
ARBOR CAPITAL PARTNERS, LLC.
4040 MACARTHUR BLVD.,
SUITE 250
NEWPORT BEACH, CA 92660
CONTACT: JIM RIGHEIMER

CITY OF FORT LUPTON:
130 S. MCKINLEY AVE.
FORT LUPTON, CO 80621
(303) 857-6694
CONTACT: ROY VESTAL

XCEL ENERGY (GAS):
5450 W. 60TH AVE.
ARVADA, CO 80003
(800) 895-4999
CONTACT: DONNA SANDERS

UNITED POWER (ELEC):
P.O. BOX 929
BRIGHTON, CO 80601
(303) 659-0551
CONTACT: HECTOR AVENDANO

CENTURY LINK (FIBER OPTIC):
5324 WADSWORTH BLVD.,
SUITE F
ARVADA, CO 80002
(303) 403-9980

SURVEYOR:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
CONTACT: DANIEL RODRIGUEZ

CIVIL ENGINEER:
ATWELL, LLC.
143 UNION BLVD.,
SUITE 700
LAKEWOOD, CO 80228
CONTACT: DANIEL RODRIGUEZ

PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

ENGINEER'S STATEMENT

THE CONSTRUCTION PLANS INCLUDED HEREIN HAVE BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF FORT LUPTON ENGINEERING CONSTRUCTION STANDARDS AND SPECIFICATIONS MANUAL.

DANIEL J. RODRIGUEZ, P.E.
COLORADO NO. 48683
FOR AND ON BEHALF OF ATWELL, LLC.

DATE



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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DEVELOPER	4040 MACARTHUR BLVD. SUITE 250 NEWPORT BEACH, CA 92660
	303-905-3496
CLIENT	ARBOR CAPITAL PARTNERS, LLC

CLIENT	ARBOR CAPITAL PARTNERS, LLC
	COTTONWOOD GREENS FILING NO. 4 FORT LUPTON, COLORADO
DATE	6/22/2021
REVISIONS	
JOB	20002948
	SHEET NO.
SHEET NO.	01

DATE 6/22/2021

REVISIONS	
JOB	20002948
	SHEET NO.
SHEET NO.	01

DR.	NA
	CH. CJG
P.M.	DJR
JOB	20002948
	SHEET NO.
SHEET NO.	01



LEGEND

EXISTING GROUND CONTOURS

GRADING AND EROSION CONTROL NOTES:

- SILT FENCE TO BE REMOVED AFTER PLACEMENT OF ECB OR SEEDING & MULCHING OF LOTS.
- INLET PROTECTION TO BE REMOVED AFTER DEVELOPMENT AND STABILIZATION OF LOTS.
- VTC TO BE REMOVED UPON COMPLETION OF PAVING OPERATIONS.
- SEE COVER SHEET FOR COMMERCE CITY STANDARD GRADING NOTES.
- SHADED BMP'S WERE INSTALLED IN INITIAL OR INTERIM STAGES AND SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY.
- SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, WATER QUALITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION.
- A RELEASE OF ANY CHEMICAL, OIL, PETROLEUM PRODUCT, SEWAGE, ETC. WHICH MAY ENTER STATE WATERS (WHICH INCLUDE SURFACE WATER, GROUNDWATER AND DRY GULLIES OR STORM SEWERS LEADING TO SURFACE WATER) MUST BE REPORTED TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) IMMEDIATELY. WRITTEN NOTIFICATION TO CDPHE MUST FOLLOW WITHIN FIVE DAYS. THE CDPHE TOLL-FREE 24-HOUR ENVIRONMENTAL EMERGENCY SPILL REPORTING LINE IS 1-877-518-5608. ANY ACCIDENTAL DISCHARGE TO THE SANITARY SEWER SYSTEM MUST BE REPORTED TO SOUTH ADAMS COUNTY WATER AND SANITATION DISTRICT AT 303-288-2646.
- E. 112TH AVENUE IMPROVEMENTS INCLUDING POND 7A HAVE BEEN DESIGNED BY JR ENGINEERING AND ARE CURRENTLY UNDER CONSTRUCTION. CONFIRM THAT THIS PROJECT AND GRADING IS COMPLETED PRIOR TO GRADING COMMENCEMENT OF REUNION FILING NO. 38. AS-BUILT STREET TIE-INS AND UTILITY INVERTS TO CONFIRM PROPER CONNECTIONS.
- UTILITY IMPROVEMENTS ON CHAMBERS ROAD HAVE BEEN DESIGNED BY JR ENGINEERING AND SHOULD BE COMPLETED PRIOR TO GRADING COMMENCEMENT OF REUNION FILING NO. 38. AS-BUILT UTILITY INVERTS TO CONFIRM PROPER CONNECTIONS.
- ALL TREE LAWNS SHALL BE SEEDD AND MULCHED.
- ALL STREETS NEED TO BE CLEANED DAILY.

GRADING AND EROSION CONTROL LEGEND

SF

IP

RRC

VTC

CWA

RS

SSA

SM

LOC

CF

DD

ECB

X

SILT FENCE

INLET PROTECTION

CULVERT PROTECTION

VEHICLE TRACKING CONTROL

CONCRETE WASHOUT AREA

ROCK SOCK

STABILIZED STAGING AREA

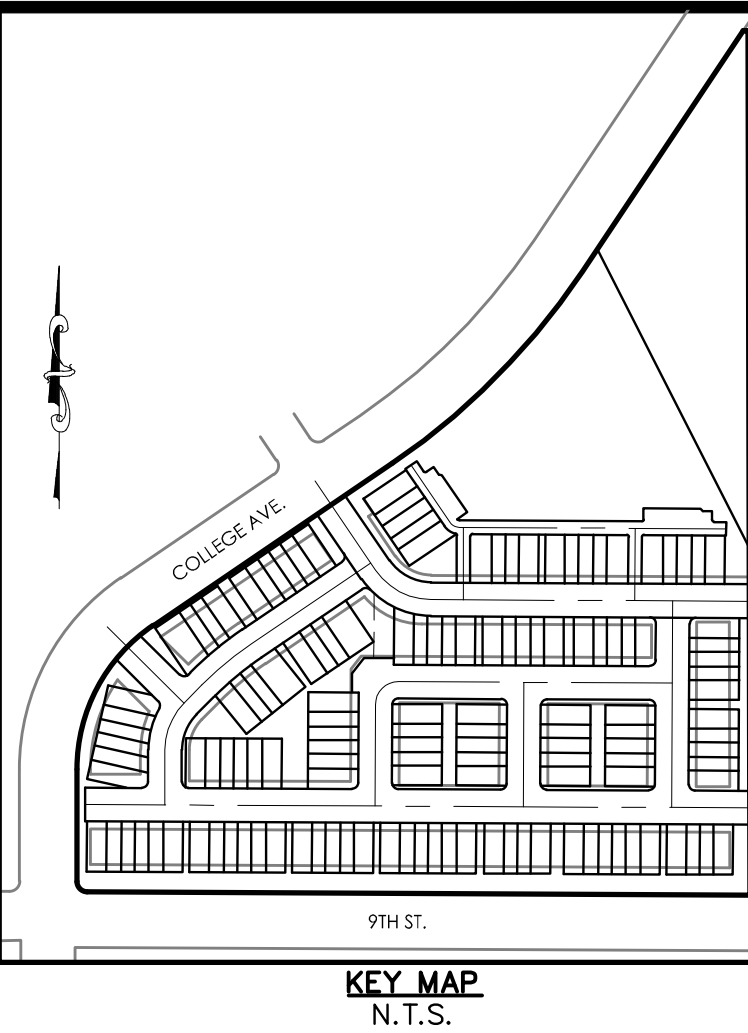
SEEDING AND MULCHING

LIMITS OF CONSTRUCTION

CONSTRUCTION FENCE

DIVERSION DITCH

EROSION CONTROL BLANKET



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SUITE 250
NEWPORT BEACH, CA 92660

DATE

6/22/2021

REVISIONS

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DR. EP

CH. CJG

P.M. DJR

JOB

20002948

SHEET NO.

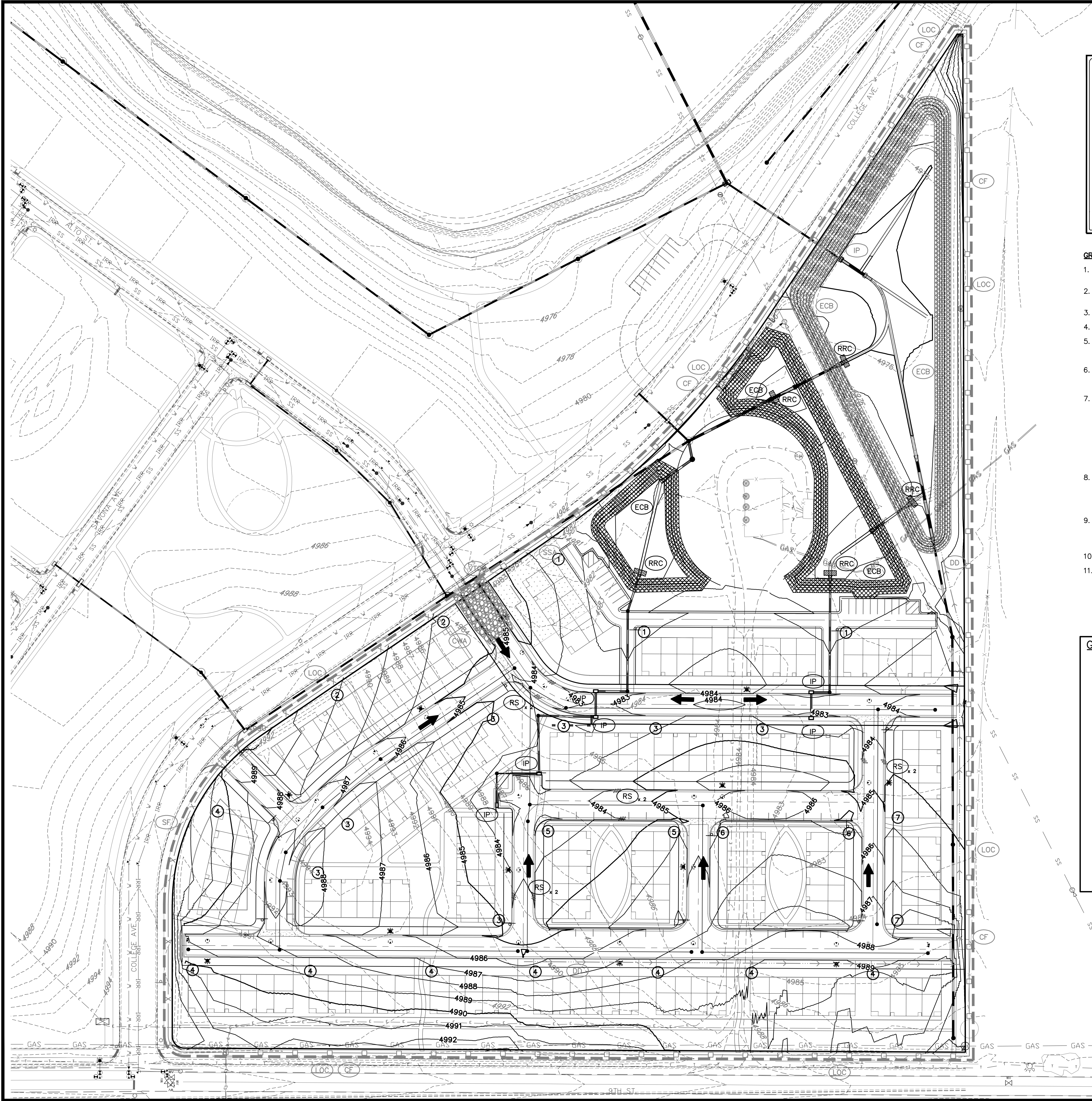
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CAD FILE: 20002948-GESC INITIAL PLAN.DWG

PROJECT NO.:
PLAN NO.:

BENCHMARK:
HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.
VERTICAL DATUM: NAVD88 USING GEOID MODEL "GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

Page 38 of 297



LEGEND

PROPERTY BOUNDARY LINE

× 40.15

PROP. OVERLOT GRADE SPOT ELEV.

× 40.15

EXIST. OVERLOT GRADE SPOT ELEV.

PROPOSED LOT LINE

EXISTING CONTOURS

PROPOSED CONTOURS

←

DRAINAGE FLOW ARROWS

GRADING AND EROSION CONTROL NOTES:

- SILT FENCE TO BE REMOVED AFTER PLACEMENT OF ECB OR SEEDING & MULCHING OF LOTS.
- INLET PROTECTION TO BE REMOVED AFTER DEVELOPMENT AND STABILIZATION OF LOTS.
- VTC TO BE REMOVED UPON COMPLETION OF PAVING OPERATIONS.
- SEE COVER SHEET FOR COMMERCE CITY STANDARD GRADING NOTES.
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GRADING AND EROSION CONTROL LEGEND

SF

— x —

SILT FENCE

IP

INLET PROTECTION

RRC

CULVERT PROTECTION

VTC

VEHICLE TRACKING CONTROL

CWA

CONCRETE WASHOUT AREA

RS

ROCK SOCK

SSA

STABILIZED STAGING AREA

SM

SEEDING AND MULCHING

LOC

LIMITS OF CONSTRUCTION

CF

CONSTRUCTION FENCE

DD

DIVERSION DITCH

ECB

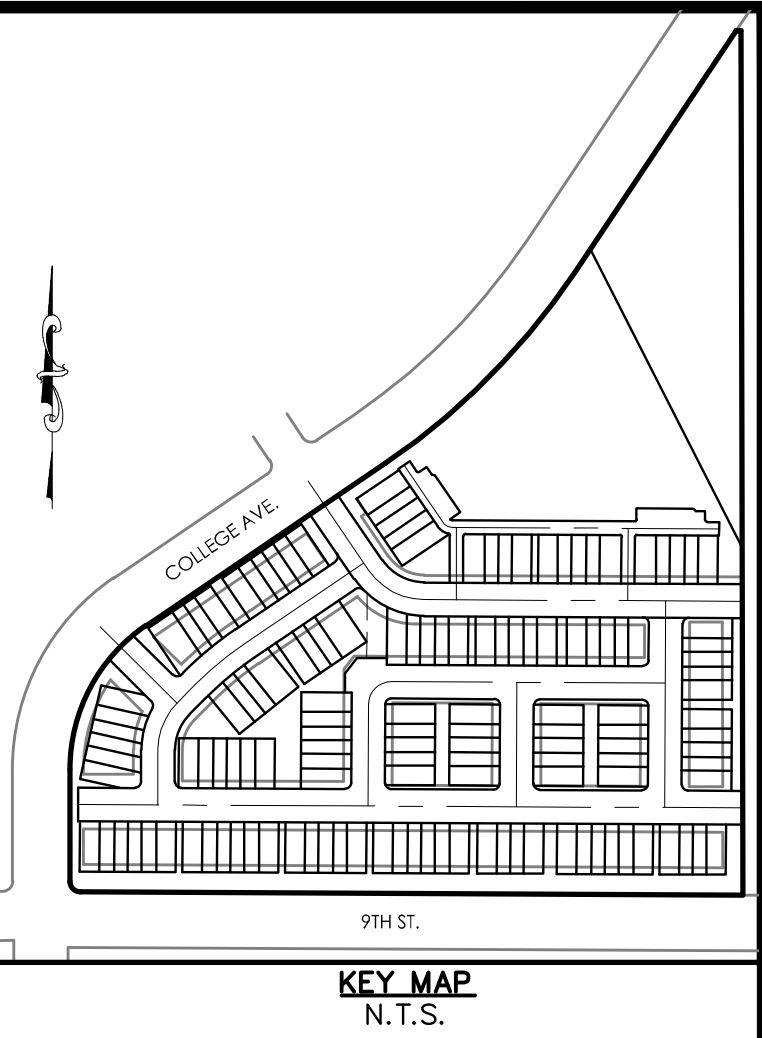
EROSION CONTROL BLANKET

PROJECT NO.:
PLAN NO.:

BENCHMARK:

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303-905-3496

ARBOR CAPITAL PARTNERS, LLC

CLIENT

ARBOR CAPITAL PARTNERS, LLC

COTTONWOOD GREENS FILING NO. 4
FORT LUTON, COLORADO

GESC PLANS

GESC INTERIM PLAN

DATE

6/22/2021

REVISIONS

PLANS UNDER REVIEW
NOT FOR CONSTRUCTION

DR. EP

CH. CJG

P.M. DJR

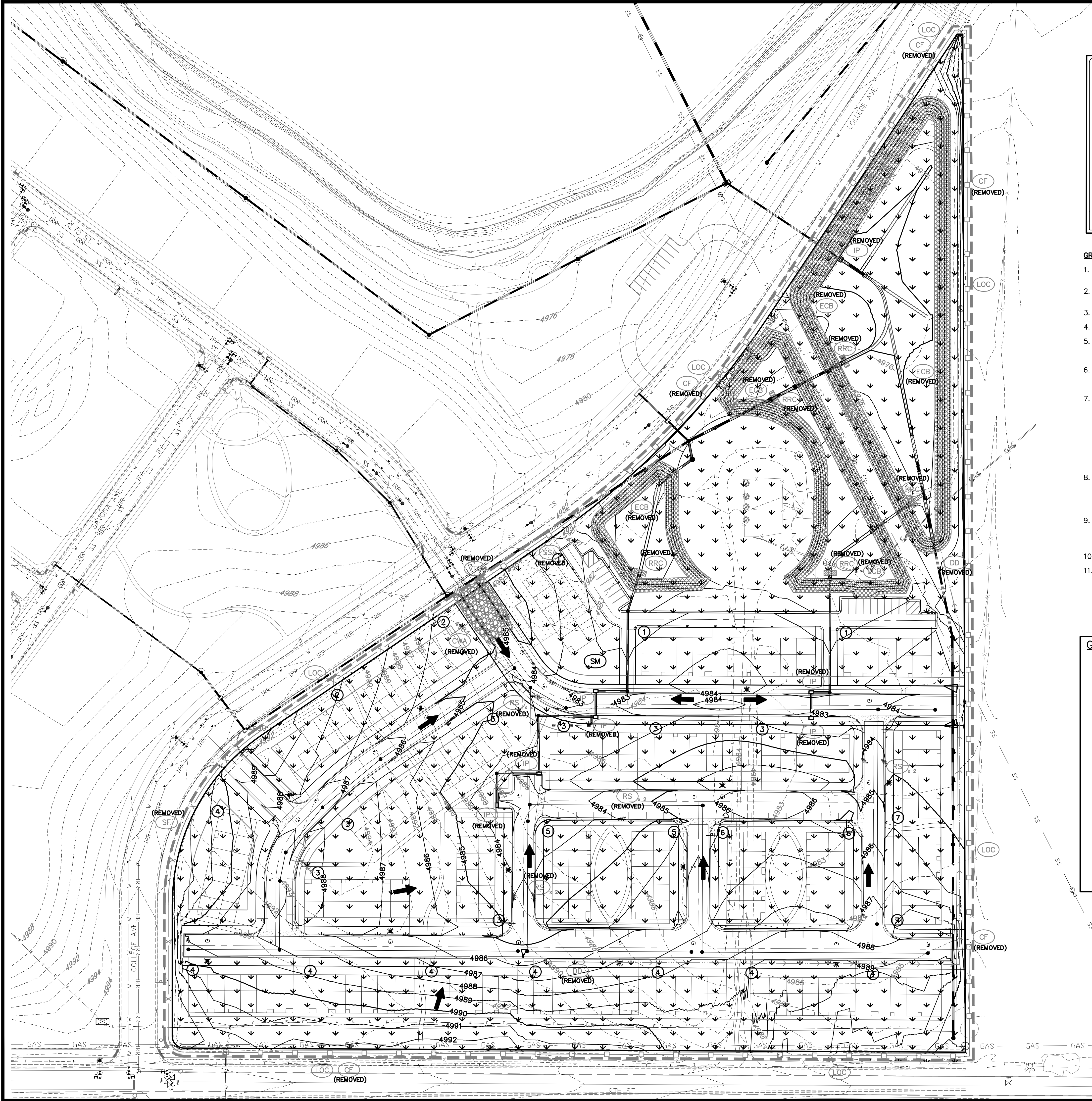
JOB

20002948

SHEET NO.

04

CAD FILE: 20002948-GESC INTERIM PLANS.DWG



LEGEND

PROPERTY BOUNDARY LINE

× 40.15

PROP. OVERLOT GRADE SPOT ELEV.

× 40.15

EXIST. OVERLOT GRADE SPOT ELEV.

PROPOSED LOT LINE

EXISTING CONTOURS

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SF

SILT FENCE

IP

INLET PROTECTION

RRC

CULVERT PROTECTION

VTC

VEHICLE TRACKING CONTROL

CWA

CONCRETE WASHOUT AREA

RS

ROCK SOCK

SSA

STABILIZED STAGING AREA

SM

SEEDING AND MULCHING

LOC

LIMITS OF CONSTRUCTION

CF

CONSTRUCTION FENCE

DD

DIVERSION DITCH

ECB

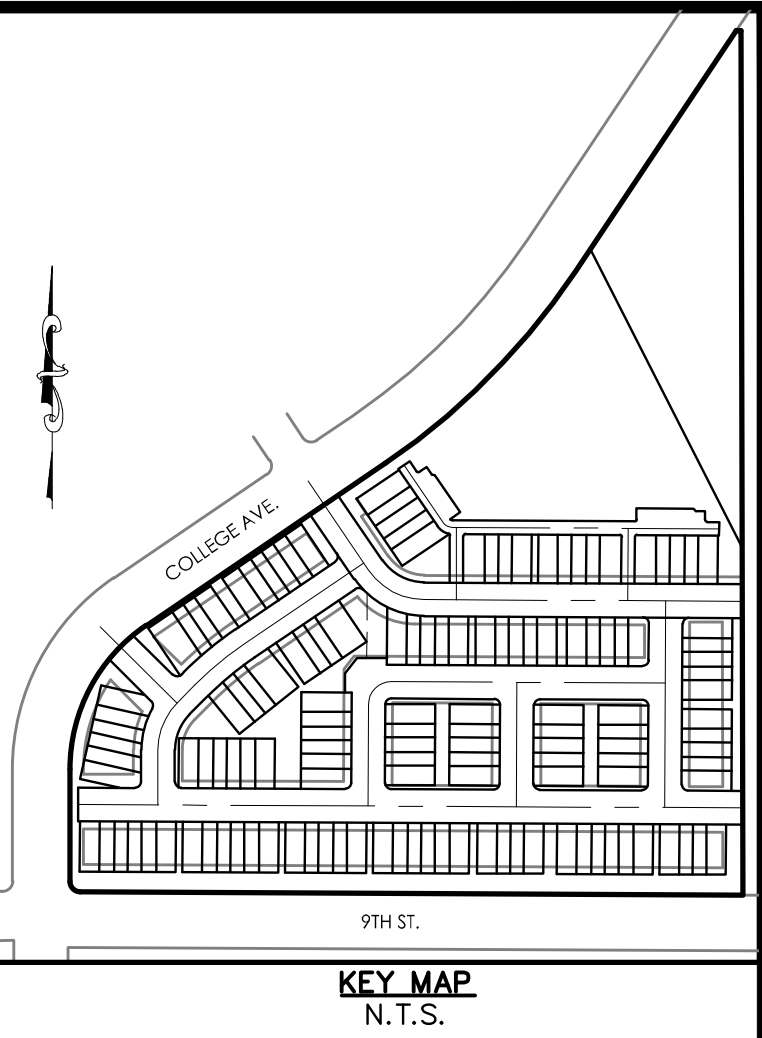
EROSION CONTROL BLANKET

PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOD MODEL "GEOD12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)



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303-905-3496

ARBOR CAPITAL PARTNERS, LLC

CLIENT

ARBOR CAPITAL PARTNERS, LLC

COTTONWOOD GREENS FILING NO. 4
FORT LUTON, COLORADO

GESC PLANS

GESC FINAL PLAN

DATE

6/22/2021

REVISIONS

PLANS UNDER REVIEW
NOT FOR CONSTRUCTION

DR. EP

CH. CJG

P.M. DJR

JOB

20002948

SHEET NO.

05

CAD FILE: 20002948-GESC FINAL PLANS.DWG

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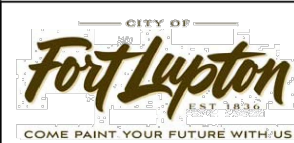
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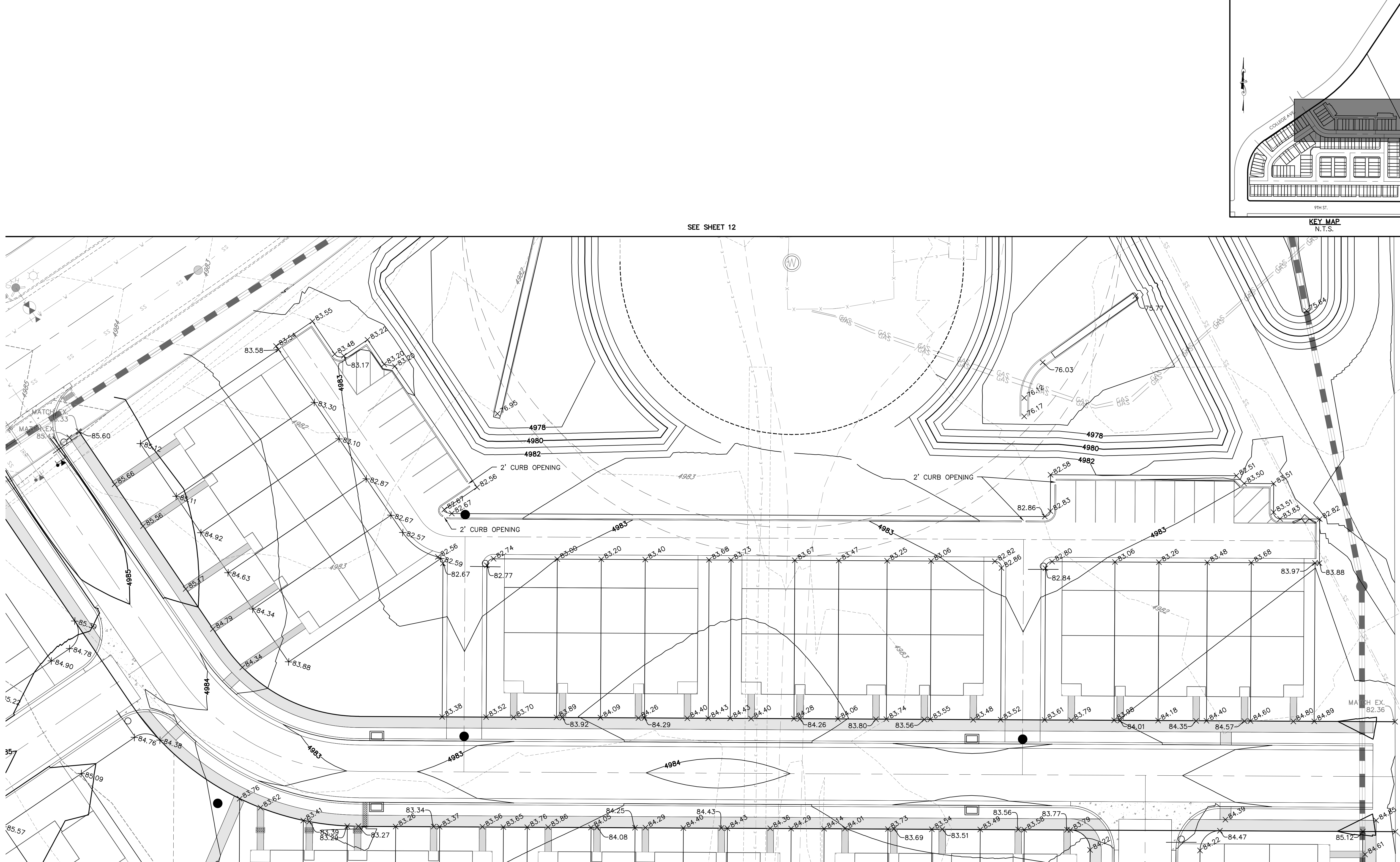
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Page 42 of 29

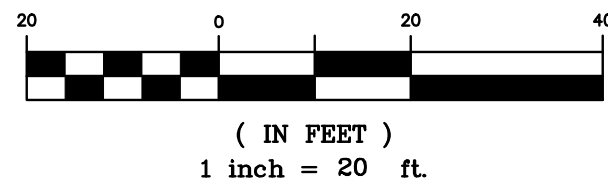
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SEE SHEET 09

SEE SHEET 11

SEE SHEET 12

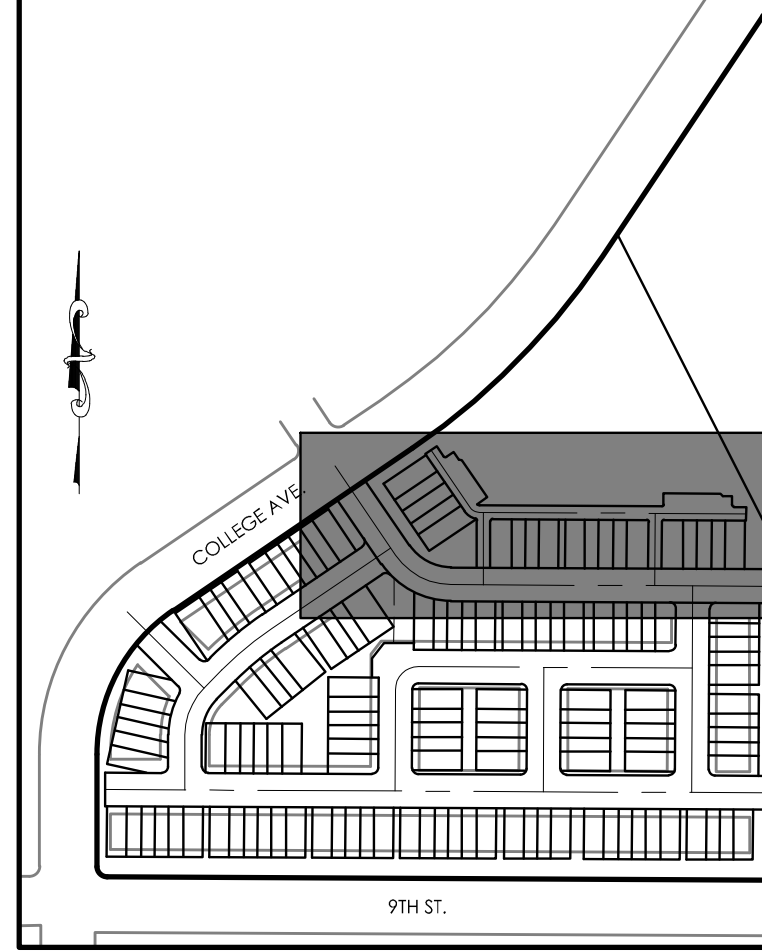


PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
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KEY MAP
N.T.S.



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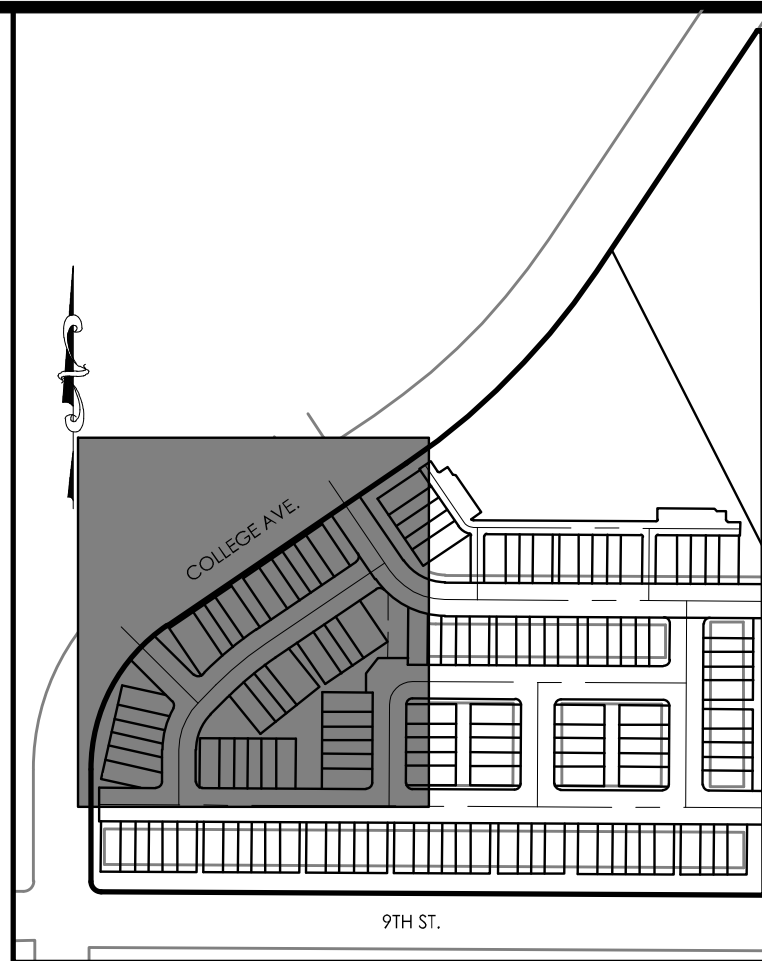
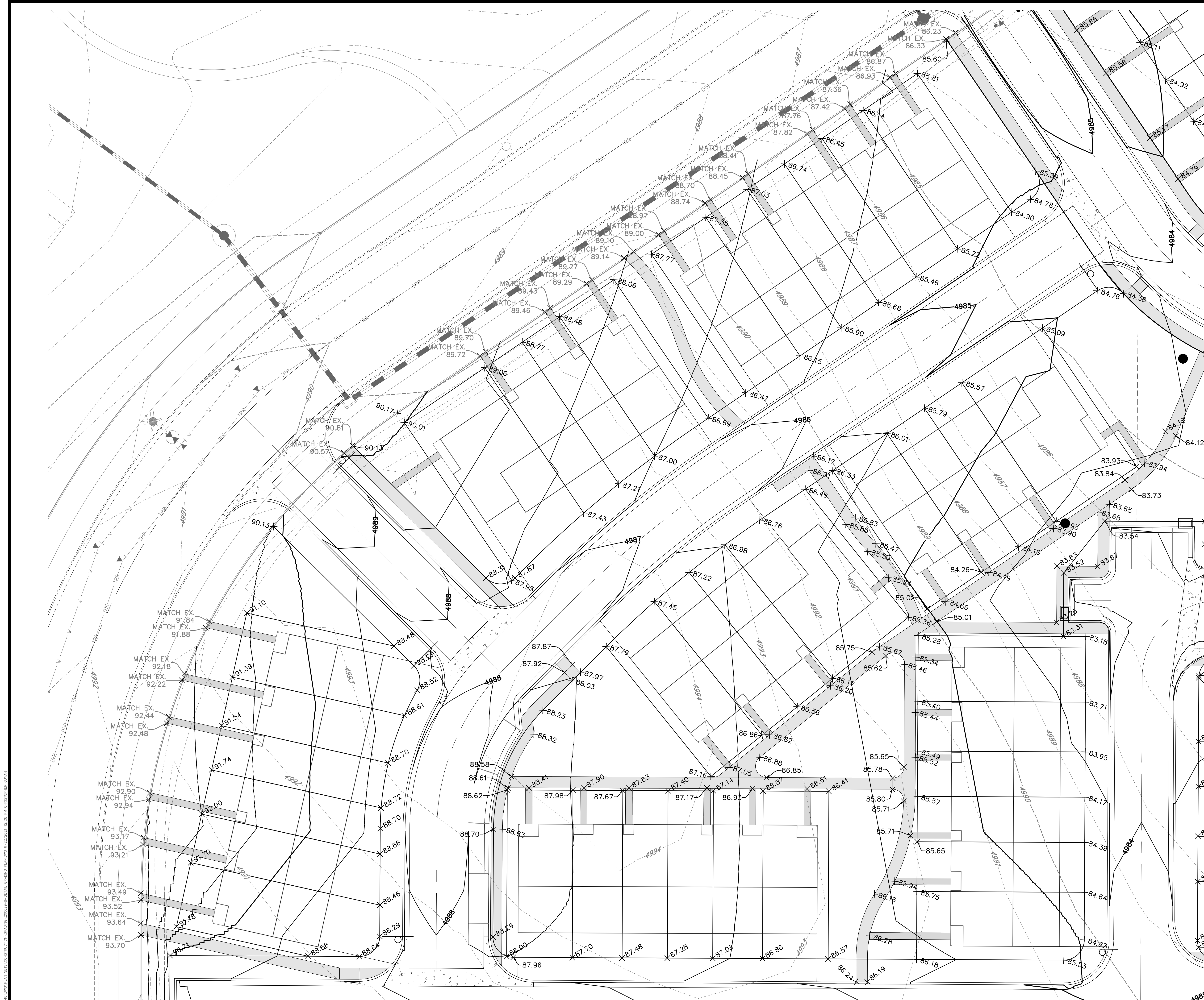
CLIENT
ARBOR CAPITAL PARTNERS, LLC COTTONWOOD GREENS, FILING NO. 4 FORT LUPTON, COLORADO
CONSTRUCTION PLANS DETAIL GRADING DETAIL GRADING PLAN

DATE
6/22/2021

REVISIONS



DR. NA	CH. CJG
P.M. DJR	
JOB 20002948	
SHEET NO.	08



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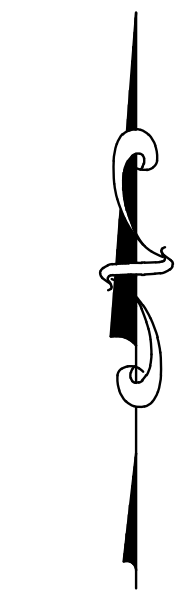
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DETAIL GRADING
DETAIL GRADING PLAN

DATE 6/22/2021

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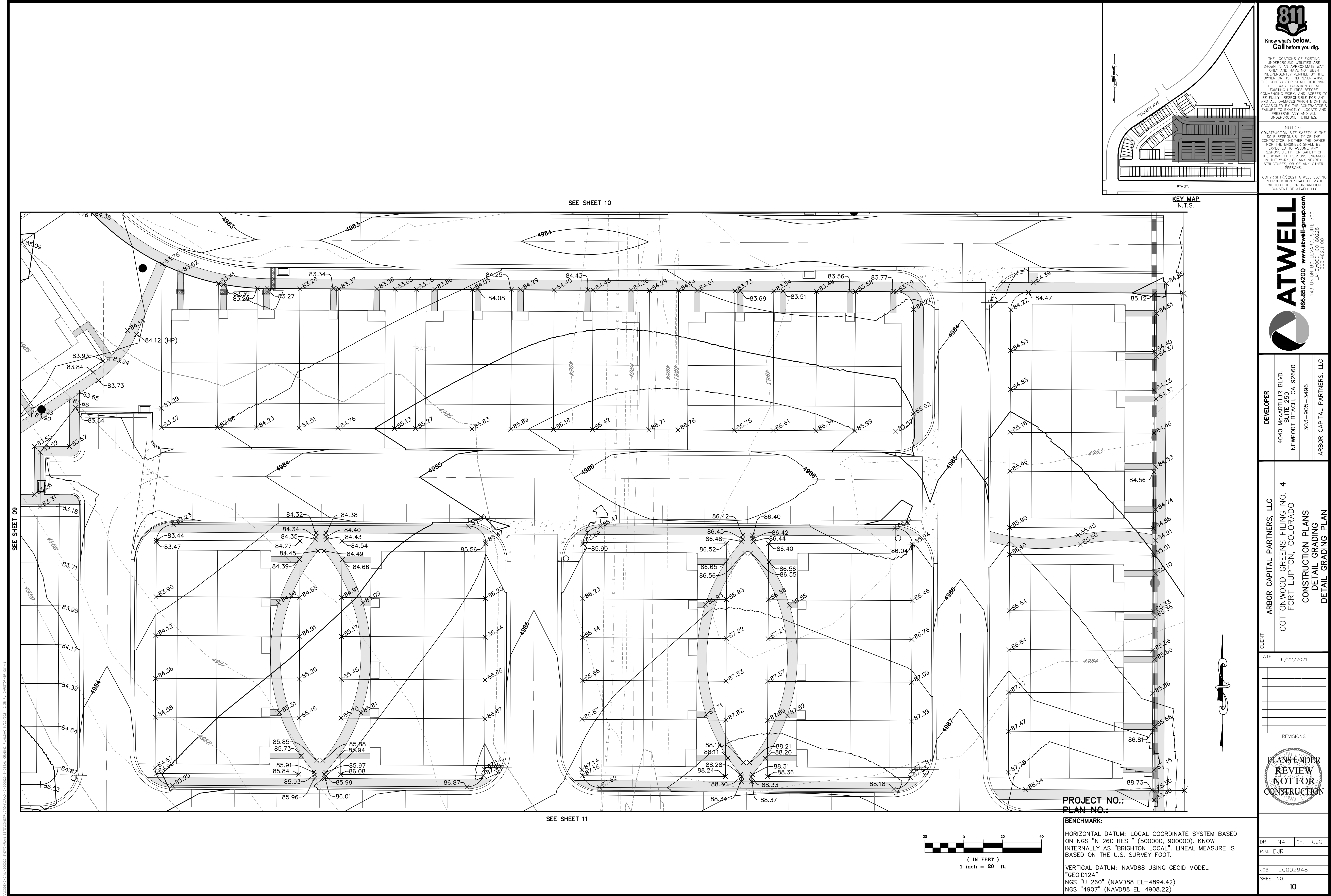
DR. NA **CH.** CJG
P.M. DJR
JOB 20002948
SHEET NO. 09
CAD FILE: 20002948-DETAIL GRADING PLAN.dwg



20 0 20 40
(IN FEET)
1 inch = 20 ft.

PROJECT NO.:
PLAN NO.:
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HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.
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NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

C:\CONSTRUCTION\20002948-DETAIL GRADING PLAN.dwg (6/22/2021 12:38:10) ATWELL, LLC





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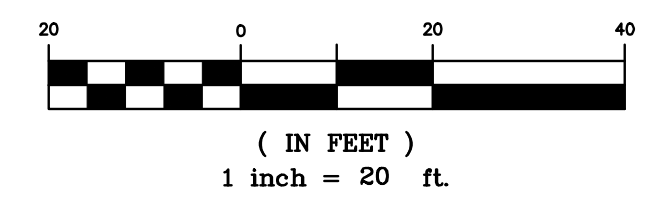
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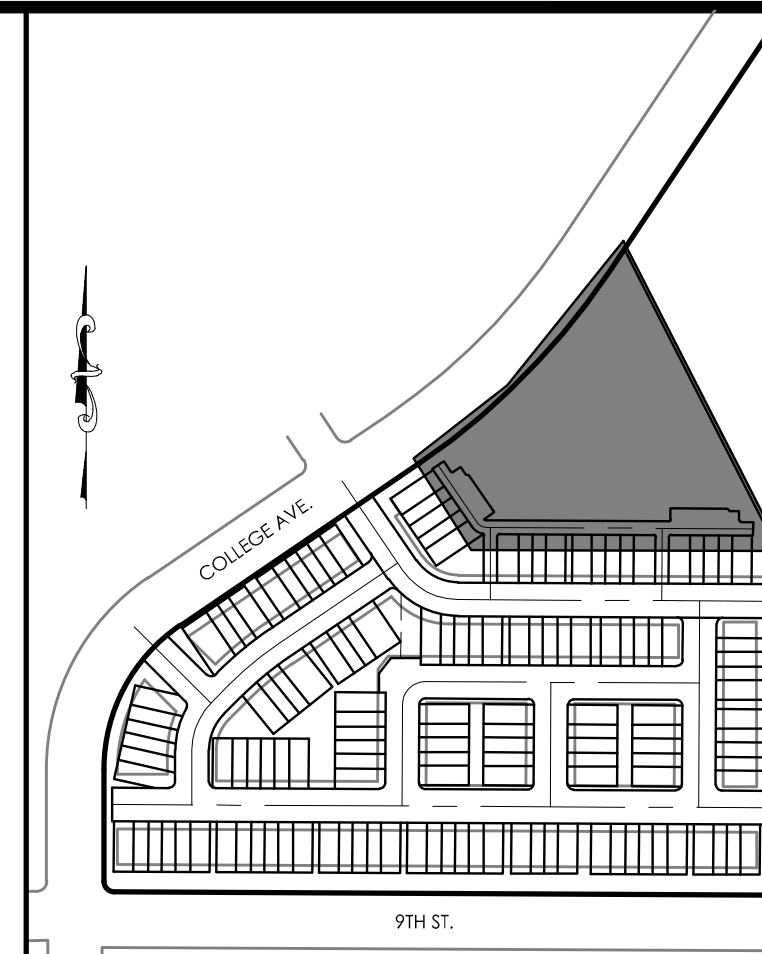
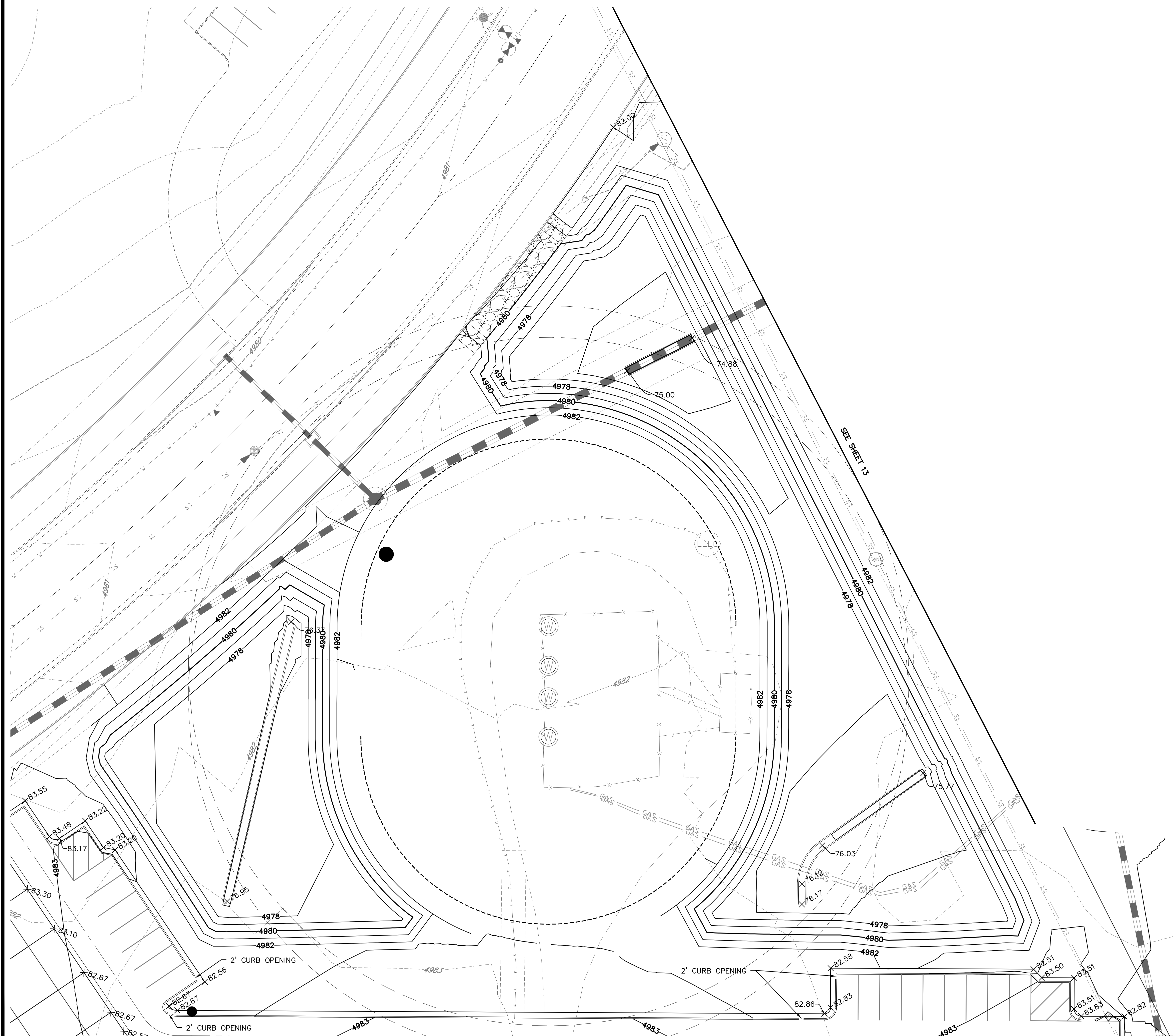
CLIENT	ARBOR CAPITAL PARTNERS, LLC
	COTTONWOOD GREENS, FILING NO. 4 FORT LUTON, COLORADO
DATE	6/22/2021
DEVELOPER	4040 McARTHUR BLVD. SUITE 250 NEWPORT BEACH, CA 92660
	303-905-3496 ARBOR CAPITAL PARTNERS, LLC
CONSTRUCTION PLANS DETAIL GRADING PLAN	
REVISIONS	
PLANS UNDER REVIEW NOT FOR CONSTRUCTION	
DR. NA	CH. CJG
P.M. DJR	
JOB	20002948
SHEET NO.	10

CAD FILE: 20002948-DETAIL GRADING PLAN.rvt

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NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)





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ARBOR CAPITAL PARTNERS, LLC
COTTONWOOD GREENS, FILING NO. 4
FORT LUPTON, COLORADO

DATE 6/22/2021



DR.		NA	
P.M.		DJR	
JOB		20002948	
SHEET NO.			
12			

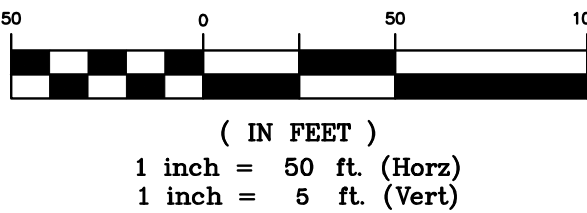
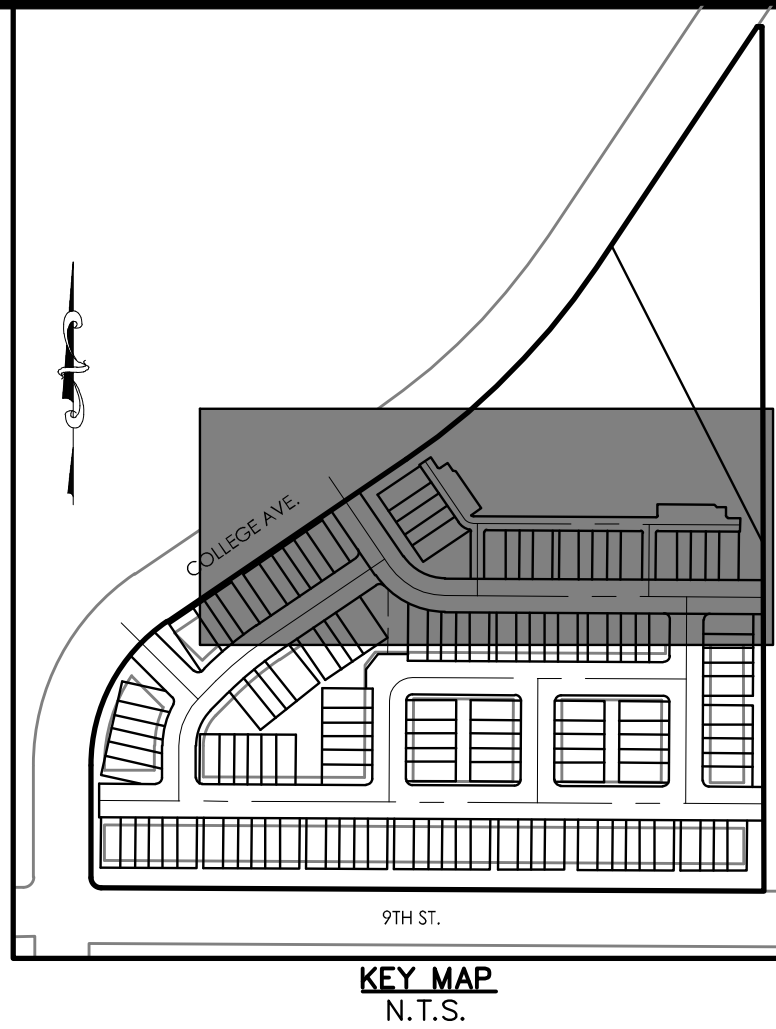
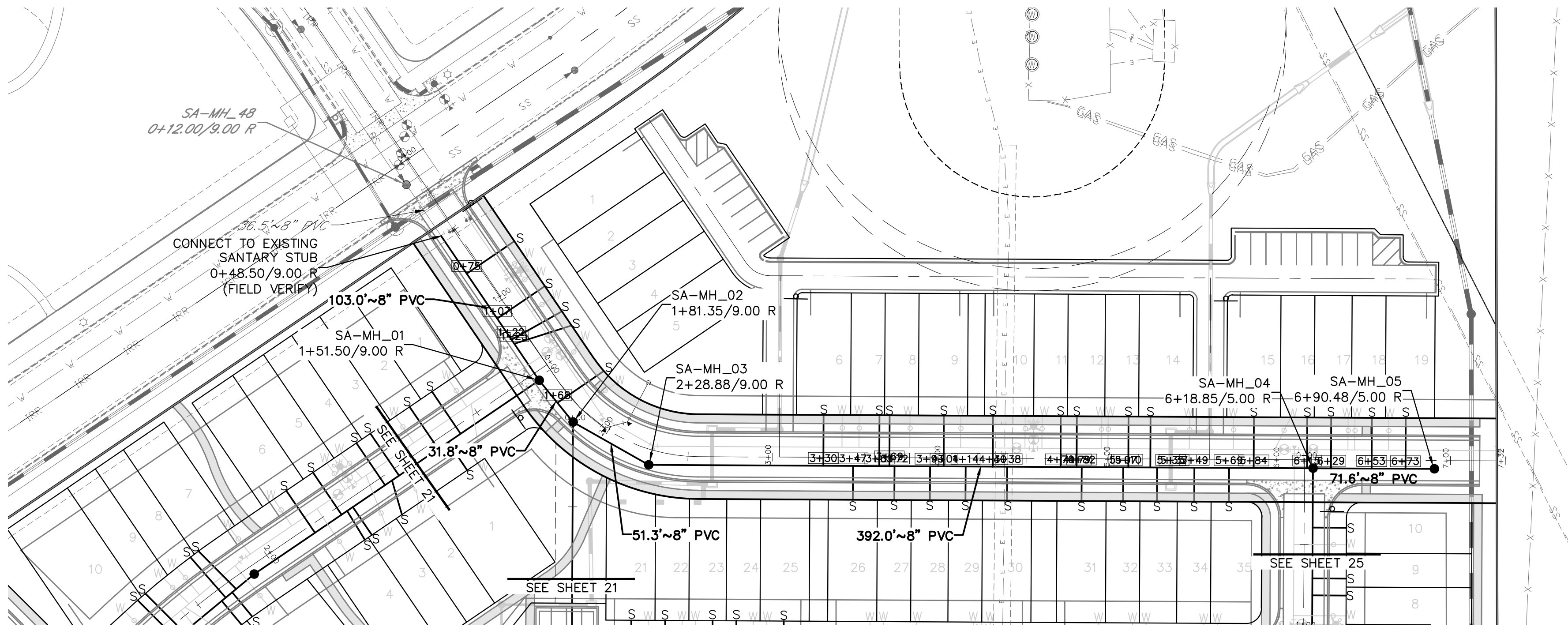
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PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)



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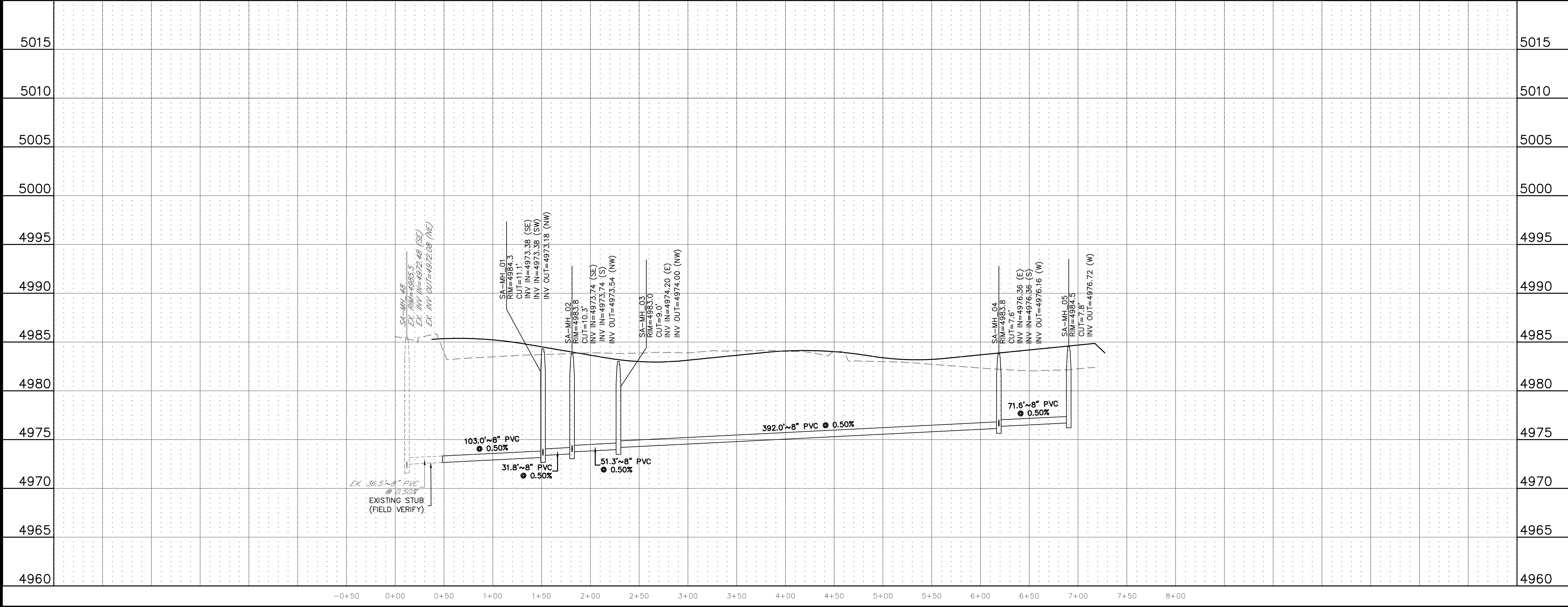
PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL "GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

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COTTONWOOD GREENS
FORT LUITON, COLORADO
CONSTRUCTION PLANS
SANITARY SEWER PLAN & PROFILE
ALTO STREET

CLIENT
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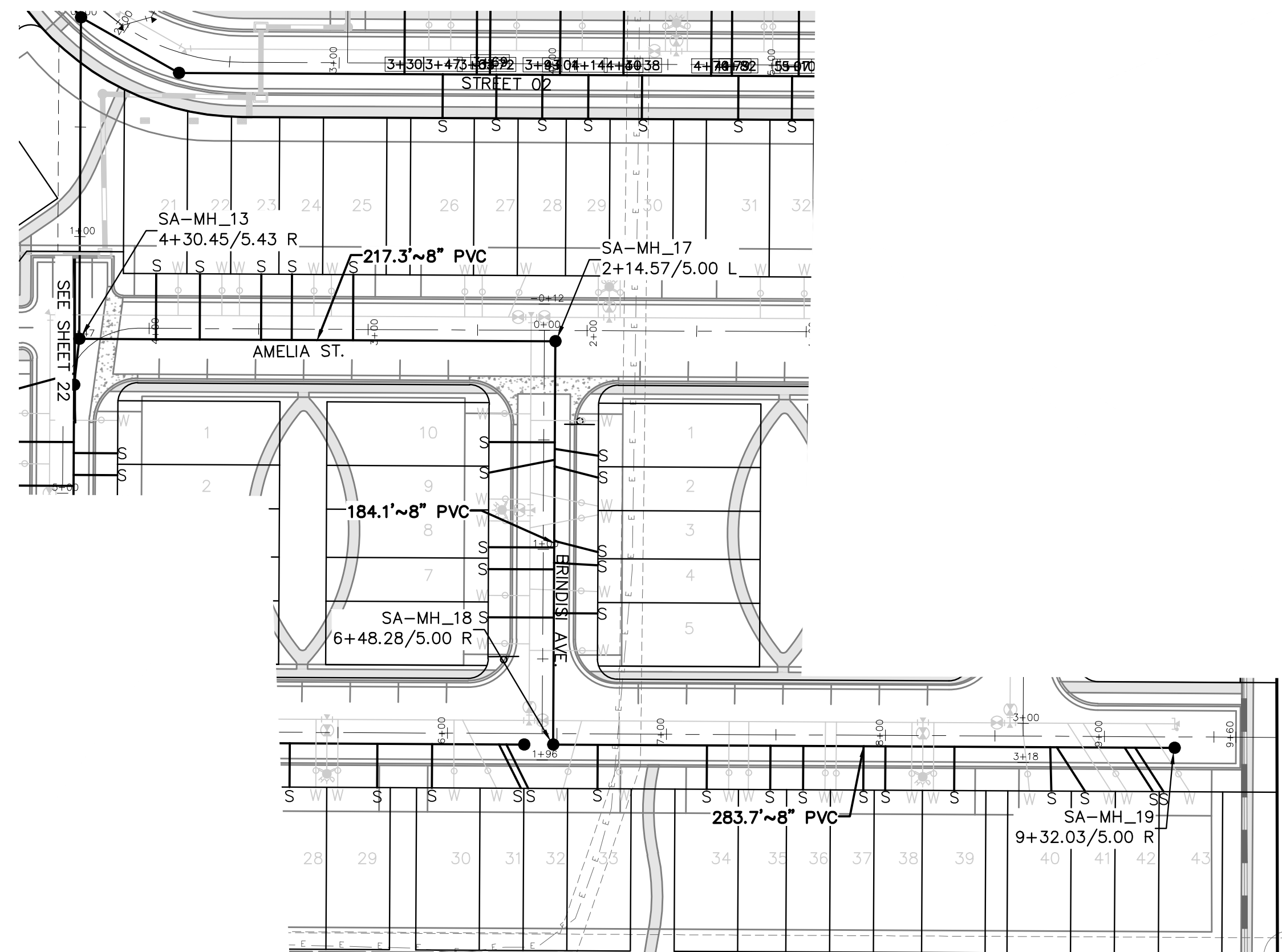
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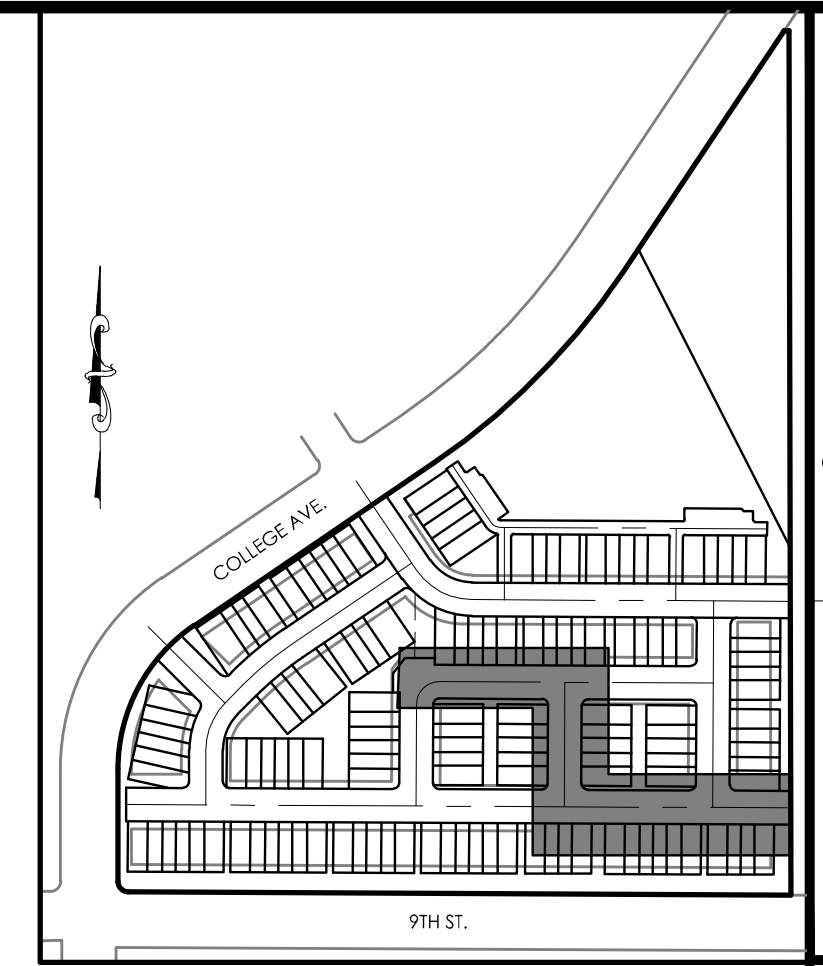
PLANS UNDER REVIEW NOT FOR CONSTRUCTION

DR. --- **CH.** ---
P.M. ---
JOB ---
SHEET NO. 20

CAD FILE: 200029348-SANITARY PLAN & PROFILE.DWG



BARLETTA ST., AMELIA ST. &
BRINDISI AVE.



KEY MAP
N.T.S.



(IN FEET)

1 inch = 50 ft. (Horz)

1 inch = 5 ft. (Vert)

PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOWN INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

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PORT BEACH, CA 90728
303-905-3496

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COTTONWOOD GREENS
FORT LUPTON, COLORADO
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SANITARY SEWER PLAN & PROFILE
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COTTONWOOD GREENS
FORT LUPTON, COLORADO
CONSTRUCTION PLANS
SANITARY SEWER PLAN & PROFILE
MONTREILLO AVENUE

DATE _____

DATE _____

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DR	CH
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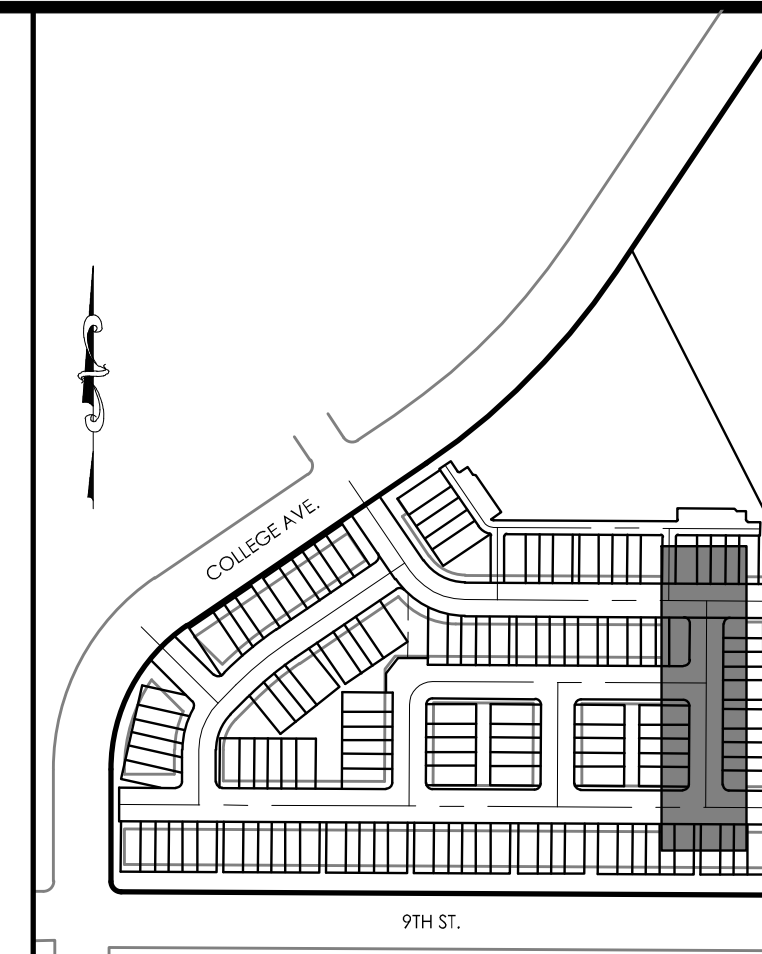
P.M. --

JOB --

SHEET NO.

25

CAN FILE: 20002948-SANITARY P&P-06 DWG



KEY MA
N.T.S.



(IN FEET)

1 inch = 50 ft. (Horz)

1 inch = 5 ft. (Vert)

PROJECT NO.:
PLAN NO.:

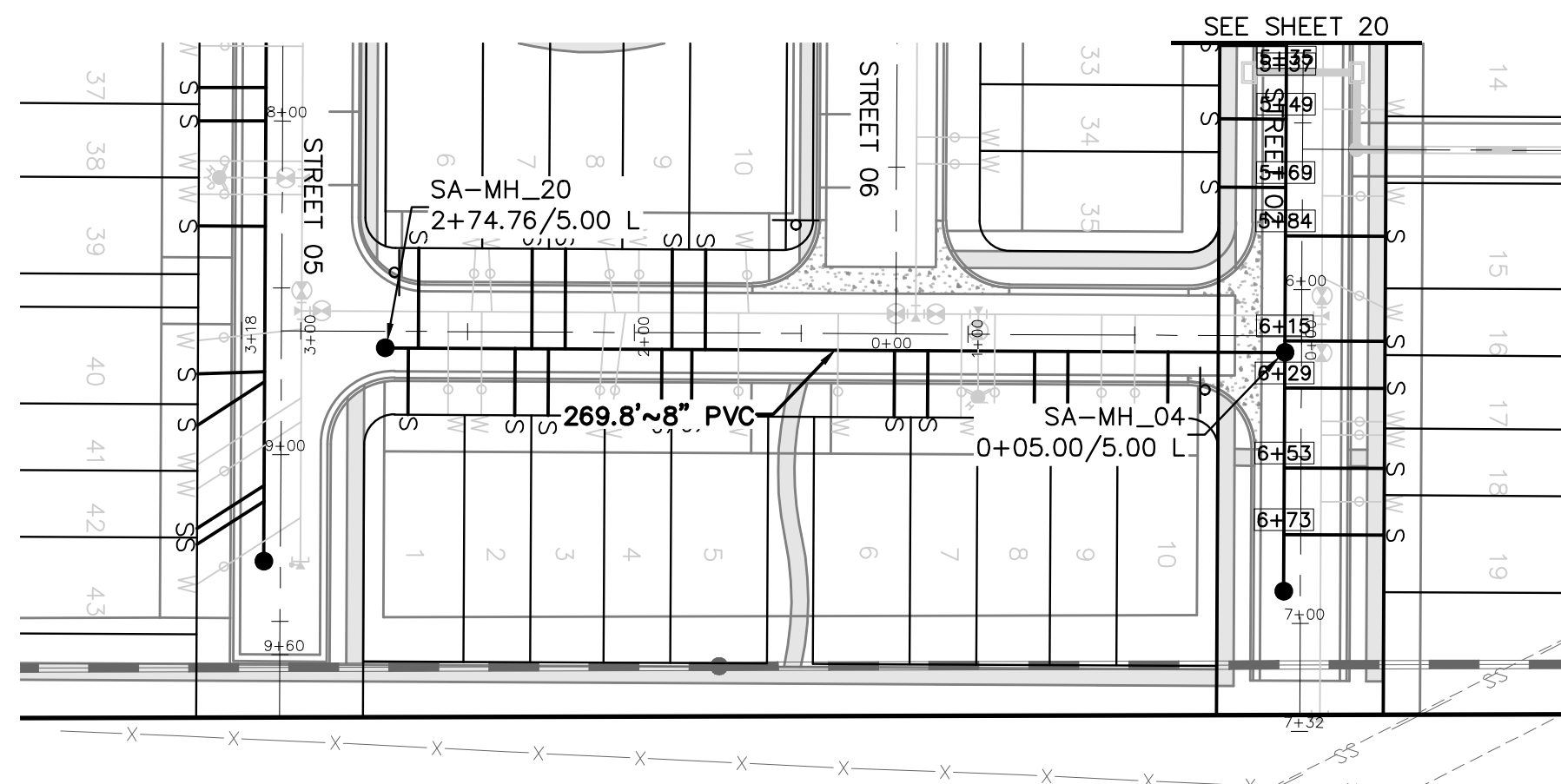
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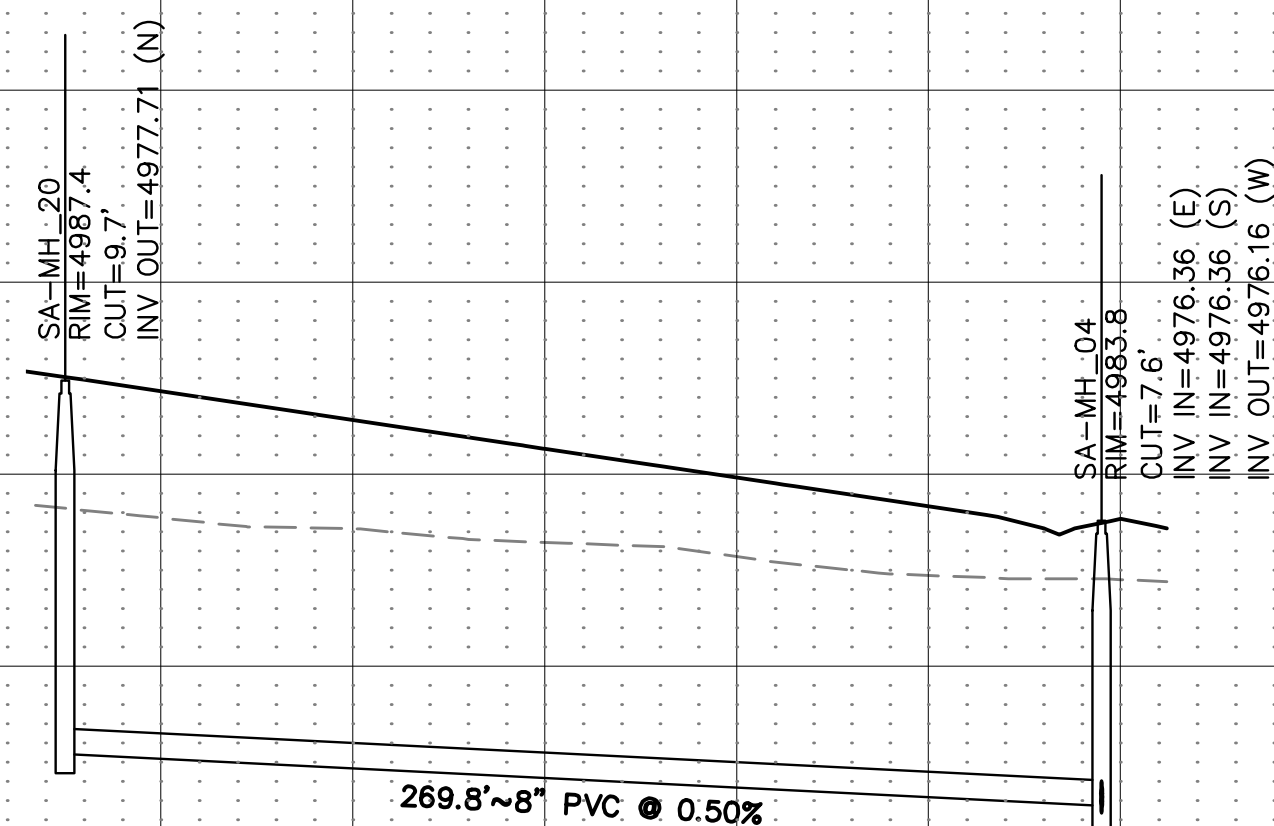
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VERTICAL DATUM: NAVD88 USING GEOID MODEL

NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

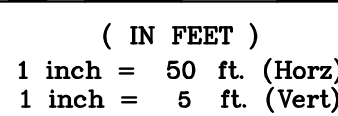


MONTBELLO AVE.



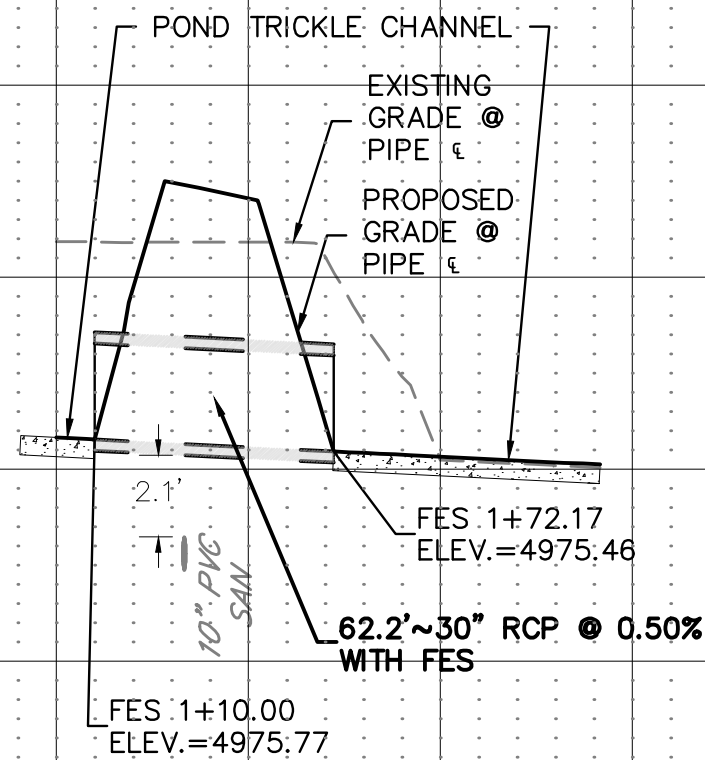
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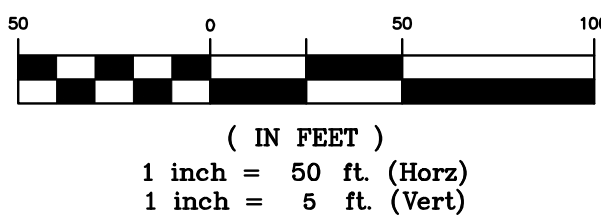
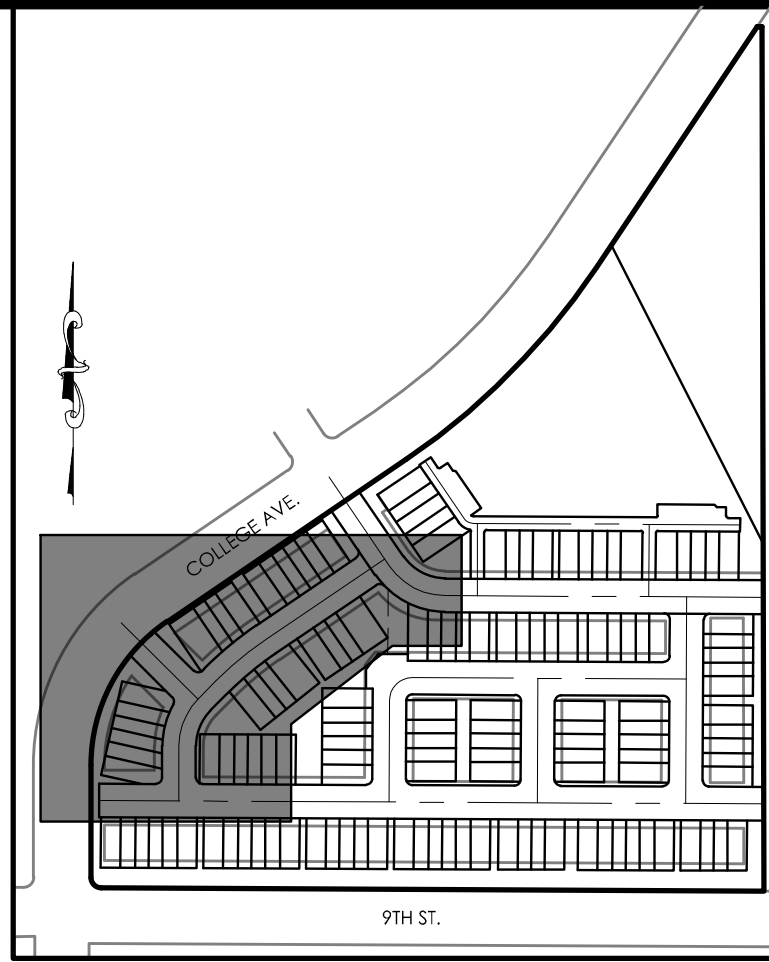
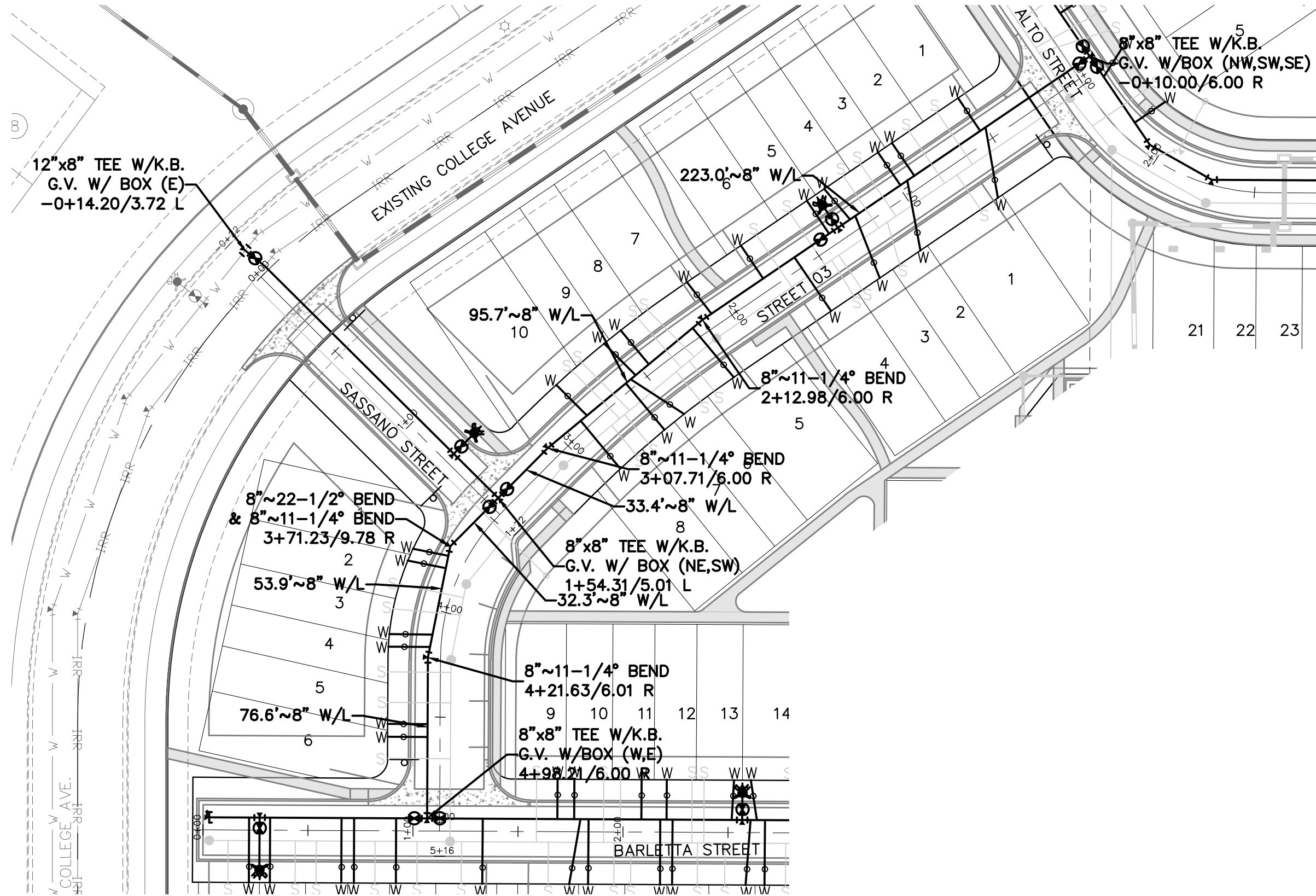


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P.M. — —
JOB — —
SHEET NO. 27

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)



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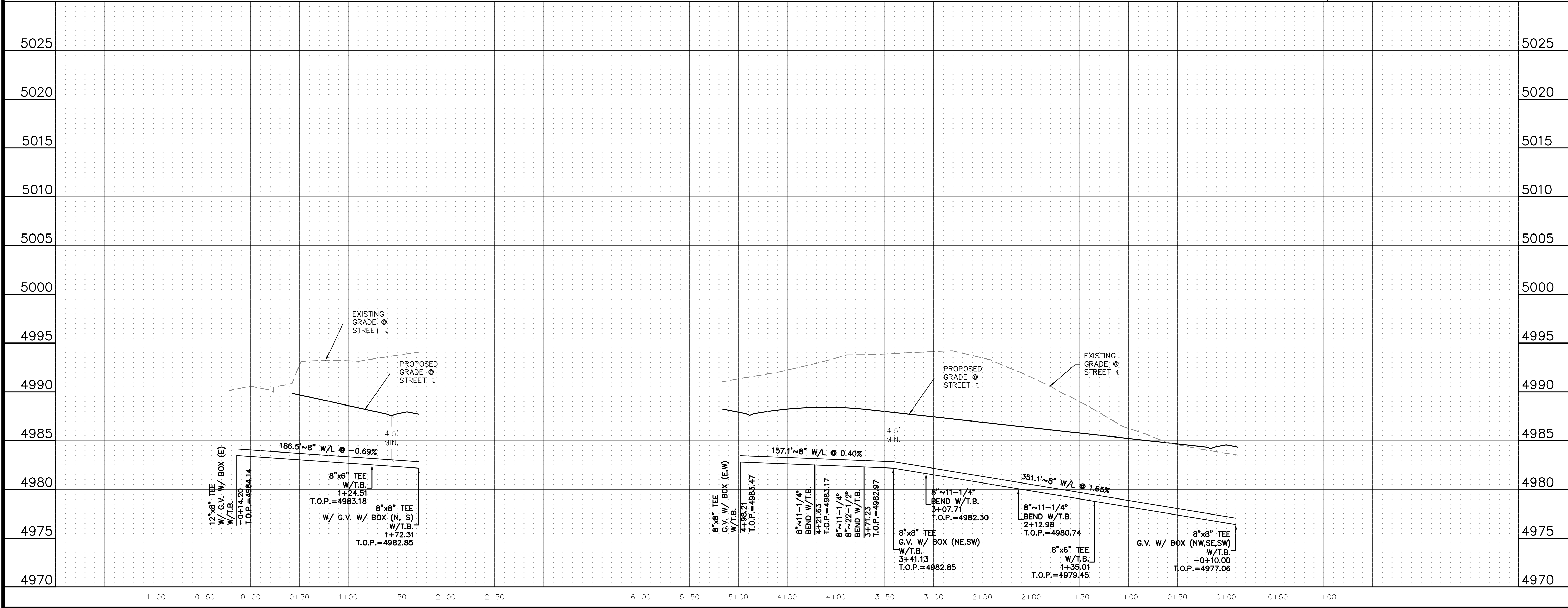


PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

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CLIENT	ARBOR CAPITAL PARTNERS, LLC COTTONWOOD GREENS FORT LUITON, COLORADO
	CONSTRUCTION PLANS WATER PLAN & PROFILE SASSANO ST. & PORCHIANO AVE.

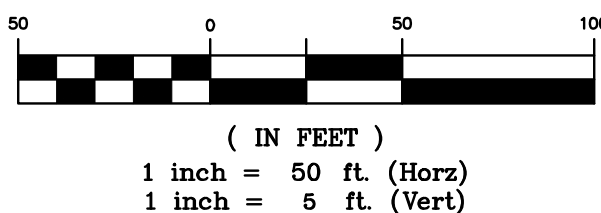
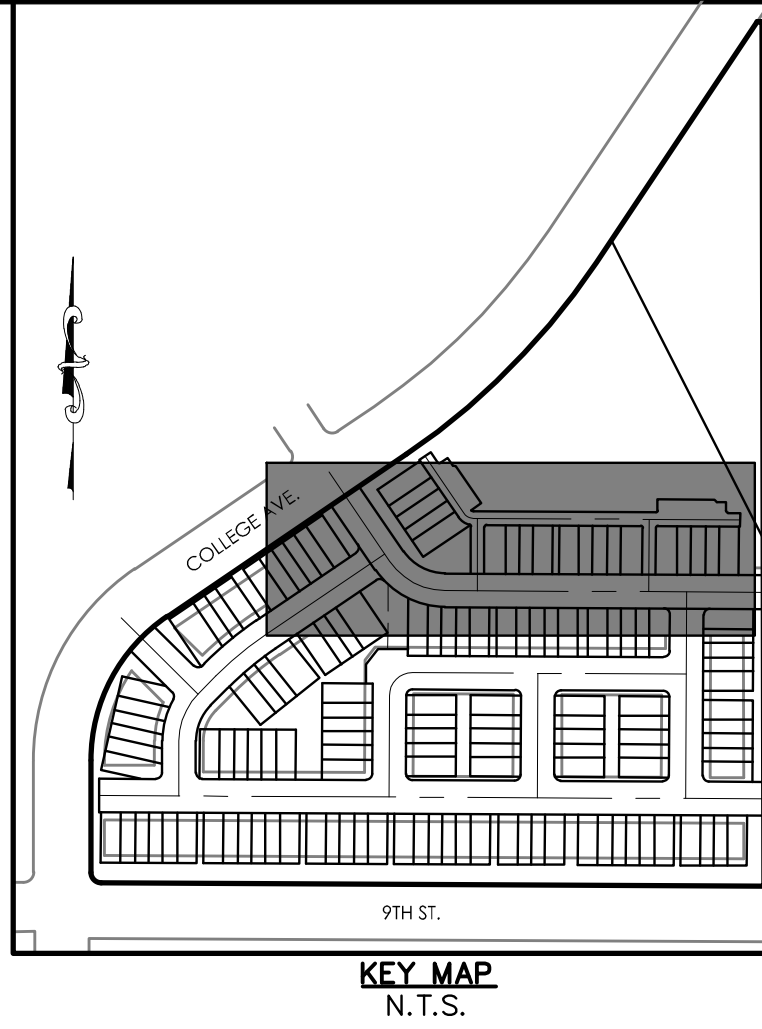
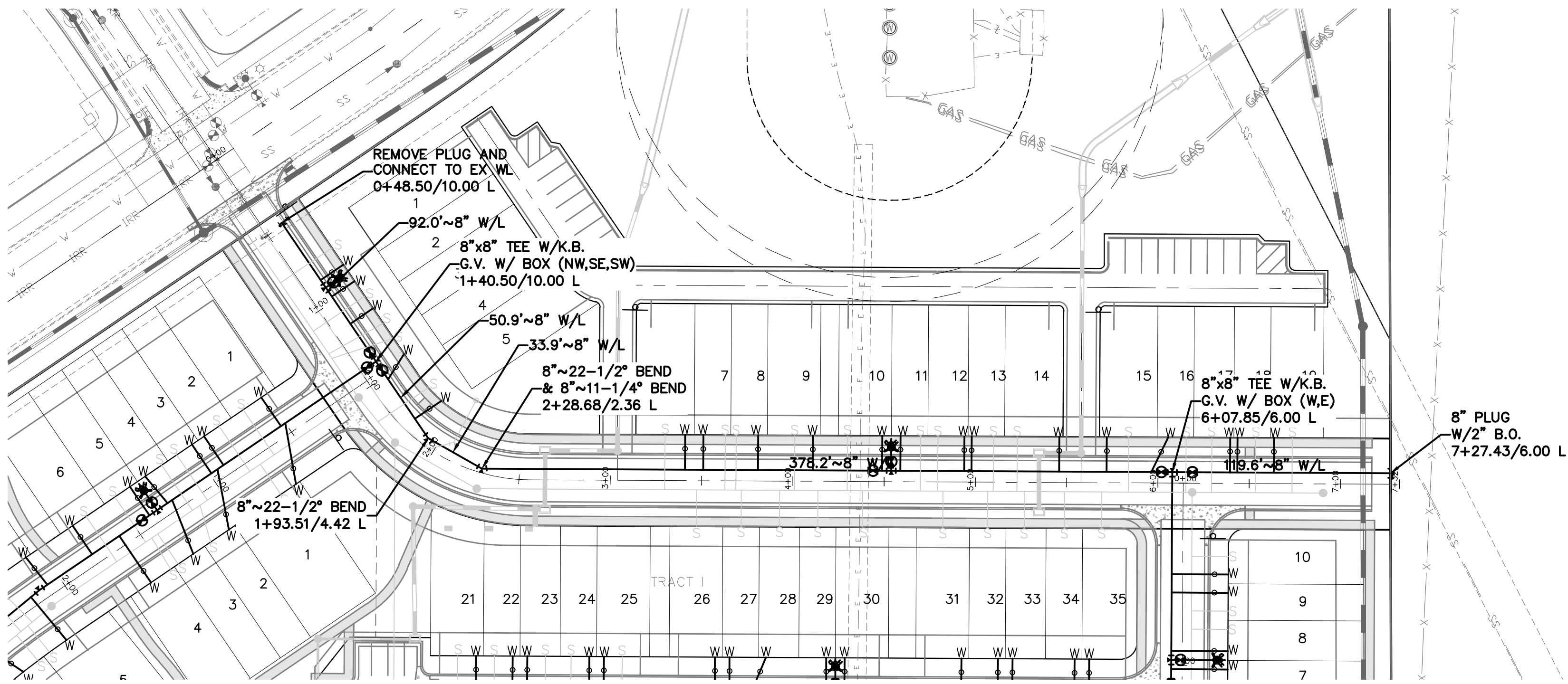
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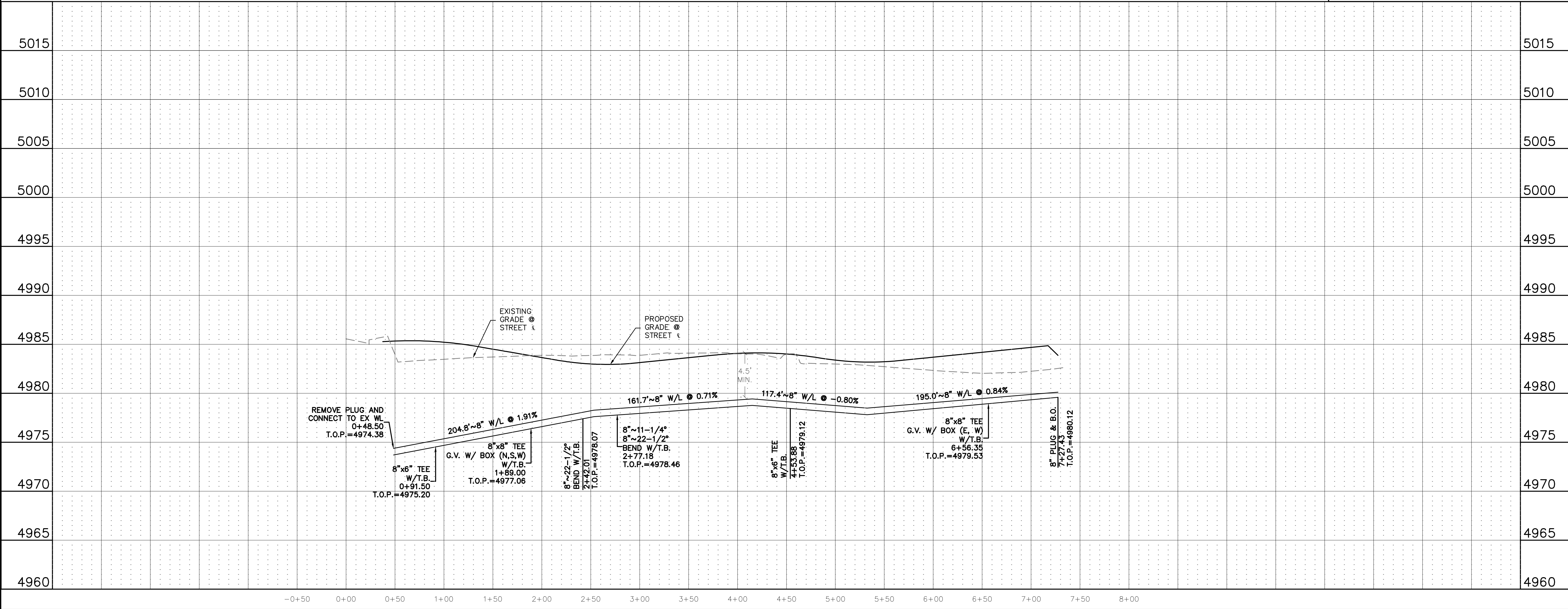


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JOB --	
SHEET NO.	28

CAD FILE: 200029348-WATER_P&P_01.DWG



PROJECT NO.:
PLAN NO.:
BENCHMARK:
HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.
VERTICAL DATUM: NAVD88 USING GEOID MODEL "GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)



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WATER PLAN & PROFILE
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DATE

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PLANS UNDER REVIEW
NOT FOR CONSTRUCTION

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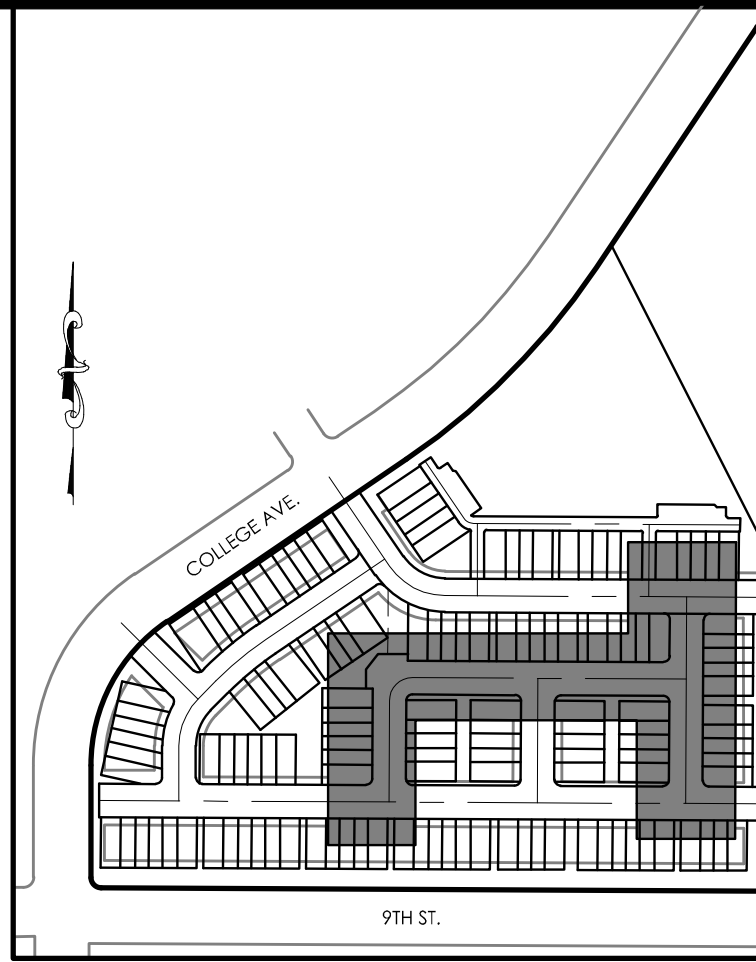
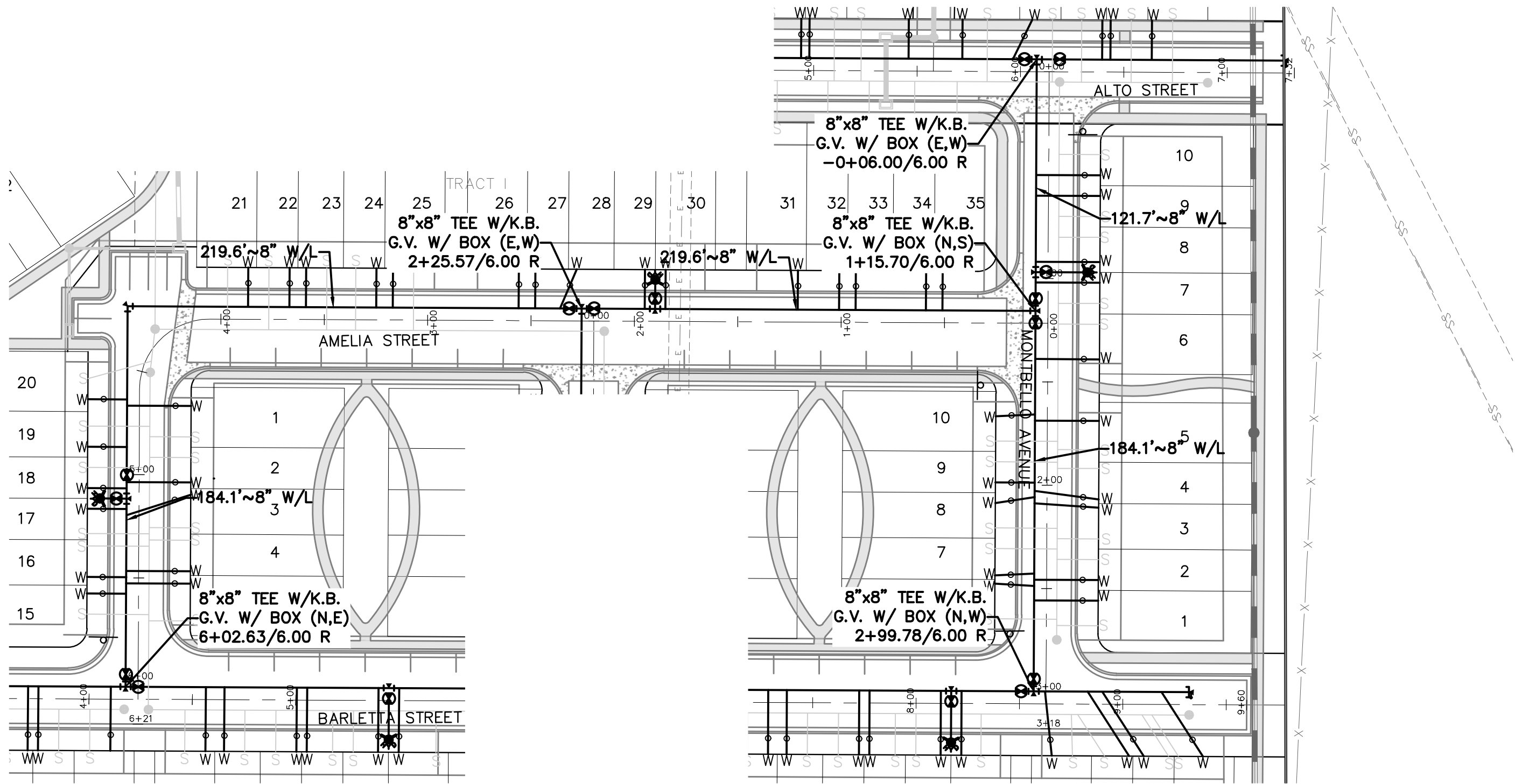
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JOB ---

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CAD FILE: 200029348-WATER PLAN_02.DWG

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KEY MAP
N.T.S.

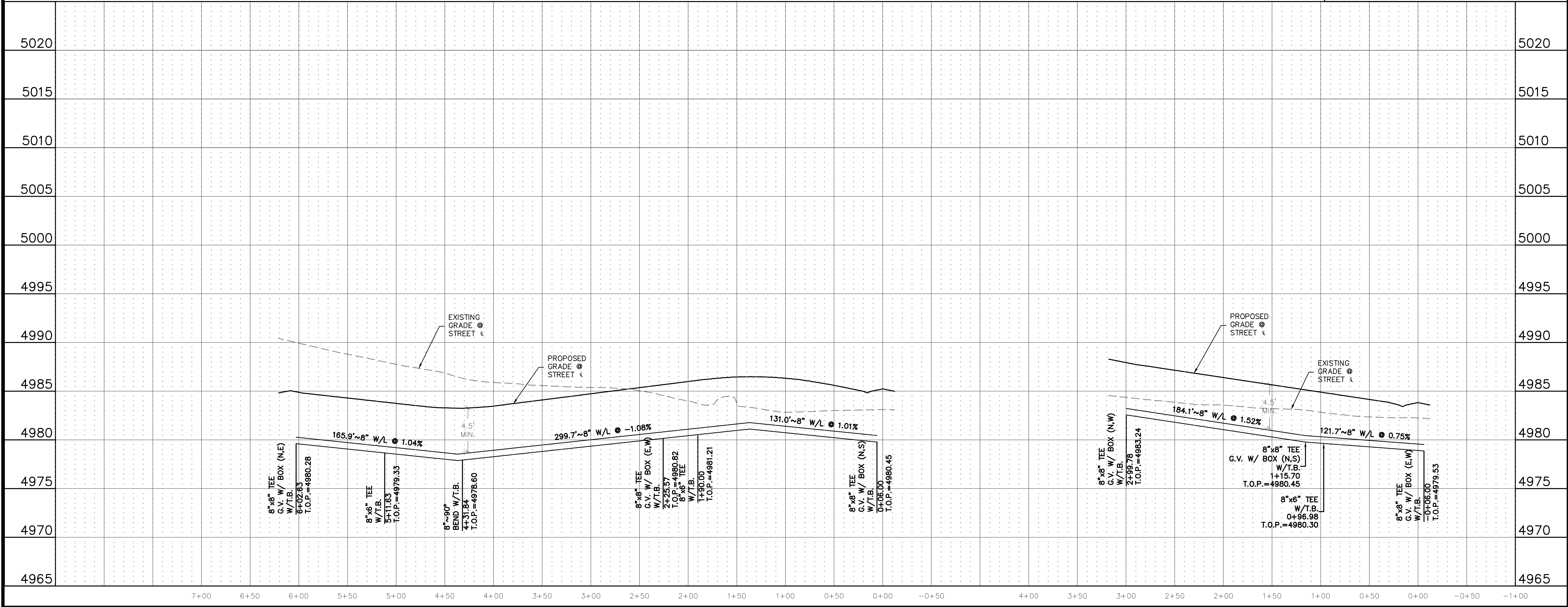


PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL "GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
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ARBOR CAPITAL PARTNERS, LLC	

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COTTONWOOD GREENS
FORT LUITON, COLORADO
CONSTRUCTION PLANS
WATER PLAN & PROFILE
MONTBELLO AVE. & AMELIA ST.

DATE

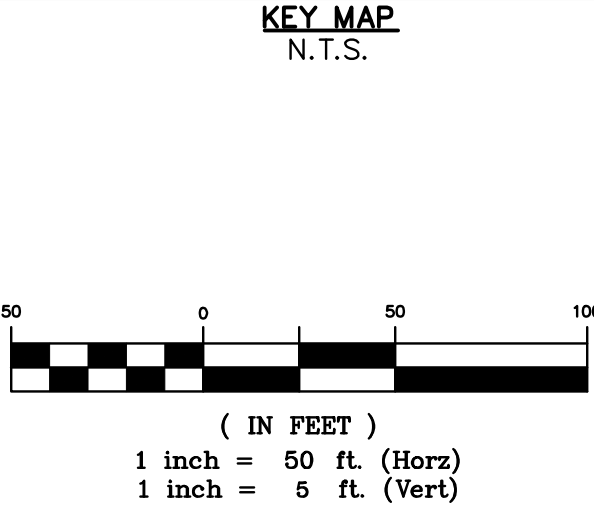
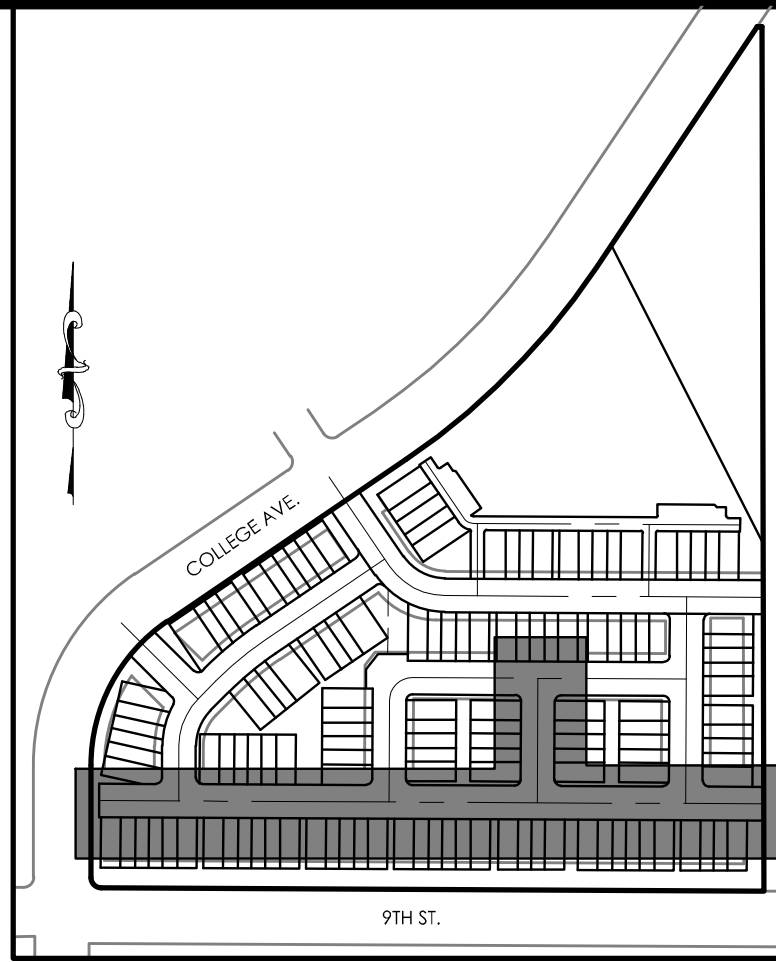
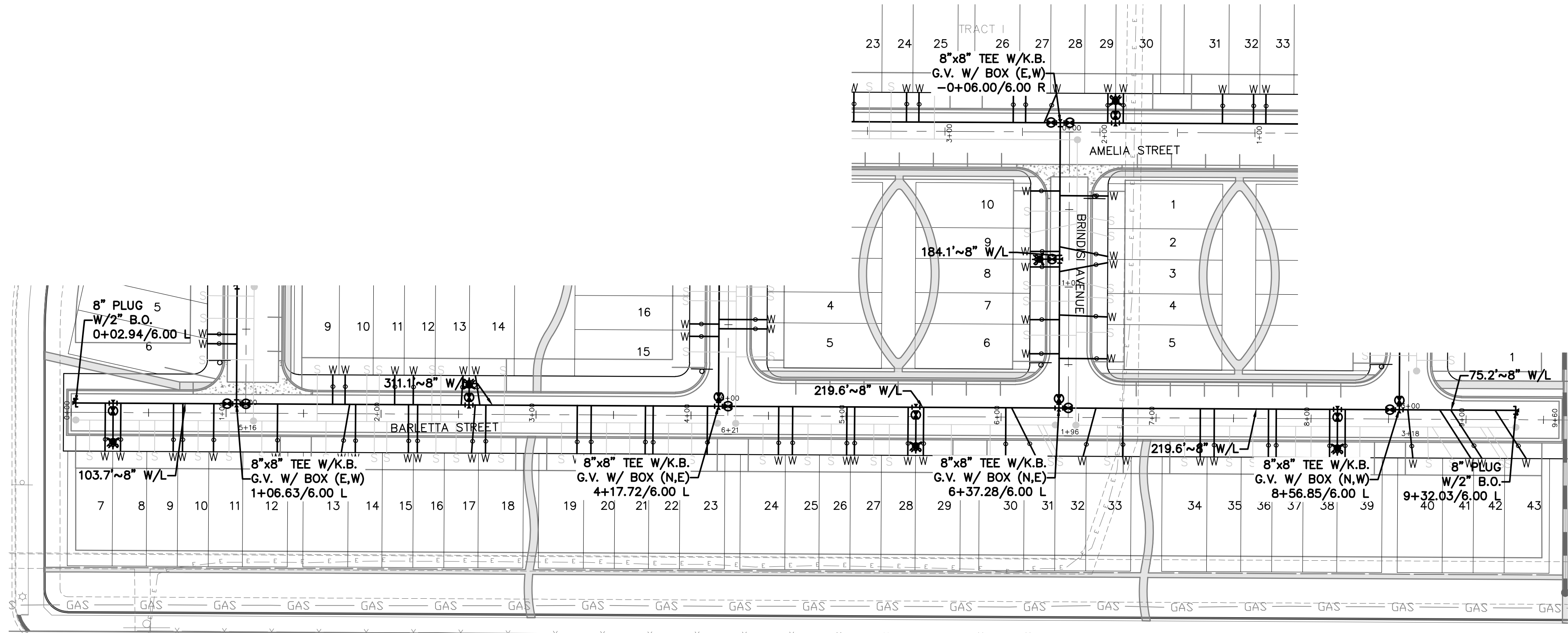
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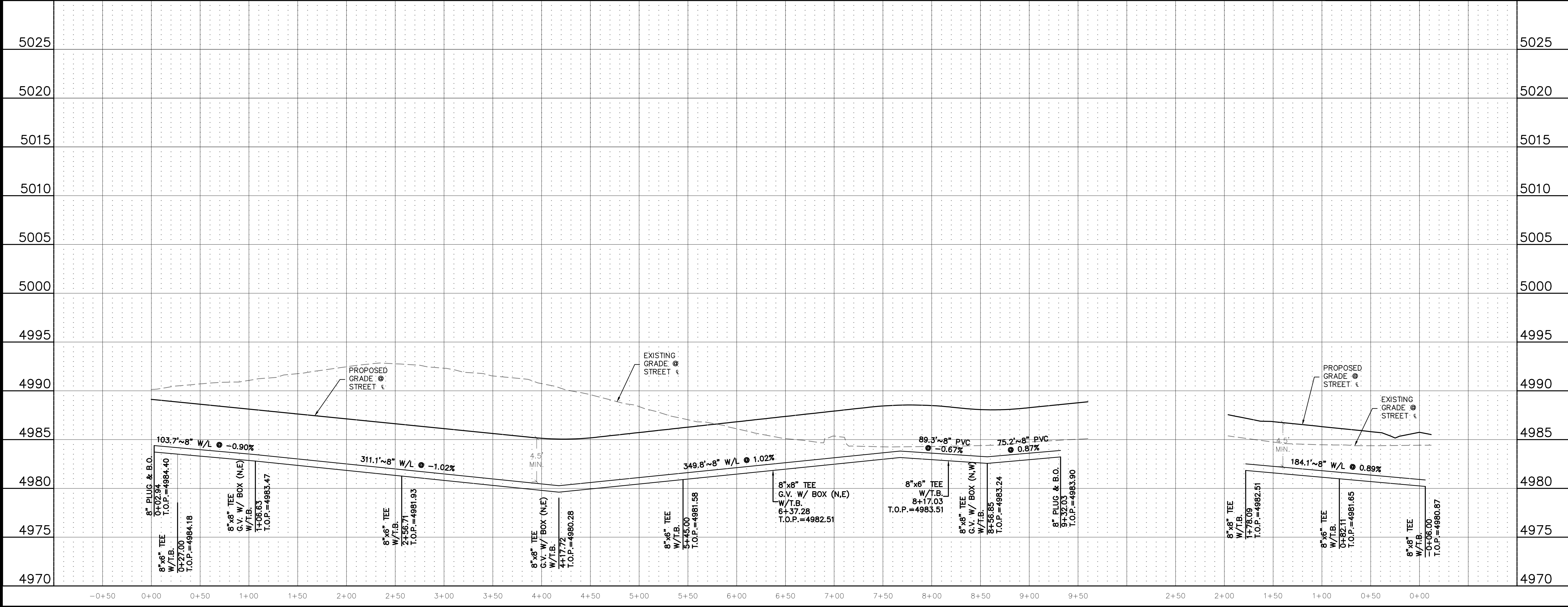
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P.M. ---
JOB ---
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CAD FILE: 200029348-WATER PLAN_03.DWG



PROJECT NO.:
PLAN NO.:
BENCHMARK:
HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.
VERTICAL DATUM: NAVD88 USING GEOID MODEL "GEOID12A"
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NGS "4907" (NAVD88 EL=4908.22)



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303-905-3496

ARBOR CAPITAL PARTNERS, LLC

CLIENT

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FORT LUPTON, COLORADO

CONSTRUCTION PLANS
WATER PLAN & PROFILE
BARILETTA ST. & BRINDISI AVE.

DATE

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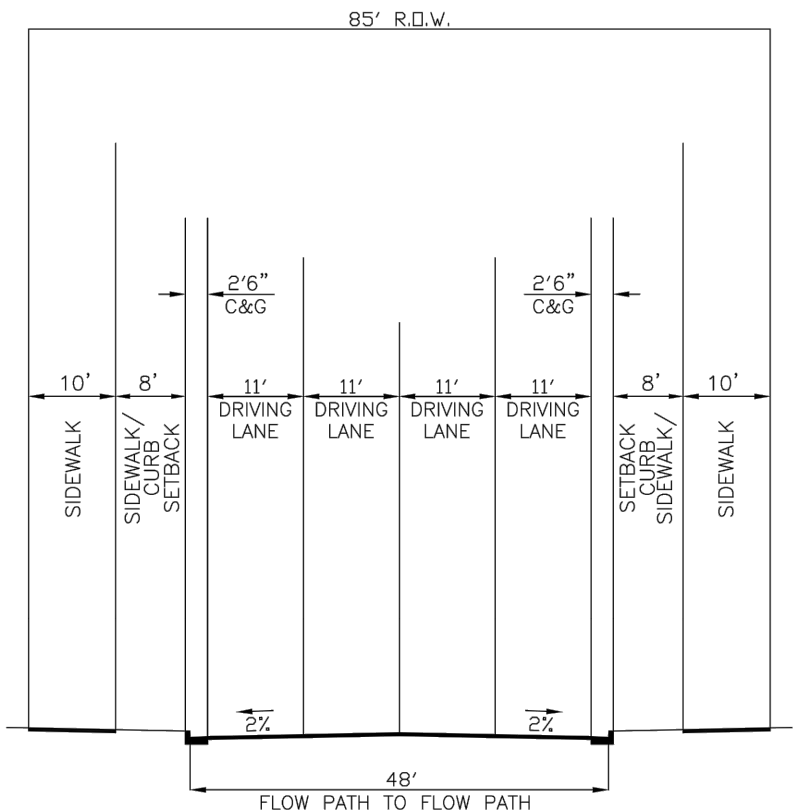
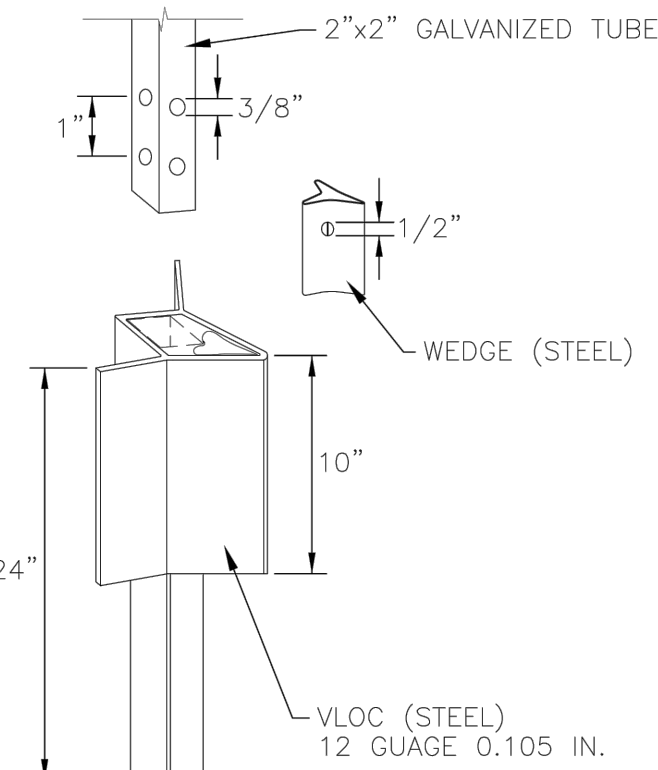
DR. --- CH. ---

P.M. ---

JOB ---

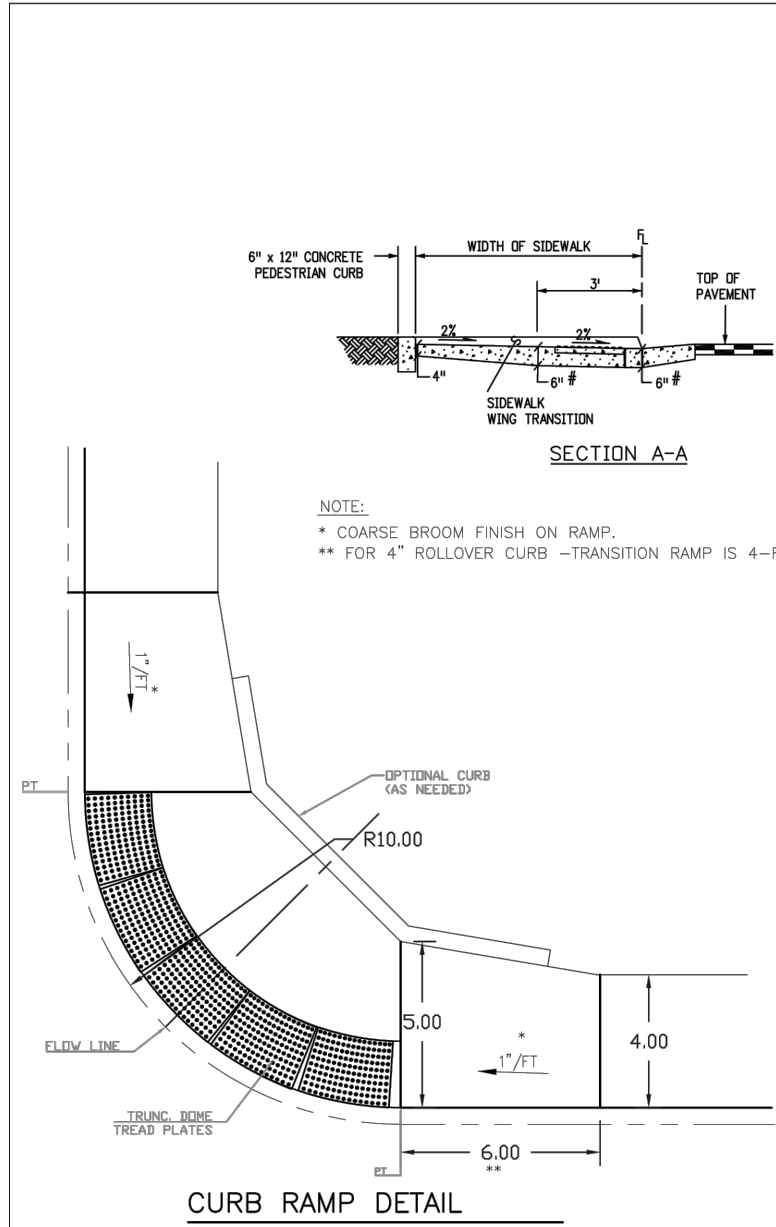
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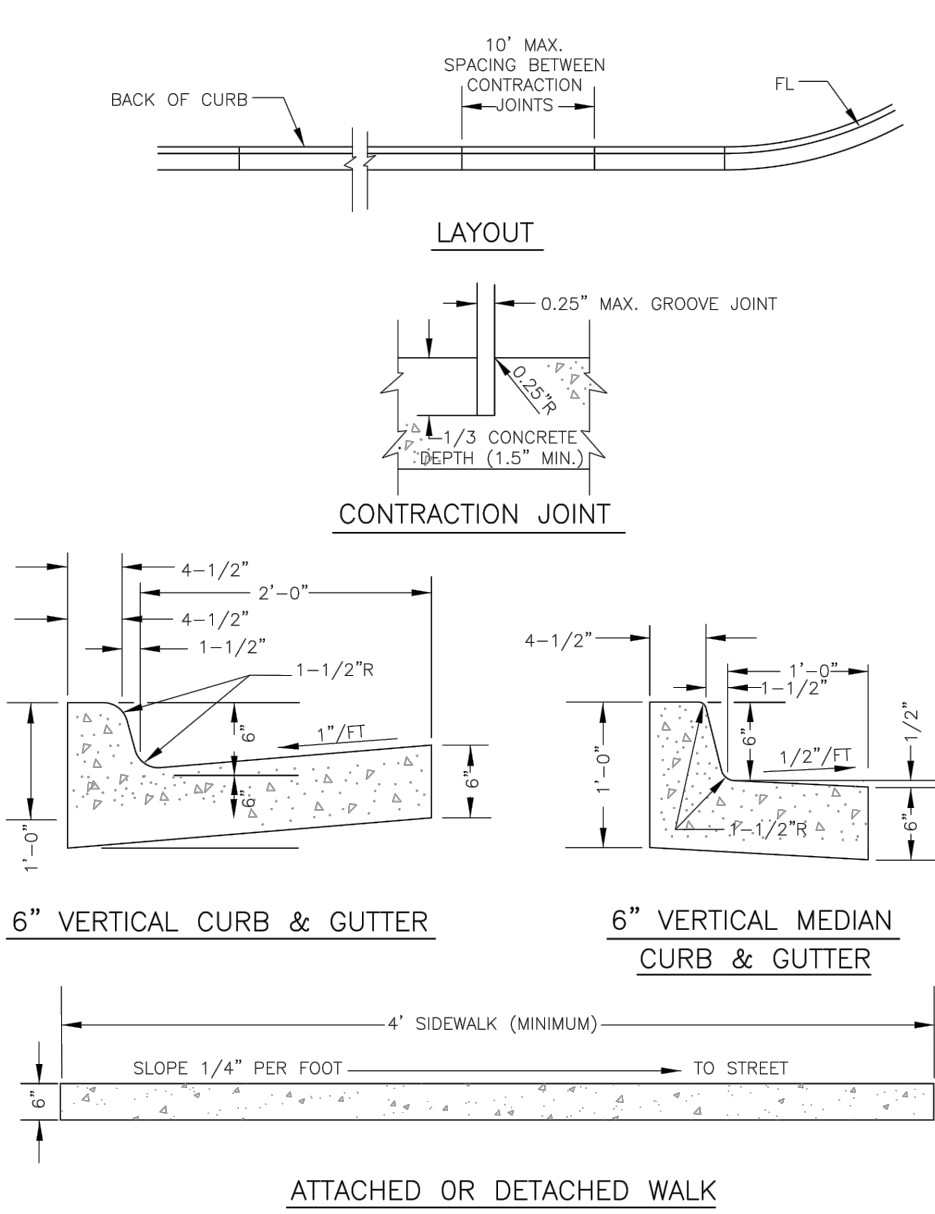


- PROVIDE WIDENING AT INTERSECTIONS FOR LEFT TURN LANES AND ACCEL/DECEL LANES RIGHT-OF-WAY WIDTH TO BE INCREASED TO 105' IN THESE AREAS.
- NO PARKING ALLOWED
- USED IN AREAS WHERE THERE IS LIMITED ACCESS AND PROJECTED TRAFFIC VOLUMES ARE GREATER THAN 10,000 VEHICLES PER DAY.

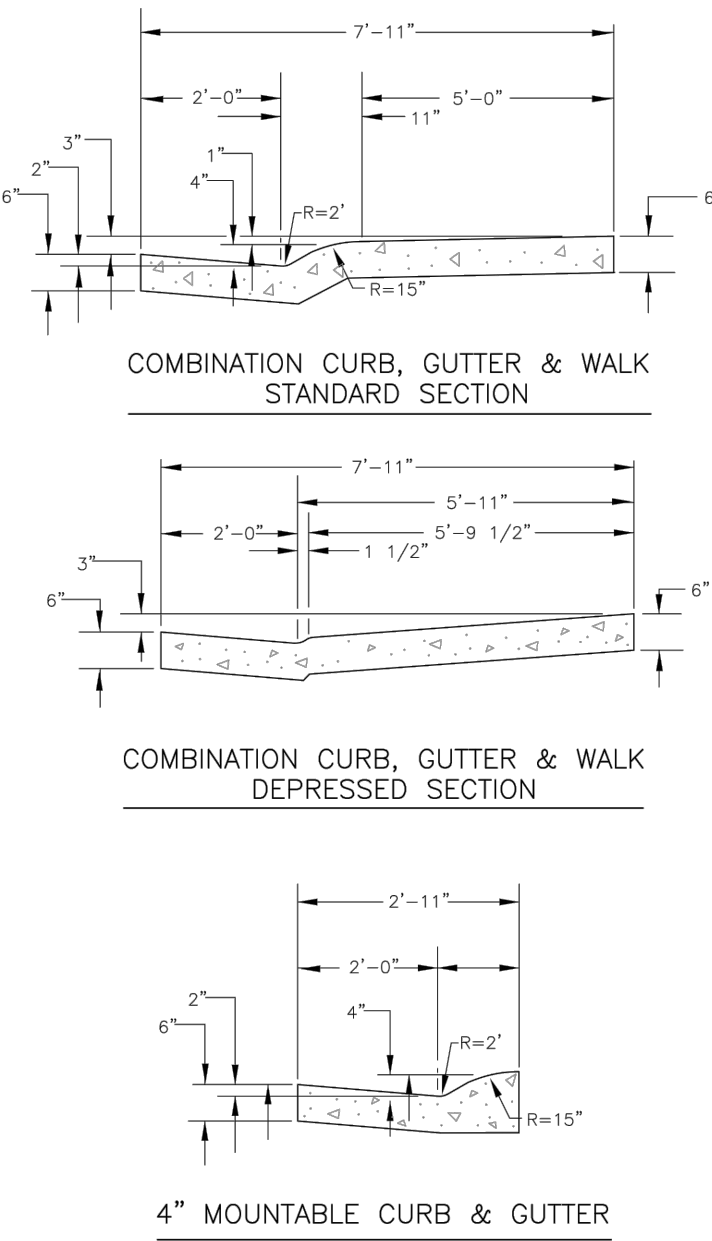
COLLECTOR - PHASE III



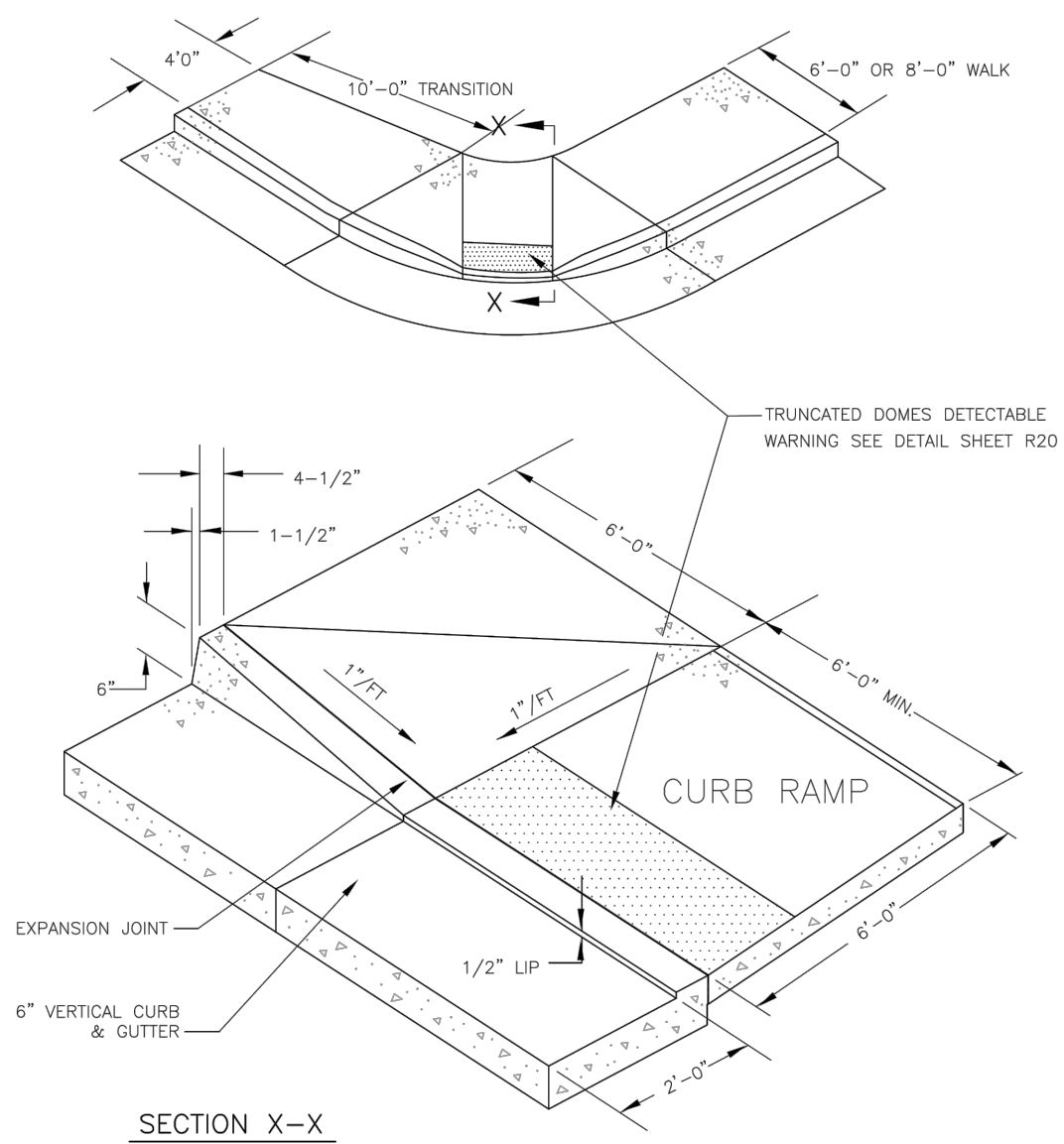
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Fort Lupton	COLLECTOR - PHASE 3 TYPICAL SECTION	R2-3
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Fort Lupton	VERTICAL CURB AND GUTTER	R7
		DATE: 8/15/14

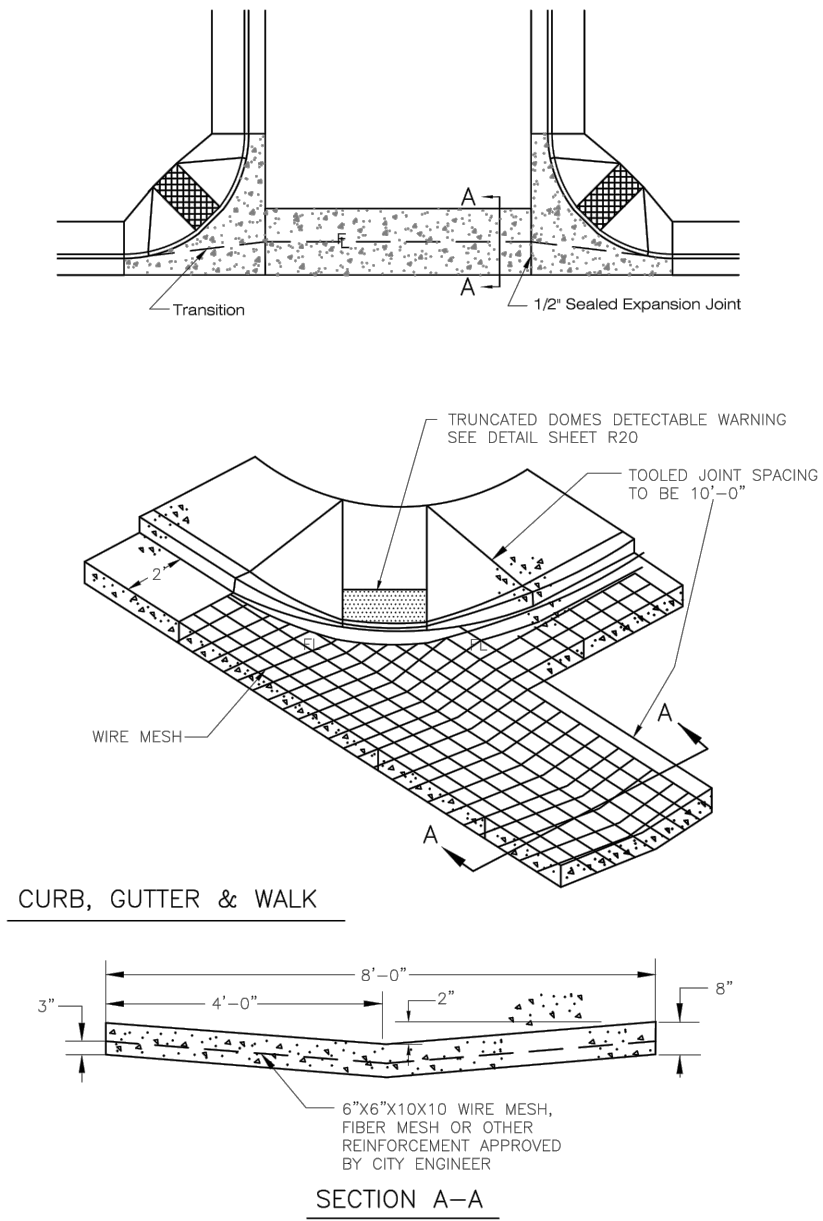


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Fort Lupton	COMBINATION CURB, GUTTER, AND WALK	R8
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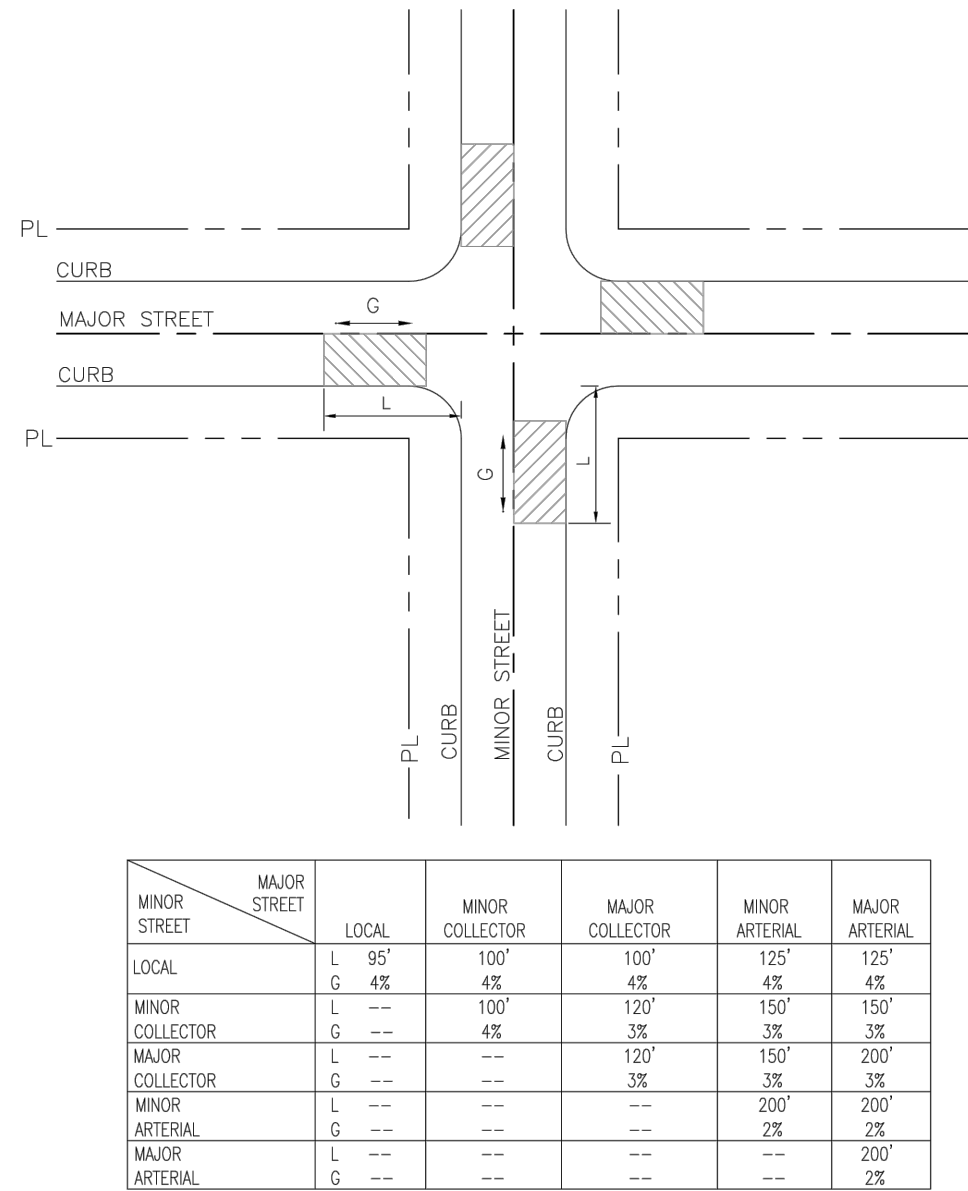


NOTE:
MIDBLOCK RAMP IS SAME AS ABOVE WITH 10 FOOT TRANSITIONS
TO SIDEWALKS OF A DIFFERING DIMENSION OR A DETACHED WALK.

CITY OF	DESIGN STANDARDS	STANDARD DRAWING
Fort Lupton	CURB RAMP BARRIER CURB AND WALK	R10
		DATE: 8/15/14



CITY OF	DESIGN STANDARDS	STANDARD DRAWING
Fort Lupton	SIDEWALK RAMP WITH CROSS PAN	R11
		DATE: 3/15/17



CITY OF	DESIGN STANDARDS	STANDARD DRAWING
Fort Lupton	MAXIMUM PERMISSIBLE INTERSECTION GRADE	R19
		DATE: 8/15/14

PROJECT NO.:
PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED
ON NGS "N 260 REST" (500000, 900000). KNOW
INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS
BASED ON THE U.S. SURVEY FOOT.

VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

811
Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING
UNDERGROUND UTILITIES ARE
SHOWN IN AN APPROXIMATE WAY
ONLY AND HAVE NOT BEEN
INDEPENDENTLY VERIFIED BY THE
OWNER OR ITS REPRESENTATIVE.
THE CONTRACTOR SHALL DETERMINE
THE EXACT LOCATION OF ALL
EXISTING UTILITIES BEFORE
COMMENCING WORK, AND AGREES TO
BE FULLY RESPONSIBLE FOR ANY
AND ALL DAMAGES WHICH MIGHT BE
OCCASIONED BY THE CONTRACTOR'S
FAILURE TO EXACTLY LOCATE AND
PRESERVE ANY AND ALL
UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE
SOLE RESPONSIBILITY OF THE
CONTRACTOR. NEITHER THE OWNER
NOR THE ENGINEER SHALL BE
EXPECTED TO ASSUME ANY
RESPONSIBILITY FOR SAFETY OF
THE WORK OF PERSONS ENGAGED
IN THE WORK OF ANY NEARBY
STRUCTURES, OR OF ANY OTHER
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ARBOR CAPITAL PARTNERS, LLC
4040 McARTHUR BLVD.
SUITE 250
NEWPORT BEACH, CA 92660
303-905-3496
ARBOR CAPITAL PARTNERS, LLC

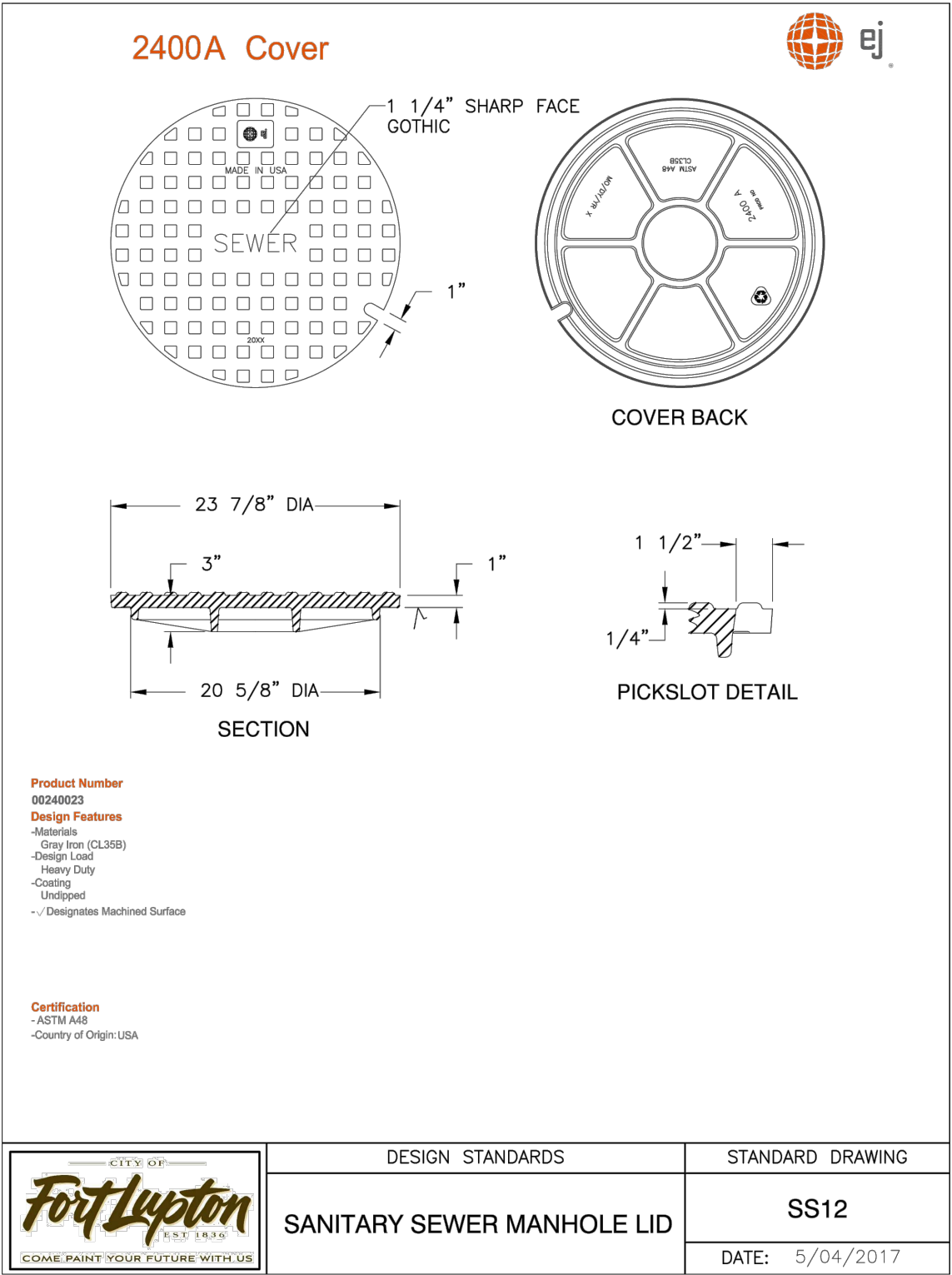
CLIENT
ARBOR CAPITAL PARTNERS, LLC
COTTONWOOD GREENS FILING NO. 4
FORT LUPTON, COLORADO
CONSTRUCTION PLANS
DETAILS
STREET DETAILS

DATE
6/22/2021

REVISIONS

PLANS UNDER
REVIEW
NOT FOR
CONSTRUCTION

DR. NA CH. CJG
P.M. DJR
JOB 20002948
SHEET NO.
33



PROJECT NO.:
PLAN NO.:

BENCHMARK:
HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.
VERTICAL DATUM: NAVD88 USING GEOID MODEL
"GEOID12A"
NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88 EL=4908.22)

Know what's below.
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THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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CLIENT	DEVELOPER
ARBOR CAPITAL PARTNERS, LLC COTTONWOOD GREENS FILING NO. 4 FORT LUPTON, COLORADO	4040 McARTHUR BLVD. SUITE 250 NEWPORT BEACH, CA 92660 303-905-3496 ARBOR CAPITAL PARTNERS, LLC

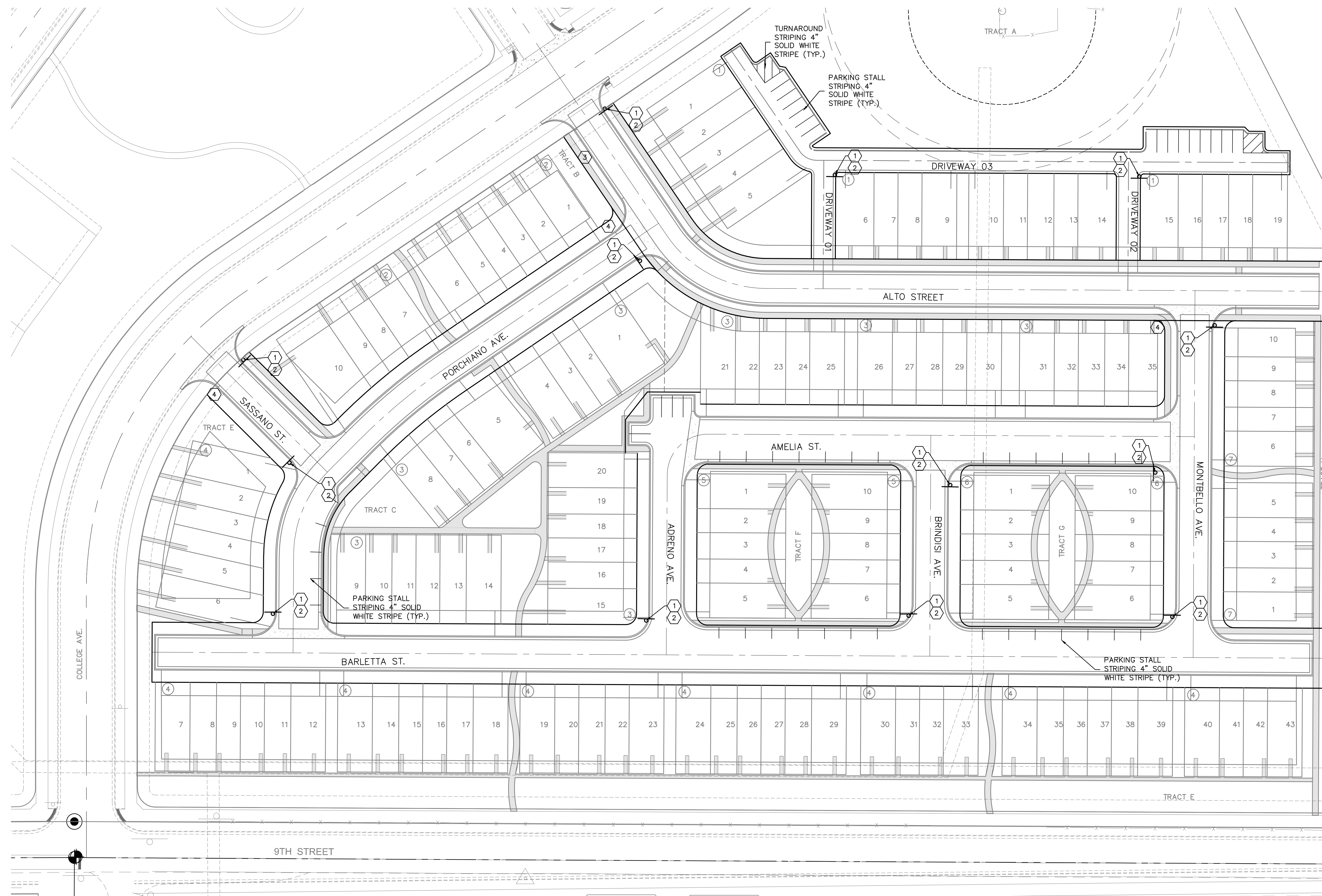
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REVISIONS

PLANS UNDER REVIEW
NOT FOR CONSTRUCTION

DR. NA	CH. CJG
P.M. DJR	
JOB 20002948	
SHEET NO. 35	

CAD FILE: 20002948-SANITARY DETAILS.DWG



KEY MAP
N.T.S.

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DEVELOPER
4040 MacARTHUR BLVD. SUITE 250 NEWPORT BEACH, CA 92660
303-905-3496
ARBOR CAPITAL PARTNERS, LLC

DATE 6/22/2021



PLANS UNDER
REVIEW
NOT FOR
CONSTRUCTION

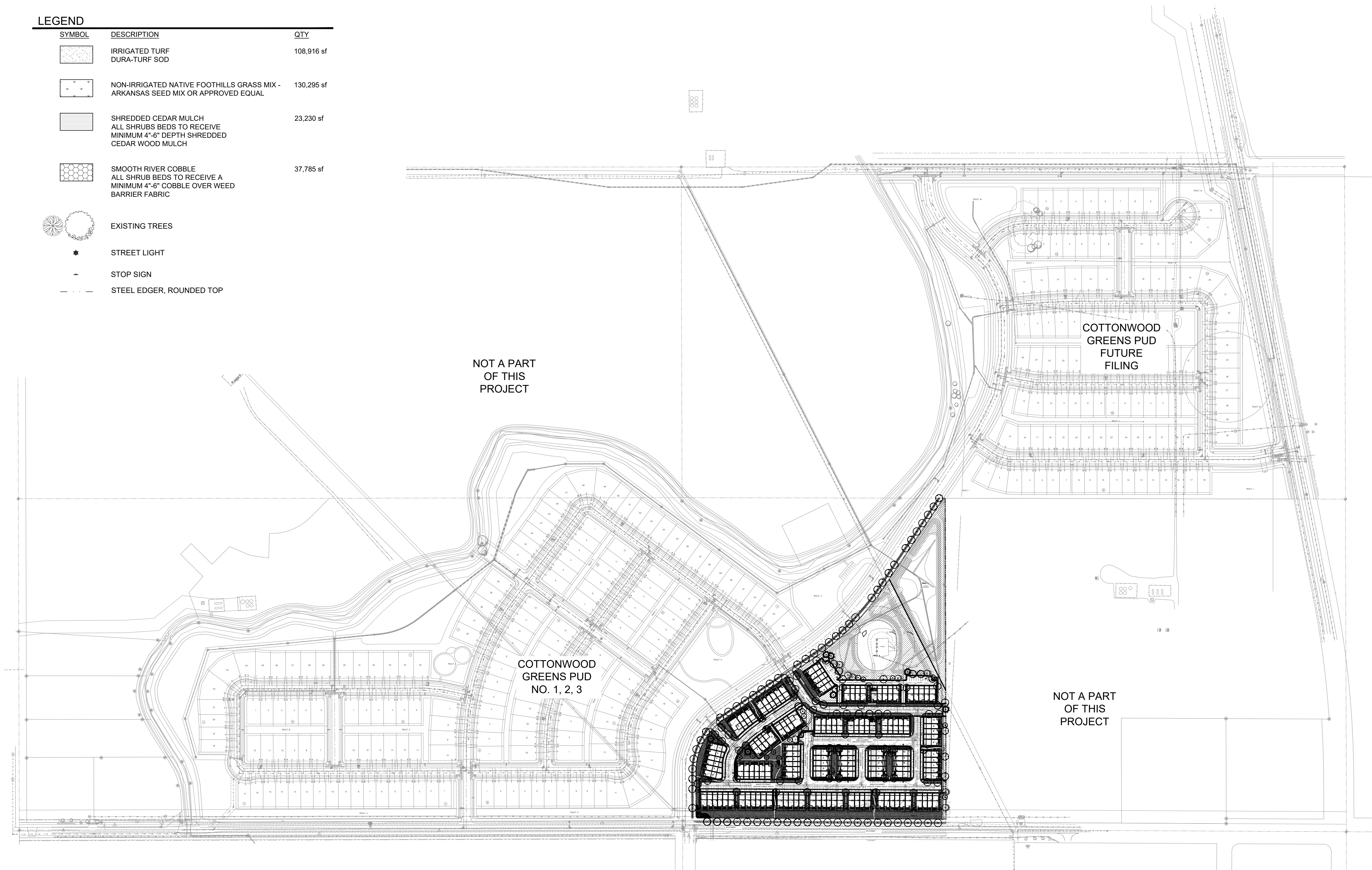
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PLAN NO.:

BENCHMARK:

HORIZONTAL DATUM: LOCAL COORDINATE SYSTEM BASED ON NGS "N 260 REST" (500000, 900000). KNOW INTERNALLY AS "BRIGHTON LOCAL". LINEAL MEASURE IS BASED ON THE U.S. SURVEY FOOT.

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NGS "U 260" (NAVD88 EL=4894.42)
NGS "4907" (NAVD88_F.L=4908.22).

<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>QTY</u>
	IRRIGATED TURF DURA-TURF SOD	108,916 sf
	NON-IRRIGATED NATIVE FOOTHILLS GRASS MIX - ARKANSAS SEED MIX OR APPROVED EQUAL	130,295 sf
	SHREDDED CEDAR MULCH ALL SHRUB BEDS TO RECEIVE MINIMUM 4"-6" DEPTH SHREDDED CEDAR WOOD MULCH	23,230 sf
	SMOOTH RIVER COBBLE ALL SHRUB BEDS TO RECEIVE A MINIMUM 4"-6" COBBLE OVER WEED BARRIER FABRIC	37,785 sf
	EXISTING TREES	
	STREET LIGHT	
	STOP SIGN	
	STEEL EDGER, ROUNDED TOP	



COTTONWOOD GREENS PUD NO. 1, 2, 3

2

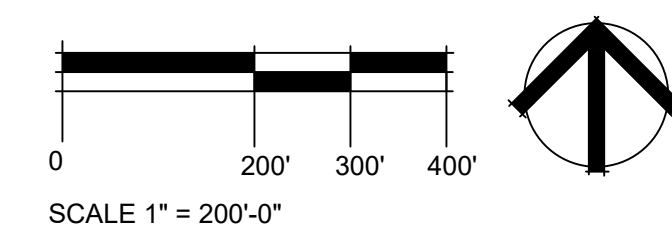
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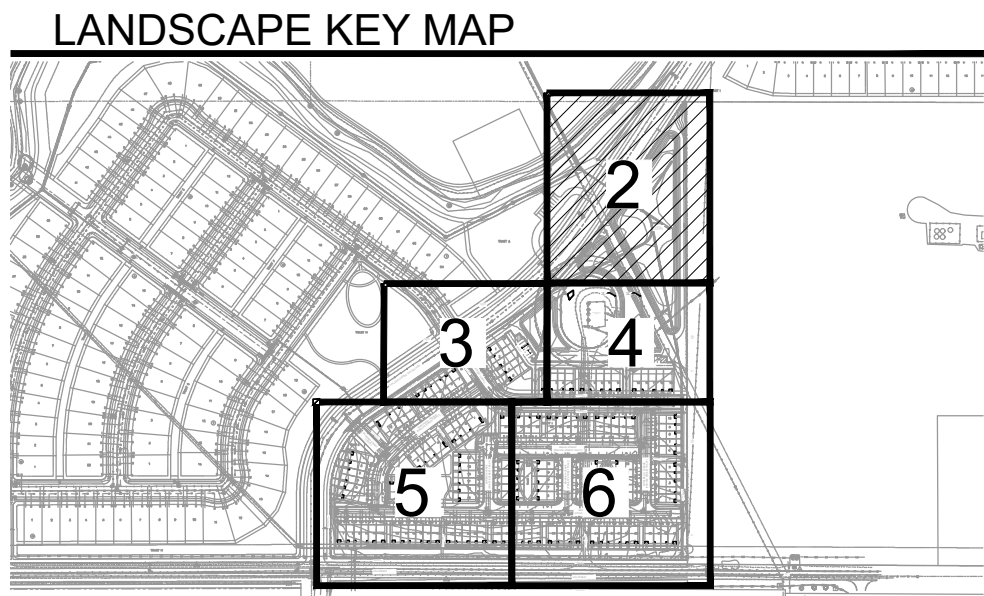
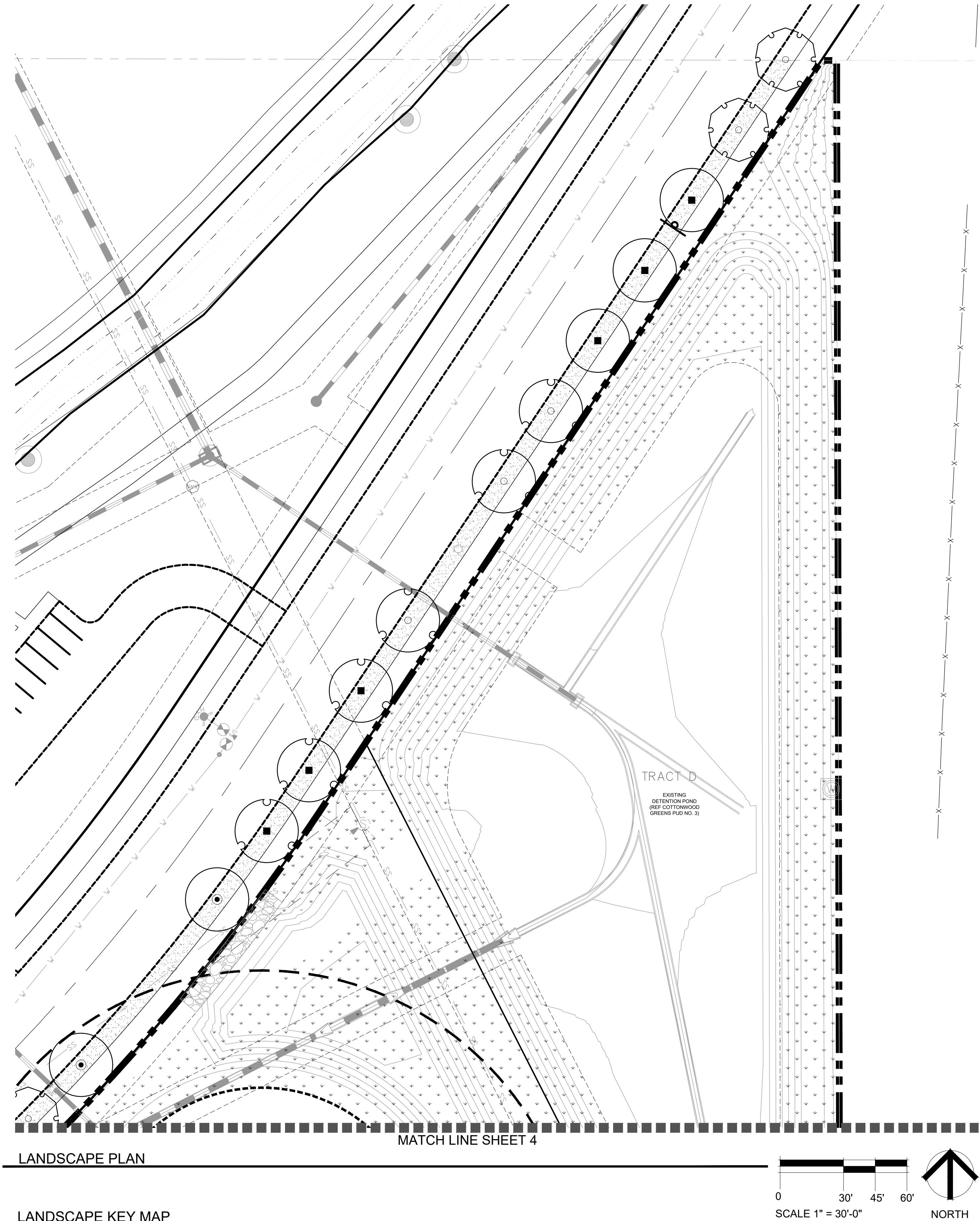
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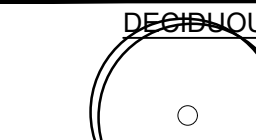
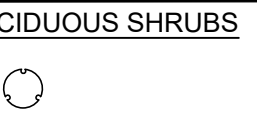
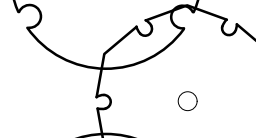
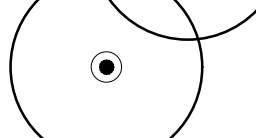
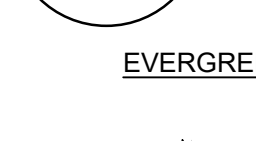
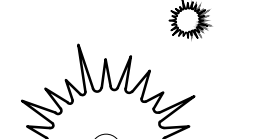
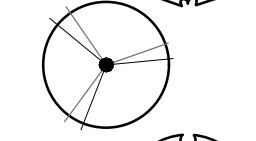
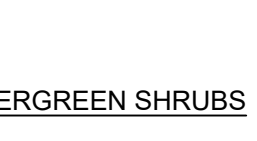
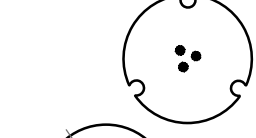


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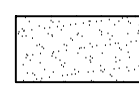
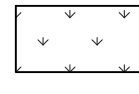
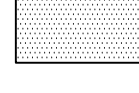
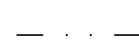
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LANDSCAPE PLAN	2
LANDSCAPE PLAN	3
LANDSCAPE PLAN	4
LANDSCAPE PLAN	5
LANDSCAPE PLAN	6
LANDSCAPE NOTES, DETAILS & SCHEDULES	7



PLANT LIST

DECIDUOUS TREES			DECIDUOUS SHRUBS		
	QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME
	23	Celtis occidentalis 'Western Hackberry'		33	Aronia arbutifolia 'Brilliantissima' Brilliant Red Chokeberry/Red Chokeberry
	24	Gleditsia triacanthos 'Skyline' Skyline Honey Locust		95	Buddleja davidii 'Blue Chip' Dwarf Butterfly Bush
	26	Gymnocladus dioica 'Espresso' Seedless Kentucky Coffeetree		52	Caryopteris x clandonensis 'Dark Knight' Blue Mist Spirea
	22	Quercus buckleyi Texas Red Oak		65	Cornus sericea 'Arctic Fire' Arctic Fire Dogwood
	22	Quercus macrocarpa Burr Oak		59	Cornus sericea 'Isanti' Isanti Dogwood
	16	Tilia americana 'Redmond' Redmond American Linden		64	Philadelphus x 'Snowbell' Snowbell Mock Orange
EVERGREEN TREES			EVERGREEN SHRUBS		
	QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME
	15	Picea abies 'Cupressina' Fastigiate Norway Spruce		14	Physocarpus monogynus Mountain Ninebark
	7	Picea pungens Colorado Spruce		64	Physocarpus opulifolius 'Summer Wine' Summer Wine Ninebark
	17	Pinus mugo 'Tannenbaum' Tannenbaum Mugo Pine		47	Prunus besseyi 'Pawnee Buttes' Creeping Western Sand Cherry
	7	Pinus strobiformis Southwestern White Pine		51	Rhus trilobata Three-Leaf Sumac
ORNAMENTAL TREES			GRASSES		
	QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME
	8	Acer glabrum Rocky Mountain Maple		42	Arctostaphylos uva-ursi Kinnikinnick
	9	Acer tataricum 'GarAnn' Hot Wings Tatarian Maple		29	Picea pungens 'St. Mary's Broom' St. Mary's Broom Colorado Spruce
	4	Malus x 'Spring Snow' Spring Snow Crab Apple		49	Pinus mugo 'Mops' Miniature Mugo Pine
	5	Pyrus calleryana 'Chanticleer' Chanticleer Pear		96	Helictotrichon sempervirens Blue Avena Grass
	4	Syringa reticulata Japanese Tree Lilac		125	Panicum virgatum 'Heavy Metal' Heavy Metal Blue Switch Grass

LEGEND

SYMBOL	DESCRIPTION	QTY
	IRRIGATED TURF DURA-TURF SOD	108,916 sf
	NON-IRRIGATED NATIVE FOOTHILLS GRASS MIX - ARKANSAS SEED MIX OR APPROVED EQUAL	130,295 sf
	SHREDDED CEDAR MULCH ALL SHRUB BEDS TO RECEIVE MINIMUM 4"-6" DEPTH SHREDDED CEDAR WOOD MULCH	23,230 sf
	SMOOTH RIVER COBBLE ALL SHRUB BEDS TO RECEIVE A MINIMUM 4"-6" COBBLE OVER WEED BARRIER FABRIC	37,785 sf
PERENNIALS		
	EXISTING TREES	
	STREET LIGHT	
	STOP SIGN	
	STEEL EDGER, ROUNDED TOP	
	Agastache rupestris 'Sunset' Sunset Hyssop	30
	Echinacea purpurea Purple Coneflower	50
	Hemerocallis x 'Red' Red Daylily	38
	Hemerocallis x 'Stella de Oro' Stella de Oro Daylily	45
	Rudbeckia fulgida sullivanii 'Goldsturm' Black-eyed Susan	53

SEAL

PROJECT TITLE

COTTONWOOD
GREENS PUD
FILING NO. 4

PROJECT NO: LUP2021-
PLAN NO:

FORT LUPTON, COLORADO

PREPARED FOR

ARBOR CAPITAL PARTNERS LLC
4040 MACARTHUR BLVD.,
STE. 250
NEWPORT BEACH, CA 92660

REVISIONS

DATE

DATE

JUNE 21, 2021

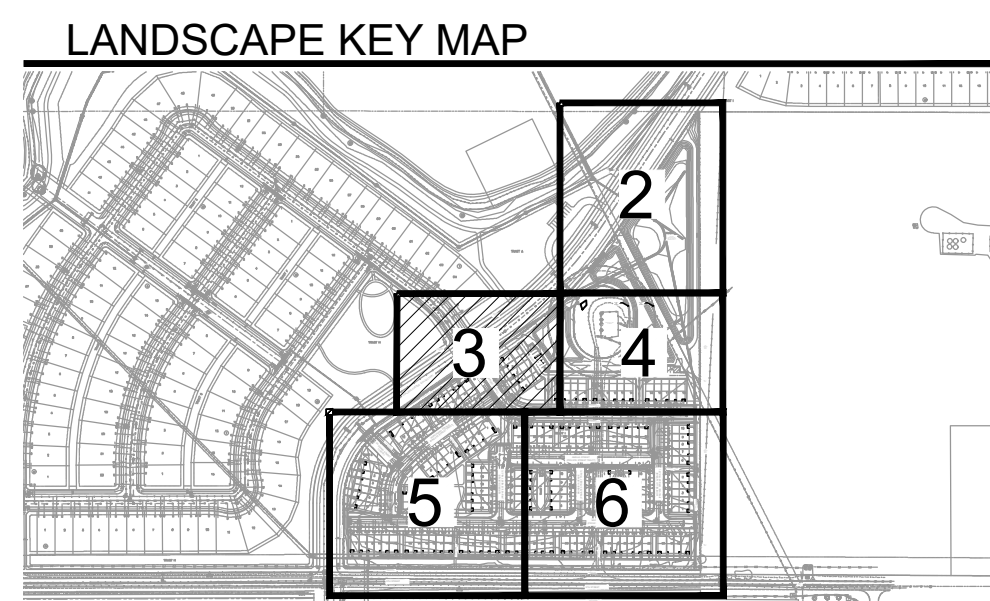
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LANDSCAPE
PLAN

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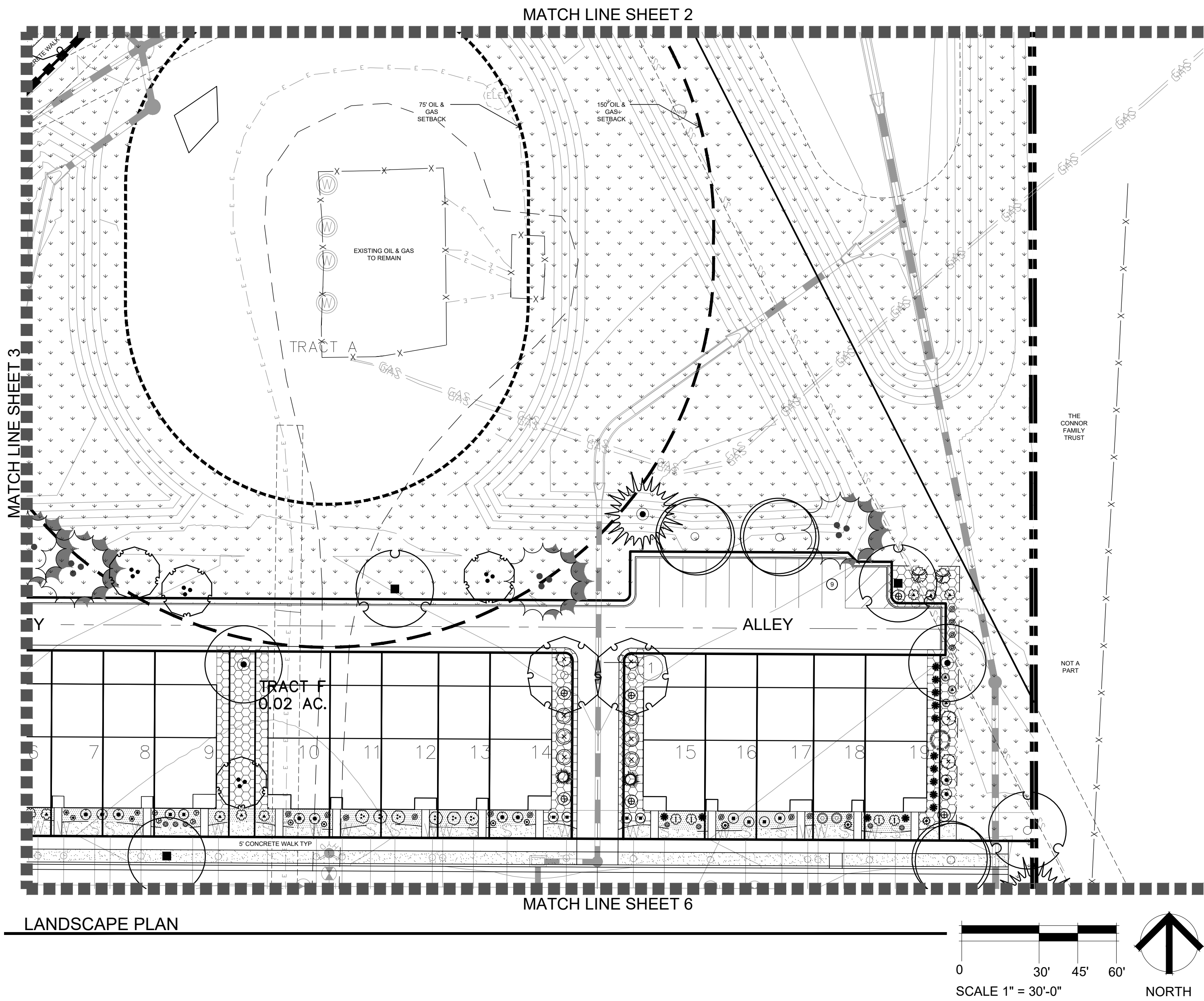
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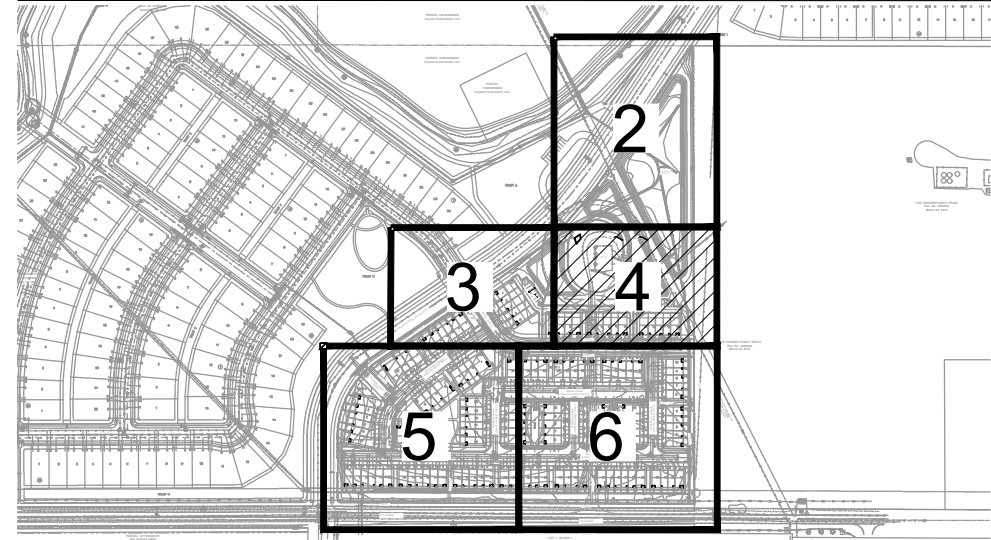


LEGEND						
MBOL	DESCRIPTION	QTY				
	IRRIGATED TURF DURA-TURF SOD	108,916 sf		96	Helictotrichon sempervirens Blue Avena Grass	
	NON-IRRIGATED NATIVE FOOTHILLS GRASS MIX - ARKANSAS SEED MIX OR APPROVED EQUAL	130,295 sf		125	Panicum virgatum 'Heavy Metal' Heavy Metal Blue Switch Grass	
	SHREDDED CEDAR MULCH ALL SHRUB BEDS TO RECEIVE MINIMUM 4"-6" DEPTH SHREDDED CEDAR WOOD MULCH	23,230 sf		31	Panicum virgatum 'Shenandoah' Shenandoah Red Switch Grass	
	SMOOTH RIVER COBBLE ALL SHRUB BEDS TO RECEIVE A MINIMUM 4"-6" COBBLE OVER WEED BARRIER FABRIC	37,785 sf		50	Echinacea purpurea Purple Coneflower	
	EXISTING TREES			38	Hemerocallis x 'Red' Red Daylily	
	STREET LIGHT			45	Hemerocallis x 'Stella de Oro' Stella de Oro Daylily	
	STOP SIGN			53	Rudbeckia fulgida sullivantii 'Goldsturm' Black-eyed Susan	
	STEEL EDGER, ROUNDED TOP					

Page 74 of 297



LANDSCAPE KEY MAP



PLANT LIST

DECIDUOUS TREES			DECIDUOUS SHRUBS		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
23	Celtis occidentalis 'Western Hackberry'		33	Aronia arbutifolia 'Brilliantissima' Brilliant Red Chokeberry/Red Chokeberry	
24	Gleditsia triacanthos 'Skyline' Skyline Honey Locust		95	Buddleja davidii 'Blue Chip' Dwarf Butterfly Bush	
26	Gymnocladus dioica 'Espresso' Seedless Kentucky Coffeetree		52	Caryopteris x clandonensis 'Dark Knight' Blue Mist Spirea	
22	Quercus buckleyi Texas Red Oak		65	Cornus sericea 'Arctic Fire' Arctic Fire Dogwood	
22	Quercus macrocarpa Burr Oak		59	Cornus sericea 'Isanti' Isanti Dogwood	
16	Tilia americana 'Redmond' Redmond American Linden		64	Philadelphus x 'Snowbell' Snowbell Mock Orange	
EVERGREEN TREES			EVERGREEN SHRUBS		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
15	Picea abies 'Cupressina' Fastigate Norway Spruce		14	Physocarpus monogynus Mountain Ninebark	
7	Picea pungens Colorado Spruce		64	Physocarpus opulifolius 'Summer Wine' Summer Wine Ninebark	
17	Pinus mugo 'Tannenbaum' Tannenbaum Mugo Pine		47	Prunus besseyi 'Pawnee Buttes' Creeping Western Sand Cherry	
7	Pinus strobiformis Southwestern White Pine		51	Rhus trilobata Three-Leaf Sumac	
ORNAMENTAL TREES			GRASSES		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
8	Acer glabrum Rocky Mountain Maple		90	Bouteloua gracilis 'Blonde Ambition' Blonde Ambition Grama Grass	
9	Acer tataricum 'GarAnn' Hot Wings Tatarian Maple		164	Calamagrostis x acutiflora 'Karl Foerster' Feather Reed Grass	
4	Malus x 'Spring Snow' Spring Snow Crab Apple		96	Helictotrichon sempervirens Blue Avena Grass	
5	Pyrus calleryana 'Chanticleer' Chanticleer Pear		125	Panicum virgatum 'Heavy Metal' Heavy Metal Blue Switch Grass	
4	Syringa reticulata Japanese Tree Lilac		31	Panicum virgatum 'Shenandoah' Shenandoah Red Switch Grass	
LEGEND			PERENNIALS		
SYMBOL	DESCRIPTION	QTY	QTY	BOTANICAL / COMMON NAME	
	IRRIGATED TURF DURA-TURF SOD	108,916 sf	30	Agastache rupestris 'Sunset' Sunset Hyssop	
	NON-IRRIGATED NATIVE FOOTHILLS GRASS MIX - ARKANSAS SEED MIX OR APPROVED EQUAL	130,295 sf	50	Echinacea purpurea Purple Coneflower	
	SHREDDED CEDAR MULCH ALL SHRUB BEDS TO RECEIVE MINIMUM 4"-6" DEPTH SHREDDED CEDAR WOOD MULCH	23,230 sf	38	Hemerocallis x 'Red' Red Daylily	
	SMOOTH RIVER COBBLE ALL SHRUB BEDS TO RECEIVE A MINIMUM 4"-6" COBBLE OVER WEED BARRIER FABRIC	37,785 sf	45	Hemerocallis x 'Stella de Oro' Stella de Oro Daylily	
	EXISTING TREES		53	Rudbeckia fulgida sullivantii 'Goldsturm' Black-eyed Susan	
	STREET LIGHT				
	STOP SIGN				
	STEEL EDGER, ROUNDED TOP				

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Berthoud, CO 80513 | WEB TBGroup.us

SEAL

PROJECT TITLE

COTTONWOOD GREENS PUD FILING NO. 4

PROJECT NO: LUP2021-PLAN NO:

FORT LUPTON, COLORADO

PREPARED FOR

ARBOR CAPITAL PARTNERS LLC
4040 MACARTHUR BLVD.,
STE. 250
NEWPORT BEACH, CA 92660

REVISIONS

DATE

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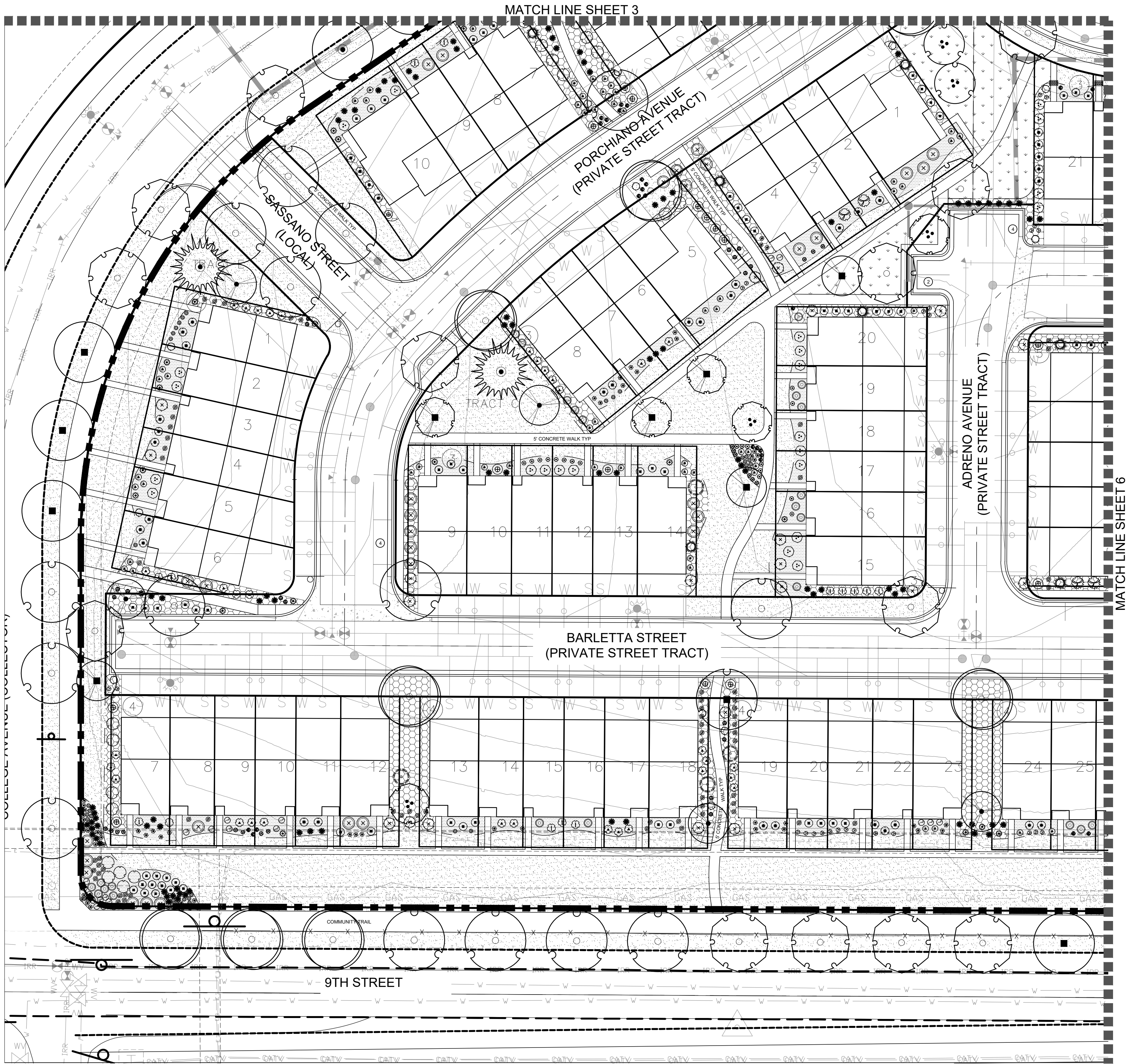
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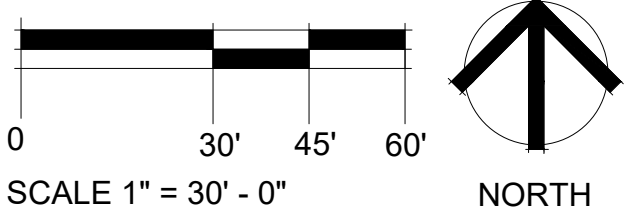
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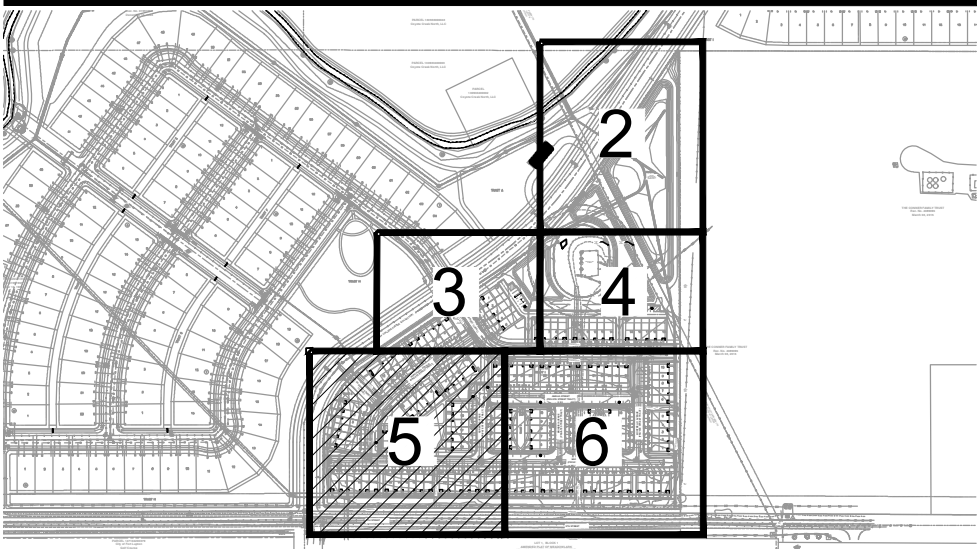
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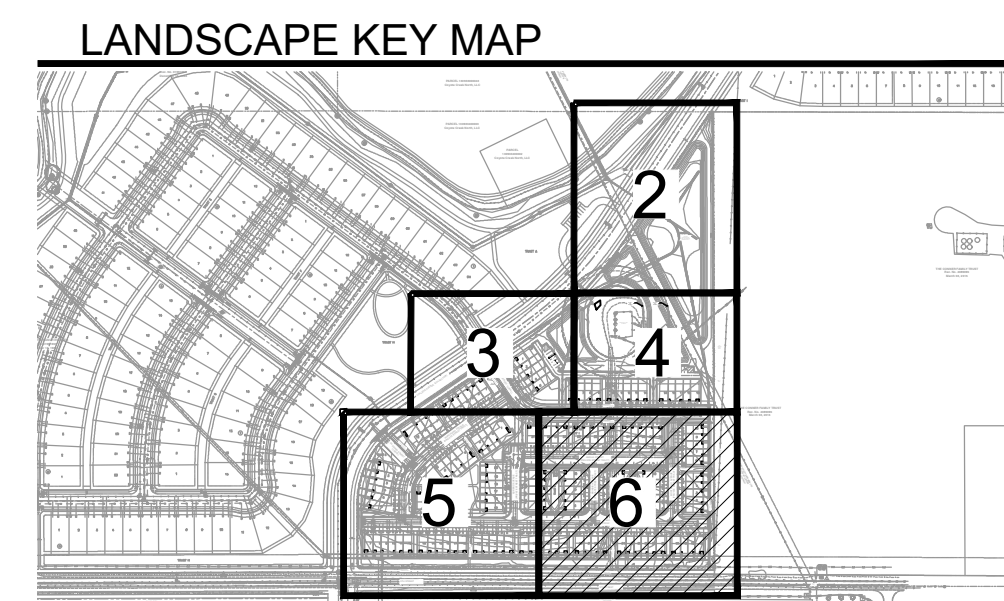


LANDSCAPE KEY MAP



PLANT LIST

DECIDUOUS TREES			DECIDUOUS SHRUBS		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
23	Celtis occidentalis 'Western Hackberry'		33	Aronia arbutifolia 'Brilliantissima' Brilliant Red Chokeberry/Red Chokeberry	
24	Gleditsia triacanthos 'Skyline' Skyline Honey Locust		95	Buddleja davidii 'Blue Chip' Dwarf Butterfly Bush	
26	Gymnocladus dioica 'Espresso' Seedless Kentucky Coffeetree		52	Caryopteris x clandonensis 'Dark Knight' Blue Mist Spirea	
22	Quercus buckleyi Texas Red Oak		65	Cornus sericea 'Arctic Fire' Arctic Fire Dogwood	
22	Quercus macrocarpa Burr Oak		59	Cornus sericea 'Isanti' Isanti Dogwood	
16	Tilia americana 'Redmond' Redmond American Linden		64	Philadelphus x 'Snowbell' Snowbell Mock Orange	
EVERGREEN TREES			EVERGREEN SHRUBS		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
15	Picea abies 'Cupressina' Fastigiate Norway Spruce		14	Physocarpus monogynus Mountain Ninebark	
7	Picea pungens Colorado Spruce		64	Physocarpus opulifolius 'Summer Wine' Summer Wine Ninebark	
17	Pinus mugo 'Tannenbaum' Tannenbaum Mugo Pine		47	Prunus besseyi 'Pawnee Buttes' Creeping Western Sand Cherry	
7	Pinus strobiformis Southwestern White Pine		51	Rhus trilobata Three-Leaf Sumac	
ORNAMENTAL TREES			GRASSES		
QTY	BOTANICAL / COMMON NAME		QTY	BOTANICAL / COMMON NAME	
8	Acer glabrum Rocky Mountain Maple		42	Arctostaphylos uva-ursi Kinnikinnick	
9	Acer tataricum 'GarAnn' Hot Wings Tatarian Maple		29	Picea pungens 'St. Mary's Broom' St. Mary's Broom Colorado Spruce	
4	Malus x 'Spring Snow' Spring Snow Crab Apple		49	Pinus mugo 'Mops' Miniature Mugo Pine	
5	Pyrus calleryana 'Chanticleer' Chanticleer Pear		90	Bouteloua gracilis 'Blonde Ambition' Blonde Ambition Grama Grass	
4	Syringa reticulata Japanese Tree Lilac		164	Calamagrostis x acutiflora 'Karl Foerster' Feather Reed Grass	
			96	Helictotrichon sempervirens Blue Avena Grass	
			125	Panicum virgatum 'Heavy Metal' Heavy Metal Blue Switch Grass	
			31	Panicum virgatum 'Shenandoah' Shenandoah Red Switch Grass	
LEGEND			PERENNIALS		
SYMBOL	DESCRIPTION	QTY	QTY	BOTANICAL / COMMON NAME	
	IRRIGATED TURF DURA-TURF SOD	108,916 sf	30	Agastache rupestris 'Sunset' Sunset Hyssop	
	NON-IRRIGATED NATIVE FOOTHILLS GRASS MIX - ARKANSAS SEED MIX OR APPROVED EQUAL	130,295 sf	50	Echinacea purpurea Purple Coneflower	
	SHREDDED CEDAR MULCH ALL SHRUB BEDS TO RECEIVE MINIMUM 4"-6" DEPTH SHREDDED CEDAR WOOD MULCH	23,230 sf	38	Hemerocallis x 'Red' Red Daylily	
	SMOOTH RIVER COBBLE ALL SHRUB BEDS TO RECEIVE A MINIMUM 4"-6" COBBLE OVER WEED BARRIER FABRIC	37,785 sf	45	Hemerocallis x 'Stella de Oro' Stella de Oro Daylily	
	EXISTING TREES		53	Rudbeckia fulgida sultivantii 'Goldsturm' Black-eyed Susan	
	STREET LIGHT				
	STOP SIGN				
	STEEL EDGER, ROUNDED TOP				





landscape architecture | planning | illustration

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SEAL

PROJECT TITLE

COTTONWOOD
GREENS PUD
FILING NO. 4

PROJECT NO: LUP2021-
PLAN NO:

FORT LUPTON, COLORADO

PREPARED FOR

ARBOR CAPITAL PARTNERS LLC
4040 MACARTHUR BLVD.,
STE. 250
NEWPORT BEACH, CA 92660

REVISIONS

DATE

DATE

JUNE 21, 2021

SHEET TITLE

LANDSCAPE
PLAN

SHEET INFORMATION

Sheet Number: 6

Of: 7

Landscape Notes

1. LANDSCAPE AREAS SHALL BE MAINTAINED, INCLUDING MOWING, WATERING AND FERTILIZING BY CONTRACTOR, UP TO FINAL ACCEPTANCE. AT SUCH TIME OWNER WILL BE RESPONSIBLE FOR ALL MAINTENANCE. LANDSCAPE AND IRRIGATION WILL BE WARRANTED FOR ONE (1) FULL YEAR AFTER FINAL ACCEPTANCE.
2. ANY DISCREPANCIES WITH THE DRAWINGS AND SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING WITH CONSTRUCTION.
3. CONTRACTOR TO VERIFY ALL FIELD CONDITIONS, EASEMENTS, PROPERTY LINES, ETC. PRIOR TO STARTING WORK. SHOULD ANY DISCREPANCIES, OMISSIONS, OR ERRORS OCCUR, NOTIFY THE OWNER'S REPRESENTATIVE IMMEDIATELY.
4. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES 48 HRS. PRIOR TO ANY EXCAVATION OR PLANTING.
5. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH PLANTING OPERATIONS.1. NO TREES OR SHRUBS SHALL BE PLANTED WITHIN 10' FROM WATER AND SEWER LINES, 4' FROM GAS, TELEPHONE AND ELECTRIC UTILITY LINES.
6. NO SHRUBS SHALL BE PLANTED WITHIN FIVE (5) FEET OR TREES WITHIN TEN (10) FEET OF POTABLE AND NON-POTABLE WATER METERS, FIRE HYDRANTS, SANITARY SEWER MANHOLES, POTABLE WATER, SANITARY SEWER, STORM SEWER, OR NON-POTABLE IRRIGATION MAINS.
7. MINIMUM CLEARANCE OF THREE (3) FEET ON EACH SIDE OF FIRE DEPARTMENT CONNECTION (FDC). NO VEGETATION OTHER THAN TURF OR GROUND COVERS PLANTED IN FRONT OF FDC.
8. TREES SHALL BE LIMBED TO A HEIGHT OF NOT LESS THAN EIGHT (8) FEET ABOVE ANY PUBLIC STREET OR SIDEWALK. SHRUBS AND OTHER PLANT MATERIALS SHALL BE MAINTAINED AT A HEIGHT OF NOT MORE THAN THIRTY (30) INCHES, AND SAID MAINTENANCE SHALL BE CONDUCTED IN PERPETUITY.
9. IF TREES OR SHRUBS ARE LOCATED ON TOP OF FIELD VERIFIED UTILITIES, CONTRACTOR SHALL NOTIFY OWNER BEFORE ANY DIGGING HAS COMMENCED. VERIFY WITH OWNER IF AND WHICH SHRUBS/TREES SHALL BE TAKEN OUT OF PROJECT/CONTRACT.
10. TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.
11. EXCAVATED MATERIAL TO BE USED AS FILL WILL HAVE ALL ROCKS, DEBRIS, WASTE MATERIAL, FROZEN MATERIAL, AND VEGETATION LARGER THAN 3" IN ANY DIMENSION REMOVED BEFORE PLACEMENT AND COMPACTION OF SOIL.
12. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING FOUNDATIONS AND A SMOOTH TRANSITION BETWEEN ALL ADJACENT EXISTING GRADES AND PROPOSED GRADES.
13. PRIOR TO FINE GRADING, SOD AREAS AND PLANTING BEDS SHALL BE THOROUGHLY LOOSENEED AND TILED TO A 6" DEPTH. REMOVE ALL UNSUITABLE TOPSOIL, INCLUDING ALL ROCKS OR OTHER MATERIAL LARGER THAN 1 INCHES IN ANY DIRECTION, ALL CONCRETE, TRASH, DEBRIS, WEEDS, ROOTS AND OTHER WASTE MATERIALS. AFTER THAT TIME ORGANIC AMENDMENTS SHALL THEN BE THOROUGHLY TILLED AND INCORPORATED TO A MINIMUM 6" DEPTH IN THESE AREAS AT THE MINIMUM OF FIVE (5) CU. YDS. / 1,000 SQ. FT.
14. UNIFORMLY COMPACT AND FINE GRADE THESE SOD / GRASS AREAS AND PLANTING BEDS TO A SMOOTH SURFACE, FREE FROM IRREGULAR SURFACE CHANGES. CUT OUT SOFT SPOTS, FILL IN LOW SPOTS AND TRIM HIGH SPOTS TO COMPLY WITH REQUIRED GRADE TOLERANCES.
15. ONCE COMPACTED AND FINE GRADED, ALL ROCKS, DEBRIS, WASTE MATERIAL AND VEGETATION MATERIAL LARGER THAN 1/2" WILL BE RAKED FROM THE SURFACE AND REMOVED FROM SITE.
16. SOD TO BE 100% COLORADO GROWN DURA-TURF TALL FESCUE BLEND SPECIFICALLY GROWN FOR LOW WATER LAWN APPLICATIONS, WITH MINIMUM THREE (3) IMPROVED VARIETIES, HAVING A HEALTHY VIGOROUS ROOT SYSTEM. ONCE TURF IS LAID IT SHALL BE PROPERLY ROLLED, COMPACTED AND PUSHED TOGETHER TO ELIMINATE ANY GAPS BETWEEN ROLL EDGES. APPLY FERTILIZER IN THESE AREAS PER SOD FARM'S RECOMMENDATIONS.
17. ALL PLANT MATERIALS ARE SIZED AND OUTLINED IN PLANT LIST. ALL PLANTS TO BE PLANTED IN AMENDED SOIL AND STAKED AS SHOWN IN DETAILS. ALL PLANT MATERIAL SHALL MEET OR EXCEED THE CODE OF STANDARDS CURRENTLY RECOMMENDED BY THE COLORADO NURSERY ACT FOR NUMBER ONE GRADE.
18. IF PLANTS ARE IN NEED OF REPLACEMENT DUE TO DECLINING HEALTH, DISEASE, OR DEATH, THE PLANTS MUST BE REPLACED WITH THE ORIGINAL SPECIES UNLESS APPROVED BY THE CITY.
19. CHANGES IN PLANT SPECIES OF PLANT LOCATIONS FROM WHAT IS LISTED ON THE LANDSCAPE PLAN WILL REQUIRE THE APPROVAL OF THE CITY PRIOR TO INSTALLATION OF REPLACEMENT. OVERALL QUANTITY AND QUALITY TO BE CONSISTENT WITH THE APPROVED PLANS. IN THE EVENT OF CONFLICT WITH THE QUANTITIES INCLUDED IN THE PLANT LIST, SPECIES AND QUANTITIES SHALL BE PROVIDED.
20. ALL TREES AND SHRUBS TO BE BALLED AND BURLAPPED, OR CONTAINERIZED.
21. ALL PLANT MATERIAL SHALL HAVE ALL WIRE, TWINE, BASKETS, BURLAP, AND ALL OTHER NON-BIODEGRADABLE CONTAINMENT MATERIAL REMOVED FROM THE TRUNK AND/OR ROOT BALL OF THE PLANT, PRIOR TO PLANTING.
22. ALL SHRUB BEDS SHALL HAVE MINIMUM 4" DEPTH SHREDDED CEDAR MULCH OR NATURAL COLOR AND/OR WASHED SMOOTH RIVER ROCK. A CONTINUOUS LAYER OF TYPICAL LANDSCAPE ABRIC OR APPROVED EQUAL SHALL BE INSTALLED IN ALL SHRUB BEDS WITH 6" OVERLAP AT SEAMS WITH 4" STAPLES 4" O.C. IN ALL DIRECTIONS.
23. EDGING BETWEEN GRASS TYPES AND SHRUB BEDS / ROCK COBBLE AND CRUSHER FINES SHALL BE 14 GA HEAVY DUTY STEEL EDGER MIN. 3/8" x 4" WITH ROLLED TOP AND SHALL BE SET LEVEL WITH THE TOP OF THE ADJACENT SOD.

General Notes:

1. ALL SIGNS SHALL BE REQUIRED TO APPLY FOR A SIGN PERMIT.
2. PROPOSED GRADES SHALL MATCH OR IMPROVE EXISTING GRADES TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING WHILE PROVIDING A SMOOTH TRANSITION BETWEEN ALL ADJACENT UNDISTURBED GRADES AND PROPOSED GRADES.
3. JOB SITE TO BE KEPT CLEAN AT ALL TIMES AND CONSTRUCTION AREAS ARE TO BE MAINTAINED FOR SAFETY.
4. SOILS DISTURBED ADJACENT TO WORK AREA, INCLUDING AREAS OUTSIDE OF CONSTRUCTION LIMITS, DUE TO NEW CONSTRUCTION ARE TO BE REGRADED AND SURFACE CONDITIONS REPAIRED EQUIVALENT TO THAT CONDITION PRIOR TO START OF WORK.
5. PROTECT EXISTING SURFACES AND SOILS, BOTH INSIDE AND OUTSIDE OF CONSTRUCTION LIMITS, DURING CONSTRUCTION. IF GRADES, CONCRETE OR ASPHALT ARE DAMAGED DUE TO CONSTRUCTION OPERATIONS OR WEATHER THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO THAT EQUIVALENT TO EXISTING CONDITIONS AT NO EXPENSE TO THE OWNER / CITY.
6. CONTRACTOR IS RESPONSIBLE FOR SETUP OF BARRICADES, WARNING SIGNAGE, OR OTHER PROTECTIVE DEVICES IF ANY EXCAVATIONS ARE LEFT EXPOSED AFTER ON-SITE WORK HOURS.
7. THE CONTRACTOR SHALL NOT PURPOSEFULLY PROCEED WITH ANY CONSTRUCTION PER PLANS PROVIDED WHEN OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT WERE NOT CONSIDERED OR CHANGED AFTER PLANS WERE SUBMITTED. CONTRACTOR SHALL NOTIFY OWNER OR OWNER'S REPRESENTATIVE AND THE CITY OF LOVELAND IF SITUATION ARISES AND REVISIONS ARE NECESSARY.
8. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND OTHER POLLUTANTS FROM ENTERING ANY STORM WATER SEWER SYSTEM OR ADJACENT WATER WAYS, ETC., DURING THE DEMOLITION OR CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE HELD RESPONSIBLE AND EXPENSE FOR THE CORRECTION OF ANY ADVERSE IMPACTS TO THE STORM WATER SEWER SYSTEM OR ADJACENT WATER WAYS, WETLANDS ETC., RESULTING FROM THE WORK DONE AS PART OF THIS PROJECT/CONTRACT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE PRIOR TO BIDDING AND CONSTRUCTION, OF BECOMING AWARE OF ALL EXISTING AND PROPOSED UTILITIES, PIPES, STRUCTURES, ETC. CALL UNCC THREE DAYS BEFORE SCHEDULED WORK AT 811 OR 1-800-922-1987.

Tree Protection Notes

1. HEAVY EQUIPMENT SHOULD NOT BE ALLOWED TO COMPACT OVER THE SOIL OVER THE ROOT ZONE OF PROTECTED EXISTING TREES.
2. AVOID CUTTING SURFACE ROOTS WHEREVER POSSIBLE. SIDEWALKS AND PAVING LEVELS SHOULD BE CONTOURED SUFFICIENTLY TO AVOID DAMAGE.
3. ROOT CUTS FROM EXCAVATION SHOULD BE DONE RAPIDLY. SMOOTH FLUSH CUTS SHOULD BE MADE. BACKFILL BEFORE THE ROOTS HAVE A CHANCE TO DRY OUT AND WATER THE TREE IMMEDIATELY.
4. PRIOR TO CONSTRUCTION, ALL PROTECTED TREES SHALL HAVE ORANGE PROTECTION BARRIER FENCING ERECTED, WHICH AS A MINIMUM ARE SUPPORTED BY 1" X 1" OR SIMILAR STURDY STOKES, NO CLOSER THAN SIX (6) FEET FROM THE TRUNK OR ONE HALF (1/2) OF THE DRIP LINE, WHICH EVER IS GREATER, WITHIN THIS PROTECTION ZONE THERE SHALL BE NO MOVEMENT OF EQUIPMENT OR STORAGE OF EQUIPMENT, MATERIALS, DEBRIS, FILL OR CUT UNLESS APPROVED BY THE CITY FORESTER.
5. WITHIN THE DRIP LINE OF ANY PROTECTED EXISTING TREE, THERE SHALL BE NO CUT OR FILL OVER A FOUR INCH DEPTH UNLESS A QUALIFIED ARBORIST OR FORESTER HAS EVALUATED AND APPROVED THE DISTURBANCE.
6. DURING THE CONSTRUCTION STAGE OF DEVELOPMENT, THE APPLICANT SHALL PREVENT THE CLEANING OF EQUIPMENT OR MATERIAL OR THE STORAGE OR DISPOSAL OF WASTE MATERIAL SUCH AS PAINTS, OILS, SOLVENTS, ASPHALT, CONCRETE, MOTOR OIL OR ANY OTHER MATERIAL HARMFUL TO THE LIFE OF A TREE, WITHIN THE DRIP LINE OF ANY PROTECTED TREE OR GROUP OF TREES.
7. NO DAMAGING ATTACHMENT, WIRES, SIGNS OR PERMITS MAY BE FASTENED TO ANY PROTECTED TREE.

Native Grass Seed Mix

NATIVE GRASS - NATIVE PRAIRIE MEADOW GRASS MIX:

1. SEED SHALL BE AS MANUFACTURED BY ARKANSAS VALLEY SEED SOLUTIONS, 4625 COLORADO BOULEVARD, DENVER, CO 80216, (877) 957-3337.
2. SEED SHALL BE A MIXTURE THAT MATCHES THE FOLLOWING:

COMMON NAME	%
ANNUAL RYEGRASS	20%
SLENDER WHEATGRASS	15%
CRESTED WHEATGRASS	12%
MOUNTAIN BROME	10%
HARD FESCUE	10%
CANADA BLUEGRASS	10%
SIDWAYS GRAMA	6%
BIG BLUESTEM	5%
BLUE GRAMA (COATED)	5%
SAND DROPSIED	1%

3. DRILLED APPLICATION RATE: 25.0 LBS (PLS) PER ACRE (0.57 LBS / 1000 SF
4. NATIVE SEED AREAS: ADEQUATE TEMPORARY IRRIGATION OR BY WATER TRUCK WILL BE PROVIDED FOR THE ESTABLISHMENT AND MAINTENANCE FOR THESE SEEDD AREAS, AND THAT NATIVE GRASSES SHALL BE MAINTAINED IN A CONDITION OF ACCEPTABLE HEIGHT, FREE OF WEEDS, TRASH AND DEBRIS, AND SHALL NOT REPRESENT A FIRE HAZARD NOR BECOME A NUISANCE SITE FOR WATER OR WIND EROSION.

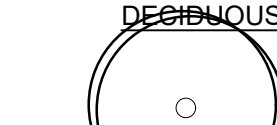
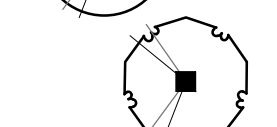
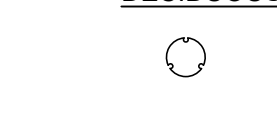
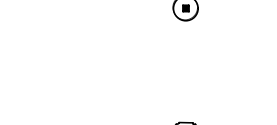
MULCH IN ALL NATIVE SEED AREAS:

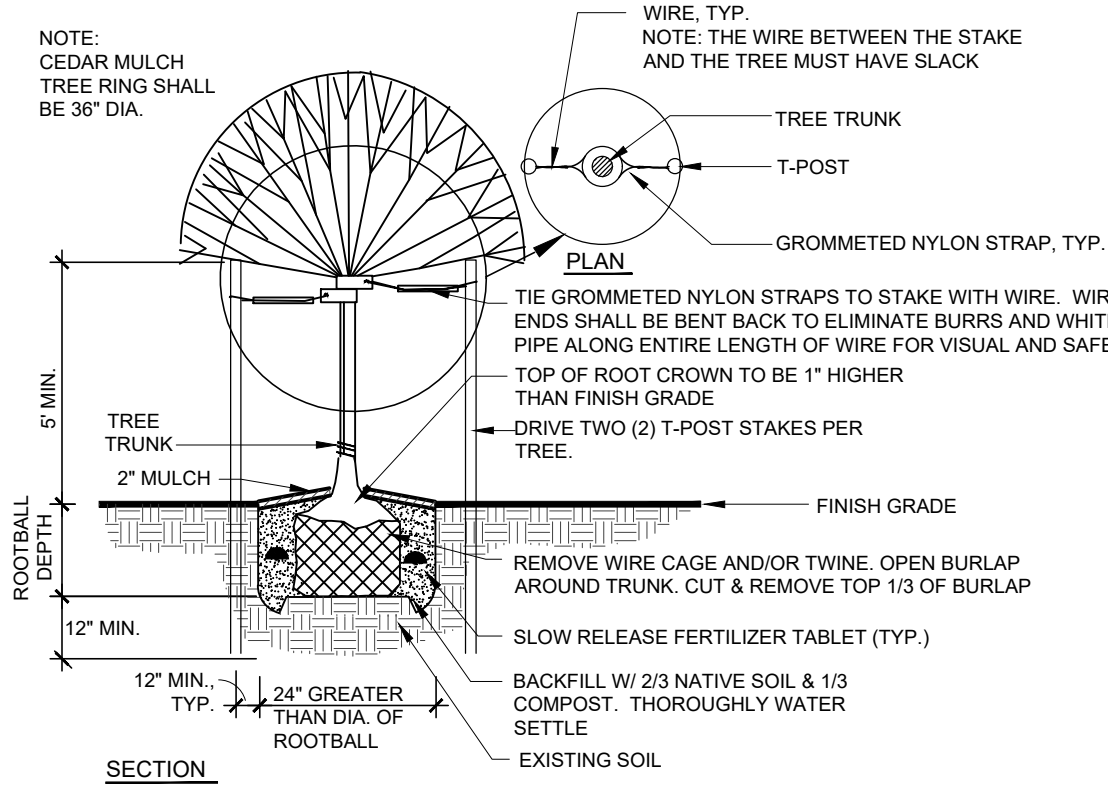
1. IMMEDIATELY FOLLOWING THE RAKING OPERATION, ADD STRAW MULCH TO THE SEEDD AREAS.
2. APPLY STRAW MULCH AT A MINIMUM OF 1.5 TONS PER ACRE OF AIR DRY MATERIAL. SPREAD STRAW MULCH UNIFORMLY OVER THE AREA WITH MECHANICAL MULCH SPREADER / CRUMPER. DO NOT MULCH WHEN WIND VELOCITY EXCEEDS 10 MPH.
3. WHEREVER THE USE OF CRIMPING EQUIPMENT IS PRACTICAL, PLACE MULCH IN THE MANNER NOTED ABOVE AND ANCHOR IT INTO THE SOIL. USE A DISC SUCH AS A MULCH TILLER, WITH A FLAT SERRATED DISC AT LEAS 1/4 INCH IN THICKNESS, HAVING DULL EDGES, AND SPACE NO MORE THAN 9 INCHES APART, WITH DISCS OF SUFFICIENT DIAMETER TO PREVENT THE FRAME OF THE EQUIPMENT FROM DRAGGING THE MULCH. ANCHOR MULCH A MINIMUM DEPTH OF 2 INCHES AND ACROSS THE SLOPE WHERE PRACTICAL WITH NO MORE THAN TWO PASSES OF THE ANCHORING EQUIPMENT.
4. IMMEDIATELY UPON COMPLETION OF THE MULCHING AND BINDING OPERATION, THE SEEDD AREAS SHALL BE IRRIGATED, KEEPING THE TOP 2 INCHES OF SOIL EVENLY MOIST UNTIL SEED HAS UNIFIED GERMINATED AND GROWN TO A HEIGHT OF 2-INCHES.
5. WATERING APPLICATION SHALL BE DONE IN A MANNER WHICH WILL PROVIDE UNIFORM COVERAGE BUT WHICH WILL NOT CAUSE EROSION, MOVEMENT, OR DAMAGE TO THE FINISHED SURFACE.

Irrigation Notes

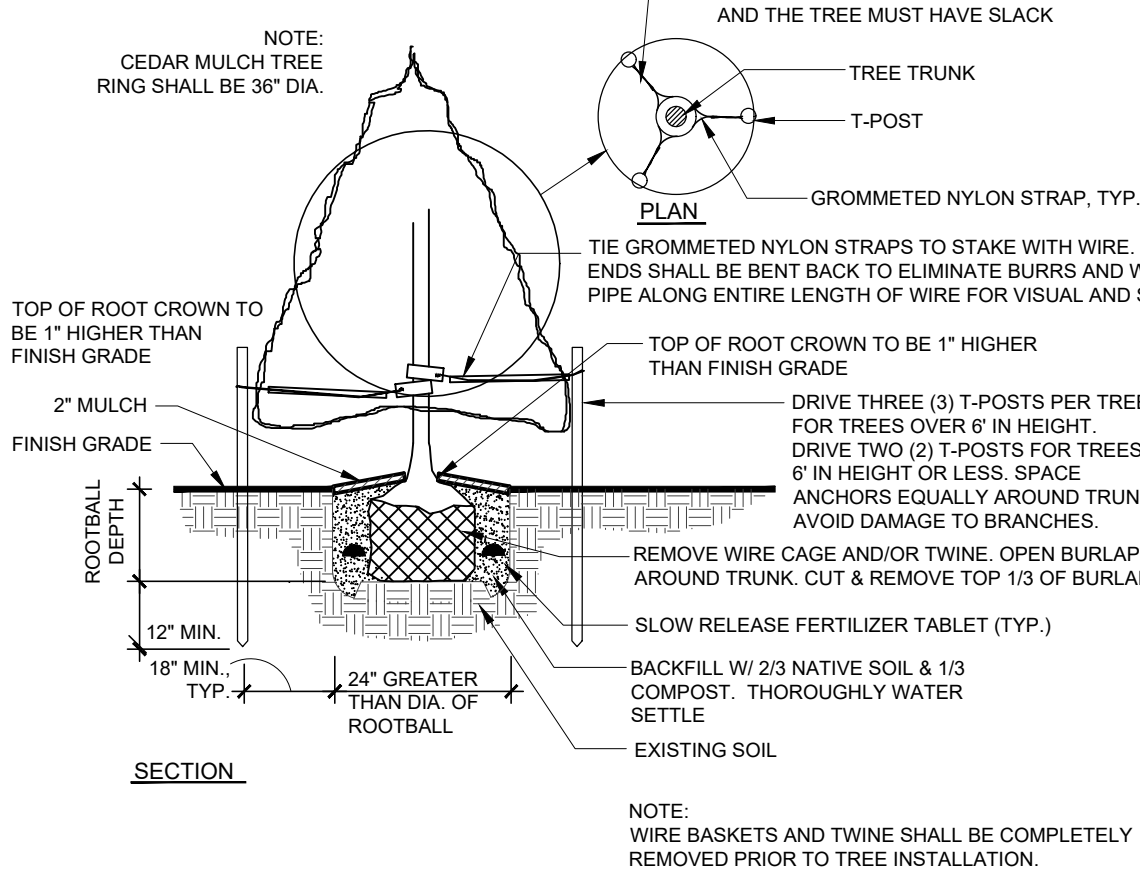
1. IRRIGATION CONTRACTOR SHALL VERIFY AVAILABLE P.S.I. AND GPM. THIS SYSTEM SHALL THEN BE VERIFIED TO MEET THE AVAILABLE P.S.I. AND GPM AND THE PROPOSED IRRIGATION SYSTEM. IF NECESSARY CONTACT THE WATER DEPARTMENT PRIOR TO BEGINNING DESIGN TO OBTAIN AVAILABLE PRESSURES.
2. ALL INDICATED SOD GRASS AREAS ARE TO BE IRRIGATED BY A PERMANENT UNDERGROUND AUTOMATIC IRRIGATION SYSTEM. TURF AREAS LESS THAN 25 FEET AND WITH AREAS TO BE BRIGATED ARE TO BE IRRIGATED BY A ROTOR POP-UP SPRAY SYSTEM. ALL IRRIGATION SYSTEMS SHALL BE DESIGNED TO MINIMIZE OVERSPRAY.
3. ALL TREES, SHRUBS AND PERENNIALS OUTSIDE OF IRRIGATED SOD AREAS ARE TO BE IRRIGATED WITH A PERMANENT DRIP IRRIGATION SYSTEM. IRRIGATION SYSTEMS SHALL BE DESIGNED TO AVOID OVERSPRAY ON TO NON-PLANTED AND IMPERVIOUS SURFACES. IRRIGATION SYSTEMS SHALL BE MAINTAINED IN GOOD WORKING ORDER AND CHECKED TO ENSURE THAT OVERSPRAY DOES NOT OCCUR.
4. FINAL LOCATION OF IRRIGATION HEADS MUST BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO PLANTING. HEAD LOCATION SHALL BE COORDINATED IN THE FIELD WITH EXISTING SITE CONDITIONS AND PLANT MATERIAL.
5. ALL IRRIGATION TRENCH IRRIGATION SHALL BE PROPERLY WATERED AND COMPACTED TO AVOID FUTURE SETTLING. ANY SETTLING DURING WARRANTY PERIOD WILL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
6. COORDINATE ALL IRRIGATION WORK WITH EXISTING UTILITIES AND RESPECTIVE TRADES.
7. ALL IRRIGATION SLEEVING SHALL BE PROVIDED AND INSTALLED BY GENERAL CONTRACTOR. IRRIGATION CONTRACTOR SHALL COORDINATE SLEEVING LOCATIONS WITH GENERAL CONTRACTOR. ALL IRRIGATION SLEEVING TO BE STAKED IN THE FIELD OR LOCATED ON DIMENSIONED "AS-BUILT" DRAWING BY THE GENERAL CONTRACTOR TO ALLOW FUTURE USE AND LOCATION.

Plant List

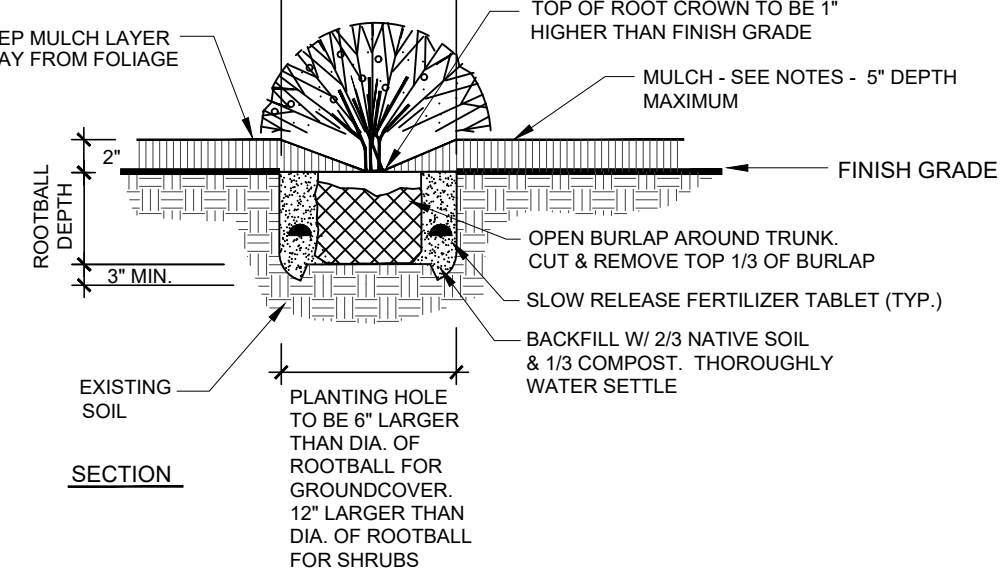
DECIDUOUS TREES	QTY	BOTANICAL / COMMON NAME	SIZE	HEIGHT	WIDTH	REMARKS
	23	Celtis occidentalis Western Hackberry	2.0" cal. BB	60"	40"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	24	Gleditsia triacanthos 'Skyline' Skyline Honey Locust	2.0" cal. BB	50"	30"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	26	Gymnocladus dioica 'Espresso' Seedless Kentucky Coffeetree	2.0" cal. BB	60"	40"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	22	Quercus buckleyi Texas Red Oak	2.0" cal. BB	40"	30"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	22	Quercus macrocarpa Bur Oak	2.0" cal. BB	80"	70"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	16	Tilia americana 'Redmond' Redmond American Linden	2.0" cal. BB	50"	40"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	SIZE	HEIGHT	WIDTH	REMARKS
	15	Picea abies 'Cupressina' Fastigiate Norway Spruce	6", BB	20"	6"	FULL SPECIMEN, EVENLY AND WELL BRANCHED
	7	Picea pungens Colorado Spruce	6", BB	50"	30"	FULL SPECIMEN, EVENLY AND WELL BRANCHED
	17	Pinus mugo 'Tannenbaum' Tannenbaum Mugo Pine	6", BB	15"	8"	FULL SPECIMEN, EVENLY AND WELL BRANCHED
	7	Pinus strobiformis Southwestern White Pine	6", BB	50"	30"	FULL SPECIMEN, EVENLY AND WELL BRANCHED
ORNAMENTAL TREES	QTY	BOTANICAL / COMMON NAME	SIZE	HEIGHT	WIDTH	REMARKS
	8	Acer glabrum Rocky Mountain Maple	1.5" cal. BB	20"	15"	WELL BRANCHED W/ STRAIGHT TRUNK AND CENTRAL LEADER
	9	Acer tataricum 'GarAnn' Hot Wings Tatarian Maple	1.5" cal. BB	20"	15"	WELL BRANCHED W/ STRAIGHT TRUNK & CENTRAL LEADER
	4	Malus x 'Spring Snow' Spring Snow Crab Apple	1.5" cal. BB	25"	20"	WELL BRANCHED W/ STRAIGHT TRUNK & CENTRAL LEADER
	5	Pyrus calleryana 'Chanticleer' Chanticleer Pear	1.5" cal. BB	35"	25"	WELL BRANCHED W/ STRAIGHT TRUNK & CENTRAL LEADER
	4	Syringa reticulata Japanese Tree Lilac	1.5" cal. BB	25"	20"	WELL BRANCHED W/ STRAIGHT TRUNK & CENTRAL LEADER
DECIDUOUS SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE	HEIGHT	WIDTH	REMARKS
	33	Aronia arbutifolia 'Brilliantissima' Brilliant Red Chokeberry/Red Chokeberry	5 gal.	8'	6'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED
	95	Buddleja davidii 'Blue Chip' Dwarf Butterfly Bush	5 gal.	2'	3'	24" (h) FULL SPECIMEN EVENLY AND WELL BRANCHED
	52	Caryopteris x clandonensis 'Dark Knight' Blue Mist Spirea	5 gal.	4'	4'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED
	65	Cornus sericea 'Arctic Fire' Arctic Fire Dogwood	5 gal.	4'	4'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED
	59	Cornus sericea 'Isanti' Isanti Dogwood	5 gal.	5'	5'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED
	64	Philadelphus x 'Snowbell' Snowbell Mock Orange	5 gal.	3'	3'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED
	14	Physocarpus monogynus Mountain Ninebark	5 gal.	4'	4'	24" (h) FULL SPECIMEN, EVENLY AND WELL BRANCHED



DECIDUOUS TREE PLANTING DETAIL



CONIFER TREE PLANTING DETAIL



GROUND COVER & SHRUB PLANTING DETAIL

landscape architecture | planning | illustration

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SEAL

PROJECT TITLE

COTTONWOOD
GREENS PUD
FILING NO. 4

PROJECT NO: LUP2021-
PLAN NO:

FORT LUPTON, COLORADO

PREPARED FOR

ARBOR CAPITAL PARTNERS LLC
4040 MACARTHUR BLVD.,
STE. 250
NEWPORT BEACH, CA 92660

REVISIONS

DATE

JUNE 21, 2021

SHEET TITLE

Landscape Notes,
Details & Schedules

SHEET INFORMATION

Sheet Number: 7

Of: 7

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UNIT 3 (MONARCH)

RIGHT ELEVATION

ELEVATION A $3/16" = 1'-0"$

FRONT ELEVATION

ELEVATION A $3/16" = 1'-0"$

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



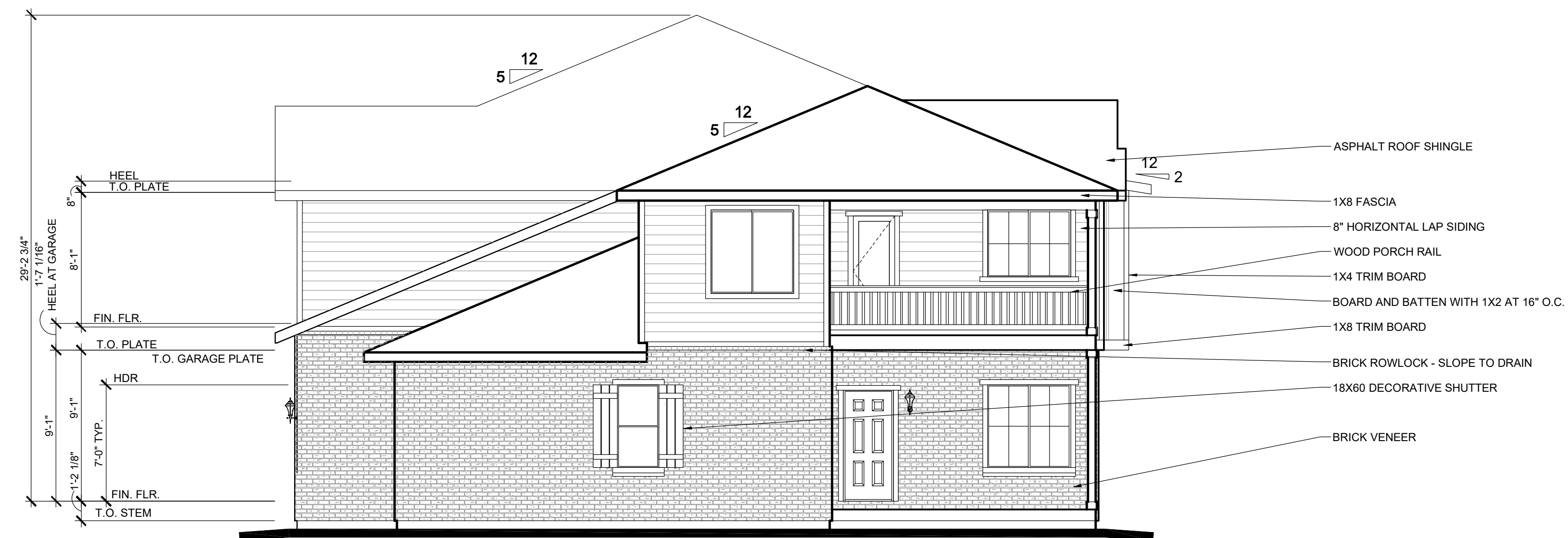
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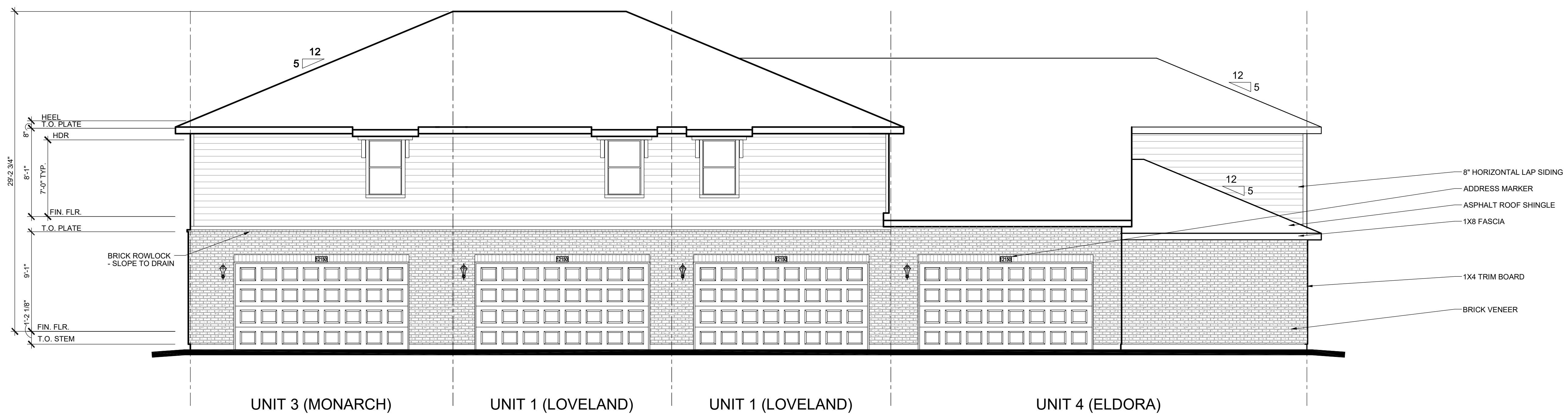
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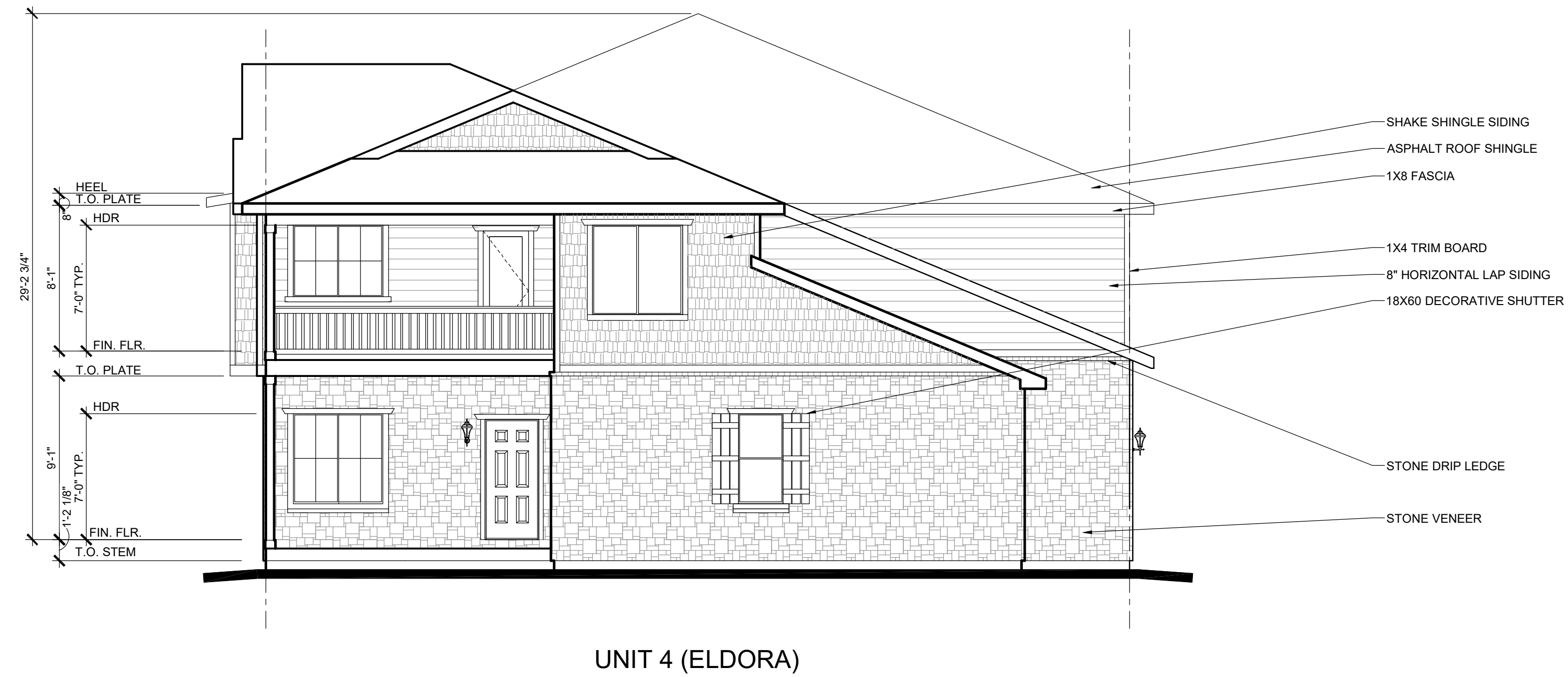


UNIT 4 (ELDORA)

LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 4 (ELDORA)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"

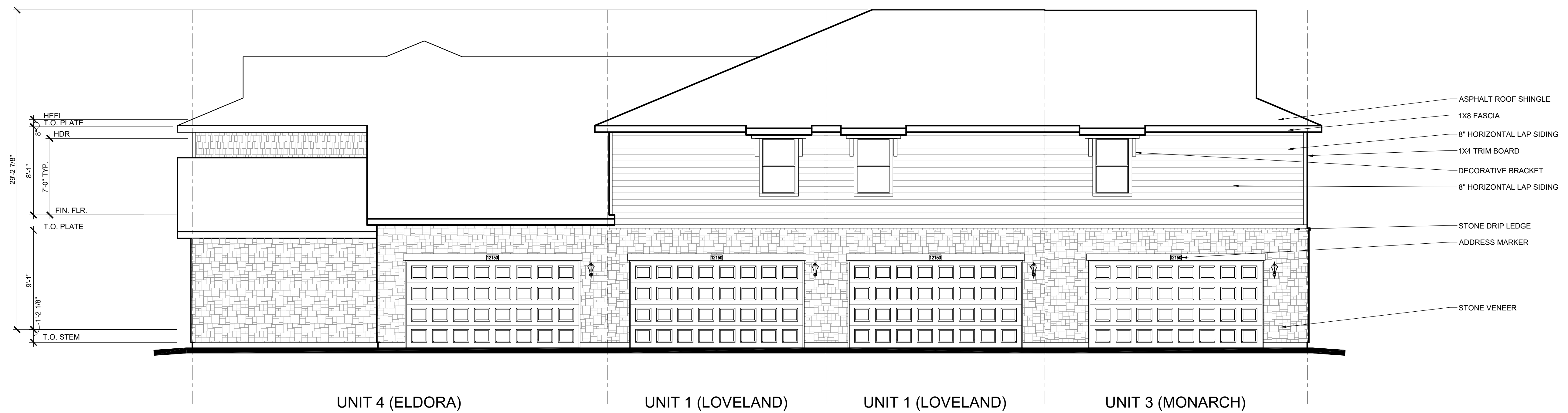


FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

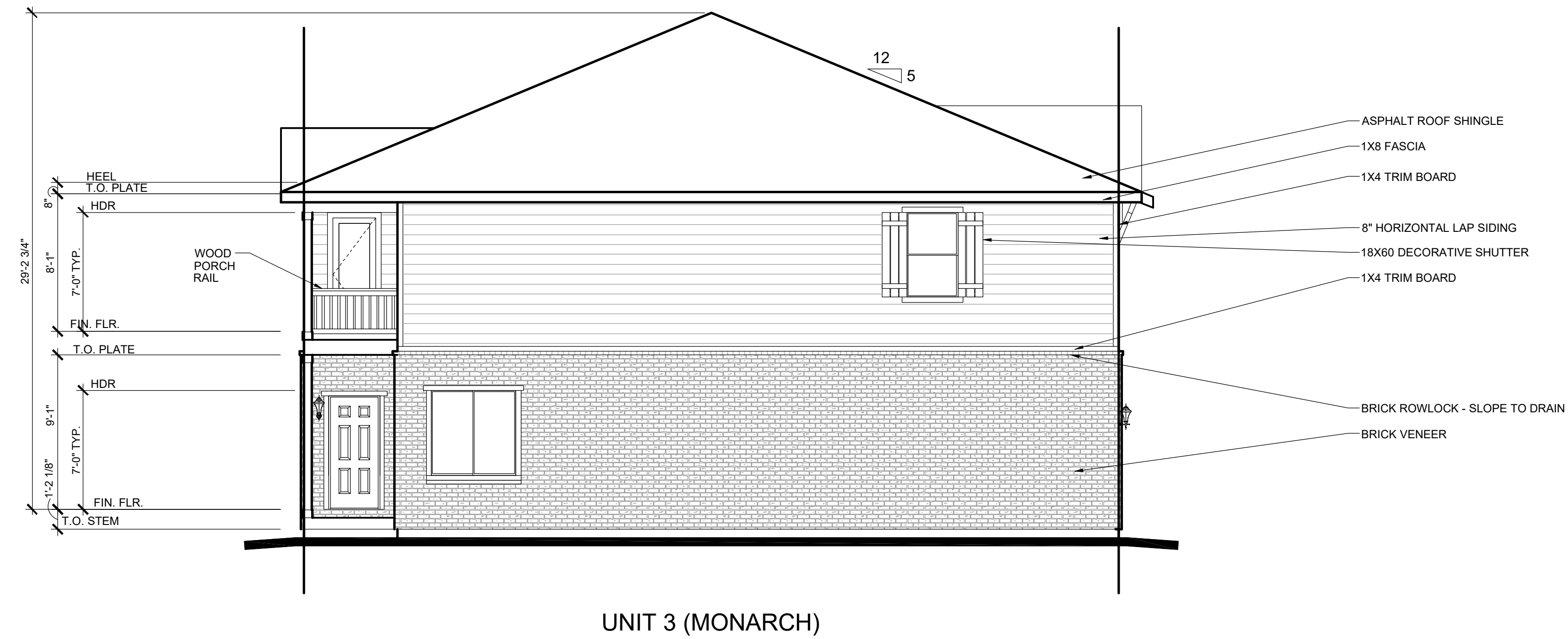


UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION B 3/16" = 1'-0"

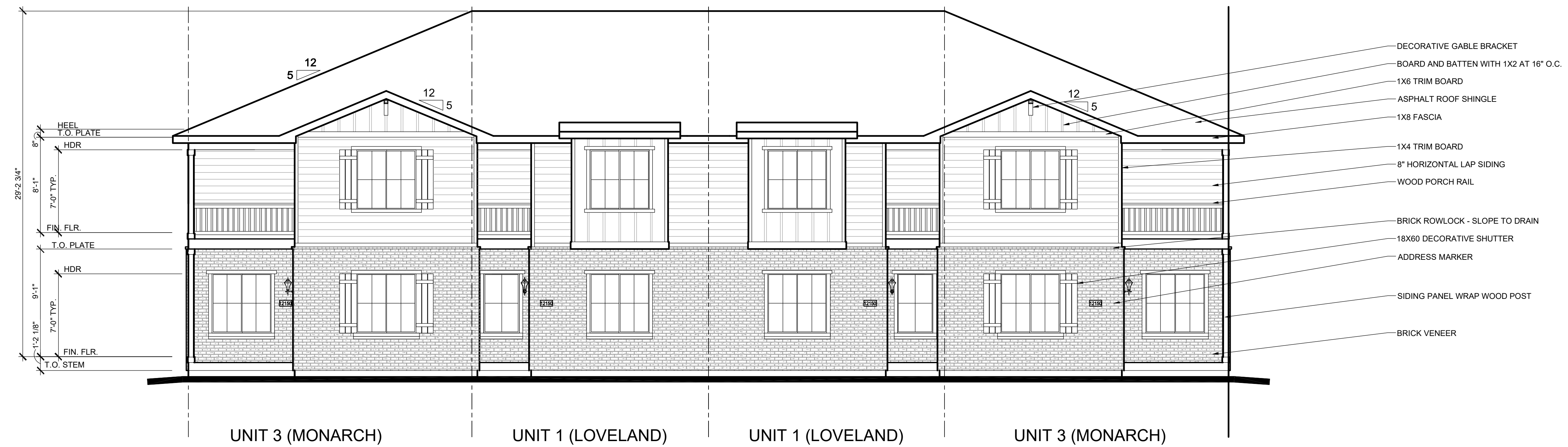


REAR ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

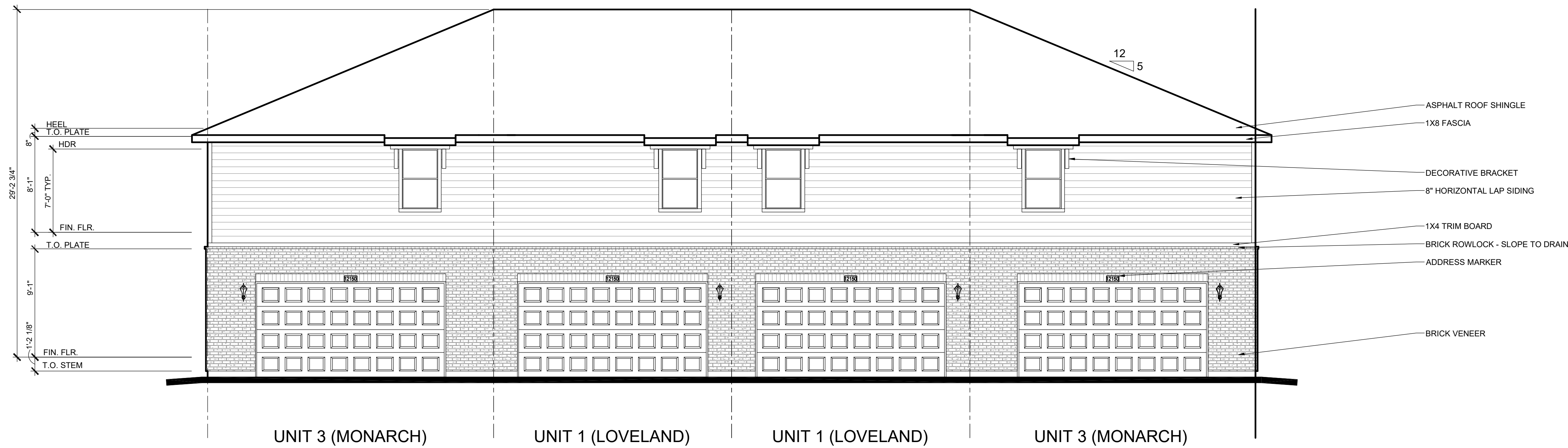
UNIT 3 (MONARCH)

FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



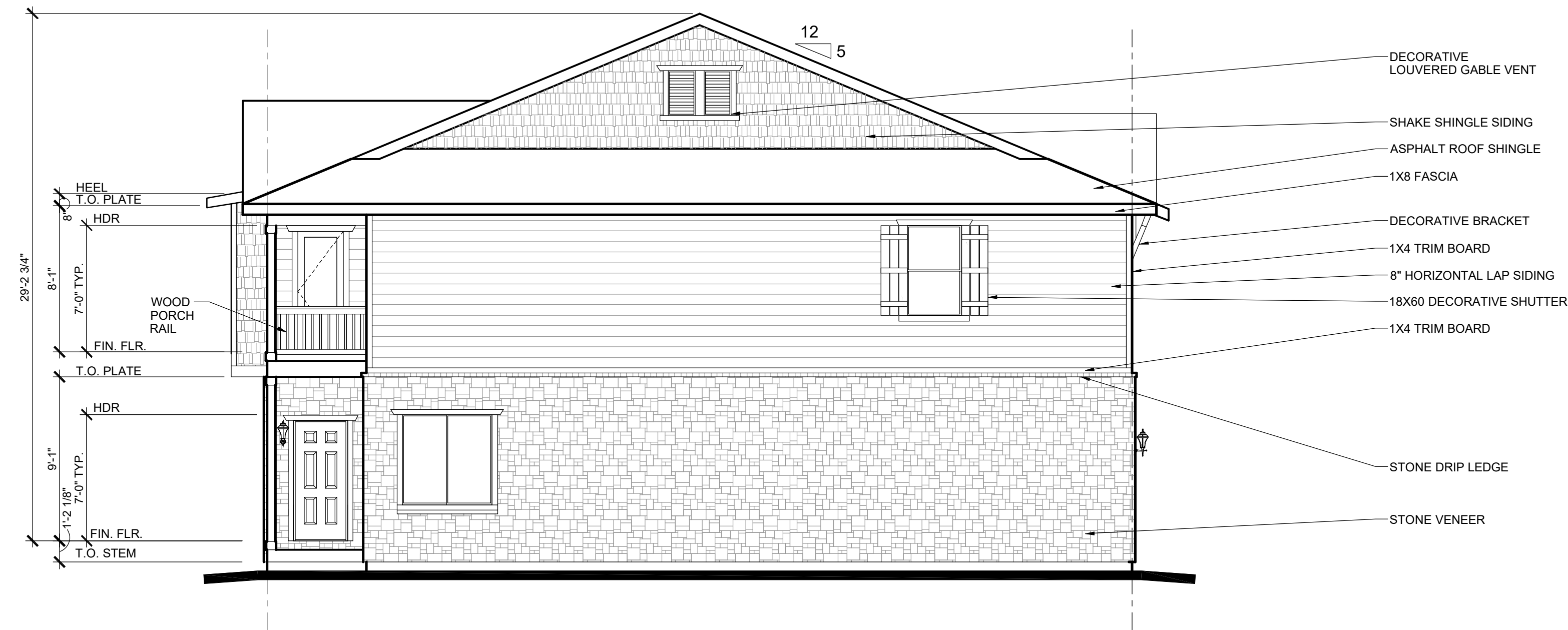
UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

UNIT 3 (MONARCH)

REAR ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

UNIT 3 (MONARCH)

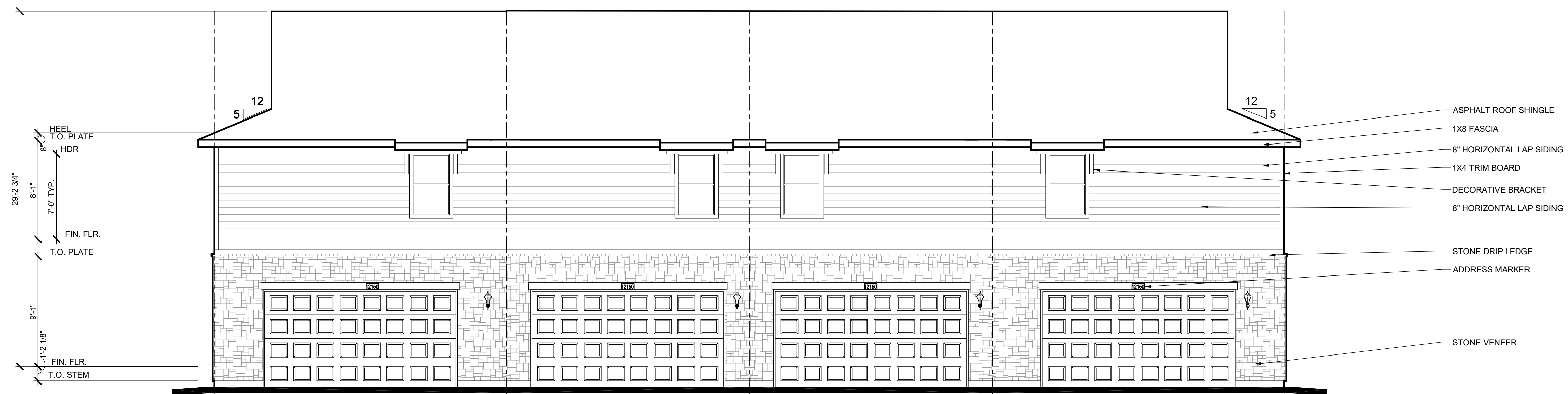
FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

LEFT ELEVATION

ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

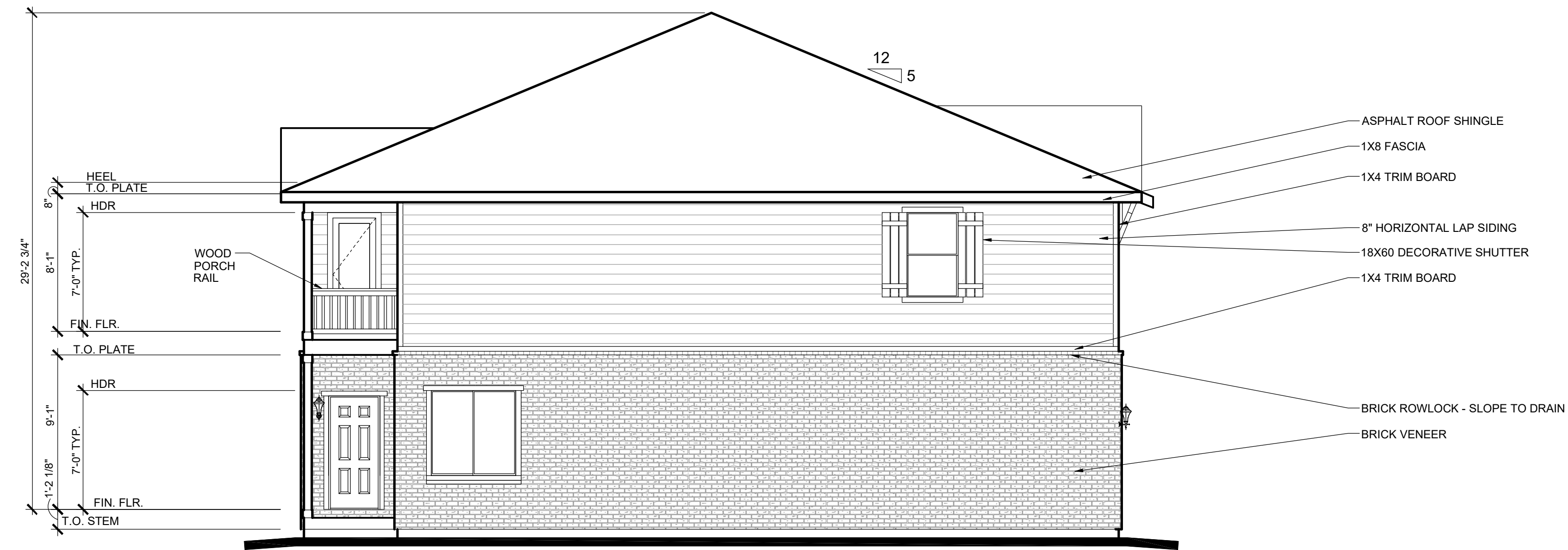
UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

UNIT 3 (MONARCH)

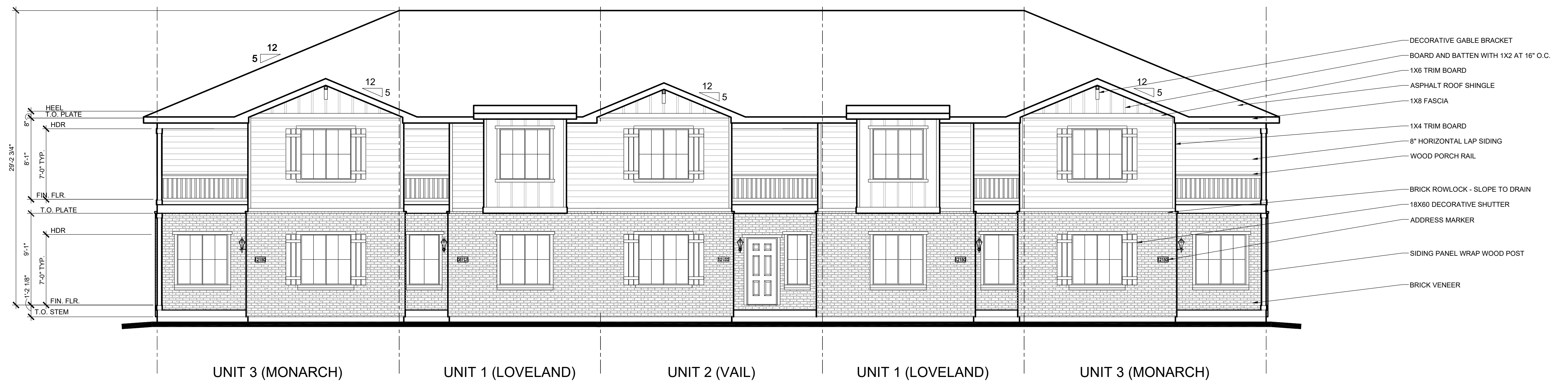
REAR ELEVATION

ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

5 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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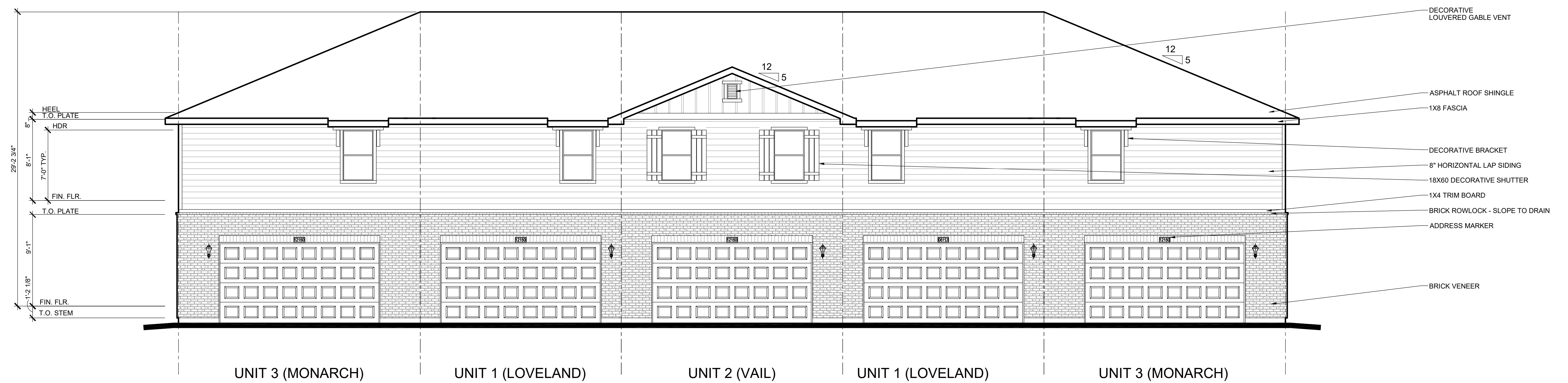
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UNIT 3 (MONARCH)

LEFT ELEVATION

ELEVATION A 3/16" = 1'-0"



REAR ELEVATION

ELEVATION A 3/16" = 1'-0"

5 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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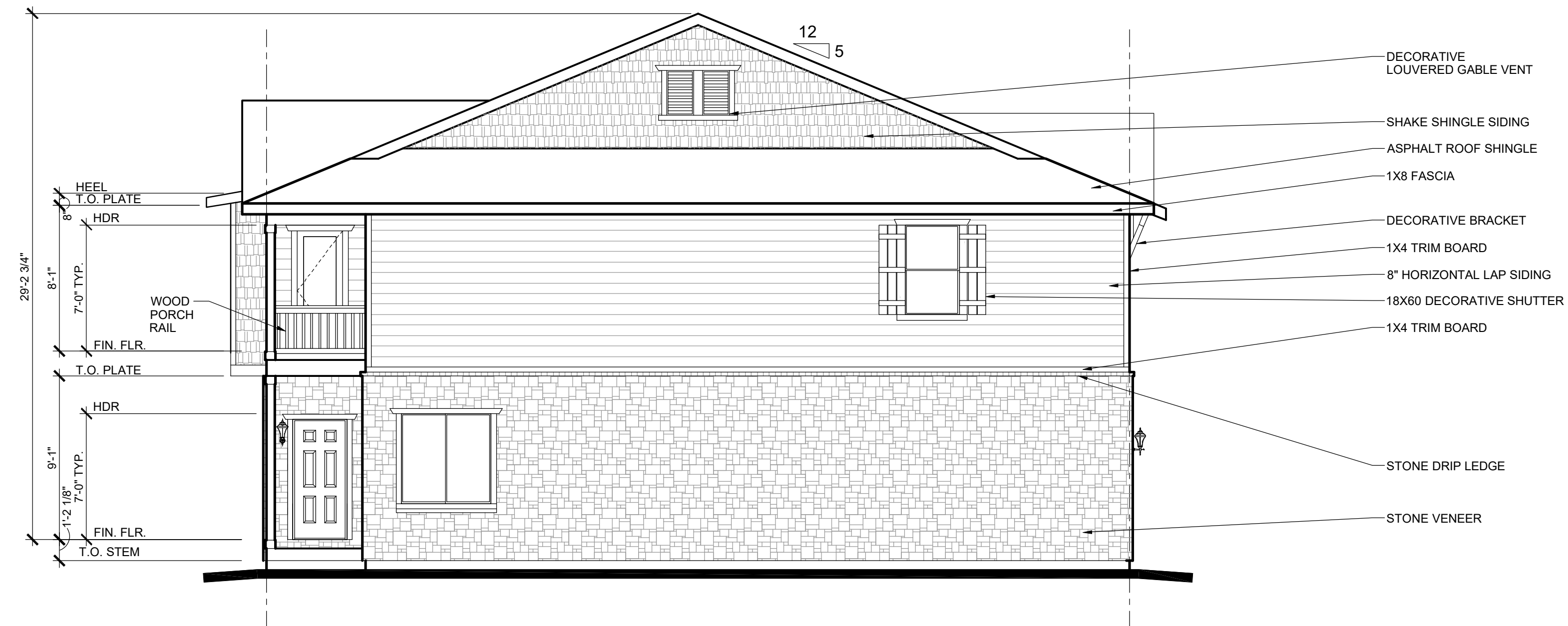
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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

5 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

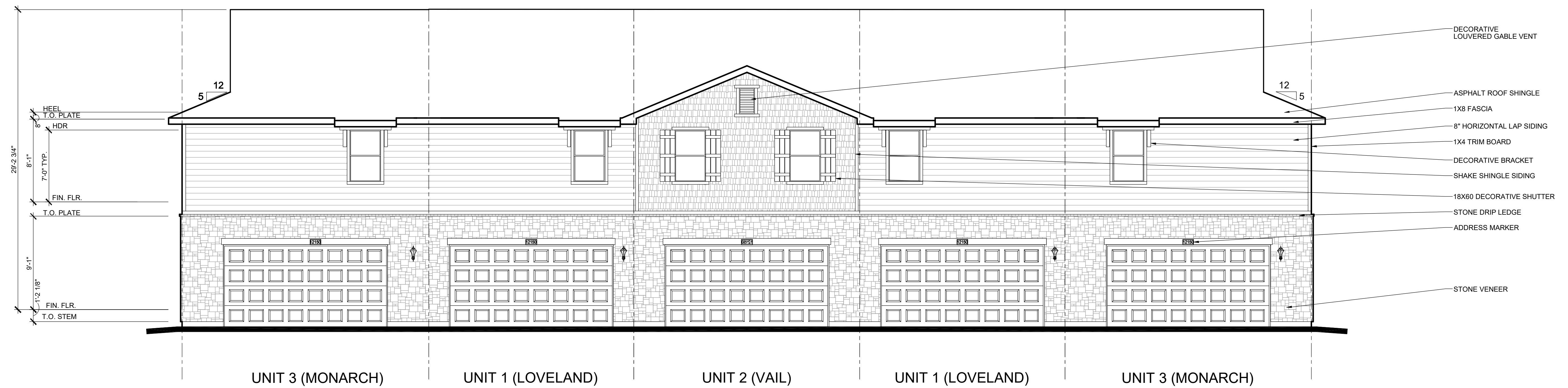
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UNIT 3 (MONARCH)

LEFT ELEVATION

ELEVATION B 3/16" = 1'-0"



REAR ELEVATION

ELEVATION B 3/16" = 1'-0"

5 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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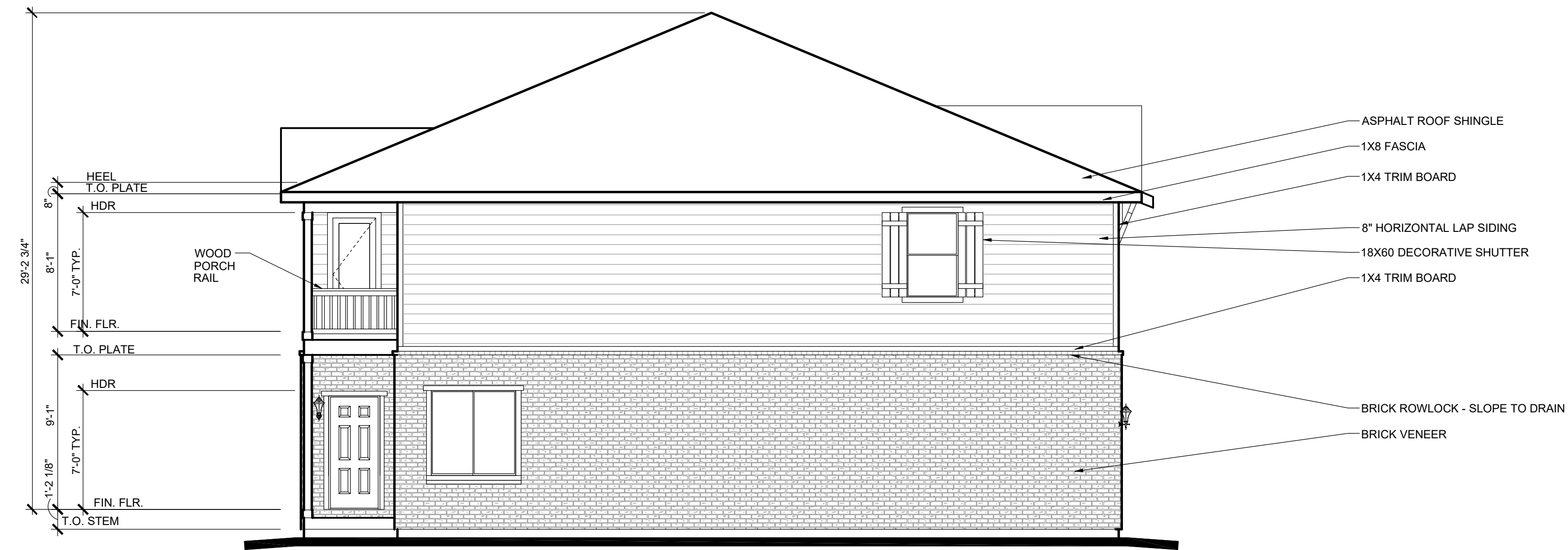
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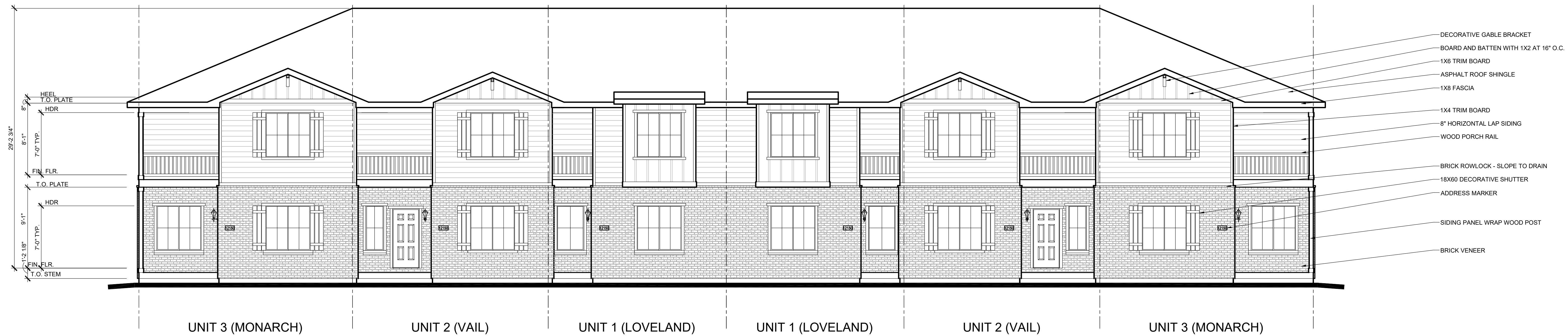
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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

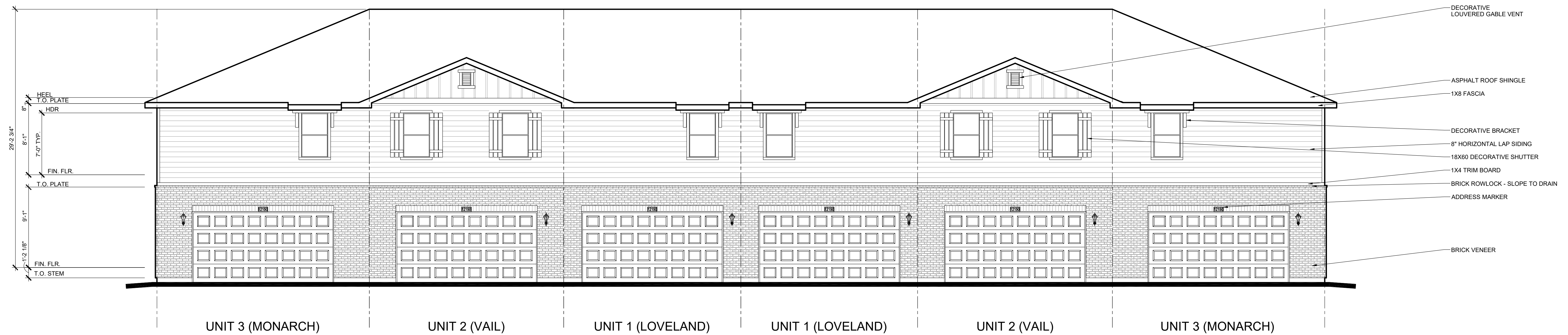
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UNIT 3 (MONARCH)

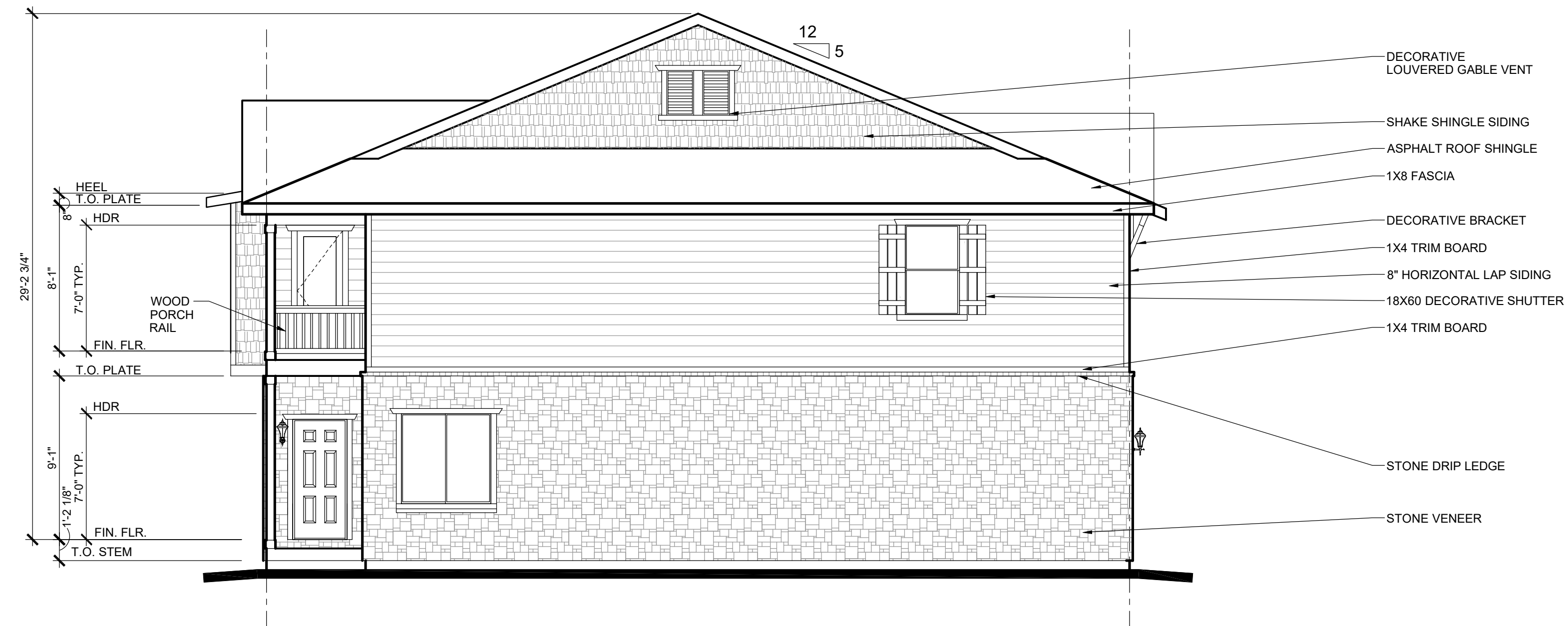
LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"

6 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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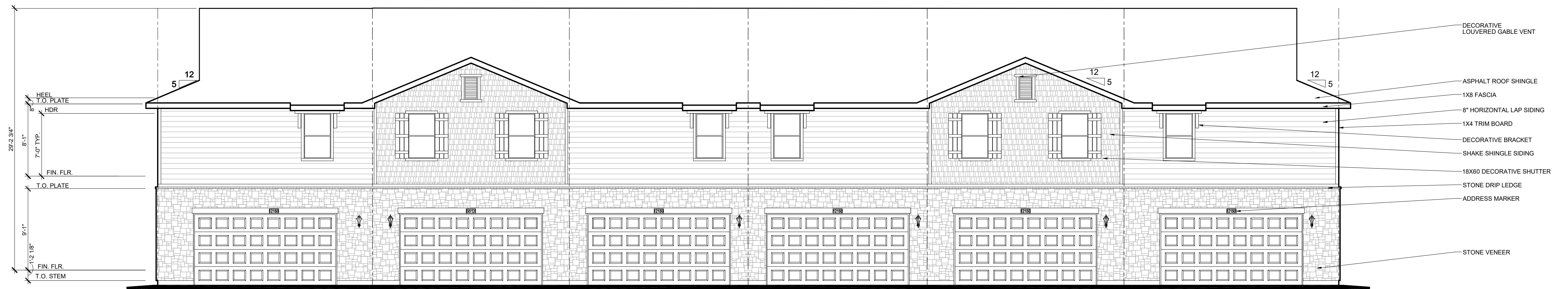
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UNIT 3 (MONARCH)

LEFT ELEVATION

ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

UNIT 2 (VAIL)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

UNIT 2 (VAIL)

UNIT 3 (MONARCH)

REAR ELEVATION

ELEVATION B 3/16" = 1'-0"

6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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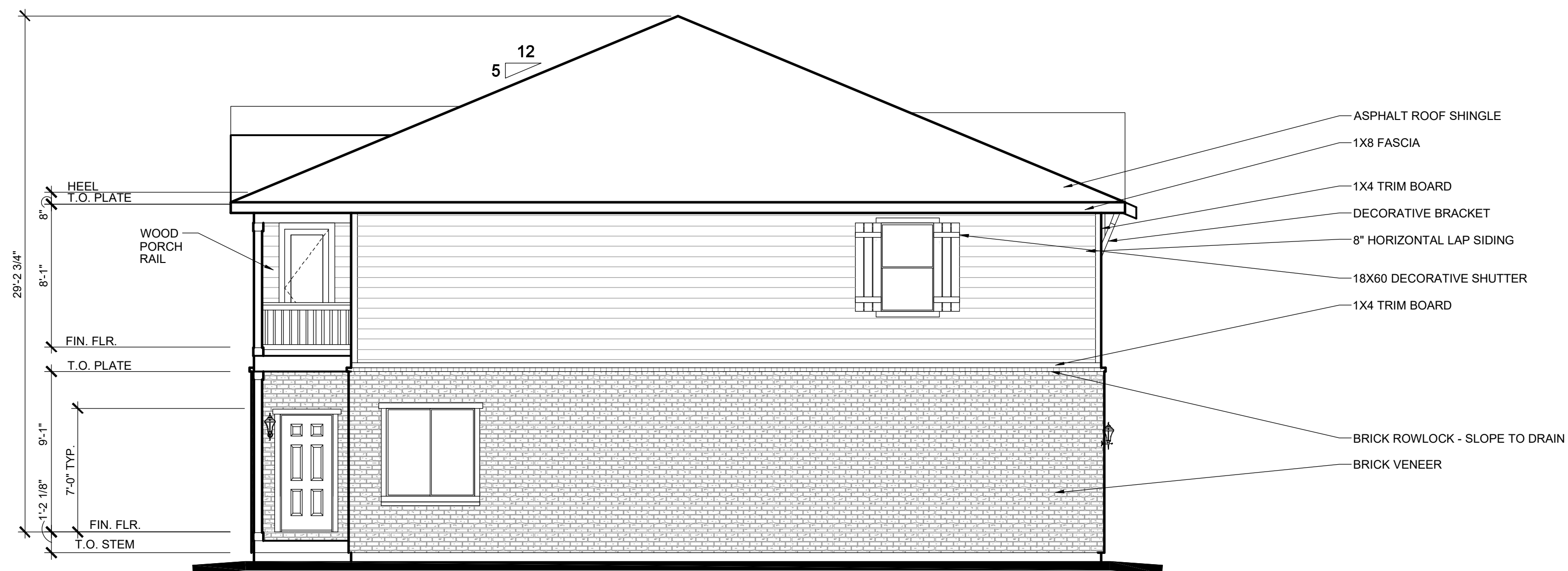
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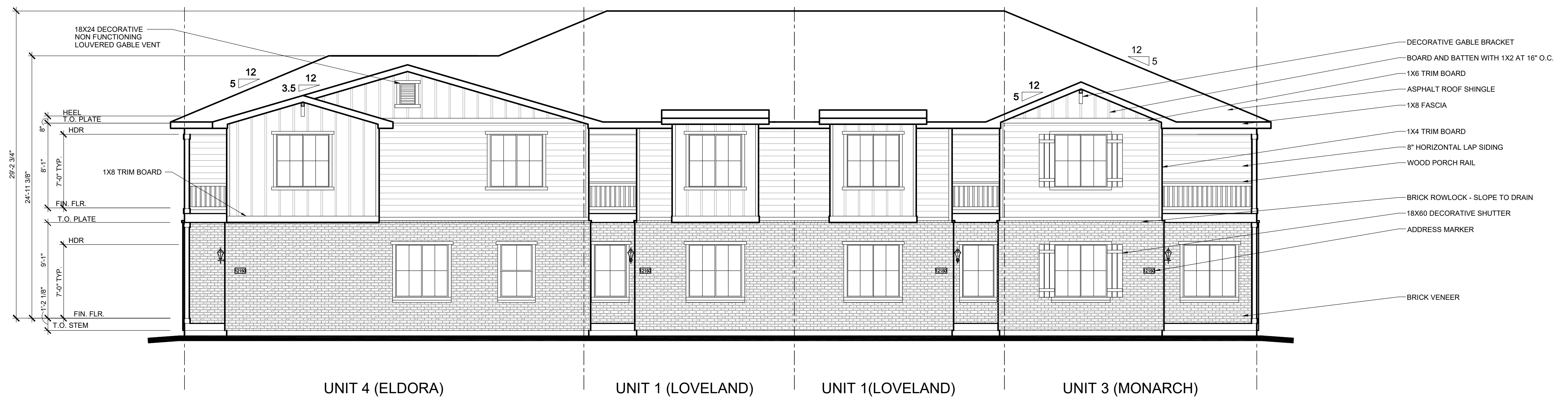
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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



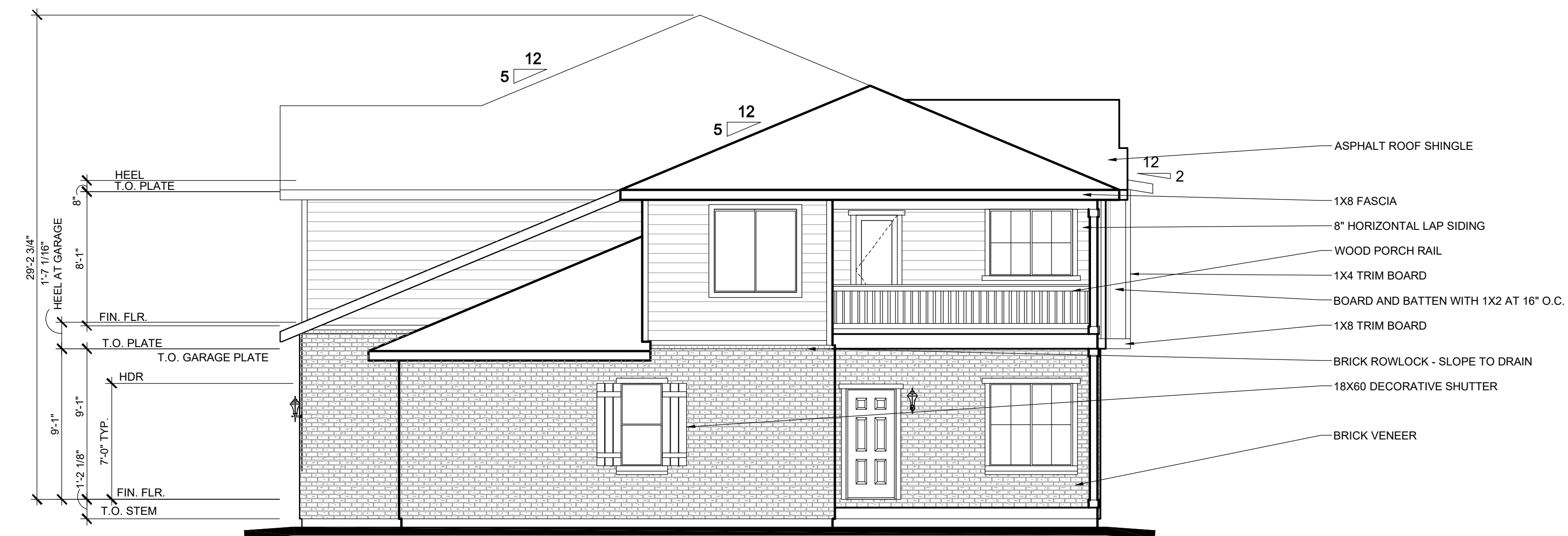
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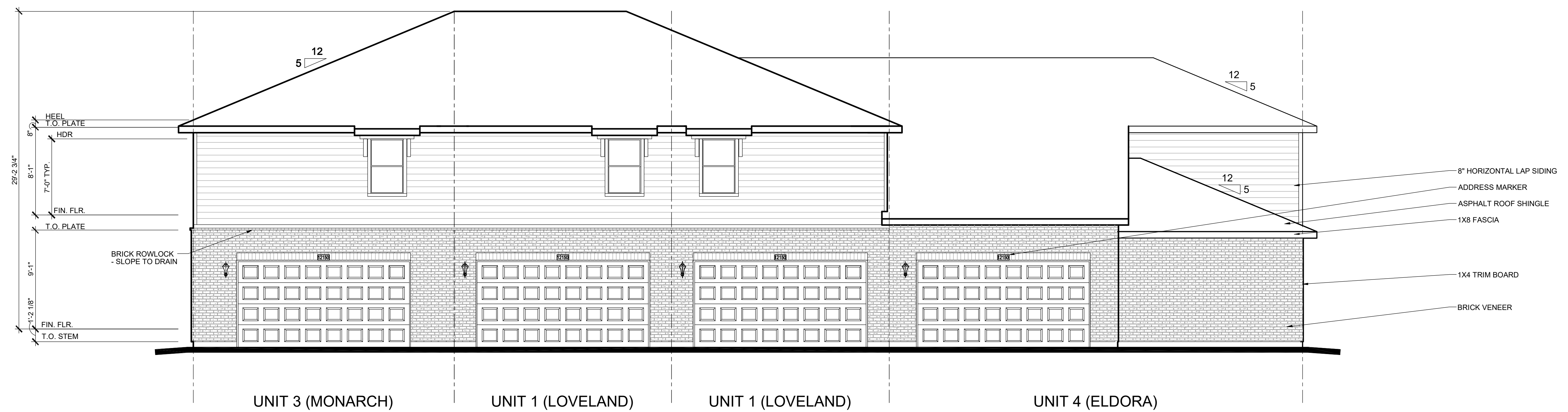
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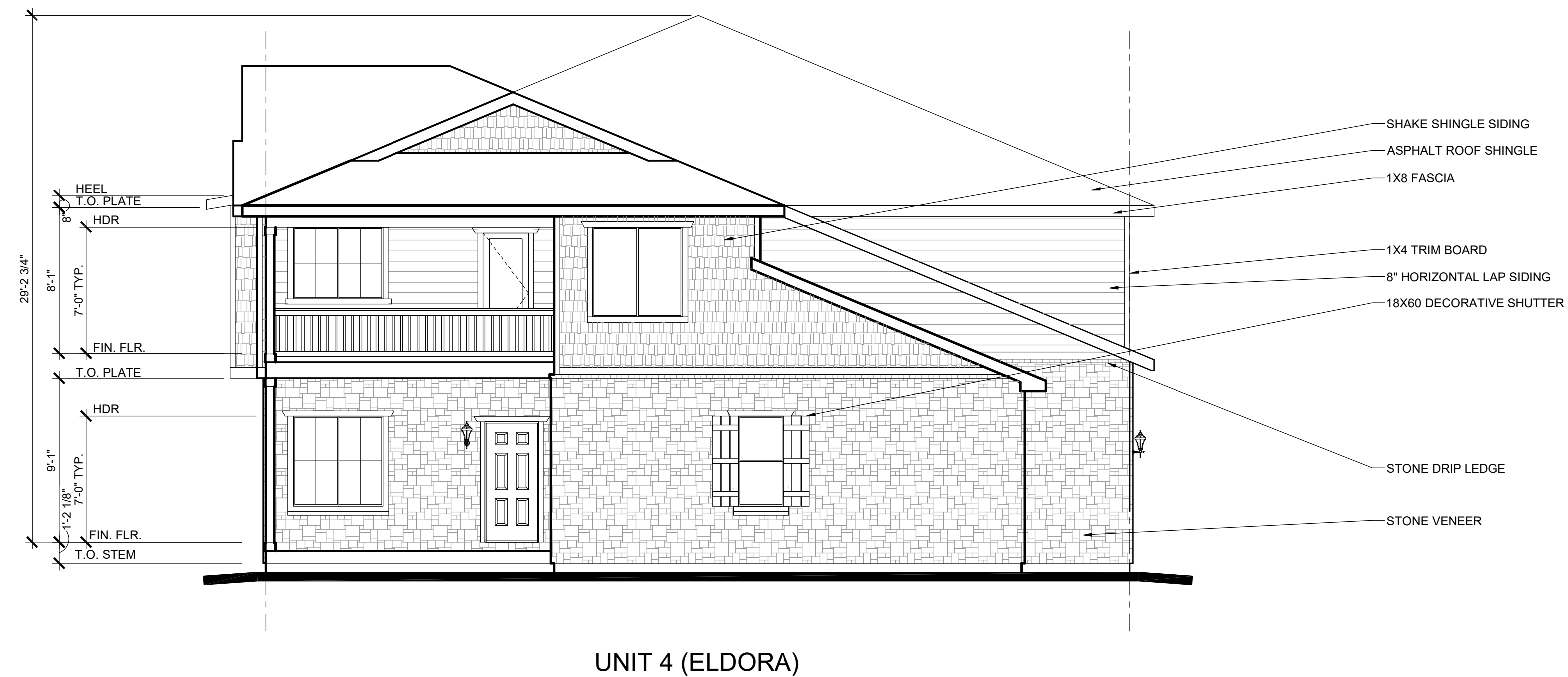


UNIT 4 (ELDORA)

LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 4 (ELDORA)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"

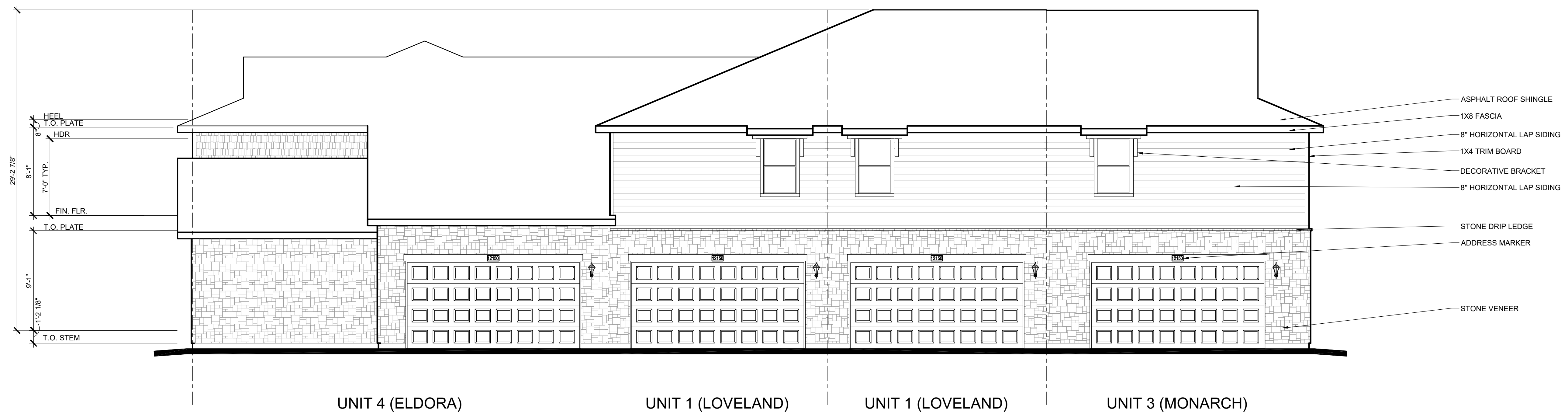


FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

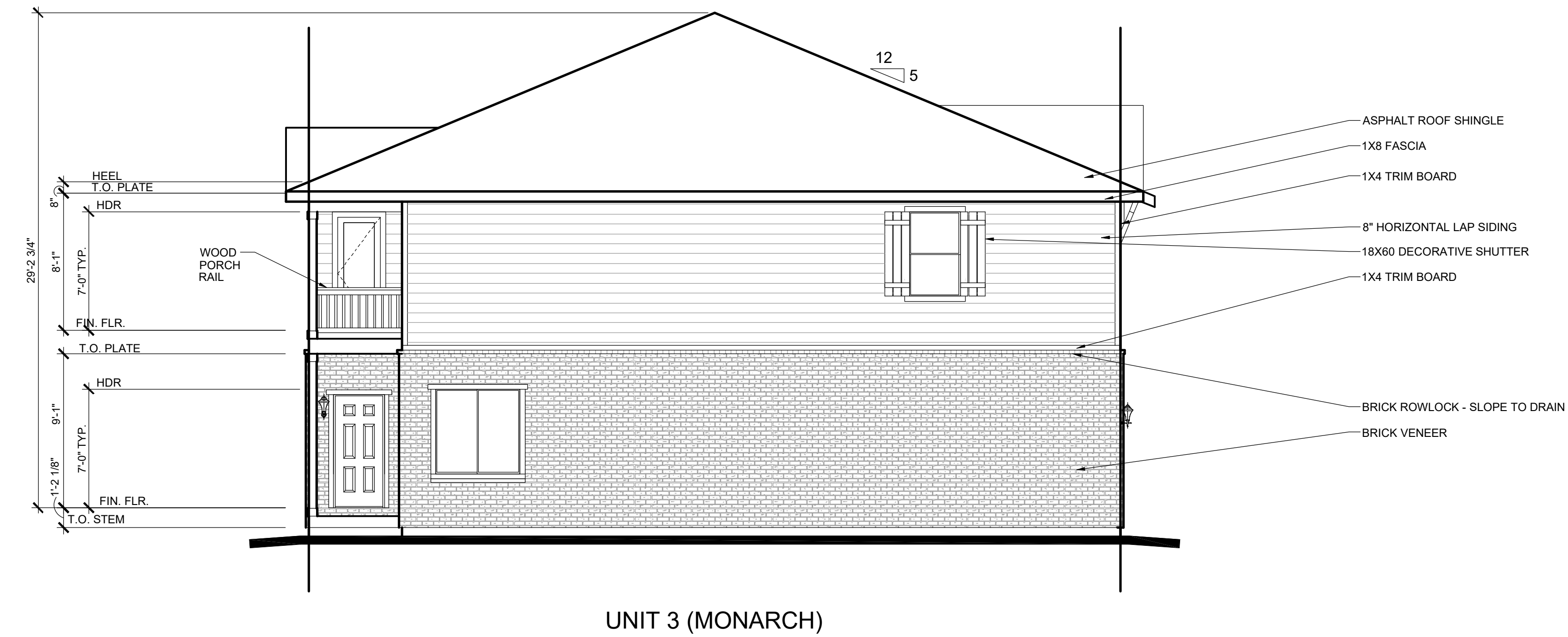


UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION B 3/16" = 1'-0"

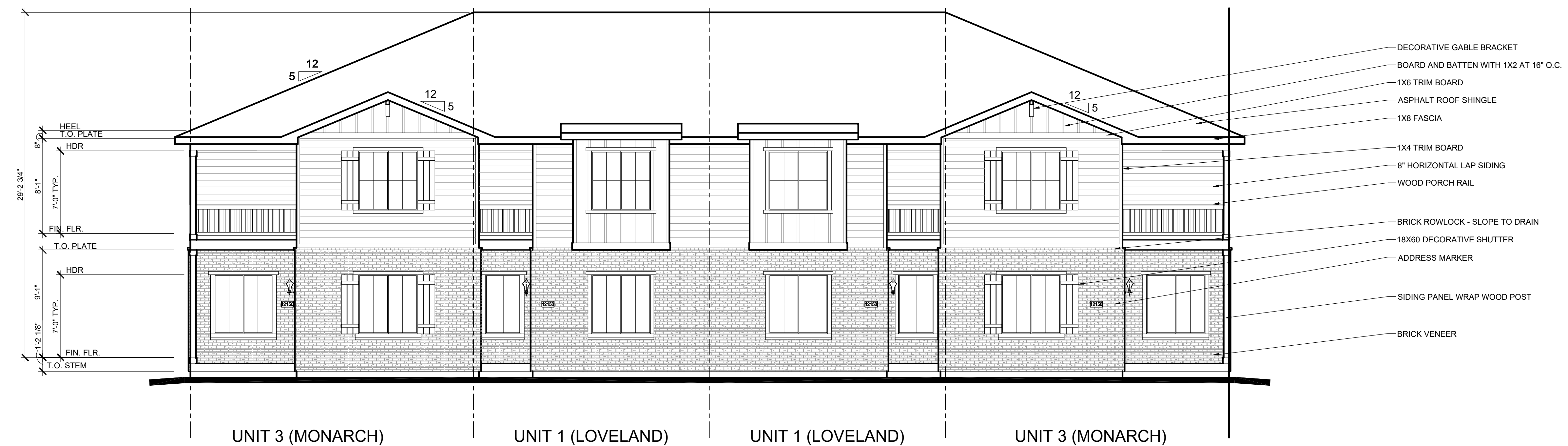


REAR ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"

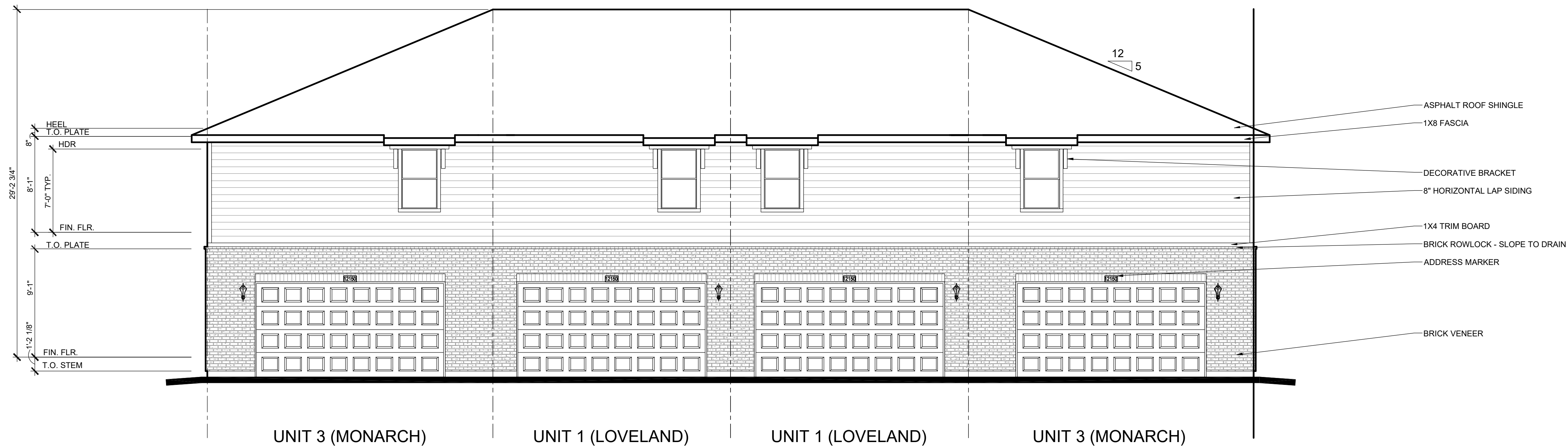


FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



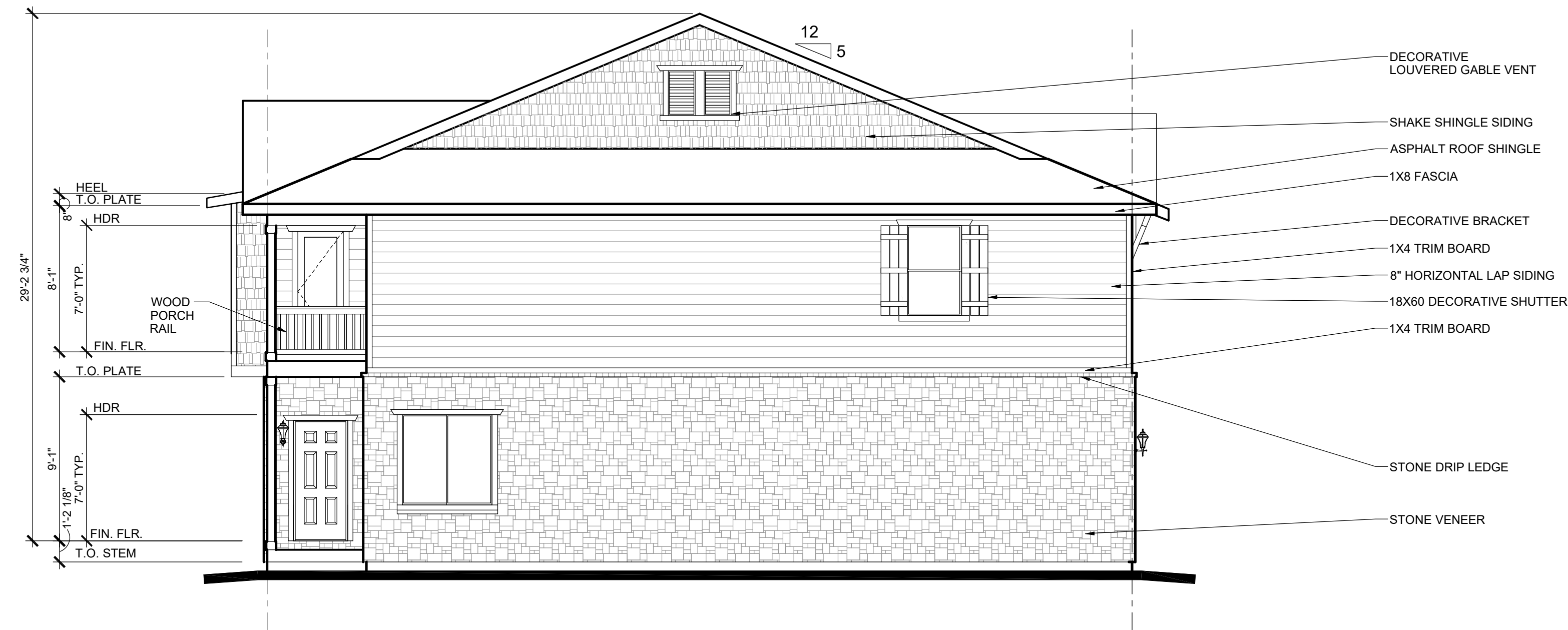
UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

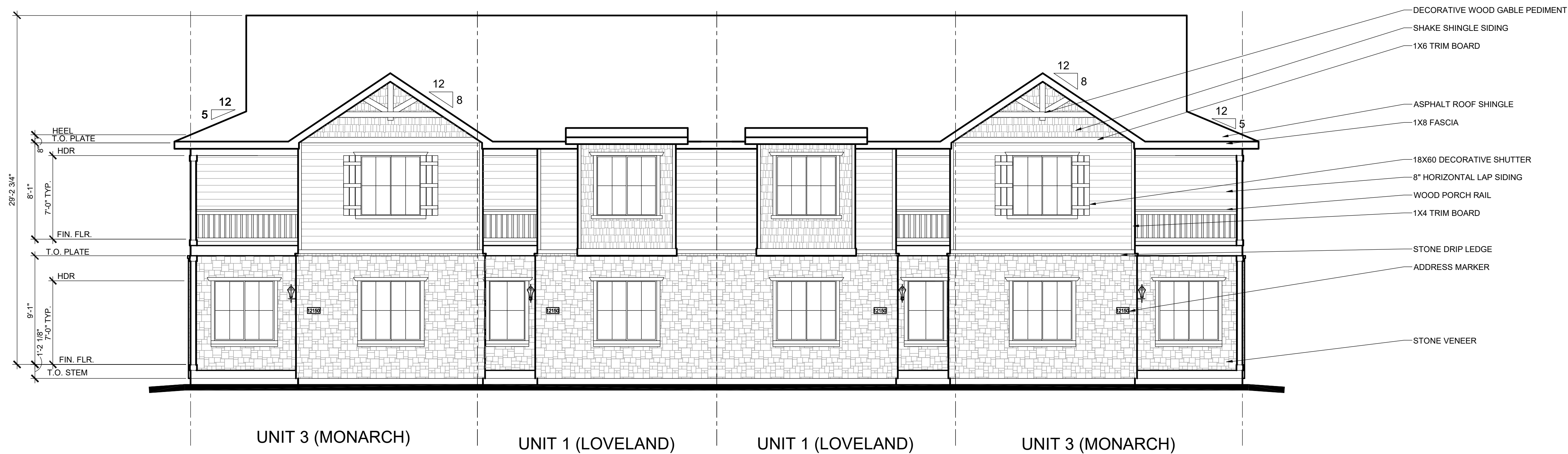
UNIT 3 (MONARCH)

REAR ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"

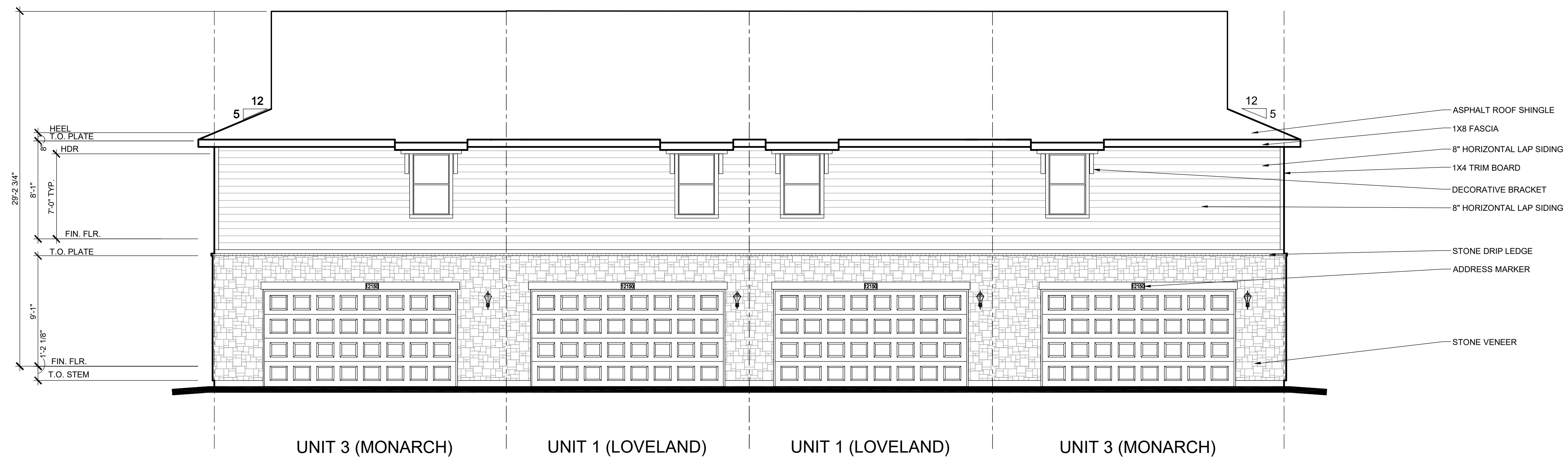


FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

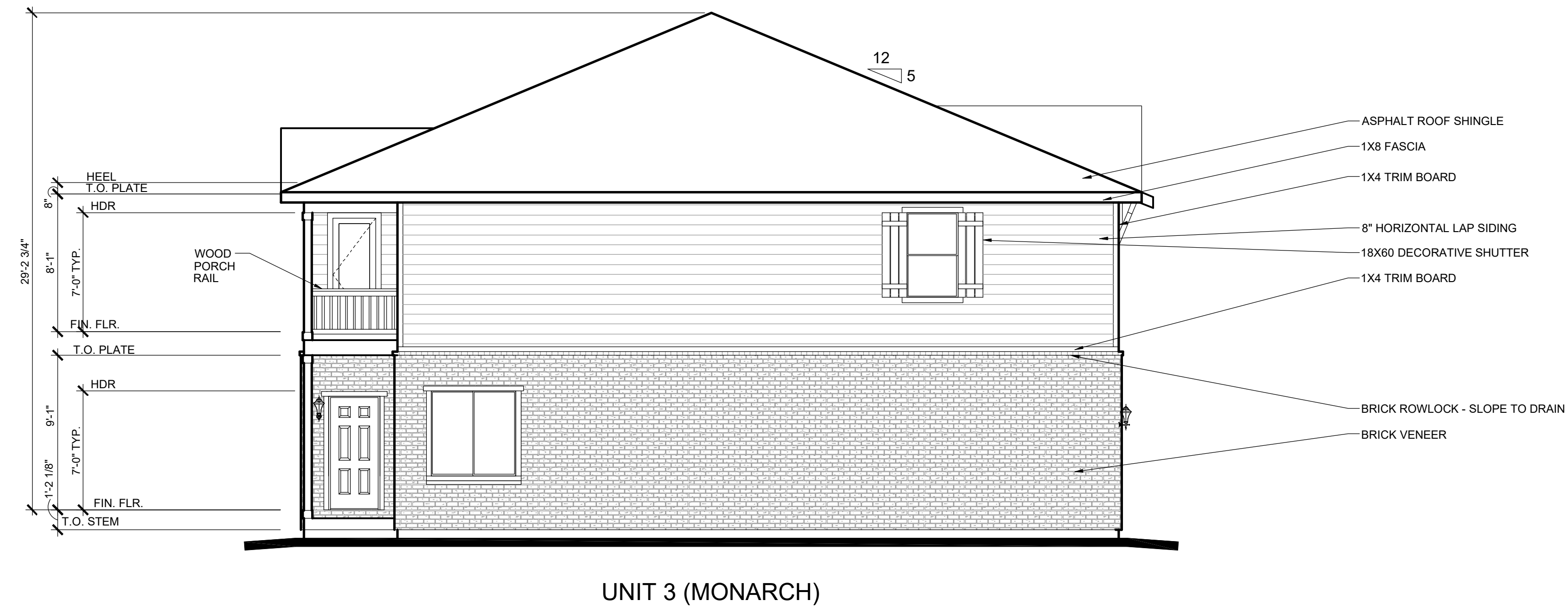


UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION B 3/16" = 1'-0"

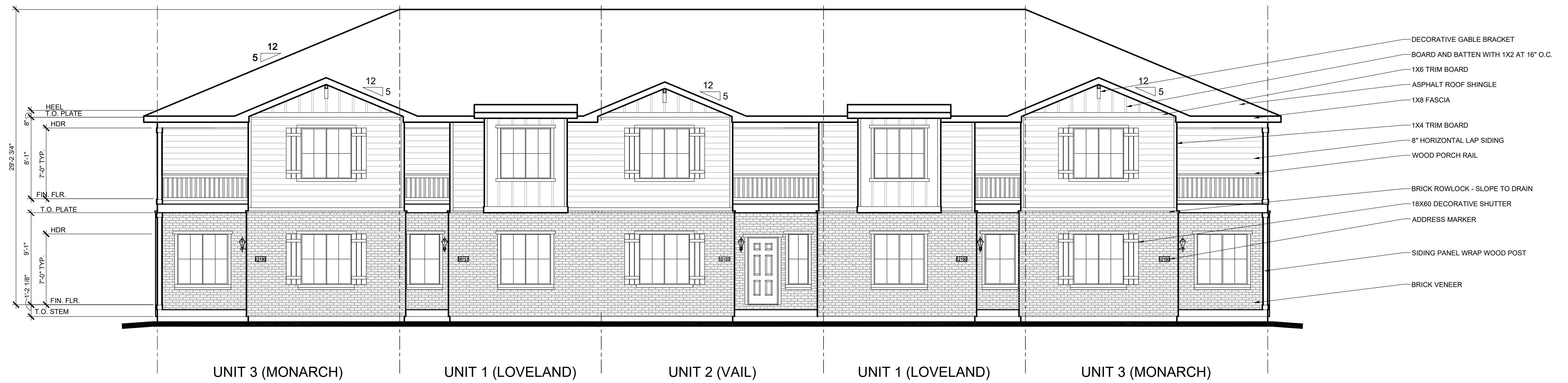


REAR ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH) UNIT 1 (LOVELAND) UNIT 2 (VAIL) UNIT 1 (LOVELAND) UNIT 3 (MONARCH)

FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

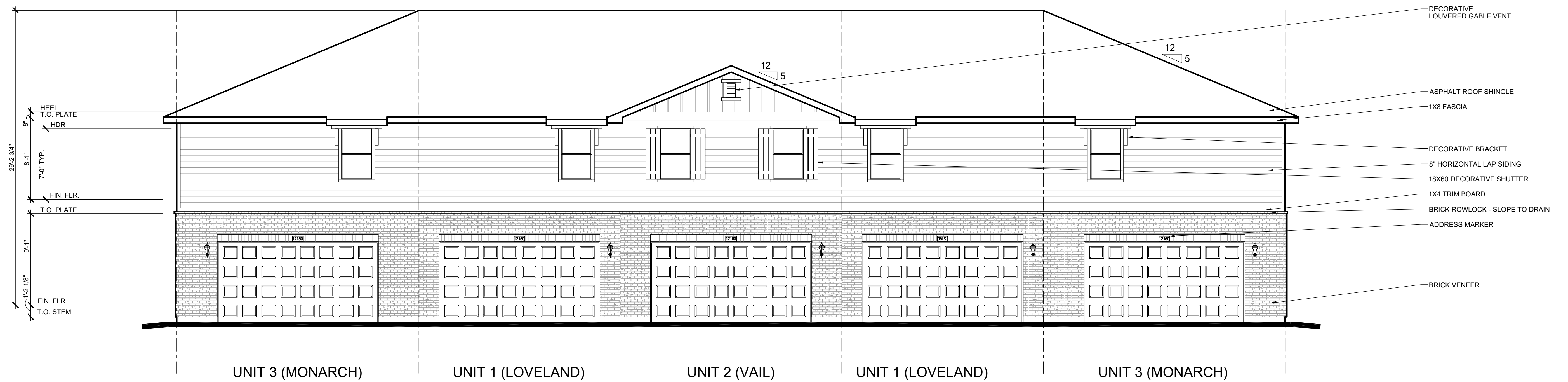
5 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



UNIT 3 (MONARCH)

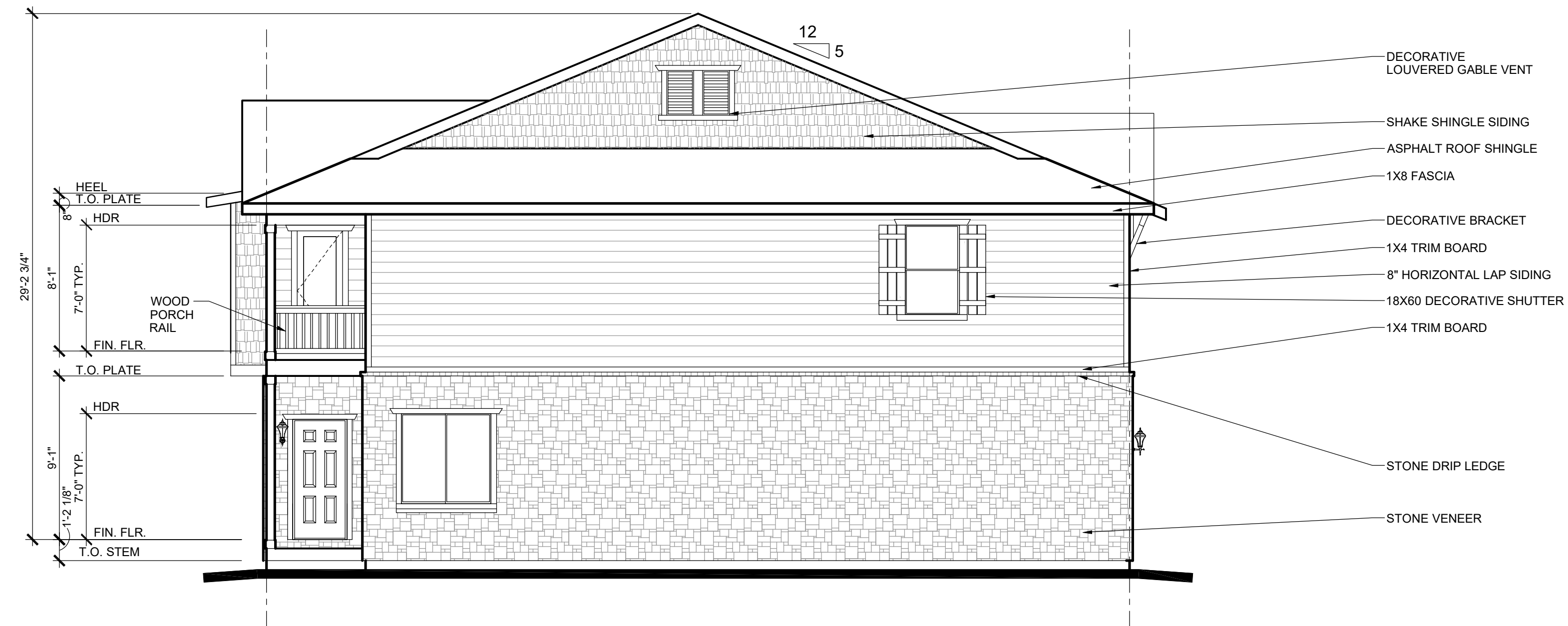
LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"

5 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"



UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 2 (VAIL)

UNIT 1 (LOVELAND)

UNIT 3 (MONARCH)

FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

5 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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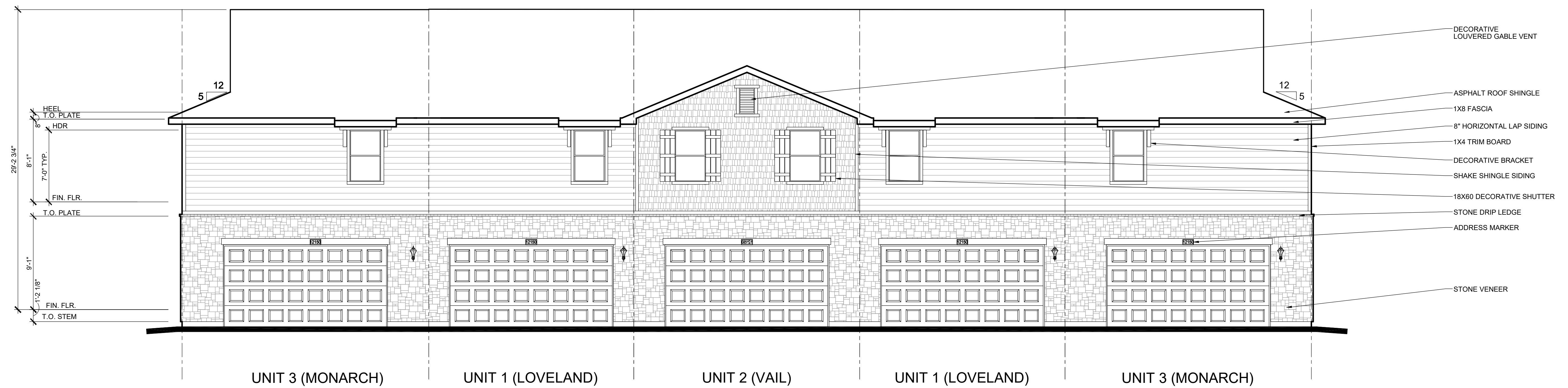
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UNIT 3 (MONARCH)

LEFT ELEVATION

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REAR ELEVATION

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5 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



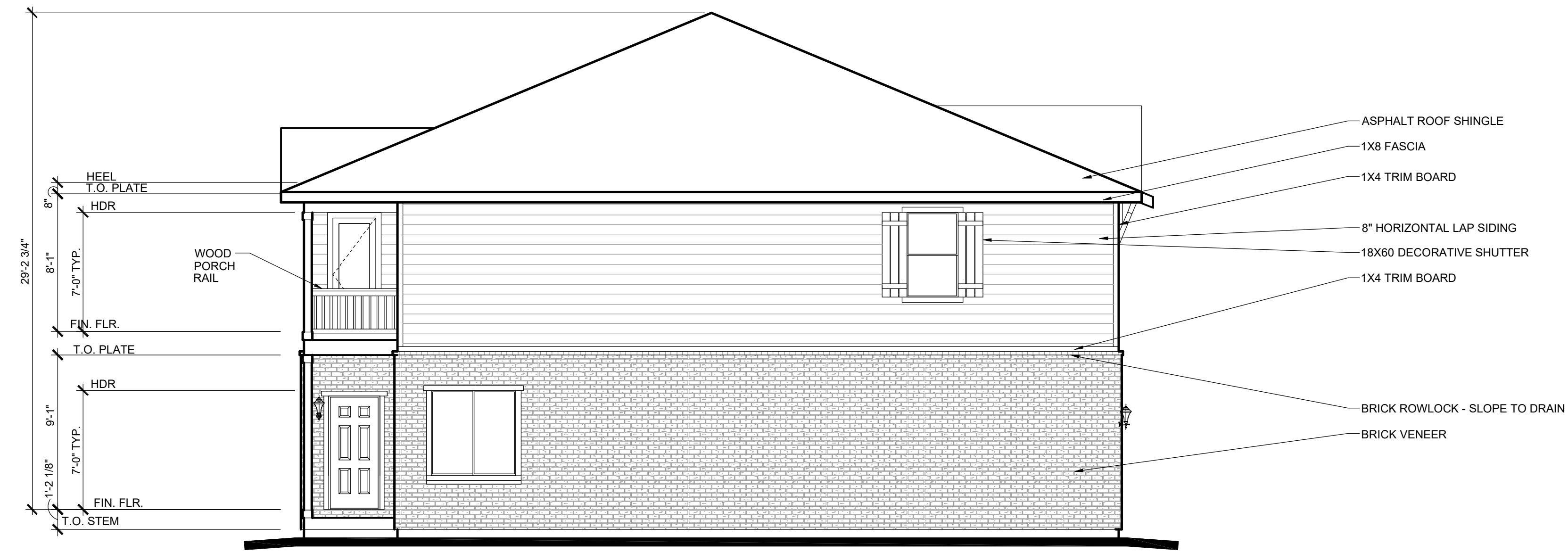
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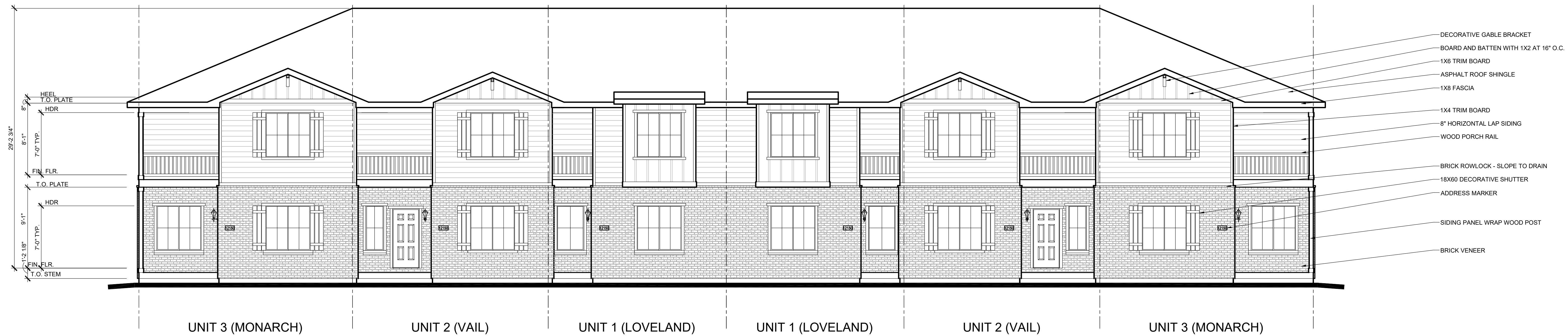
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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

6 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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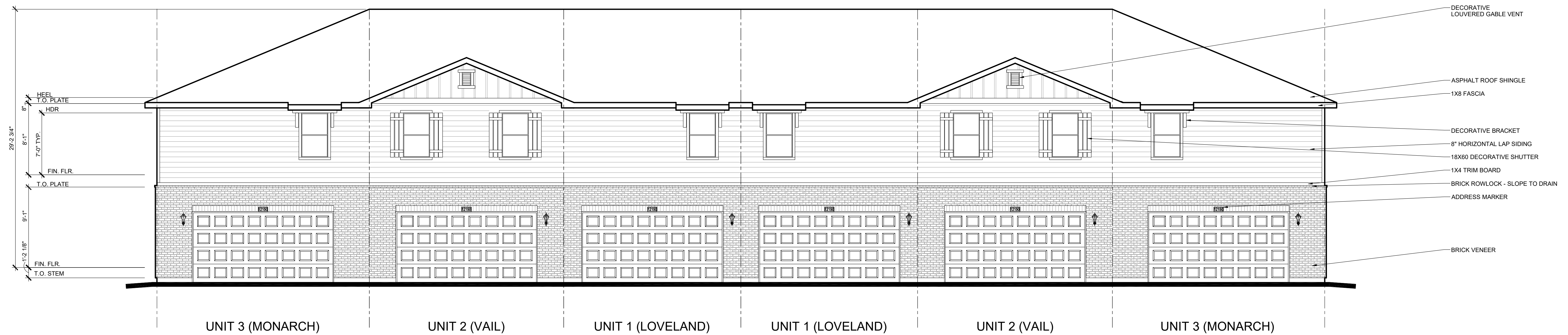
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UNIT 3 (MONARCH)

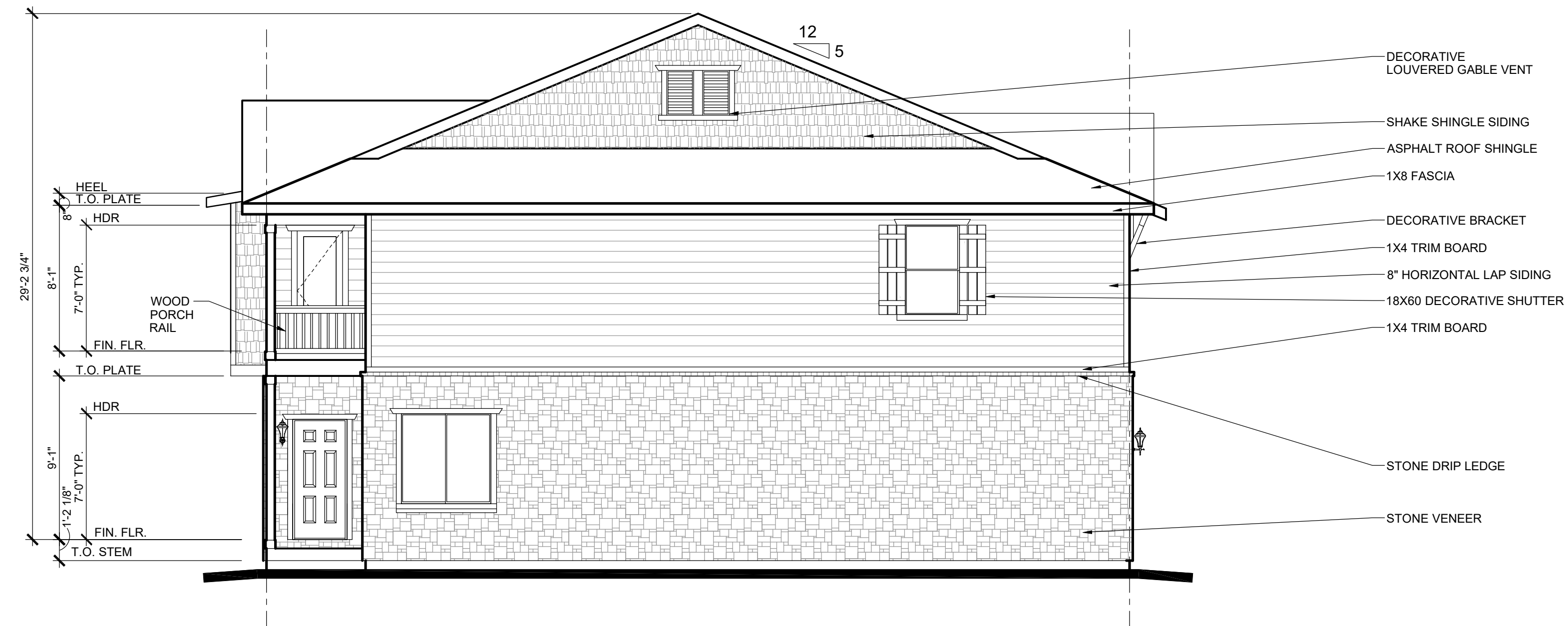
LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"

6 PLEX - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION B 3/16" = 1'-0"



FRONT ELEVATION
ELEVATION B 3/16" = 1'-0"

6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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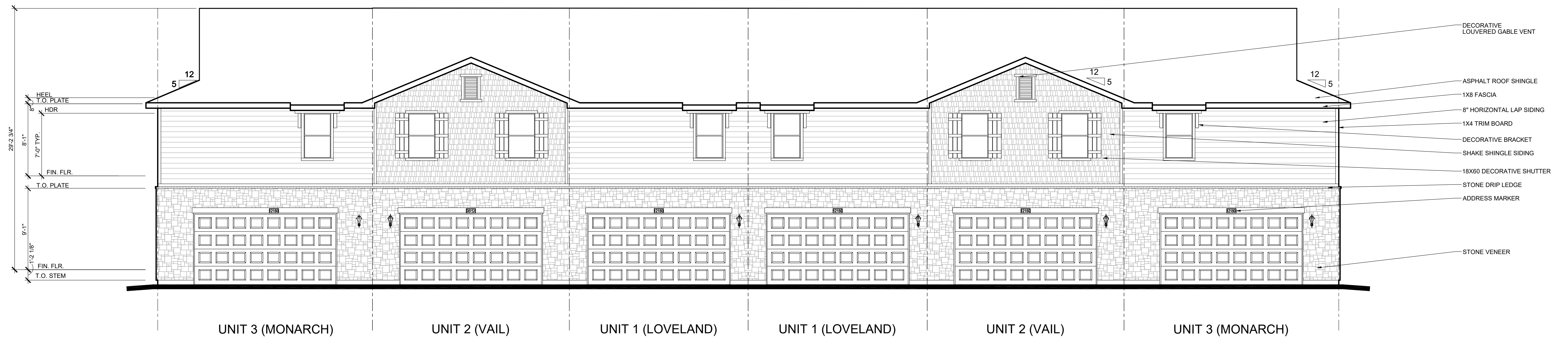
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UNIT 3 (MONARCH)

LEFT ELEVATION
ELEVATION B 3/16" = 1'-0"



REAR ELEVATION
ELEVATION B 3/16" = 1'-0"

6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 4 (ELDORA)

UNIT 1 (LOVELAND)

UNIT 1(LOVELAND)

UNIT 3 (MONARCH)

FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



UNIT 4 (ELDORA)

LEFT ELEVATION
ELEVATION A 3/16" = 1'-0"



REAR ELEVATION
ELEVATION A 3/16" = 1'-0"

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

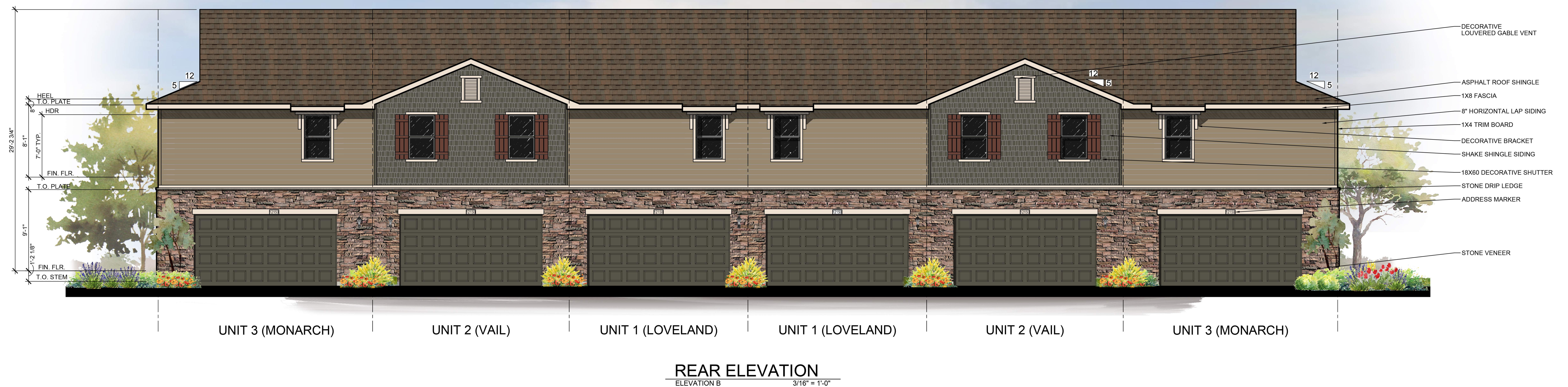
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UNIT 3 (MONARCH)

RIGHT ELEVATION
ELEVATION A 3/16" = 1'-0"



UNIT 4 (ELDORA)

UNIT 1 (LOVELAND)

UNIT 1(LOVELAND)

UNIT 3 (MONARCH)

FRONT ELEVATION
ELEVATION A 3/16" = 1'-0"

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

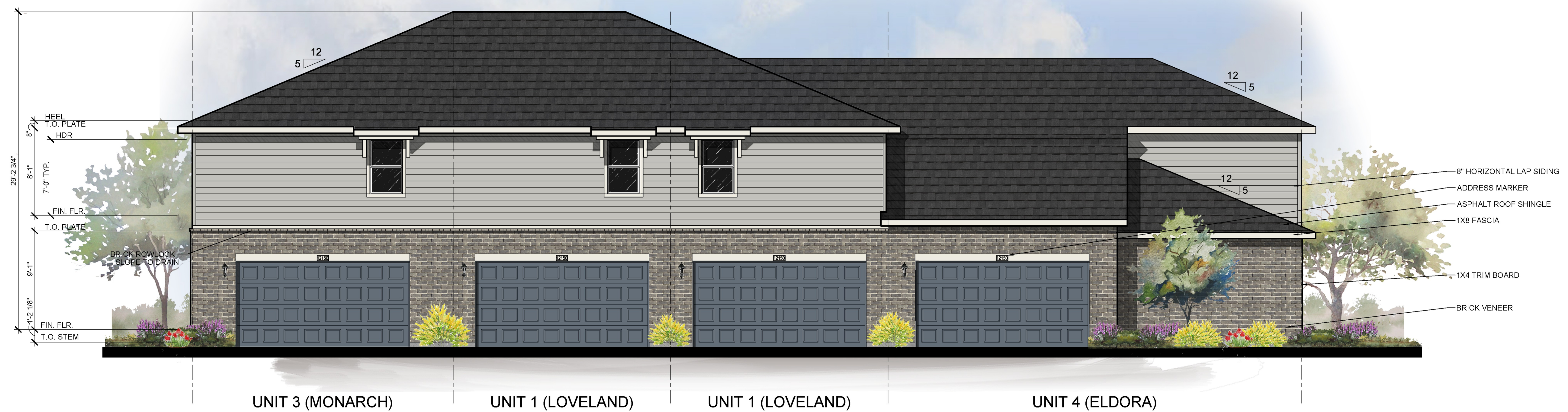
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UNIT 4 (ELDORA)

LEFT ELEVATION

ELEVATION A 3/16" = 1'-0"



UNIT 3 (MONARCH)

UNIT 1 (LOVELAND)

UNIT 1 (LOVELAND)

UNIT 4 (ELDORA)

REAR ELEVATION

ELEVATION A 3/16" = 1'-0"

4 PLEX - BLDG. 1 - ELEVATION A | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

8-4-2021



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UNIT 3 (MONARCH)
RIGHT ELEVATION
ELEVATION B $\frac{3}{16}'' = 1'-0''$



FRONT ELEVATION
ELEVATION B $\frac{3}{16}'' = 1'-0''$

6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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6 PLEX - ELEVATION B | FORT LUPTON, CO | COTTONWOOD GREENS PUD NO. 4

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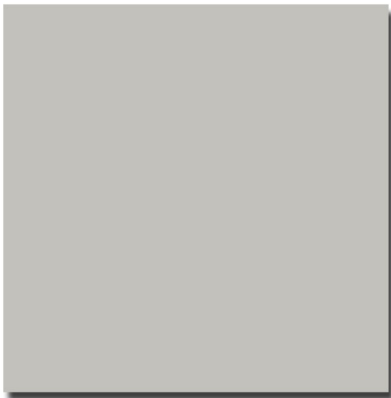
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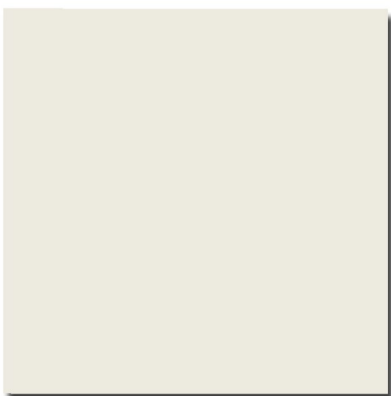
Color Scheme 1



Main Body
Light French Gray (SW 0055)
Mfg: Sherwin Williams



Accent Body
Granite Peak (SW 6250)
Mfg: Sherwin Williams



Trim
Alabaster (SW 7008)
Mfg: Sherwin Williams



Front Door
Hopsack (SW 6109)
Mfg: Sherwin Williams



Stone
TundraBrick - Ashland
Mfg: Eldorado Stone



Asphalt Shingles
Heritage Premium-Rustic Black
Mfg: Tamko

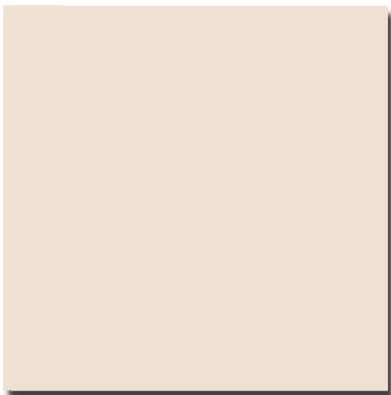
Color Scheme 2



Main Body -
Sawdust (SW 6158)
Mfg: Sherwin Williams



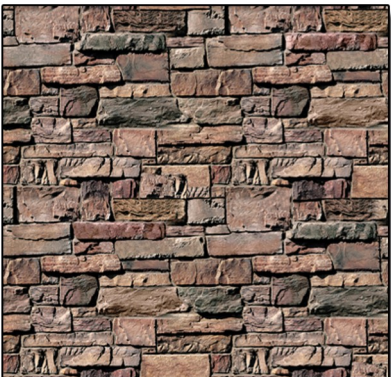
Accent Body -
Roycroft Bronze Green (SW 2846)
Mfg: Sherwin Williams



Trim -
Alluring White (SW 6343)
Mfg: Sherwin Williams



Front Door -
Aurora Brown (SW 2837)
Mfg: Sherwin Williams



Stone
Old Country Ledge - Chablis
Mfg: Coronado Stone



Asphalt Shingles
Heritage Premium - Mountain Slate
Mfg: Tamko

Project: Cottonwood Townhomes (Filing 4)
 Date: July 20, 2021
 Client: Arbor Capital Partners

Prepared By: ARP
 Job Number: 20002948



Cottonwood Greens
Overall: Phase 4

Storm Drainage

Item	Qty	Unit	Unit Cost	Item Cost	Description
12" Storm Sewer	93	LF	\$ 40.00	\$ 3,716.00	Includes inlet/outlet structures, trickle channel, micropool, forebay, grading and seeding
18" Storm Sewer	105	LF	\$ 50.00	\$ 5,255.00	
24" Storm Sewer	463	LF	\$ 60.00	\$ 27,786.00	
30" Storm Sewer	321	LF	\$ 75.00	\$ 24,060.00	
Detention Pond	1	EA	\$ 60,000.00	\$ 60,000.00	
5' Type R Inlet	6	EA	\$ 5,500.00	\$ 33,000.00	
Storm Sewer Manholes 4' Dia	5	EA	\$ 4,500.00	\$ 22,500.00	
Storm Sewer Manholes 6' Dia	2	EA	\$ 7,000.00	\$ 14,000.00	
Storm Total				\$ 190,317.00	

Sanitary Sewer

Item	Qty	Unit	Unit Cost	Item Cost	Description
8" Sanitary Sewer	3,029	LF	\$ 38.00	\$ 115,113.40	
Sanitary Sewer Service	136	EA	\$ 1,500.00	\$ 204,000.00	
Sanitary Sewer Manholes 4' Dia.	20	EA	\$ 4,500.00	\$ 90,000.00	
Connection to Existing	1	EA	\$ 5,000.00	\$ 5,000.00	
Air Test	3,029	LF	\$ 1.25	\$ 3,786.25	
Sanitary Total				\$ 417,899.65	

Water Distribution

Item	Qty	Unit	Unit Cost	Item Cost	Description
8" Water Line	3,900	LF	\$ 38.00	\$ 148,200.00	Includes setting water meter
4" Irrigation Line	384	LF	\$ 3.00	\$ 1,152.90	
Water Service	136	EA	\$ 1,500.00	\$ 204,000.00	
Connection to Existing	2	EA	\$ 3,500.00	\$ 7,000.00	
8" Gate Valves	34	EA	\$ 1,950.00	\$ 66,300.00	
Hydrant Assemblies	11	EA	\$ 4,800.00	\$ 52,800.00	
Clear Water Testing	3,900	LF	\$ 1.25	\$ 4,875.00	
Water Total				\$ 484,327.90	

Private Alleys

Item	Qty	Unit	Unit Cost	Item Cost	Description
Subgrade Preparation	1,575	SY	\$ 2.50	\$ 3,937.50	
Curb & Gutter	1,404	LF	\$ 32.00	\$ 44,928.00	
Asphalt	1,575	SY	\$ 38.00	\$ 59,850.00	
Signs	2	EA	\$ 375.00	\$ 750.00	
Roadway Total				\$ 109,465.50	

Public Streets

Item	Qty	Unit	Unit Cost	Item Cost	Description
Subgrade Preparation	8,628	SY	\$ 2.50	\$ 21,570.00	
Curb & Gutter	5,417	LF	\$ 32.00	\$ 173,344.00	
Asphalt	8,093	SY	\$ 38.00	\$ 307,534.00	
Sidewalk	36,467	SF	\$ 5.50	\$ 200,568.50	
Pedestrian Ramps	26	EA	\$ 3,000.00	\$ 78,000.00	
Crossspan	9	EA	\$ 8,000.00	\$ 72,000.00	
Signs	11	EA	\$ 375.00	\$ 4,125.00	
Roadway Total				\$ 857,141.50	

Soil Erosion Control

Item	Qty	Unit	Unit Cost	Item Cost	Description
Mobilization	1	EA	\$ 25,000.00	\$ 25,000.00	
Mulching	13	AC	\$ 350.00	\$ 4,647.65	
Temporary Seeding	13	AC	\$ 350.00	\$ 4,647.65	
Silt Fence	3,205	LF	\$ 5.00	\$ 16,025.00	
Permanent Seeding	13	AC	\$ 600.00	\$ 7,967.40	
Rock Sock	4	EA	\$ 150.00	\$ 600.00	
Erosion Control Blanket	5,877	SY	\$ 3.25	\$ 19,100.97	
Vehicle Tracking Control	1	EA	\$ 3,000.00	\$ 3,000.00	
Inlet/Outlet Protection	7	EA	\$ 450.00	\$ 3,150.00	
Concrete Washout Area	1	EA	\$ 10,000.00	\$ 10,000.00	
Soil Erosion Control Total				\$ 94,138.67	

Earthwork

Item	Qty	Unit	Unit Cost	Item Cost	Description
Earthwork	69,738	CY	\$ 3.00	\$ 209,214.00	Includes earthwork shown on Borrow Area Plan dated 2021-04-30 (does not include soil import)
Earthwork Total				\$ 209,214.00	

Total

Sub-Total:	\$	1,505,362.72
20% contingency:	\$	301,072.54
TOTAL:	\$	1,806,435.27

MEMORANDUM

To: Roy Vestal, City of Fort Lupton
 From: Ruth Rollins, Rollins Consult LLC
 Date: June 17, 2021
 Subject: Transportation Memo Cottonwood Greens Townhomes

The following memorandum provides an evaluation of the proposed Townhomes within the Cottonwood Greens project in Fort Lupton. The original traffic study, prepared by Rollins Consult LLC for the Cottonwood Greens project is dated October 7, 2019. This study addressed the built out of 287 single family homes and 140 Townhomes. The townhomes are now being submitted for a preliminary and final development plan.

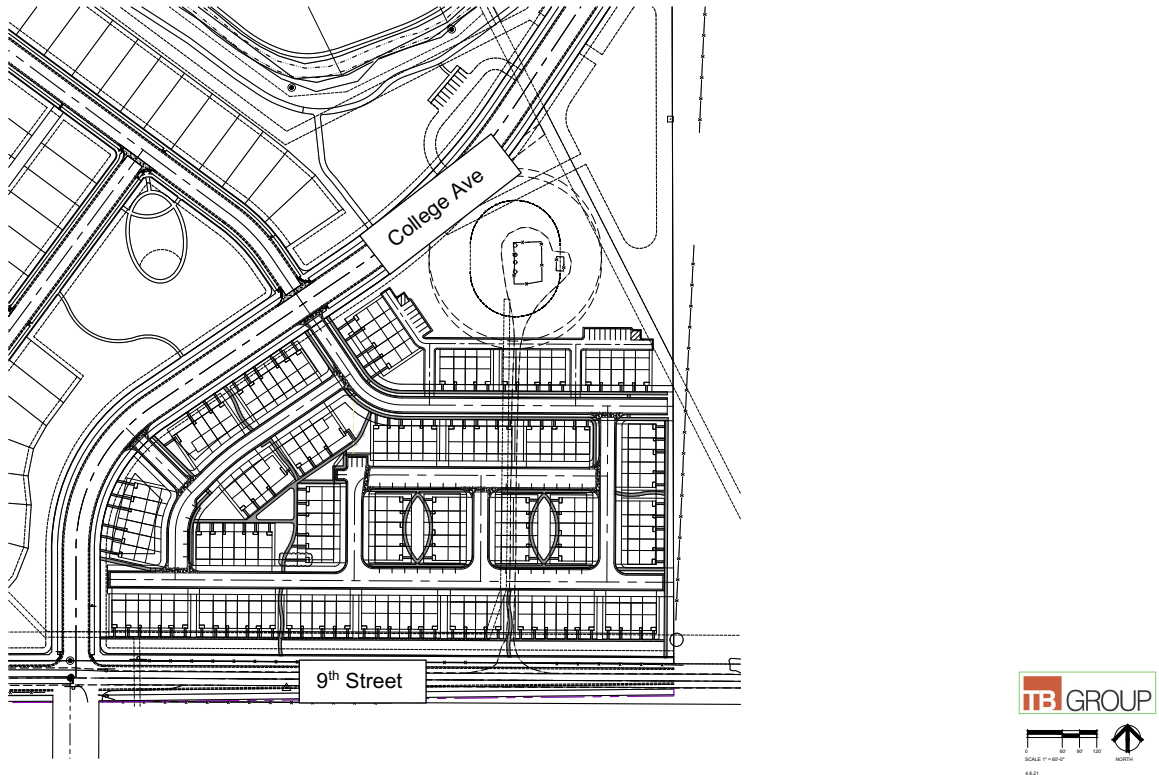
The townhomes will remain at the 140 dwellings analyzed in the October 7, 2019 study. The townhome site plan, which is shown on Figure 1, includes a roadway system that connects to the planned north/south collector street, College Avenue, within Cottonwood Greens. The internal roads within the townhome area can be designed as local streets to accommodate the townhome's projected 1,018 daily trips, as documented in the October 7, 2019 study and shown below in Table 1.

Table 1 – Estimated Trip Generation

ITE Land Use Code & Rates		Project	Project Trip Generation						
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Single-Family Detached	210	287	2,709	53	159	212	179	105	284
Multi-Family Low Rise	220	140	1,018	15	51	66	50	29	80
TOTAL BUILDOUT			3,727	68	210	278	229	135	364

Based on ITE Trip Generation 10th Edition

Figure 1 – Townhome Site Plan



The roadway system as proposed can accommodate the Cottonwood Greens Townhomes. Roy, let me know if you require any additional information.

Respectfully,

A handwritten signature in black ink, appearing to read 'Keith Rollins'.

President, Rollins Consult LLC

Traffic Impact Study Cottonwood Greens

October 7, 2019



Prepared for:
Arbor Capital Partners LLC

Rollins Consult LLC

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1 INTRODUCTION

This report documents the results of a study to evaluate the potential traffic impacts of the proposed Cottonwood Greens project in the City of Fort Lupton, Colorado. Rollins Consult LLC conducted the study in support of the development application for the proposed project.

PROJECT DESCRIPTION

The Cottonwood Greens project is located in the City of Fort Lupton, west of Weld County Road (CR) 31 and north of 9th Street. The site is bounded by the Fulton Ditch and the future alignment of 14th Street. The project site is comprised of approximately 122 acres. The site is surrounded by undeveloped land to the north and east. South of the site is a golf course, and government facilities. West of the project site is a church, residential development and undeveloped land. Figure 1 illustrates the project location and study area.

The project site is depicted on Figure 2. The site was designed with numerous roadways which allow for distribution of pedestrians, bicycles and vehicles. The internal roadways were designed as a curvilinear grid. There is also a pedestrian and bicycle trail (the Main Fulton Ditch Trail) proposed that follows the alignment of the Fulton Ditch.

The project proposes the following land uses and transportation elements:

- There are 287 single family homes proposed.
- 140 townhomes would be located in the southern part of the project.
- Access to public roadways would be provided at four connections. Two access locations are proposed from 9th Street. One access is provided to CR 31. One access will be provided to 14th Street.
- The internal roadway system has been designed to accommodate the project traffic.
- The proposed pedestrian and bicycle trail along the Fulton Ditch will connect to both the planned Fort Lupton Trail and the Main Fulton Ditch Trail. The site also provides parking and access to future bike/ped trails.

Figure 1 – Project Location

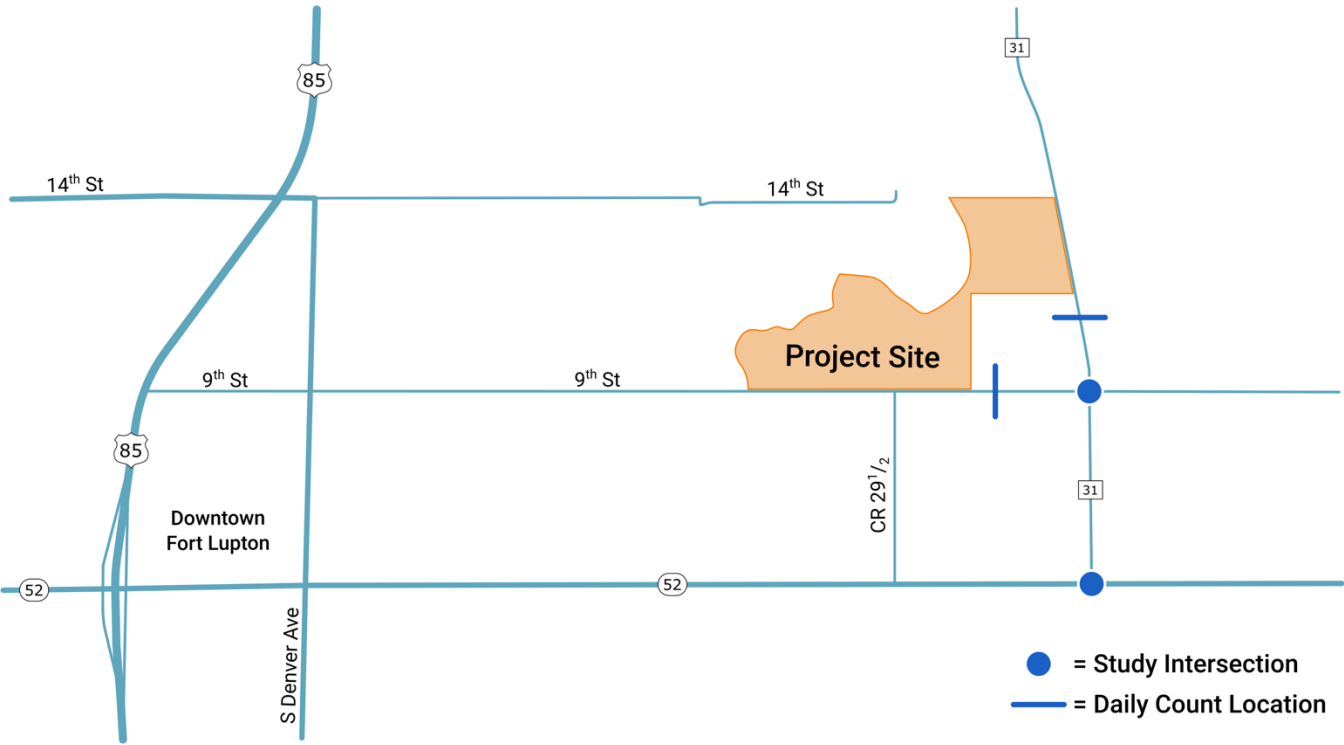
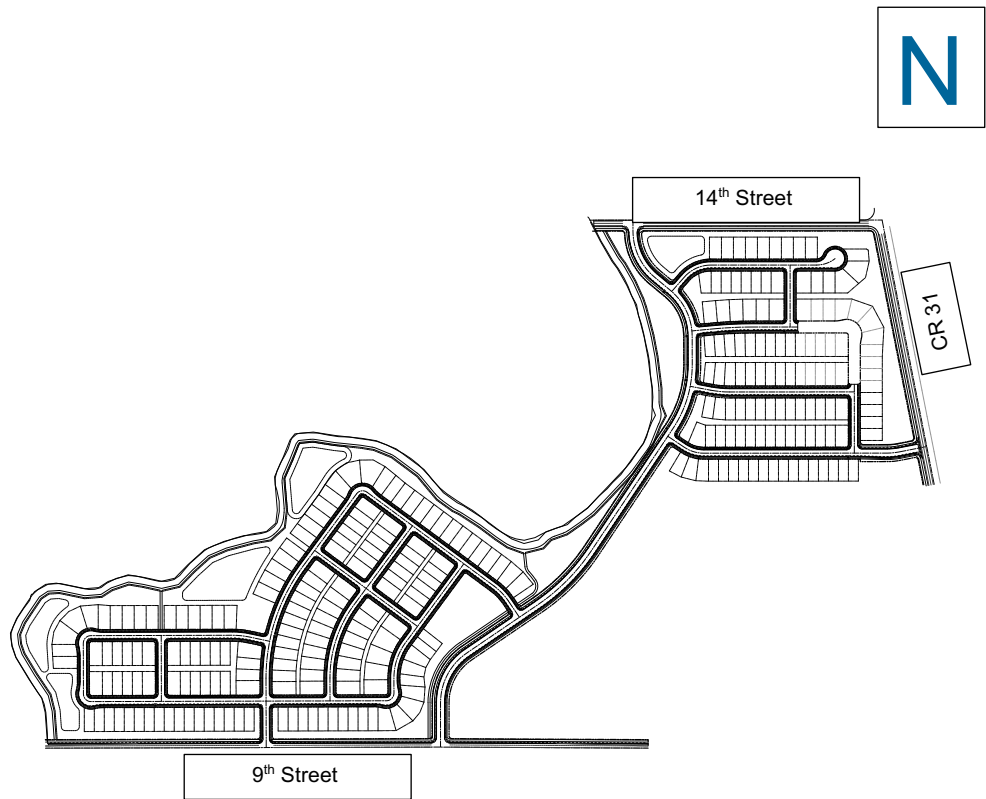


Figure 2 - Project Site Plan



STUDY SCOPE

The scope of work for this study was developed in conjunction with the City of Fort Lupton's Public Works department. The base assumptions, technical methodologies, and geographic coverage of the study were all identified as part of the study approach. The study analyzes the potential project-generated traffic impacts on the adjacent street system.

The study evaluates the potential changes to the transportation system after completion of the proposed Cottonwood Greens residential project for two future horizon years. The analysis of future year traffic forecasts is based on projected conditions in year 2024 (short range conditions) and 2040 (long range future conditions) both with and without the addition of the project traffic. The following transportation scenarios were analyzed for the AM and PM peak hours:

- **Existing Conditions** – The analysis of existing traffic conditions provides a basis for the remainder of the study. The existing transportation system is described. Peak hour intersection operations are evaluated.
- **Project Travel Demand** – The traffic generated by the Project will be estimated, distributed, and assigned to the transportation network.
- **2024 and 2040 Background Conditions** – Future traffic conditions are projected without the proposed Project for the project buildout year 2024 and the long range future year 2040. The traffic volumes on the roadway system will be factored and analyzed to reflect conditions for 2024 and 2040. This analysis will include the addition of traffic from other potential projects.
- **Total Future Conditions** – The traffic associated with the project will be projected and added to the Background traffic. The intersection operations will be determined.

The study examined three intersections within the study area. These were identified by the City of Fort Lupton for inclusion in the study. The study intersections are shown on Figure 1 and listed below.

1. CR 31 & SH 52
2. CR 31 & 9th Street
3. Future CR 31 & 14th Street (to be connected to CR 31 by 2024)

2 EXISTING CONDITIONS

The transportation system has numerous elements that are described in this chapter. The roadway network identified for this study is described and traffic volume information presented for the study intersections.

ADJACENT LANDUSE

The Project site is located west of CR 31 and north of 9th Street. The site is currently undeveloped land and is located to the east of downtown Fort Lupton. It is surrounded by undeveloped land, rural residential and industrial to the north and east. South of the site is a golf course, and government facilities. West of the project site is a church, residential development, and undeveloped land.

TRANSPORTATION NETWORK

The primary roadways that serve the Project site are described below. Roadway designations were provided in the *Fort Lupton Transportation Plan*, June 2018.

Roadway Network

State Highway (SH) 52 – This is a two-lane state highway that provides regional connections to Interstate 25 west of Fort Lupton, US 85 in Fort Lupton, and Interstate 76 to the east. In the study area, this is a two-lane east-west roadway with narrow paved shoulders. The speed limit is posted at 55 mph. At the intersection with CR 31 there are turn/auxiliary lanes provided.

CR 31 is a north-south two-lane roadway. The speed limit is posted at 45 mph in the study area. CR 31 has no improved shoulders. It is identified as a truck route by Fort Lupton. Currently CR 31 terminates at State Highway (SH) 52.

9th Street is a east-west two-lane roadway. Directly west of CR 31, 9th Street is a paved roadway with sidewalks. The intersection of 9th Street at CR 31 is improved for the eastbound direction. The speed limit is 40 mph. East of CR 31, 9th Street is an unpaved two-lane roadway.

CR 29 ½ is a north-south two-lane roadway that currently exists south of the Project site. Near 9th Street it is unpaved. Near SH 52 it is paved and provides access to Aims Community College. The City of Fort Lupton plans on improving CR 29 ½ by paving it from 9th Street south to its' current pavement.

EXISTING TRAFFIC CONDITIONS

Existing intersection operations were evaluated for both the morning and evening peak hours. Intersection count data and daily counts were collected on Wednesday, April 24, 2019. **Appendix A** includes the intersection turning movement and daily count data. The resulting peak hour turning movement and daily volumes are provided on Figure 4. The current lane configurations of the study intersections are shown on Figure 5.

Intersection Level of Service Analysis Methodologies

Transportation professionals evaluate intersections to determine how they are currently operating and will operate in the future. The methods employed can be found in the Transportation Research Board's, 6th Edition, 2016 *Highway Capacity Manual* (HCM). Level of service (LOS) is based on a "graded" system from LOS A, very little to no delays, to LOS F which represents excessive delays and congestion.

The City of Fort Lupton has established a Level of Service criteria within their *Standards and Specifications for the Design and Construction of Public Improvements*, 2015. Chapter 8 – Traffic Control states: "Level of Service "C" shall be the design objective for all movements, and under no circumstances will less than level of Service "D" be accepted for site and non-site traffic, including existing traffic at Build-out of the study area." Definitions for level of service are provided for both unsignalized (existing operations) and signalized conditions.

Unsignalized Intersection

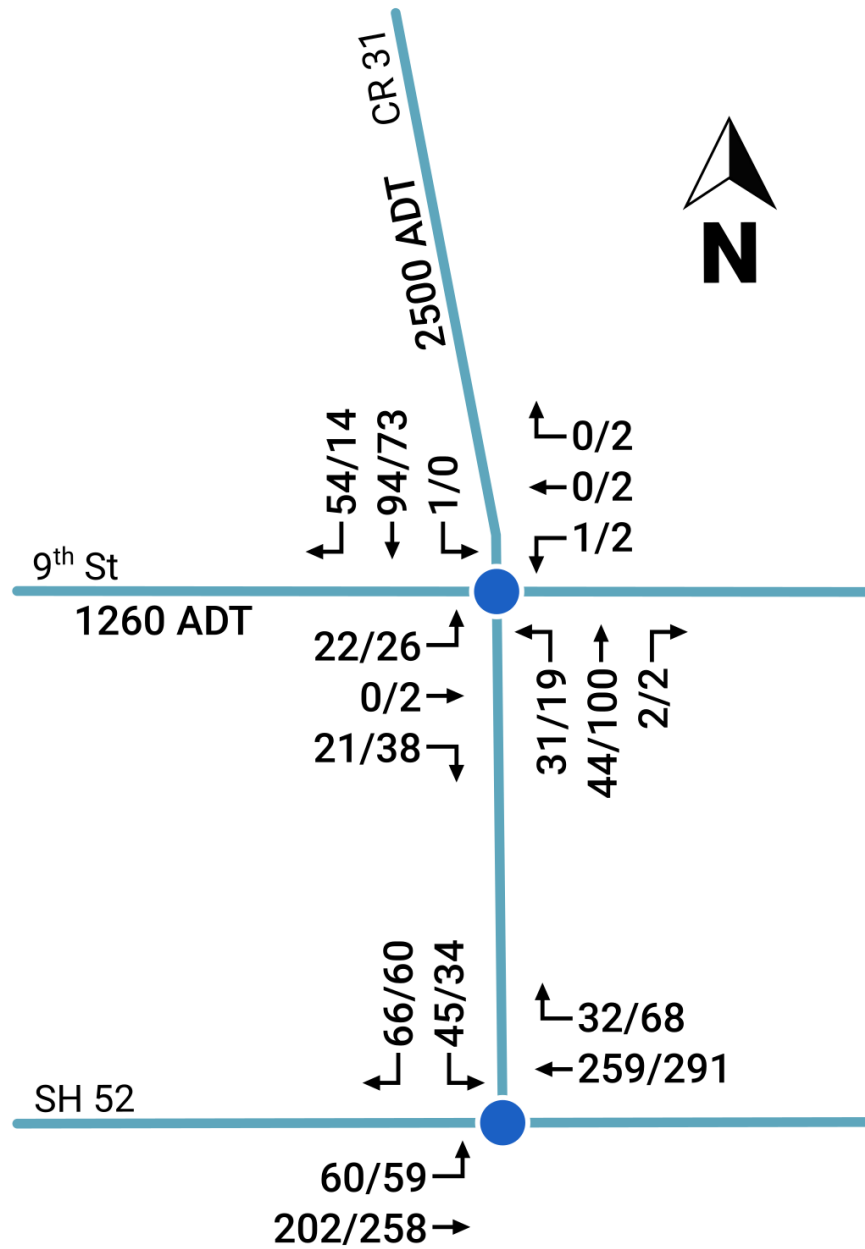
Peak hour levels of motor vehicle delay at unsignalized intersections were estimated using the method from Chapter 17 of the 2016 *Highway Capacity Manual*. The delays for the entire intersection and for each of the constrained movements are reported. Table 1 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

Table 1 Unsignalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤10.0	No delay for stop-controlled approaches.
B	10.0 and ≤15.0	Operations with minor delay.
C	>15.0 and ≤25.0	Operations with moderate delays.
D	>25.0 and ≤35.0	Operations with increasingly unacceptable delays.
E	>35.0 and ≤50.0	Operations with high delays, and long queues.
F	>50.0	Operations with extreme congestion, and with very high delays and long queues unacceptable to most drivers.

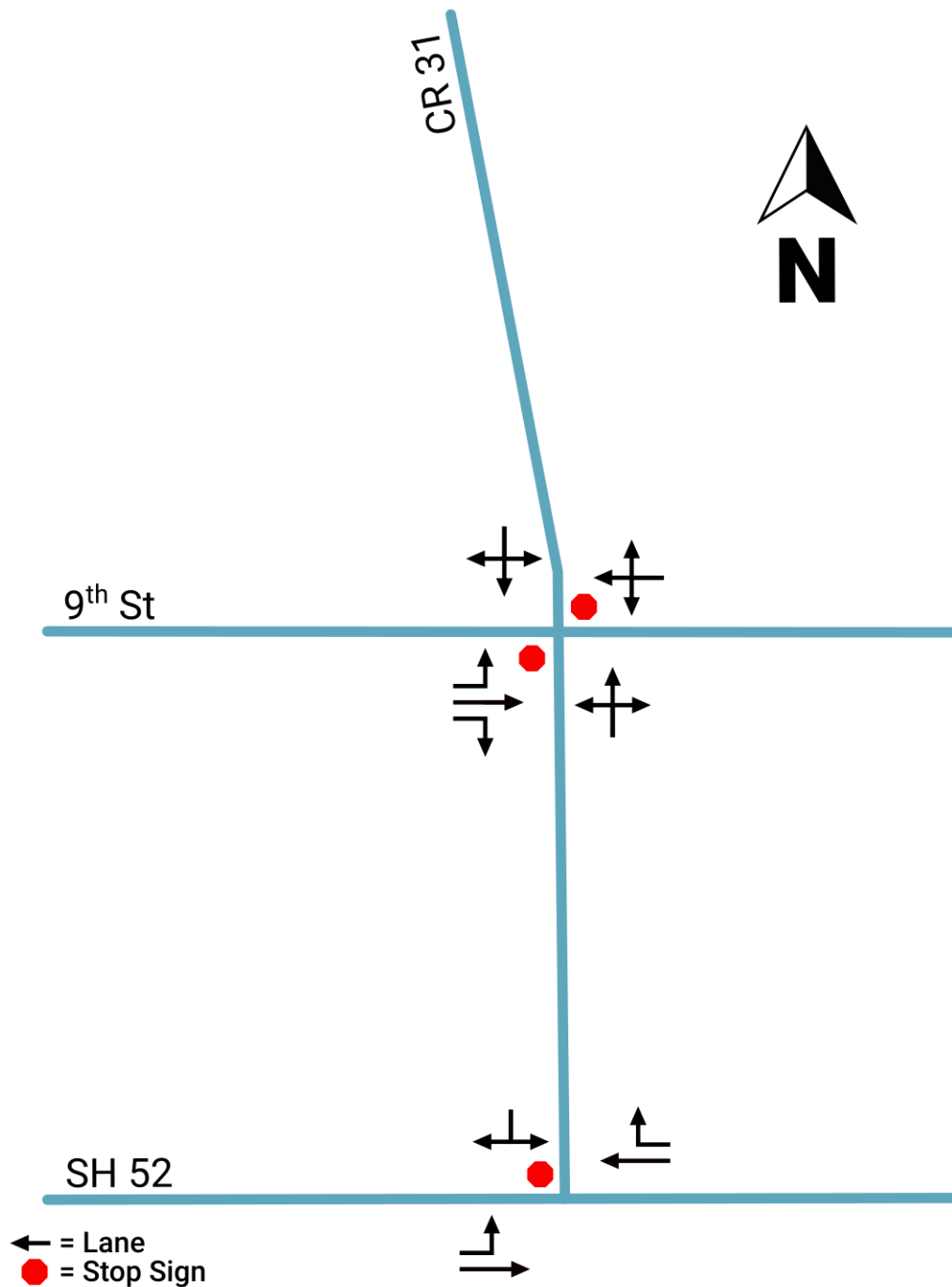
Source: Transportation Research Board, Highway Capacity Manual, 2016.

Figure 3 – Existing Peak Hour & Daily Volumes



AM/PM Peak Hour Turning Movements
ADT = Average Daily Traffic

Figure 4 – Existing Lane Configurations



Signalized Intersections

Peak hour levels of motor vehicle delay at signalized intersections were estimated using methods provided in Transportation Research Board's 2010 Highway Capacity Manual. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay

experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table 2 summarizes the relationship between average control delay per vehicle and LOS for signalized intersections.

Table 2 Signalized Intersection Level of Service Definitions

Level of Service	Average Control Delay Per Vehicle (Seconds)	Description
A	≤ 10.0	Free Flow or Insignificant Delays: Operations with very low delay, when signal progression is extremely favorable and most vehicles arrive during the green light phase. Most vehicles do not stop at all.
B	> 10.0 and ≤ 20.0	Stable Operation or Minimal Delays: Generally, occurs with good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average delay. An occasional approach phase is fully utilized.
C	> 20.0 and ≤ 35.0	Stable Operation or Acceptable Delays: Higher delays resulting from fair signal progression and/or longer cycle lengths. Drivers begin having to wait through more than one red light. Most drivers feel somewhat restricted.
D	> 35.0 and ≤ 55.0	Approaching Unstable or Tolerable Delays: Influence of congestion becomes more noticeable. Longer delays result from unfavorable signal progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop. Drivers may have to wait through more than one red light. Queues may develop, but dissipate rapidly, without excessive delays.
E	> 55.0 and ≤ 80.0	Unstable Operation or Significant Delays: Considered to be the limit of acceptable delay. High delays indicate poor signal progression, long cycle lengths and high volume to capacity ratios. Individual cycle failures are frequent occurrences. Vehicles may wait through several signal cycles. Long queues form upstream from intersection.
F	> 80.0	Forced Flow or Excessive Delays: Occurs with oversaturation when flows exceed the intersection capacity. Represents jammed conditions. Many cycle failures. Queues may block upstream intersections.

Source: Transportation Research Board, Highway Capacity Manual, 2016.

Existing Intersection Conditions

Using the HCM methodology, the weekday AM and PM peak hour intersection operations were determined. The results are provided in Table 3. As indicated in the table, both of the study intersections are currently operating at acceptable levels of service. The detailed analysis worksheets are provided in Appendix B.

Table 3 Existing Weekday Peak-Hour Intersection Level of Service

#	Intersection	Overall Movement	AM Peak		PM Peak	
			Delay	LOS	Delay	LOS
1	CR 31 & SH 52 T Stop Control	Overall	2.9	A	2.2	A
		EB LT	8.1	A	8.3	A
		SB	13	B	13.2	B
2	CR 31 & 9 th Street Two Way Stop Control	Overall	2.5	A	3	A
		NB LT	7.6	A	7.4	A
		EB LT	10.4	B	10.3	B
		EB T	0	A	10.5	B
		EB RT	9	A	8.9	A
		WB	10.5	B	10	B
		SB LT	7.3	A	0	A

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained /STOP-controlled movement or approach.

3 PROJECT TRAVEL DEMAND

This chapter provides an overview of the project and a description of the travel demand methodology to estimate vehicle trip generation, distribution, and assignment of project-generated traffic along area roadways and intersections.

PROJECT CHARACTERISTICS

The proposed Cottonwood Greens project is a residential project located west of CR 31 and north of 9th Street. The project site plan was depicted on Figure 2. The project is planned on approximately 122 acres. As shown on the figure, vehicular access to the project will be from: CR 31 (one location), 9th Street (two locations) and a connection with the future 14th Street. The primary north-south project roadway will align with CR 29 ½. The project will be developed with 287 single family and 140 townhomes. The transportation characteristics of the site includes a curvilinear grid roadway layout, a pedestrian/bicycle trail that allows for future connections to the Main Fulton Ditch Trail and the Fort Lupton Trail.

PROJECT TRIP GENERATION

The trip generation characteristics of the project were estimated using data from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition. Table 4 provides the trip generation estimated for the project. As indicated in the table, the full buildout of the project is estimated to generate approximately 3,730 daily trips, 280 morning and 360 evening peak hour trips.

PROJECT TRIP DISTRIBUTION | ASSIGNMENT

The distribution of the project traffic onto the roadway system was based on: the existing peak hour traffic counts, the roadway network, the adjacent land use, the location of the project within the region and the City of Fort Lupton, traffic forecasts from the *Transportation Plan*, and input from the City engineer. The project trip distribution is depicted on Figure 5.

The project assigned peak hour traffic volumes for are shown on Figure 6. The City of Fort Lupton has within their *Transportation Plan* the extension of CR 31 south of SH 52 to CR 8. The projected traffic volumes on Figure 6 were modified at CR 31 and SH 52 to reflect this connection. The future year 2040 peak hour traffic volumes for this location are provided in Figure 7.

**COTTONWOOD GREENS | TRAFFIC IMPACT STUDY
CITY OF FORT LUPTON**

Table 4 – Estimated Trip Generation

ITE Land Use Code & Rates		Project	Project Trip Generation						
Land Use	Land Use Code	Dwelling Units	Daily	AM			PM		
				IN	Out	Total	IN	Out	Total
Single-Family Detached	210	287	2,709	53	159	212	179	105	284
Multi-Family Low Rise	220	140	1,018	15	51	66	50	29	80
TOTAL BUILDOUT			3,727	68	210	278	229	135	364
Based on ITE Trip Generation 10th Edition									

Figure 5 – Trip Distribution

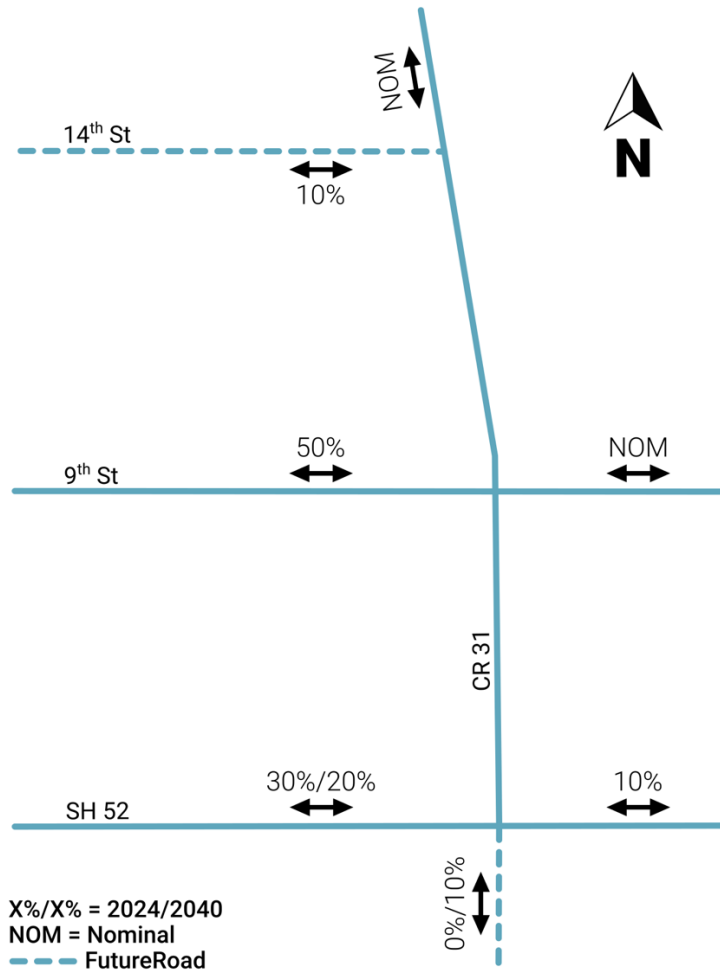


Figure 6 – Project Traffic - 2024

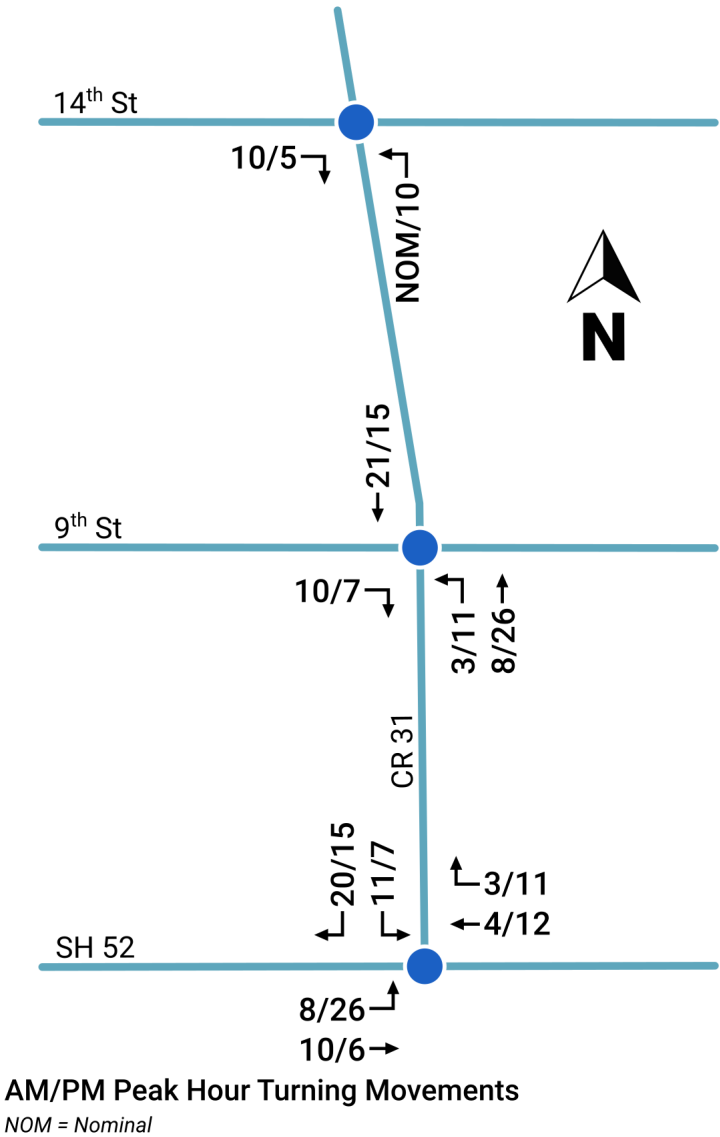
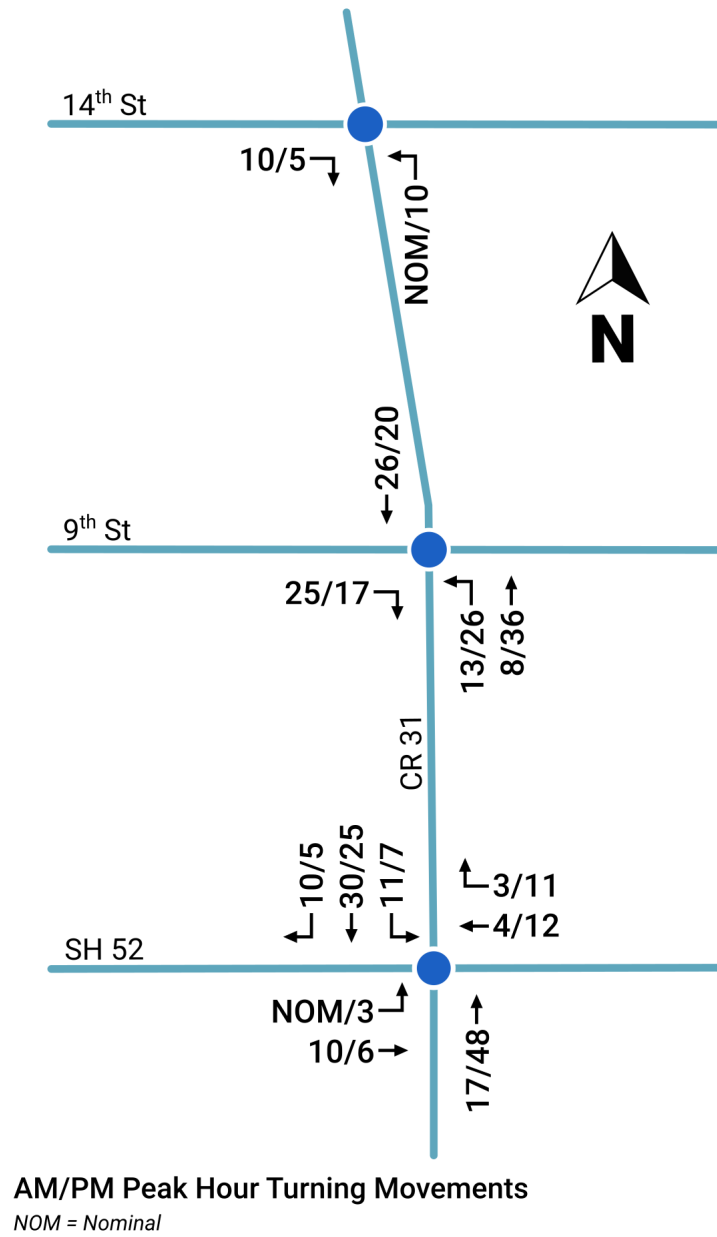


Figure 7 – Project Traffic - 2040



4 FUTURE TRAFFIC PROJECTIONS

Estimates of future traffic conditions both with and without the proposed Project were necessary to evaluate the potential impact of the Project on the local street system. The background base traffic scenario represents future traffic conditions without the addition of the Project, while the total scenario represents future traffic conditions with completion of the proposed Project. Two future years were analyzed, Year 2024 and Year 2040. The development of these future traffic scenarios is described in this chapter.

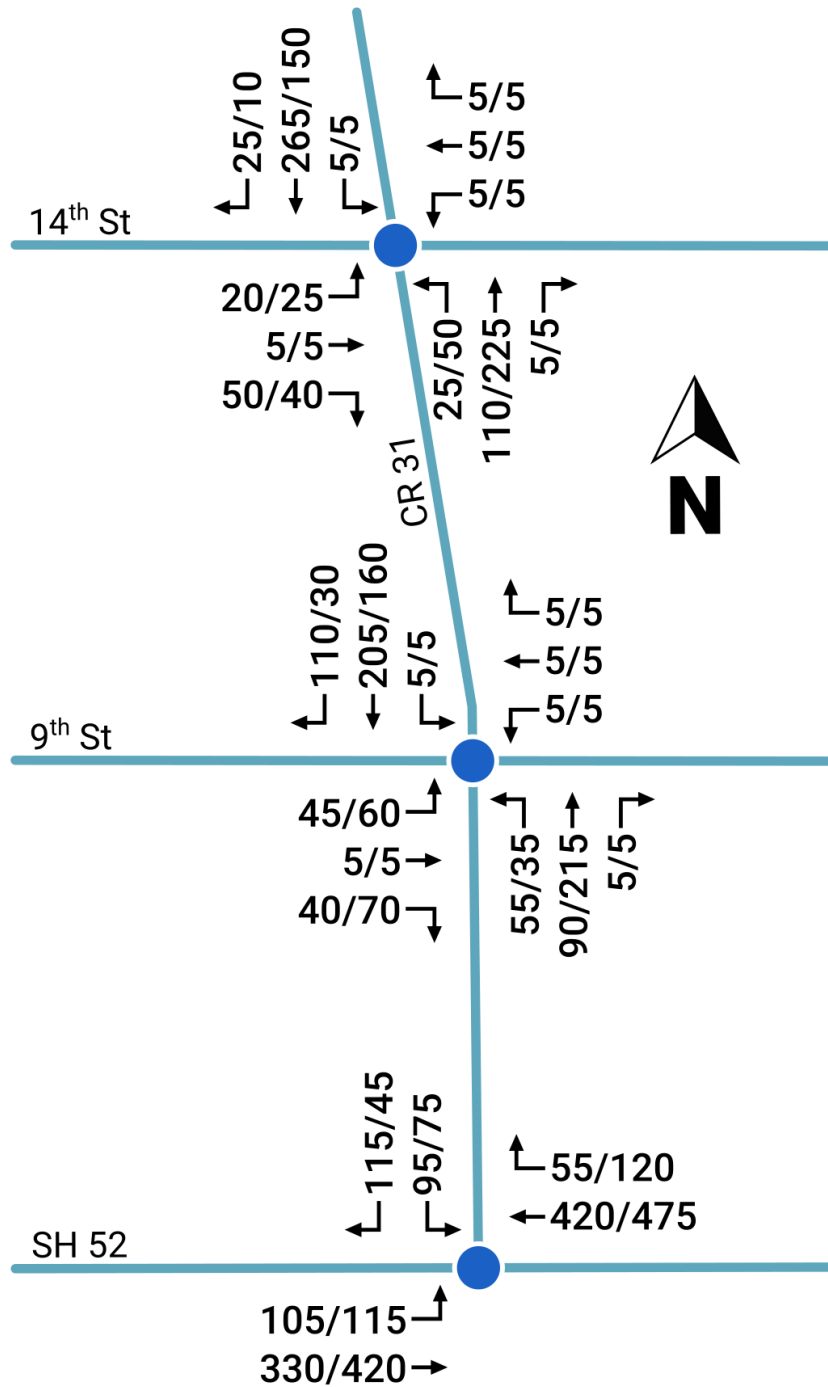
BACKGROUND 2024 TRAFFIC PROJECTIONS

The background traffic projections reflect growth in traffic from two primary sources: ambient growth in the existing traffic volumes due to regional growth both in and outside of the study area, and traffic generated by potential projects. The City requested that a project similar in size to the proposed Cottonwood Greens project be assumed for the land directly north of the project site. Additionally, the City anticipates two roadway improvements: 14th Street will be constructed to CR 31 by 2024 and CR 29 ½ will be paved and improved between 9th Street and SH 52. Each of these elements are described below.

- The **ambient growth** in traffic was determined with information from the *Fort Lupton Transportation Plan*, June 2018. Based on these projections an annual straight line growth rate of 1.7% per year was established for the short range for each roadway except SH 52. It should be noted that the future projections were adjusted to account for traffic from the proposed project. This eliminates double counting the Project traffic which is already included in the future projections in the *Transportation Plan*. The growth rate for SH 52 was 1% per year. This value will be applied to the existing counts to determine the Year 2024 volumes due to regional growth.
- It was assumed that a project similar in size and use would be built on the land north of the Cottonwood Greens project. Access to/from this future project would be from 14th Street. Traffic was estimated and assigned to the roadway system to account for this potential project.
- Based on conversations with City of Fort Lupton Public Works, 14th Street is expected to be built to CR 31 and CR 29 ½ will be paved and improved between 9th Street and SH 52..

The resulting Background 2024 traffic projections for the study intersections is provided on Figure 8.

Figure 8 – Background Traffic 2024



AM/PM Peak Hour Turning Movements

Volumes Rounded to Nearest 5 Vehicles

BACKGROUND 2040 TRAFFIC PROJECTIONS

The traffic projections for 2040 was estimated using a similar methodology as for 2024. The City of Fort Lupton has plans for roadway improvements by Year 2040. Each of these components to the 2040 projections are discussed below.

- The **ambient growth** in traffic was based on the values developed for 2024. An annual straight line growth of 1.7 % per year will be used for each roadway except for SH 52 which was 1% per year.
- Similar to 2024, it was assumed that a project similar in size and use would be built on the land north of the Cottonwood Greens project. Access to/from this future project would be from 14th Street. Traffic was estimated and assigned to the roadway system to account for this potential project.
- 14th Street was assumed to be built to CR 31 and CR 29 ½ will be paved between 9th Street and SH 52.
- The City of Fort Lupton, *Transportation Plan* plans for CR 31 is to be extended south of SH 52 to CR 8 by 2040.

The assumed intersection configurations for 2040 are illustrated on Figure 9. The resulting Background 2040 traffic projections for each of the study intersections are provided on Figure 10.

TOTAL TRAFFIC PROJECTIONS

The total traffic projections include both the background plus project traffic. Total traffic projections were developed for Year 2024 and 2040. The project-generated traffic volumes from Figure 7 were added to the Year 2024 background traffic volumes illustrated on Figure 9 to develop background plus project peak hour traffic volumes. The resulting Year 2024 total traffic is depicted on Figure 11.

The Year 2040 Total traffic projections were developed by adding the Project traffic from Figure 8, to the Year 2040 Background traffic from Figure 10. The resulting Year 2040 total traffic is illustrated on Figure 12.

INTERNAL SITE TRAFFIC

The Project site was designed to accommodate the traffic generated by the project. The City of Fort Lupton, within Chapter 6 of the *Standards and Specifications for the Design and Construction of Public Improvements*, has established that Local streets can accommodate up to 2,500 daily vehicular trips. It was estimated that the Local streets within Cottonwood Greens will accommodate between 700 and 1,500 daily trips at locations near their intersections with public roadways. The design of the internal streets as Locals is therefore appropriate.

Figure 9 – Lane Configurations 2040

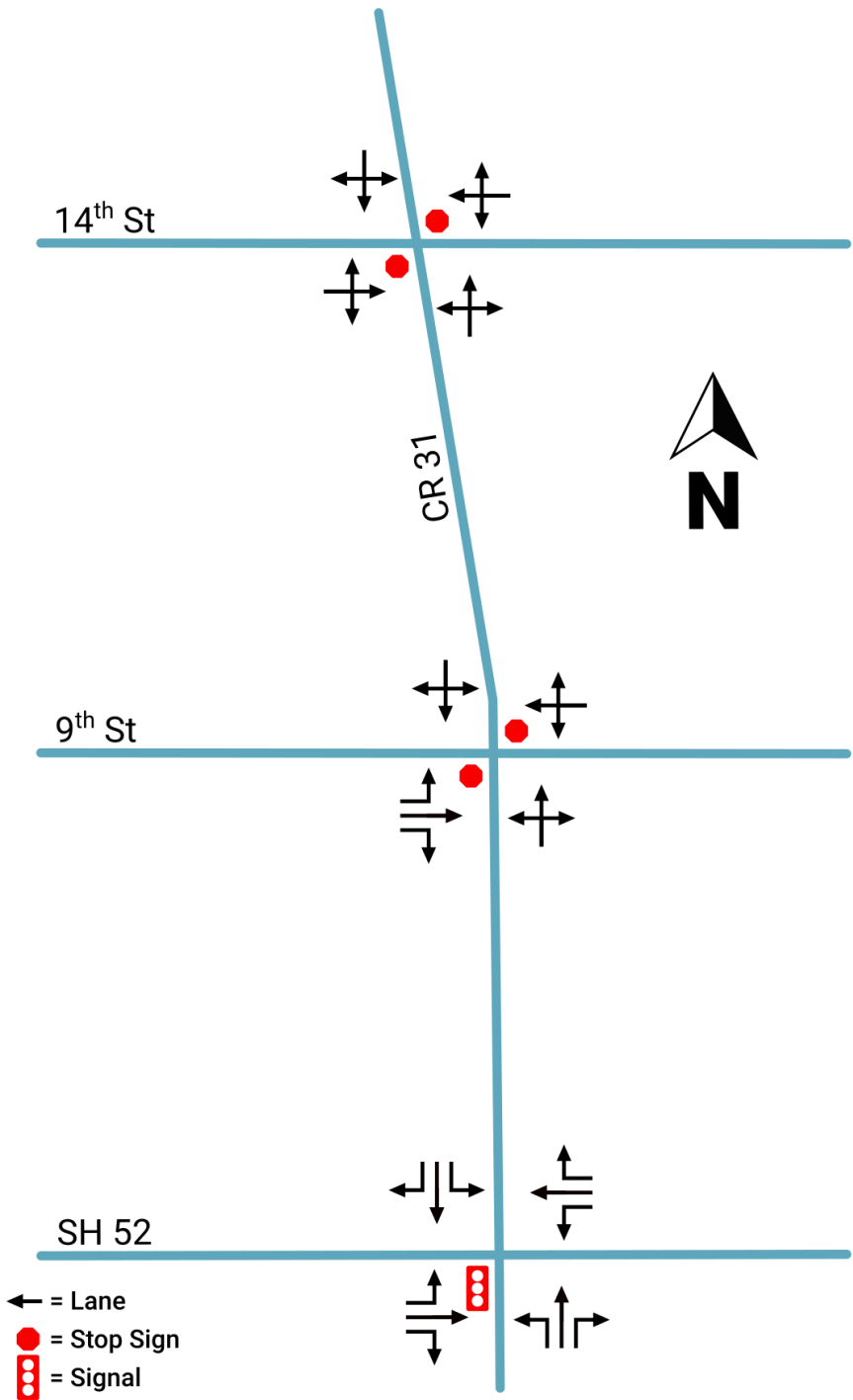
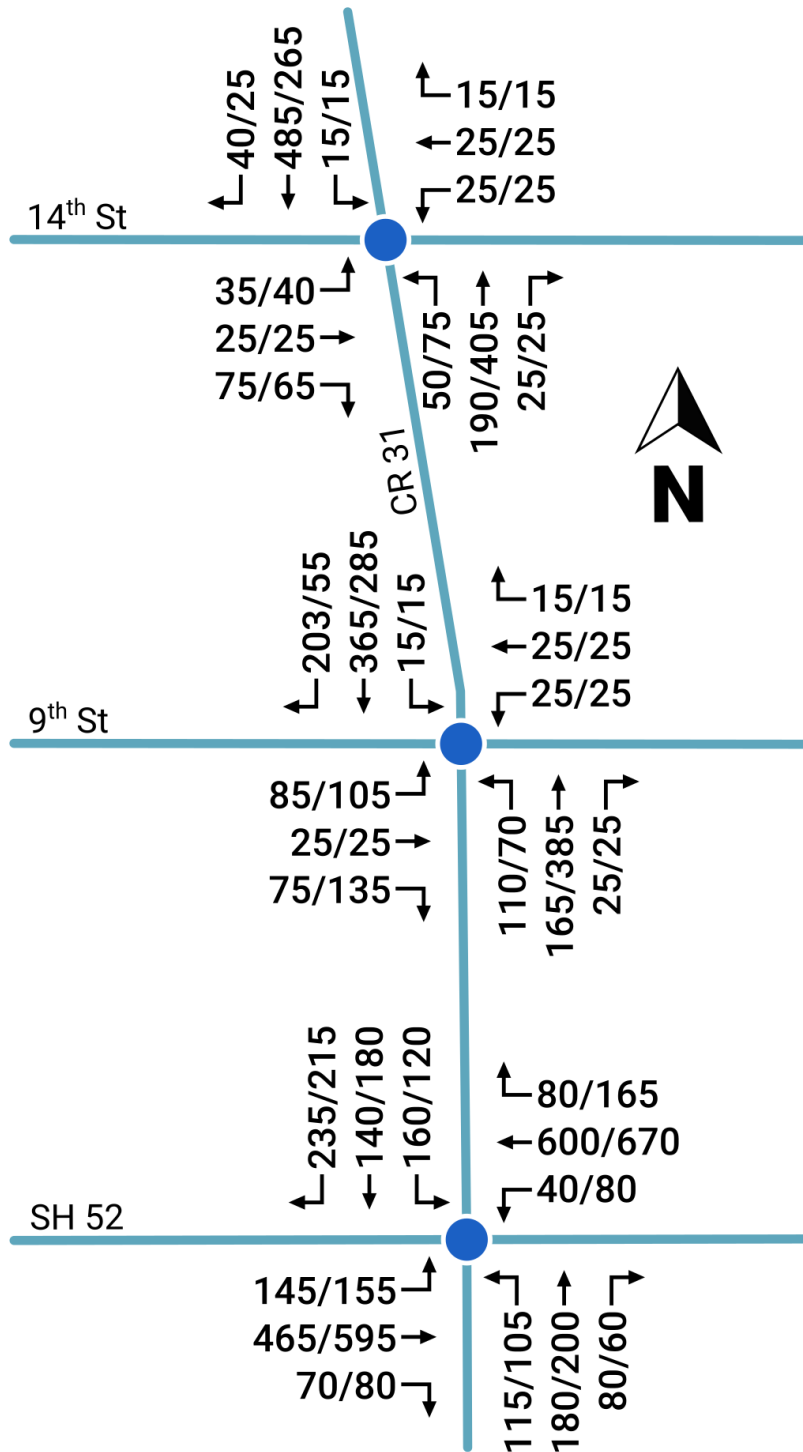


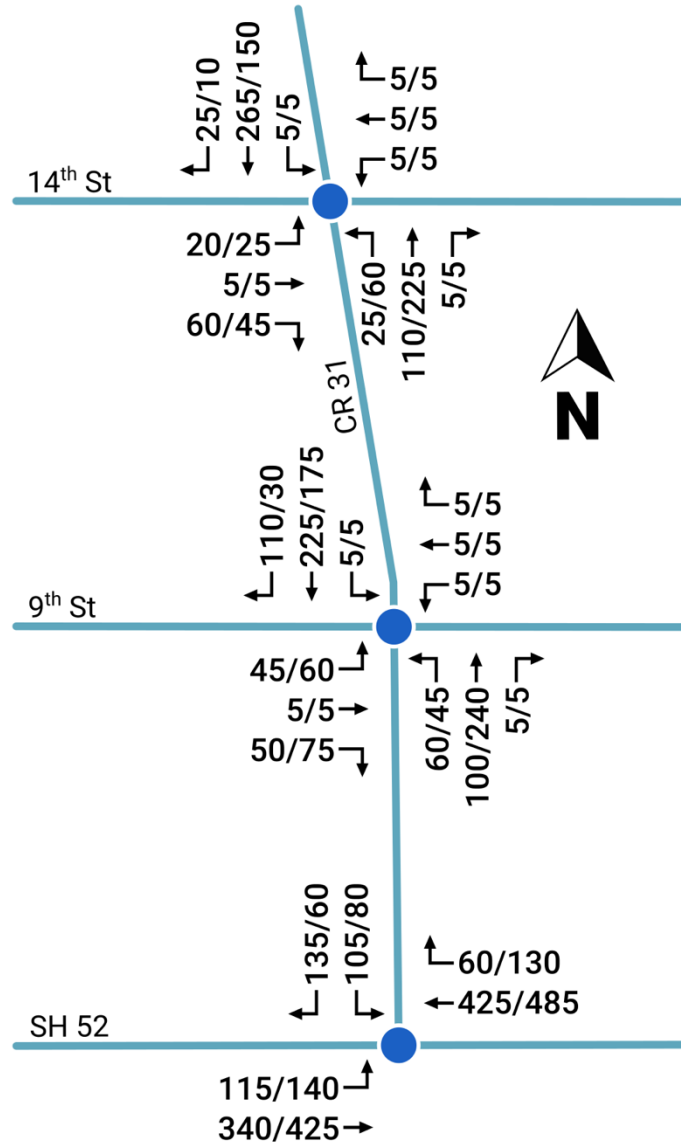
Figure 10 – Background Traffic 2040



AM/PM Peak Hour Turning Movements

Volumes Rounded to Nearest 5 Vehicles

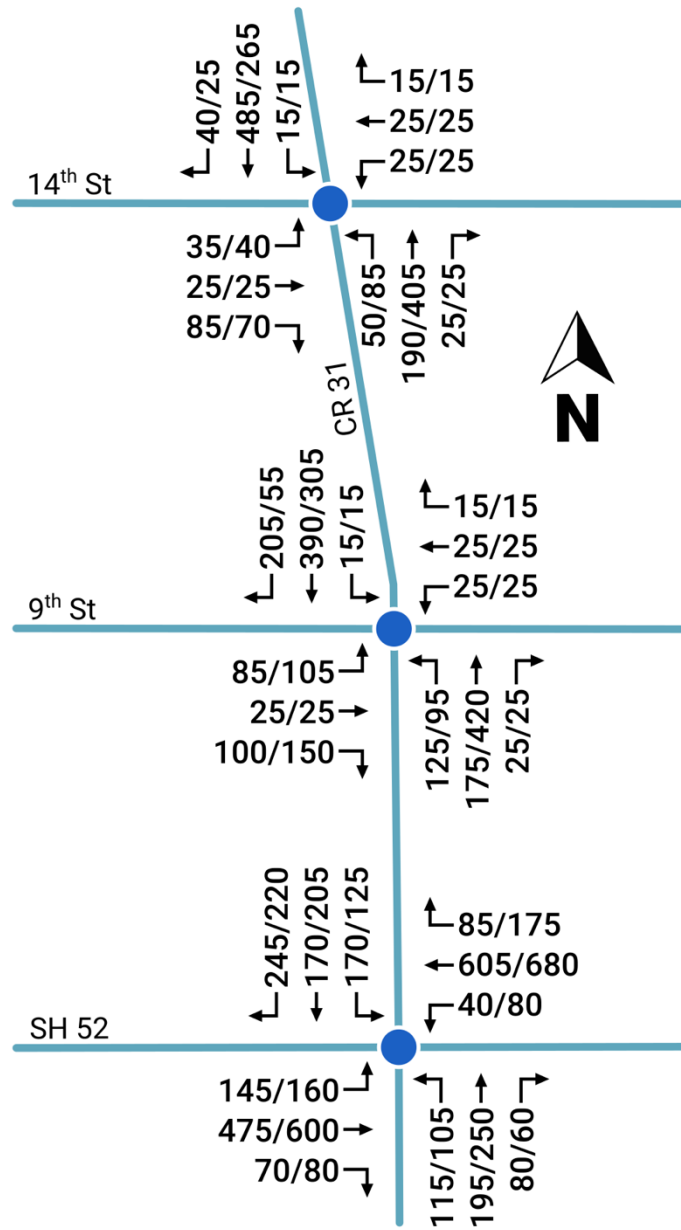
Figure 11 – Total Traffic 2024



AM/PM Peak Hour Turning Movements

Volumes Rounded to Nearest 5 Vehicles

Figure 12 – Total Traffic 2040



AM/PM Peak Hour Turning Movements

Volumes Rounded to Nearest 5 Vehicles

5 TRAFFIC IMPACT ANALYSIS

This chapter presents an analysis of the potential impacts of the traffic generated by the proposed Cottonwood Greens project on the local street system. The analysis compares the projected levels of service at each study intersection under future background and total conditions to estimate the incremental increase in the delay caused by the proposed project. This provides the information needed to assess the potential impact of the project using the significance criteria.

SIGNIFICANT TRAFFIC IMPACT CRITERIA

Threshold criteria were applied to determine if the growth in traffic due to regional growth/other projects and/or the proposed Project has a significant traffic impact at an intersection. If the future traffic projections for either Background (without Project) or Total (with Project) resulted in any portion of an intersection to exceed the LOS standards, this would be considered an impact.

As presented earlier, based on the City of Fort Lupton standards, LOS C is the design objective for all movements at an intersection. Level of service less than D is unacceptable.

FUTURE TRAFFIC CONDITIONS

The future traffic projections at the three study intersections were analyzed to determine their future operating conditions. The results for Year 2024 are provided in Table 5 for both the background and total traffic scenarios. The future operating conditions for Year 2040 are provided in Table 6.

It should be noted that under 2040 conditions, the intersection of CR 31 and SH 52 was projected to have peak hour volumes that would warrant signalization. The operational analysis for this location was performed assuming it was signalized. The need for a traffic signal is documented in the Federal Highways Administration, *Manual On Uniform Traffic Control Devices* (MUTCD), 2009. The Peak Hour - Warrant 3 is provided in Appendix C.

Note that the results provided in Tables 5 and 6 indicate both the overall delay/LOS for the intersection and the delay/LOS for the each constrained movement and/or leg. If an intersection, a movement, or leg is projected to operate at unacceptable levels it is highlighted in grey.

Table 5 Future 2024 Intersection Level of Service

#	Intersection	Movement	AM Peak Hr				PM Peak Hr			
			Background		Total		Background		Total	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	CR 31 & SH 52 T Stop Control	Overall	7.2	A	10.2	B	4.6	A	6.6	A
		EB LT	8.8	A	8.9	A	9.4	A	9.7	A
		SB	33.9	D	45.7	E	38.8	E	52.6	F
2	CR 31 & 9 th Street Two Way Stop Control	Overall	3.1	A	3.2	A	3.5	A	3.7	A
		NB LT	8.1	A	8.3	A	7.7	A	7.9	A
		EB LT	14.2	B	16.3	B	14.4	B	18.7	C
		EB T	13.3	B	14.8	B	13.2	B	15.8	C
		EB RT	10.1	B	10.8	B	9.6	A	10.1	B
		WB	12.4	B	13.9	B	12.6	B	15.1	C
		SB LT	7.4	A	7.5	A	7.7	A	7.9	A
3	CR 31 & 14 th Street (To be Built) Two Way Stop Control	Overall	2.4	A	2.6	A	2.7	A	2.9	A
		NB	8	A	8	A	7.7	A	7.7	A
		EB	11.7	B	11.7	B	11.8	B	11.9	B
		WB	12	B	12	B	12.6	B	12.9	B
		SB	7.5	A	7.5	A	7.7	A	7.7	A

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained STOP-controlled movement or approach.
3. Delays greater than 50 seconds are rounded to nearest second.
4. Grey highlighted indicates intersection operating at unacceptable LOS conditions.

**COTTONWOOD GREENS | TRAFFIC IMPACT STUDY
CITY OF FORT LUPTON**

Table 6 Future 2040 Intersection Level of Service

#	Intersection	Movement	AM Peak Hr				PM Peak Hr			
			Background		Total		Background		Total	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	CR 31 & SH 52 Signalized	Overall	22.7	C	23.3	C	22.5	C	23.7	C
		EB LT	16.9	B	17.1	B	18.3	B	19.0	B
		EB T	10.4	B	10.5	B	11.3	B	11.3	B
		EB RT	7.7	A	7.7	A	7.4	A	7.3	A
		WB LT	14.5	B	14.7	B	18.9	B	18.9	B
		WB T	36.5	D	37.3	C	31.7	C	32.8	C
		WB RT	13.3	B	13.3	B	13.7	B	13.8	B
		NB LT	25.2	C	27.0	C	32.2	C	34.8	D
		NB T	19.9	B	20.5	C	24.7	C	27.4	C
		NB RT	18.0	B	18.1	B	21.1	C	21.5	C
		SB LT	29.5	C	32.0	C	33.3	C	39.8	D
		SB T	18.9	B	19.8	B	24.0	C	25.4	B
		SB RT	24.1	C	24.9	C	27.8	C	28.7	C
2	CR 31 & 9 th Street Two Way Stop Control	Overall	7.8	A	10	B	8.7	A	11.9	B
		NB LT	9.3	A	9.6	A	8.2	A	8.4	A
		EB LT	47.9	E	74	F	50	F	83.2	F
		EB T	24.8	C	29.5	D	22.9	C	27.5	D
		EB RT	12.4	B	13.8	B	11.5	B	11.9	B
		WB	32.7	D	46.3	E	31.7	D	46.4	E
		SB LT	7.7	A	7.7	A	8.3	A	8.4	A
3	CR 31 & 14 th Street (To be Built) Two Way Stop Control	Overall	5.5	A	5.7	A	5.8	A	6.1	A
		NB	8.8	A	8.8	A	8.1	A	8.1	A
		EB	24.4	C	24.5	C	25.2	D	26.3	D
		WB	25.5	D	26.1	D	27.4	D	29.1	D
		SB	7.7	A	7.7	A	8.3	A	8.3	A

Notes:

1. LOS calculations performed using Synchro which is based on the Transportation Research Board HCM 2016.
2. Average vehicle delay (in seconds per vehicle) is reported for both overall intersection and each constrained STOP-controlled movement, lane group (signalized) or approach.
3. Delays greater than 50 seconds are rounded to nearest second.
4. Grey highlighted indicates intersection operating at unacceptable LOS conditions.

The study results for 2024 indicate the following:

- At the intersection of CR 31 at SH 52 under both Background and Total conditions, the southbound approach is projected to operate at LOS E/F.
- The remaining two study intersections will operate at acceptable levels of service.

The study results for 2040 indicate the following:

- At CR 31 and 9th Street the eastbound left-turn will experience long delays under both Background and Total conditions. The westbound approach will experience long delays under Total conditions.
- The intersection of CR 31 at SH 52 and CR 31 at 14th Street are expected to operate acceptably.

FUTURE YEAR 2024 IMPROVEMENT MEASURES

The future 2024 traffic volume projections and operations were evaluated at CR 31 and SH 52 to determine effective improvements. Currently the southbound direction is a shared left/right-turn lane. The addition of an exclusive right-turn lane was analyzed. The resulting intersection operations with a southbound right-turn lane and a left-turn lane are provided in Table 7. The operations of the right-turn lane improved to acceptable levels however, the left-turn lane continued to operate with long delays. It should be noted that left-turns from streets that intersect higher volume roadways such as State Highways will typically experience delays in excess of LOS D. Therefore the addition of a separate right-turn lane should be considered as an improvement to this intersection.

Signalization of this location was also considered. Under Background conditions it was determined that peak hour signal warrants, as provided in the MUTCD, would not be satisfied. Under Total conditions, Warrant 3 the Peak Hour warrant is projected to be satisfied. It should be noted that the warrant is marginally satisfied. Meeting the threshold volumes for one warrant does not always justify the installation of a signal. The City of Fort Lupton and CDOT will need to determine this based on all of the traffic engineering factors that may include: daily volumes, pedestrian activity, location of nearby schools, crash history, and geometrics. The intersection operations with signalization are provided in Table 7. As shown the LOS is projected to operate at acceptable levels. This intersection should be monitored to determine if or when a signal should be installed.

Table 7 - Improved 2024 Intersection Level of Service

#	Intersection	Movement	AM Peak Hr		PM Peak Hr	
			Total		Total	
			Delay	LOS	Delay	LOS
1	CR 31 & SH 52 T Stop Control	Overall	5.9	A	5.1	A
		EB LT	8.9	A	9.7	A
		SB LT	40.2	E	57.7	F
		SB RT	12.9	B	12.4	B
1	CR 31 & SH 52 Signalized	Overall	16.1	B	16.7	B
		EB LT	12.7	B	13.1	B
		EB T	9.9	A	9.7	A
		WB T	23.0	C	25.5	C
		WB RT	13.8	B	13.7	B
		SB RT/LT	14.7	B	14.1	B

The Total 2024 traffic volume projections (for the AM plus PM peak hours) were evaluated to determine the relative percentage of Project and Background volumes. These are shown on Table 8.

Table 8 - 2024 Percent Contribution

#	Intersection	Total Volumes (AM + PM)	Background		Project	
			Volume	Percent	Volume	Percent
1	CR 31 & SH 52 Signalized	2500	2369	95%	135	5%

FUTURE YEAR 2040 IMPROVEMENT MEASURES

The intersection of CR 31 at 9th Street is projected to experience long delays for the eastbound left-turn and westbound approach. It is challenging to improve these delays. Additional lanes in the westbound direction could reduce delays however, multiple lanes on 9th Street at a two-way stop begins to become challenging for motorists to determine whom has the right-of-way. An all-way stop would increase overall delays at the intersection by stopping CR 31. A roundabout is another intersection control design however, it is most effective where the volumes on both of the roadways (CR 31 and 9th Street) are approximately equal which is not anticipated. The projections do not indicate that any signal warrants would be satisfied.

If the intersection of CR 31 at SH 52 is signalized, this could create gaps in CR 31 traffic which will ease the projected delays on 9th Street. Additionally, as more of the roadway network in this area of Fort Lupton is built, vehicles will have options if their delays

become perceived as unacceptable. Finally, some traffic may shift from 9th Street to 14th Street which was assumed to be completed by 2024.

6 AUXILIARY LANE ANALYSIS

An analysis was conducted to determine the need for auxiliary right-turn and left-turn lanes on at the Project access locations. This analysis was performed for both 2024 and 2040. The projected peak hour traffic volumes at these locations are provided in Appendix D for both 2024 and 2040. The turning volumes were analyzed based on the guidelines set forth in the Transportation Research Board's *NCHRP Report 279*, 1985 provided in Appendix D.

Using the figures shown in Appendix D, it was determined that a left-turn lane on CR 31 will most likely be warranted at the northern Project access street (Access "C") under 2024 projections. For the year 2040, the two access locations on 9th Street (Access "A" and "B") would not require auxiliary lanes. It should be noted that this analysis was performed assuming both CR 31 and 9th Street were two-lane roadways.

Right-turn lanes were not determined to be required.

7 CONCLUSIONS

This study was undertaken to analyze the potential traffic impacts of the proposed Cottonwood Greens project in the City of Fort Lupton. The following summarizes the results of this analysis:

- The full buildout proposed Project consists of 287 single family homes and 140 multi-family dwellings.
- The Project site is located north of 9th Street and west of CR 31 on land that is undeveloped.
- The Project is expected to generate approximately 3,275 daily trips, 280 trips during the AM peak hour and 365 trips during the PM peak hour.
- Currently the study intersections on CR 31 at both SH 52 and 9th Street are operating at acceptable levels.
- For 2024 it was assumed that 14th Street would connect from its' current terminus east to CR 31 and CR 29 ½ would be paved between 9th Street to SH 52.
- Under the future 2024 conditions, the intersection of CR 31 at SH 52 is projected to operate with long delays under both Background and Total traffic conditions. It is suggested that the City and CDOT consider improvements to the southbound approach with the addition of a right-turn lane. The southbound left-turn lane will continue to experience long delays. Signalization may also be considered at this location.
- Under the future 2040 conditions it was assumed that CR 31 would be extended south of SH 52 and be signalized.
- Under 2040 projected conditions, the traffic on 9th Street at CR 31 will experience long delays. Numerous improvements were explored to mitigate these delays however it is suggested that as this area of Fort Lupton grows and the roadway network is expanded, this location be monitored and improvements developed at that time.
- Under 2024 conditions a left-turn lane would be needed on CR 31 at: 9th Street.

APPENDICIES

- Appendix A: Intersection Turning Movement Count Data (October 11, 2018)
- Appendix B: HCM LOS Calculation Outputs
- Appendix C: Figure and Table 4C-3 Manual on Uniform Traffic Control Devices
- Appendix D: Project Access 2024 and 2040 Volumes and NCHRP Report 279

Appendix A

Intersection Turning Movement Count Data (April 24, 2019)

Location: WCR 31 N/O 9TH ST
 Date Range: 4/24/2019 - 4/30/2019
 Site Code: 01



Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	4/24/2019			4/25/2019			4/26/2019			4/27/2019			4/28/2019			4/29/2019			4/30/2019					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	3	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	4
1:00 AM	4	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	8
2:00 AM	2	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	6
3:00 AM	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4
4:00 AM	7	9	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	9	16
5:00 AM	35	39	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	39	74
6:00 AM	57	50	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57	50	107
7:00 AM	67	149	216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	149	216
8:00 AM	52	75	127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	75	127
9:00 AM	40	59	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	59	99
10:00 AM	65	67	132	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	67	132
11:00 AM	81	74	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	74	155
12:00 PM	73	82	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	82	155
1:00 PM	72	54	126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	54	126
2:00 PM	88	93	181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	93	181
3:00 PM	118	67	185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	67	185
4:00 PM	129	86	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	129	86	215
5:00 PM	118	90	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	118	90	208
6:00 PM	110	68	178	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	68	178
7:00 PM	81	46	127	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81	46	127
8:00 PM	53	43	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	43	96
9:00 PM	32	14	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	14	46
10:00 PM	21	6	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	6	27
11:00 PM	7	2	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	2	9
Total	1,316	1,185	2,501																			1,316	1,185	2,501
Percent	53%	47%																				53%	47%	

1. Mid-week average includes data between Tuesday and Thursday.

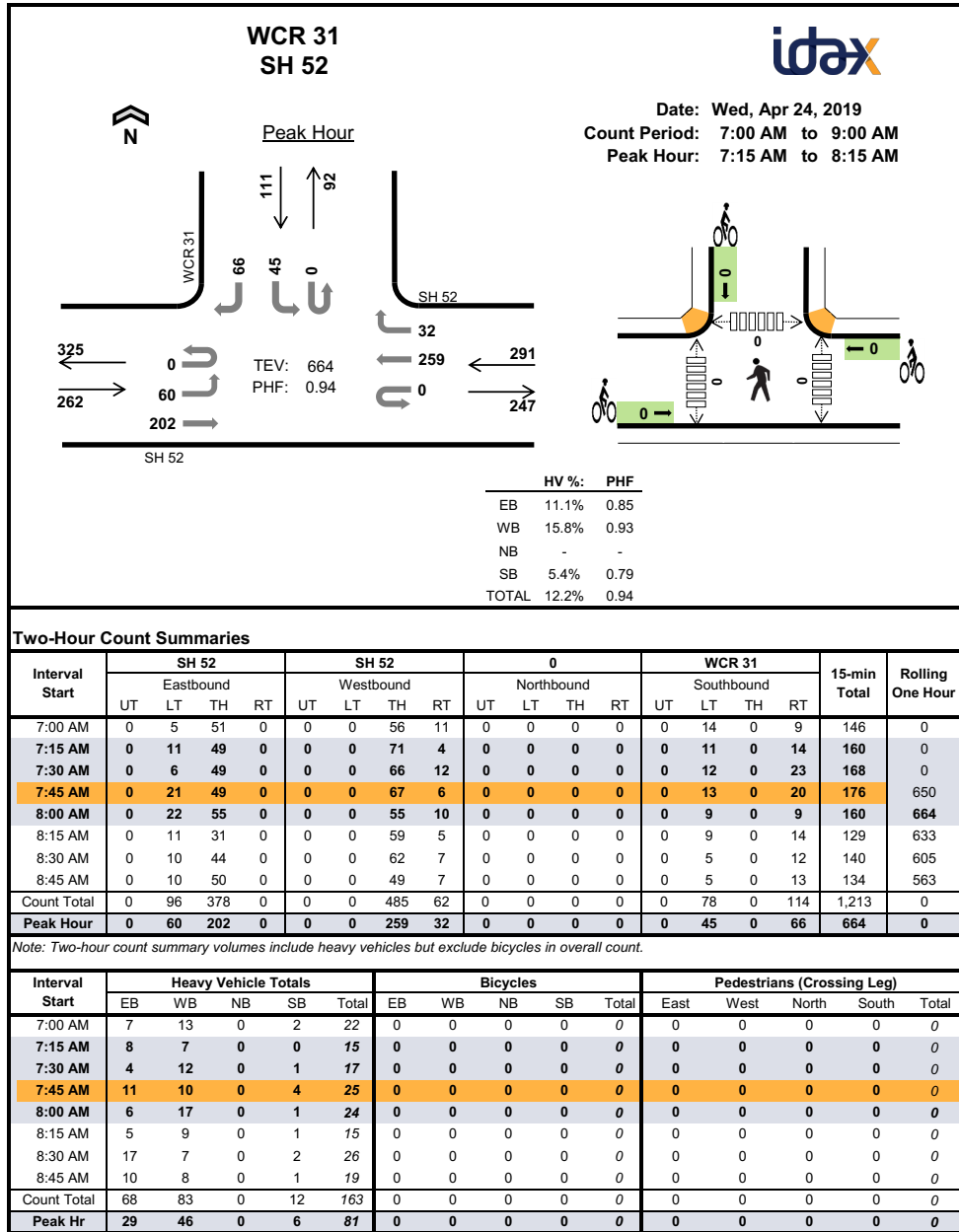
Location: 9TH ST W/O WCR 31
 Date Range: 4/24/2019 - 4/30/2019
 Site Code: 02

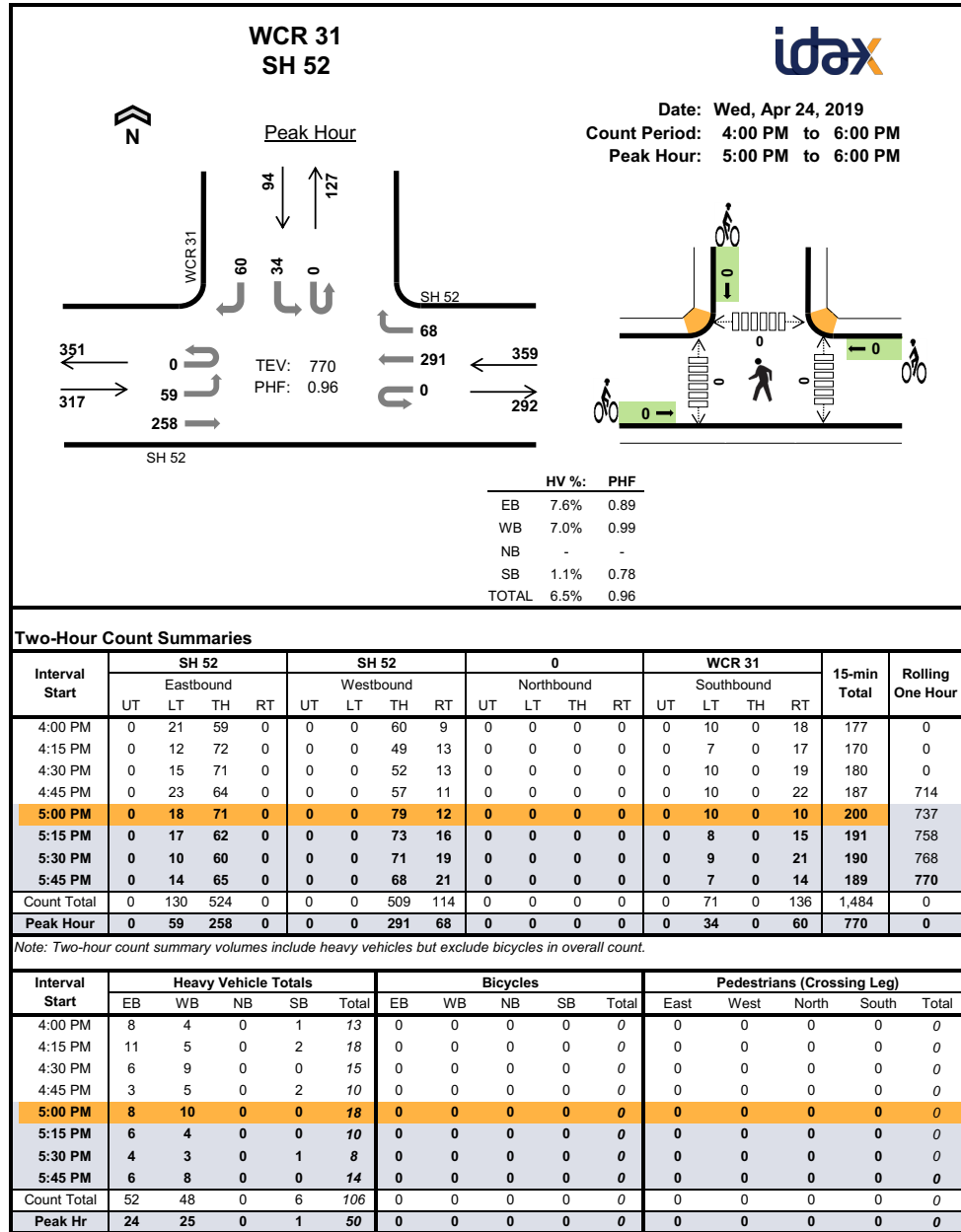


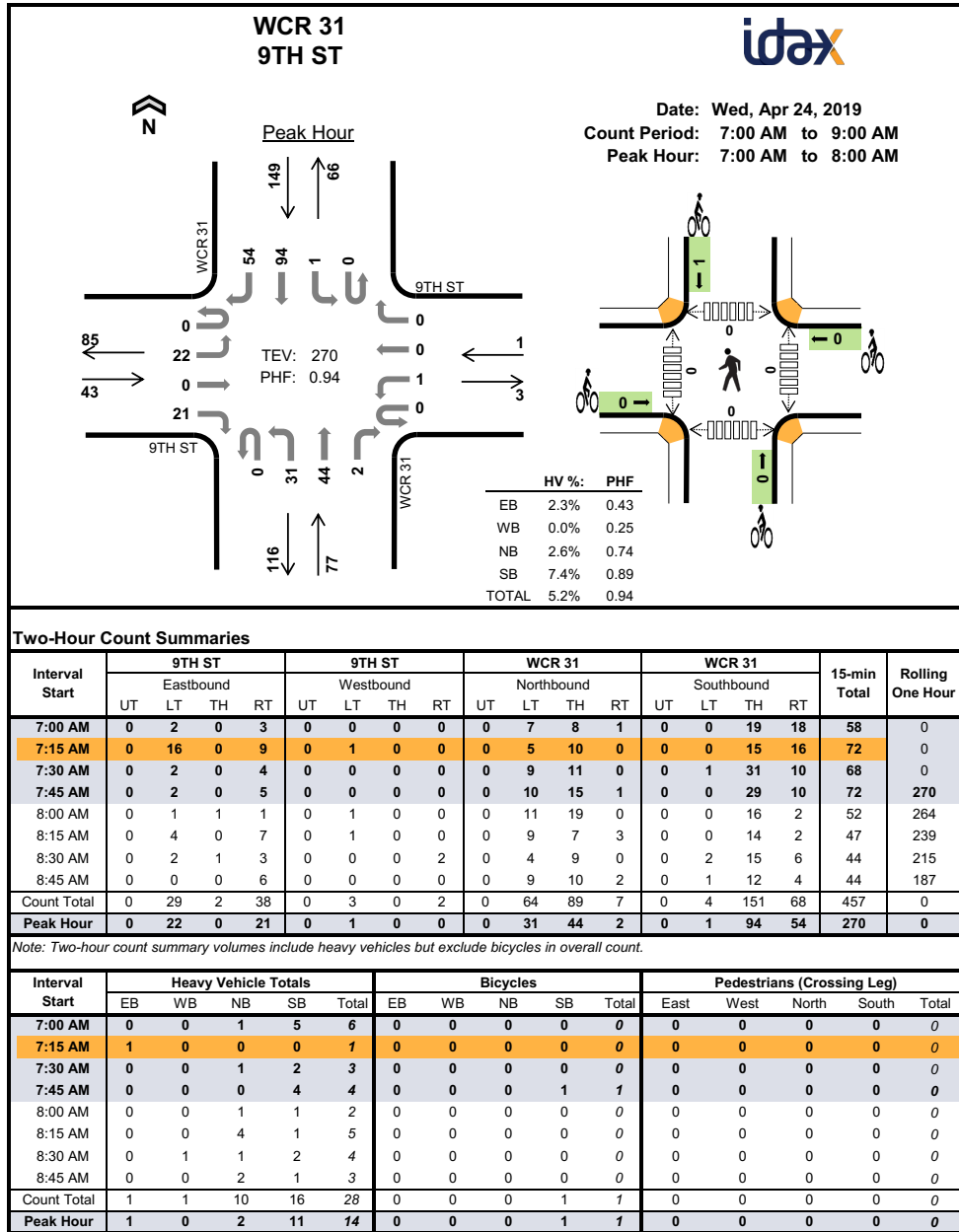
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	4/24/2019			4/25/2019			4/26/2019			4/27/2019			4/28/2019			4/29/2019			4/30/2019					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1
1:00 AM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
2:00 AM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
3:00 AM	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2
4:00 AM	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	3
5:00 AM	28	8	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	8	36
6:00 AM	37	18	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	18	55
7:00 AM	44	86	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	86	130
8:00 AM	28	46	74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	46	74
9:00 AM	37	46	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	46	83
10:00 AM	45	41	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	41	86
11:00 AM	52	35	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52	35	87
12:00 PM	44	32	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	32	76
1:00 PM	32	41	73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32	41	73
2:00 PM	50	52	102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	52	102
3:00 PM	66	41	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	41	107
4:00 PM	67	34	101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	34	101
5:00 PM	40	41	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	41	81
6:00 PM	28	34	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	34	62
7:00 PM	19	19	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	19	38
8:00 PM	13	11	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	11	24
9:00 PM	6	8	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	8	14
10:00 PM	14	4	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	4	18
11:00 PM	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	5
Total	659	603	1,262																			659	603	1,262
Percent	52%	48%																				52%	48%	

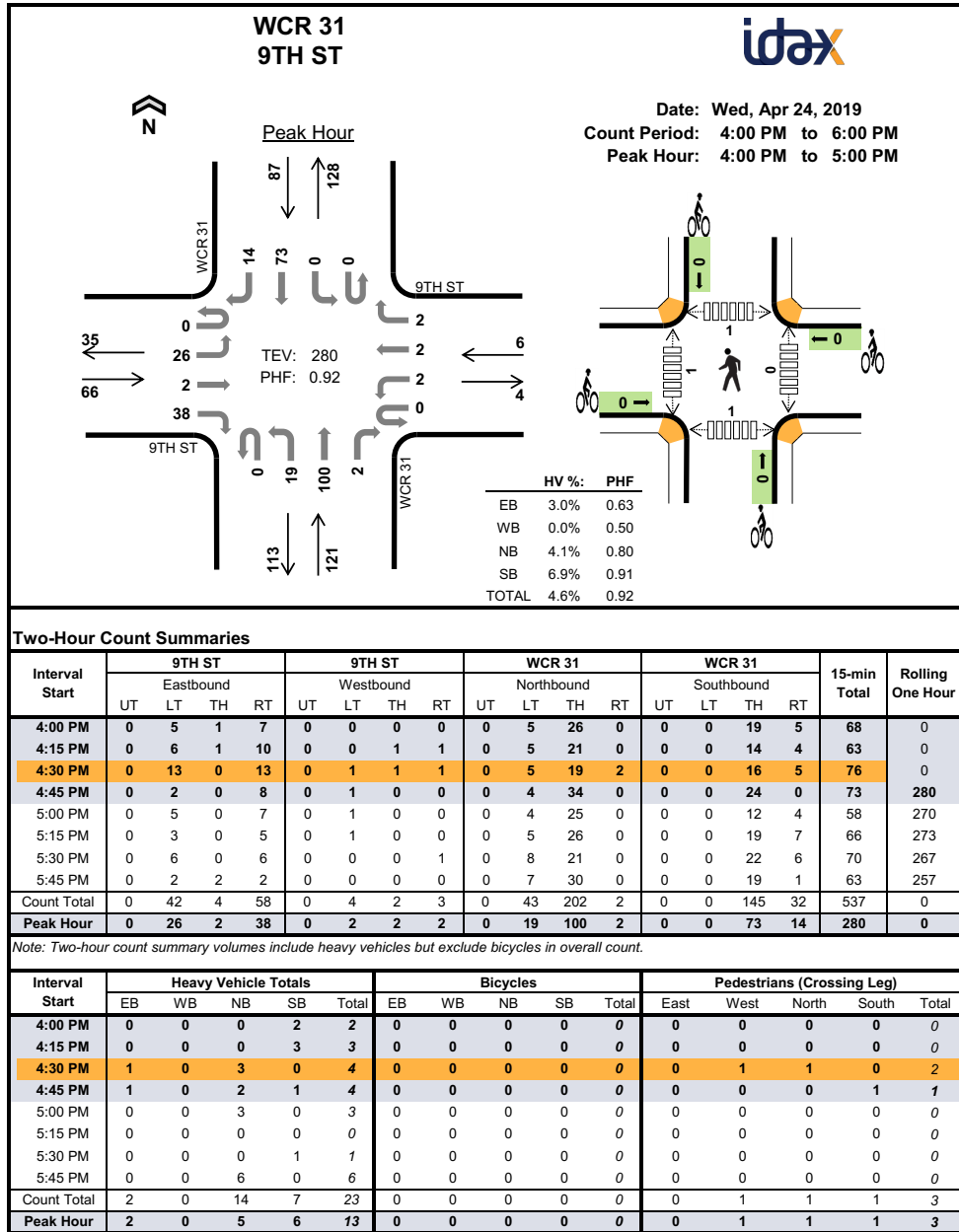
1. Mid-week average includes data between Tuesday and Thursday.

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 mark.skaggs@idaxdata.com









Appendix B

Level of Service Worksheets

EXISTING

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	60	202	259	32	45	66
Future Vol, veh/h	60	202	259	32	45	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	- None	- None	- None	- None	- None	- None
Storage Length	0	-	-	0	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	220	282	35	49	72
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	317	0	-	0	632	282
Stage 1	-	-	-	-	282	-
Stage 2	-	-	-	-	350	-
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	243	-	-	-	444	757
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	243	-	-	-	421	757
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	713	-
Approach	EB	WB	SB			
HCM Control Delay, s	8	0	13			
HCM LOS			B			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	1243	-	-	-	-	572
HCM Lane V/C Ratio	0.052	-	-	-	-	0.211
HCM Control Delay (s)	8.1	-	-	-	-	13
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	-	0.8

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	59	258	291	68	34	60
Future Vol, veh/h	59	258	291	68	34	60
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	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	280	316	74	37	65
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	390	0	-	0	724	316
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	408	-
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	169	-	-	-	393	724
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	671	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	169	-	-	-	371	724
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	671	-
Approach	EB		WB		SB	
HCM Control Delay, s	4.5		0		13.2	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	1169	-	-	-	-	539
HCM Lane V/C Ratio	0.055	-	-	-	-	0.19
HCM Control Delay (s)	8.3	-	-	-	-	13.2
HCM Lane LOS	A	-	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	-	0.7

HCM 6th TWSC
2: CR 31 & 9th Street

05/01/2019

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	22	0	21	1	0	0	31	44	2	1	94	54
Future Vol, veh/h	22	0	21	1	0	0	31	44	2	1	94	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	23	1	0	0	34	48	2	1	102	59

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	251	252	132	262	280	49	161	0
Stage 1	134	134	-	117	117	-	-	-
Stage 2	117	118	-	145	163	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	702	651	917	691	628	1020	1418	-
Stage 1	869	785	-	888	799	-	-	-
Stage 2	888	798	-	858	763	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	688	634	917	661	612	1020	1418	-
Mov Cap-2 Maneuver	688	634	-	661	612	-	-	-
Stage 1	847	784	-	866	779	-	-	-
Stage 2	866	778	-	836	762	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.5	3.1	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	688	-	917	661	1557	-	-
HCM Lane V/C Ratio	0.024	-	-	0.035	-	0.025	0.002	0.001	-	-
HCM Control Delay (s)	7.6	0	-	10.4	0	9	10.5	7.3	0	-
HCM Lane LOS	A	A	-	B	A	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0.1	0	0	-	-

HCM 6th TWSC
2: CR 31 & 9th Street

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Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↰	↰	↰	↱	↱	↰	↱	↰
Traffic Vol, veh/h	26	2	38	2	2	2	19	100	2	0	73	14
Future Vol, veh/h	26	2	38	2	2	2	19	100	2	0	73	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	0	-	0	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	2	41	2	2	2	21	109	2	0	79	15

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	241	240	87	260	246	110	94	0
Stage 1	87	87	-	152	152	-	-	-
Stage 2	154	153	-	108	94	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	713	661	971	693	656	943	1500	-
Stage 1	921	823	-	850	772	-	-	-
Stage 2	848	771	-	897	817	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	702	651	971	654	646	943	1500	-
Mov Cap-2 Maneuver	702	651	-	654	646	-	-	-
Stage 1	907	823	-	837	760	-	-	-
Stage 2	831	759	-	857	817	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	10	1.2	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1500	-	-	702	651	971	725	1479	-	-
HCM Lane V/C Ratio	0.014	-	-	0.04	0.003	0.043	0.009	-	-	-
HCM Control Delay (s)	7.4	0	-	10.3	10.5	8.9	10	0	-	-
HCM Lane LOS	A	A	-	B	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	0	0	-	-

BACKGROUND 2024

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	105	330	420	55	95	115
Future Vol, veh/h	105	330	420	55	95	115
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	-	-	0	0	-
Veh in Median Storage, #	0	0	-	0	-	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	359	457	60	103	125
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	517	0	-	0	1044	457
Stage 1	-	-	-	-	457	-
Stage 2	-	-	-	-	587	-
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	1049	-	-	-	254	604
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	556	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1049	-	-	-	226	604
Mov Cap-2 Maneuver	-	-	-	-	226	-
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	556	-
Approach	EB	WB		SB		
HCM Control Delay, s	9.1	0		33.9		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBL	SBR
Capacity (veh/h)	1049	-	-	-	344	-
HCM Lane V/C Ratio	0.109	-	-	-	-0.664	-
HCM Control Delay (s)	8.8	-	-	-	33.9	-
HCM Lane LOS	A	-	-	-	D	-
HCM 95th %tile Q(veh)	0.4	-	-	-	4.5	-

Intersection						
Int Delay, s/veh	4.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	115	420	475	120	75	45
Future Vol, veh/h	115	420	475	120	75	45
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	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	457	516	130	82	49
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	646	0	-	0	1223	516
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	707	-
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	939	-	-	-	198	559
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	939	-	-	-	172	559
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	519	-
Stage 2	-	-	-	-	489	-
Approach	EB		WB		SB	
HCM Control Delay, s	2		0		38.8	
HCM LOS	E					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBRn1
Capacity (veh/h)	939	-	-	-	-	232
HCM Lane V/C Ratio	0.133	-	-	-	-	0.562
HCM Control Delay (s)	9.4	-	-	-	-	38.8
HCM Lane LOS	A	-	-	-	-	E
HCM 95th %tile Q(veh)	0.5	-	-	-	-	3.1

HCM 6th TWSC
2: CR 31 & 9th Street

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Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	45	5	40	5	5	5	55	90	5	5	205	110
Future Vol, veh/h	45	5	40	5	5	5	55	90	5	5	205	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	5	43	5	5	5	60	98	5	5	223	120
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	519	516	283	538	574	101	343	0	0	103	0	0
Stage 1	293	293	-	221	221	-	-	-	-	-	-	-
Stage 2	226	223	-	317	353	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	467	463	756	454	429	954	1216	-	-	1489	-	-
Stage 1	715	670	-	781	720	-	-	-	-	-	-	-
Stage 2	777	719	-	694	631	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	440	437	756	406	405	954	1216	-	-	1489	-	-
Mov Cap-2 Maneuver	440	437	-	406	405	-	-	-	-	-	-	-
Stage 1	678	667	-	740	683	-	-	-	-	-	-	-
Stage 2	727	682	-	646	628	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.3			12.4			3			0.1		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1216	-	-	440	437	756	502	1489	-	-		
HCM Lane V/C Ratio	0.049	-	-	0.111	0.012	0.058	0.032	0.004	-	-		
HCM Control Delay (s)	8.1	0	-	14.2	13.3	10.1	12.4	7.4	0	-		
HCM Lane LOS	A	A	-	B	B	B	B	A	A	-		
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0	0.2	0.1	0	-	-		

HCM 6th TWSC
2: CR 31 & 9th Street

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Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	60	5	70	5	5	5	35	215	5	5	160	30
Future Vol, veh/h	60	5	70	5	5	5	35	215	5	5	160	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	76	5	5	5	38	234	5	5	174	33
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	519	516	191	554	530	237	207	0	0	239	0	0
Stage 1	201	201	-	313	313	-	-	-	-	-	-	-
Stage 2	318	315	-	241	217	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	467	463	851	443	455	802	1364	-	-	1328	-	-
Stage 1	801	735	-	698	657	-	-	-	-	-	-	-
Stage 2	693	656	-	762	723	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	447	446	851	389	439	802	1364	-	-	1328	-	-
Mov Cap-2 Maneuver	447	446	-	389	439	-	-	-	-	-	-	-
Stage 1	775	732	-	676	636	-	-	-	-	-	-	-
Stage 2	661	635	-	686	720	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	11.9		12.6		1.1		0.2		0.2		0.2	
HCM LOS	B		B		A		A		A		A	
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1364	-	-	447	446	851	492	1328	-	-		
HCM Lane V/C Ratio	0.028	-	-	0.146	0.012	0.089	0.033	0.004	-	-		
HCM Control Delay (s)	7.7	0	-	14.4	13.2	9.6	12.6	7.7	0	-		
HCM Lane LOS	A	A	-	B	B	A	B	A	A	-		
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0.3	0.1	0	-	-		

HCM 6th TWSC
3: CR 31 & 14th Street

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Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	20	5	50	5	5	5	25	110	5	5	265	25
Future Vol, veh/h	20	5	50	5	5	5	25	110	5	5	265	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	5	54	5	5	5	27	120	5	5	288	27
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	494	491	302	518	502	123	315	0	0	125	0	0
Stage 1	312	312	-	177	177	-	-	-	-	-	-	-
Stage 2	182	179	-	341	325	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	486	478	738	468	471	928	1245	-	-	1462	-	-
Stage 1	699	658	-	825	753	-	-	-	-	-	-	-
Stage 2	820	751	-	674	649	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	469	465	738	421	458	928	1245	-	-	1462	-	-
Mov Cap-2 Maneuver	469	465	-	421	458	-	-	-	-	-	-	-
Stage 1	683	655	-	806	736	-	-	-	-	-	-	-
Stage 2	791	734	-	617	646	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	1.7		12		1.4		0.1					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1245	-	-	619	532	1462	-	-				
HCM Lane V/C Ratio	0.022	-	-	0.132	0.031	0.004	-	-				
HCM Control Delay (s)	8	0	-	11.7	12	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-				

HCM 6th TWSC
3: CR 31 & 14th Street

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Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	25	5	40	5	5	5	50	225	5	5	150	10
Future Vol, veh/h	25	5	40	5	5	5	50	225	5	5	150	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	5	43	5	5	5	54	245	5	5	163	11
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	540	537	169	559	540	248	174	0	0	250	0	0
Stage 1	179	179	-	356	356	-	-	-	-	-	-	-
Stage 2	361	358	-	203	184	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	453	450	875	440	449	791	1403	-	-	1316	-	-
Stage 1	823	751	-	661	629	-	-	-	-	-	-	-
Stage 2	657	628	-	799	747	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	429	428	875	399	427	791	1403	-	-	1316	-	-
Mov Cap-2 Maneuver	429	428	-	399	427	-	-	-	-	-	-	-
Stage 1	786	748	-	631	601	-	-	-	-	-	-	-
Stage 2	617	600	-	751	744	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.8			12.6			1.4			0.2		
HCM LOS	B			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn	WBLn	N1	SBL	SBT	SBR			
Capacity (veh/h)	1403	-	-	605	491	1316	-	-	-			
HCM Lane V/C Ratio	0.039	-	-	0.126	0.033	0.004	-	-	-			
HCM Control Delay (s)	7.7	0	-	11.8	12.6	7.7	0	-	-			
HCM Lane LOS	A	A	-	B	B	A	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-	-			

TOTAL 2024

HCM 6th TWSC
1: SH 52 & CR 31

10/03/2019

Intersection						
Int Delay, s/veh	10.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	115	340	425	60	105	135
Future Vol, veh/h	115	340	425	60	105	135
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	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	370	462	65	114	147
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	527	0	-	0	1082	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	620	-
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	1040	-	-	-	241	600
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1040	-	-	-	212	600
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	536	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.3	0		45.7		
HCM LOS	E					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1040	-	-	-	333	
HCM Lane V/C Ratio	0.12	-	-	-	0.783	
HCM Control Delay (s)	8.9	-	-	-	45.7	
HCM Lane LOS	A	-	-	-	E	
HCM 95th %tile Q(veh)	0.4	-	-	-	6.4	

HCM 6th TWSC
1: SH 52 & CR 31

10/03/2019

Intersection						
Int Delay, s/veh	6.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	140	425	485	130	80	60
Future Vol, veh/h	140	425	485	130	80	60
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	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	462	527	141	87	65
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	668	0	-	0	1293	527
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	766	-
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	922	-	-	-	180	551
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	922	-	-	-	150	551
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	459	-
Approach	EB		WB		SB	
HCM Control Delay, s	2.4		0		52.6	
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	922	-	-	-	218	
HCM Lane V/C Ratio	0.165	-	-	-	0.698	
HCM Control Delay (s)	9.7	-	-	-	52.6	
HCM Lane LOS	A	-	-	-	F	
HCM 95th %tile Q(veh)	0.6	-	-	-	4.5	

HCM 6th TWSC
2: CR 31 & 9th Street

10/03/2019

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	45	5	50	5	5	5	60	100	5	5	225	110
Future Vol, veh/h	45	5	50	5	5	5	60	100	5	5	225	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	5	54	5	5	5	65	109	5	5	245	120

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	562	559	305	587	617	112	365	0	0	114	0	0
Stage 1	315	315	-	242	242	-	-	-	-	-	-	-
Stage 2	247	244	-	345	375	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	438	438	735	421	405	941	1194	-	-	1475	-	-
Stage 1	696	656	-	762	705	-	-	-	-	-	-	-
Stage 2	757	704	-	671	617	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	410	411	735	368	380	941	1194	-	-	1475	-	-
Mov Cap-2 Maneuver	410	411	-	368	380	-	-	-	-	-	-	-
Stage 1	656	653	-	718	664	-	-	-	-	-	-	-
Stage 2	703	663	-	614	615	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.6			13			3			0.1		
HCM LOS	B			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1194	-	-	410	411	735	468	1475	-	-
HCM Lane V/C Ratio	0.055	-	-	0.119	0.013	0.074	0.035	0.004	-	-
HCM Control Delay (s)	8.2	0	-	15	13.9	10.3	13	7.5	0	-
HCM Lane LOS	A	A	-	C	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0	0.2	0.1	0	-	-

HCM 6th TWSC
2: CR 31 & 9th Street

10/03/2019

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	60	5	75	5	5	5	45	240	5	5	175	30
Future Vol, veh/h	60	5	75	5	5	5	45	240	5	5	175	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	5	82	5	5	5	49	261	5	5	190	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	584	581	207	622	595	264	223	0	0	266	0	0
Stage 1	217	217	-	362	362	-	-	-	-	-	-	-
Stage 2	367	364	-	260	233	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	423	425	833	399	417	775	1346	-	-	1298	-	-
Stage 1	785	723	-	657	625	-	-	-	-	-	-	-
Stage 2	653	624	-	745	712	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	401	405	833	344	397	775	1346	-	-	1298	-	-
Mov Cap-2 Maneuver	401	405	-	344	397	-	-	-	-	-	-	-
Stage 1	751	720	-	629	598	-	-	-	-	-	-	-
Stage 2	615	597	-	664	709	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	12.5	-	-	13.4	-	-	1.2	-	-	0.2	-	-
HCM LOS	B	-	-	B	-	-	-	-	-	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1346	-	-	401	405	833	447	1298	-	-
HCM Lane V/C Ratio	0.036	-	-	0.163	0.013	0.098	0.036	0.004	-	-
HCM Control Delay (s)	7.8	0	-	15.7	14	9.8	13.4	7.8	0	-
HCM Lane LOS	A	A	-	C	B	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0	0.3	0.1	0	-	-

HCM 6th TWSC
3: CR 31 & 14th Street

08/29/2019

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	5	60	5	5	5	25	110	5	5	265	25
Future Vol, veh/h	20	5	60	5	5	5	25	110	5	5	265	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	5	65	5	5	5	27	120	5	5	288	27
Major/Minor	Minor2	Minor1		Major1		Major2						
Conflicting Flow All	494	491	302	524	502	123	315	0	0	125	0	0
Stage 1	312	312	-	177	177	-	-	-	-	-	-	-
Stage 2	182	179	-	347	325	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	486	478	738	464	471	928	1245	-	-	1462	-	-
Stage 1	699	658	-	825	753	-	-	-	-	-	-	-
Stage 2	820	751	-	669	649	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	469	465	738	411	458	928	1245	-	-	1462	-	-
Mov Cap-2 Maneuver	469	465	-	411	458	-	-	-	-	-	-	-
Stage 1	683	655	-	806	736	-	-	-	-	-	-	-
Stage 2	791	734	-	602	646	-	-	-	-	-	-	-
Approach	EB	WB		NB		SB						
HCM Control Delay, s	1.7	12		1.4		0.1						
HCM LOS	B	B										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1245	-	-	631	527	1462	-	-				
HCM Lane V/C Ratio	0.022	-	-	0.146	0.031	0.004	-	-				
HCM Control Delay (s)	8	0	-	11.7	12	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-				

HCM 6th TWSC
3: CR 31 & 14th Street

08/28/2019

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	25	5	45	5	5	5	60	225	5	5	150	10
Future Vol, veh/h	25	5	45	5	5	5	60	225	5	5	150	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	5	49	5	5	5	65	245	5	5	163	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	562	559	169	584	562	248	174	0	0	250	0	0
Stage 1	179	179	-	378	378	-	-	-	-	-	-	-
Stage 2	383	380	-	206	184	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	438	438	875	423	436	791	1403	-	-	1316	-	-
Stage 1	823	751	-	644	615	-	-	-	-	-	-	-
Stage 2	640	614	-	796	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	412	413	875	378	411	791	1403	-	-	1316	-	-
Mov Cap-2 Maneuver	412	413	-	378	411	-	-	-	-	-	-	-
Stage 1	779	748	-	609	582	-	-	-	-	-	-	-
Stage 2	596	581	-	743	744	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.9		12.9		1.6		0.2					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn	WBLn	SBL	SBT	SBR				
Capacity (veh/h)	1403	-	-	604	473	1316	-	-				
HCM Lane V/C Ratio	0.046	-	-	0.135	0.034	0.004	-	-				
HCM Control Delay (s)	7.7	0	-	11.9	12.9	7.7	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-				

2024 With Improvements

HCM 6th TWSC
1: SH 52 & CR 31

10/03/2019

Intersection						
Int Delay, s/veh	5.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	115	340	425	60	105	135
Future Vol, veh/h	115	340	425	60	105	135
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	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	125	370	462	65	114	147
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	527	0	-	0	1082	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	620	-
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	1040	-	-	-	241	600
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	536	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1040	-	-	-	212	600
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	536	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.3	0		24.8		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1040	-	-	-	212	600
HCM Lane V/C Ratio	0.12	-	-	-	0.538	0.245
HCM Control Delay (s)	8.9	-	-	-	40.2	12.9
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	2.8	1

HCM 6th TWSC
1: SH 52 & CR 31

10/03/2019

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	140	425	485	130	80	60
Future Vol, veh/h	140	425	485	130	80	60
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	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	462	527	141	87	65
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	668	0	-	0	1293	527
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	766	-
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	922	-	-	-	180	551
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	459	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	922	-	-	-	150	551
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	459	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.4	0		38.3		
HCM LOS	E					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	922	-	-	-	150	551
HCM Lane V/C Ratio	0.165	-	-	-	0.58	0.118
HCM Control Delay (s)	9.7	-	-	-	57.7	12.4
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.6	-	-	-	3	0.4

HCM 6th Signalized Intersection Summary
1: SH 52 & CR 31

10/03/2019

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	340	425	60	105	135
Future Volume (veh/h)	115	340	425	60	105	135
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No	No	No	No	No	No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	125	370	462	65	114	147
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	336	864	557	472	267	344
Arrive On Green	0.08	0.46	0.30	0.30	0.37	0.37
Sat Flow, veh/h	1781	1870	1870	1585	725	935
Grp Volume(v), veh/h	125	370	462	65	262	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1666	0
Q Serve(g_s), s	2.3	7.0	12.2	1.6	6.2	0.0
Cycle Q Clear(g_c), s	2.3	7.0	12.2	1.6	6.2	0.0
Prop In Lane	1.00			1.00	0.44	0.56
Lane Grp Cap(c), veh/h	336	864	557	472	613	0
V/C Ratio(X)	0.37	0.43	0.83	0.14	0.43	0.00
Avail Cap(c_a), veh/h	380	1112	759	643	613	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.0	9.6	17.4	13.6	12.6	0.0
Incr Delay (d2), s/veh	0.7	0.3	5.7	0.1	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.9	4.8	0.4	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.7	9.9	23.0	13.8	14.7	0.0
LnGrp LOS	B	A	C	B	B	A
Approach Vol, veh/h		495	527		262	
Approach Delay, s/veh		10.6	21.9		14.7	
Approach LOS		B	C		B	
Timer - Assigned Phs			4		6	7 8
Phs Duration (G+Y+Rc), s			29.0		24.0	8.7 20.3
Change Period (Y+Rc), s			4.5		4.5	4.5 4.5
Max Green Setting (Gmax), s			31.5		19.5	5.5 21.5
Max Q Clear Time (g_c+l1), s			9.0		8.2	4.3 14.2
Green Ext Time (p_c), s			1.8		0.6	0.0 1.6
Intersection Summary						
HCM 6th Ctrl Delay			16.1			
HCM 6th LOS			B			

HCM 6th Signalized Intersection Summary
1: SH 52 & CR 31

10/03/2019

							
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations							
Traffic Volume (veh/h)	140	425	485	130	80	60	
Future Volume (veh/h)	140	425	485	130	80	60	
Initial Q (Qb), veh	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	
Work Zone On Approach		No	No		No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900	
Adj Flow Rate, veh/h	152	462	527	141	87	65	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	2	2	2	2	0	0	
Cap, veh/h	330	925	615	521	327	245	
Arrive On Green	0.08	0.49	0.33	0.33	0.34	0.34	
Sat Flow, veh/h	1781	1870	1870	1585	963	719	
Grp Volume(v), veh/h	152	462	527	141	153	0	
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1693	0	
Q Serve(g_s), s	2.8	9.0	14.3	3.6	3.6	0.0	
Cycle Q Clear(g_c), s	2.8	9.0	14.3	3.6	3.6	0.0	
Prop In Lane	1.00			1.00	0.57	0.42	
Lane Grp Cap(c), veh/h	330	925	615	521	576	0	
V/C Ratio(X)	0.46	0.50	0.86	0.27	0.27	0.00	
Avail Cap(c_a), veh/h	396	1118	739	627	576	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	
Uniform Delay (d), s/veh	12.1	9.2	17.0	13.4	13.0	0.0	
Incr Delay (d2), s/veh	1.0	0.4	8.5	0.3	1.1	0.0	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	0.8	2.3	5.9	1.0	1.4	0.0	
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh	13.1	9.7	25.5	13.7	14.1	0.0	
LnGrp LOS	B	A	C	B	B	A	
Approach Vol, veh/h		614	668		153		
Approach Delay, s/veh		10.5	23.0		14.1		
Approach LOS		B	C		B		
Timer - Assigned Phs				4	6	7	8
Phs Duration (G+Y+Rc), s				31.4	23.0	9.0	22.4
Change Period (Y+Rc), s				4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s				32.5	18.5	6.5	21.5
Max Q Clear Time (g_c+l1), s				11.0	5.6	4.8	16.3
Green Ext Time (p_c), s				2.4	0.3	0.1	1.6
Intersection Summary							
HCM 6th Ctrl Delay			16.7				
HCM 6th LOS			B				

BACKGROUND 2040

HCM 6th Signalized Intersection Summary
1: SH 52 & CR 31

09/01/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	465	70	40	600	80	115	180	80	160	140	235
Future Volume (veh/h)	145	465	70	40	600	80	115	180	80	160	140	235
Initial Q (Qb), 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	158	505	76	43	652	87	125	196	87	174	152	255
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	280	979	830	402	704	597	334	541	458	338	541	458
Arrive On Green	0.08	0.52	0.52	0.38	0.38	0.38	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1781	1870	1585	833	1870	1585	978	1870	1585	1096	1870	1585
Grp Volume(v), veh/h	158	505	76	43	652	87	125	196	87	174	152	255
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	833	1870	1585	978	1870	1585	1096	1870	1585
Q Serve(g_s), s	3.2	11.3	1.5	2.3	21.4	2.3	7.3	5.3	2.6	9.6	4.0	8.7
Cycle Q Clear(g_c), s	3.2	11.3	1.5	4.2	21.4	2.3	11.3	5.3	2.6	14.9	4.0	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	979	830	402	704	597	334	541	458	338	541	458
V/C Ratio(X)	0.56	0.52	0.09	0.11	0.93	0.15	0.37	0.36	0.19	0.51	0.28	0.56
Avail Cap(c_a), veh/h	283	1008	855	414	731	619	334	541	458	338	541	458
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.4	10.0	7.6	14.4	19.1	13.2	22.0	18.1	17.1	24.0	17.6	19.3
Incr Delay (d2), s/veh	2.5	0.4	0.0	0.1	17.4	0.1	3.2	1.9	0.9	5.5	1.3	4.8
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	1.1	3.2	0.4	0.4	10.5	0.7	1.9	2.4	1.0	2.8	1.8	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.9	10.4	7.7	14.5	36.5	13.3	25.2	19.9	18.0	29.5	18.9	24.1
LnGrp LOS	B	B	A	B	D	B	C	B	B	C	B	C
Approach Vol, veh/h	739			782			408			581		
Approach Delay, s/veh	11.5			32.7			21.1			24.3		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	2			4			6		7	8		
Phs Duration (G+Y+Rc), s	24.5			39.5			24.5		9.4	30.1		
Change Period (Y+Rc), s	6.0			6.0			6.0		4.5	6.0		
Max Green Setting (Gmax), s	18.5			34.5			18.5		5.0	25.0		
Max Q Clear Time (g_c+I1), s	13.3			13.3			16.9		5.2	23.4		
Green Ext Time (p_c), s	0.9			2.9			0.5		0.0	0.7		
Intersection Summary												
HCM 6th Ctrl Delay	22.7											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

1: SH 52 & CR 31

09/01/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	595	80	80	670	165	105	200	60	120	180	215
Future Volume (veh/h)	155	595	80	80	670	165	105	200	60	120	180	215
Initial Q (Qb), 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	168	647	87	87	728	179	114	217	65	130	196	234
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	272	1058	896	341	804	681	276	508	430	291	508	430
Arrive On Green	0.07	0.57	0.57	0.43	0.43	0.43	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1781	1870	1585	723	1870	1585	958	1870	1585	1097	1870	1585
Grp Volume(v), veh/h	168	647	87	87	728	179	114	217	65	130	196	234
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	723	1870	1585	958	1870	1585	1097	1870	1585
Q Serve(g_s), s	3.6	16.9	1.9	6.7	26.8	5.3	8.1	7.0	2.3	8.2	6.3	9.3
Cycle Q Clear(g_c), s	3.6	16.9	1.9	13.6	26.8	5.3	14.4	7.0	2.3	15.2	6.3	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	1058	896	341	804	681	276	508	430	291	508	430
V/C Ratio(X)	0.62	0.61	0.10	0.26	0.91	0.26	0.41	0.43	0.15	0.45	0.39	0.54
Avail Cap(c_a), veh/h	344	1219	1033	373	889	753	276	508	430	291	508	430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	10.6	7.4	18.5	19.6	13.5	27.7	22.1	20.4	28.4	21.8	22.9
Incr Delay (d2), s/veh	2.3	0.7	0.0	0.4	12.0	0.2	4.5	2.6	0.7	4.9	2.2	4.9
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	1.2	5.0	0.5	1.0	11.8	1.6	2.1	3.3	0.9	2.5	2.9	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	11.3	7.4	18.9	31.7	13.7	32.2	24.7	21.1	33.3	24.0	27.8
LnGrp LOS	B	B	A	B	C	B	C	C	C	C	C	C
Approach Vol, veh/h	902			994			396			560		
Approach Delay, s/veh	12.3			27.3			26.3			27.8		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	2			4			6		7	8		
Phs Duration (G+Y+Rc), s	26.0			47.7			26.0		10.0	37.6		
Change Period (Y+Rc), s	6.0			6.0			6.0		4.5	6.0		
Max Green Setting (Gmax), s	20.0			48.0			20.0		8.5	35.0		
Max Q Clear Time (g_c+I1), s	16.4			18.9			17.2		5.6	28.8		
Green Ext Time (p_c), s	0.7			4.2			0.8		0.1	2.9		
Intersection Summary												
HCM 6th Ctrl Delay	22.5											
HCM 6th LOS	C											

HCM 6th TWSC
2: CR 31 & 9th Street

08/29/2019

Intersection												
Int Delay, s/veh	7.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Vol, veh/h	85	25	75	25	25	15	110	165	25	15	365	203
Future Vol, veh/h	85	25	75	25	25	15	110	165	25	15	365	203
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	27	82	27	27	16	120	179	27	16	397	221
Major/Minor	Minor2	Minor1				Major1			Major2			
Conflicting Flow All	994	986	508	1027	1083	193	618	0	0	206	0	0
Stage 1	540	540	-	433	433	-	-	-	-	-	-	-
Stage 2	454	446	-	594	650	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	224	248	565	213	217	849	962	-	-	1365	-	-
Stage 1	526	521	-	601	582	-	-	-	-	-	-	-
Stage 2	586	574	-	491	465	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	72	209	565	145	183	849	962	-	-	1365	-	-
Mov Cap-2 Maneuver	72	209	-	145	183	-	-	-	-	-	-	-
Stage 1	452	511	-	516	500	-	-	-	-	-	-	-
Stage 2	467	493	-	390	456	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	30.4			32.7			3.4			0.2		
HCM LOS	D			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	962	-	-	172	209	565	199	1365	-	-		
HCM Lane V/C Ratio	0.124	-	-	0.537	0.13	0.144	0.355	0.012	-	-		
HCM Control Delay (s)	9.3	0	-	47.9	24.8	12.4	32.7	7.7	0	-		
HCM Lane LOS	A	A	-	E	C	B	D	A	A	-		
HCM 95th %tile Q(veh)	0.4	-	-	2.7	0.4	0.5	1.5	0	-	-		

HCM 6th TWSC
2: CR 31 & 9th Street

07/16/2019

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	25	135	25	25	15	70	385	25	15	285	55
Future Vol, veh/h	105	25	135	25	25	15	70	385	25	15	285	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	27	147	27	27	16	76	418	27	16	310	60
Major/Minor	Minor2	Minor1		Major1		Major2		Major2				
Conflicting Flow All	977	969	340	1043	986	432	370	0	0	445	0	0
Stage 1	372	372	-	584	584	-	-	-	-	-	-	-
Stage 2	605	597	-	459	402	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	230	254	702	207	248	624	1189	-	-	1115	-	-
Stage 1	648	619	-	498	498	-	-	-	-	-	-	-
Stage 2	485	491	-	582	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	188	228	702	137	223	624	1189	-	-	1115	-	-
Mov Cap-2 Maneuver	188	228	-	137	223	-	-	-	-	-	-	-
Stage 1	593	608	-	456	456	-	-	-	-	-	-	-
Stage 2	406	449	-	432	589	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay	27.8		31.7		1.2		0.3					
HCM LOS	D		D		D		D					
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1189	-	-	188	228	702	204	1115	-	-		
HCM Lane V/C Ratio	0.064	-	-	0.607	0.119	0.209	0.346	0.015	-	-		
HCM Control Delay (s)	8.2	0	-	50	22.9	11.5	31.7	8.3	0	-		
HCM Lane LOS	A	A	-	F	C	B	D	A	A	-		
HCM 95th %tile Q(veh)	0.2	-	-	3.4	0.4	0.8	1.5	0	-	-		

HCM 6th TWSC
3: CR 31 & 14th Street

07/16/2019

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔↔↔↔↔↔↔↔↔↔											
Traffic Vol, veh/h	35	25	75	25	25	15	50	190	25	15	485	40
Future Vol, veh/h	35	25	75	25	25	15	50	190	25	15	485	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	27	82	27	27	16	54	207	27	16	527	43
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	931	923	549	964	931	221	570	0	0	234	0	0
Stage 1	581	581	-	329	329	-	-	-	-	-	-	-
Stage 2	350	342	-	635	602	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	247	270	535	235	267	819	1002	-	-	1333	-	-
Stage 1	499	500	-	684	646	-	-	-	-	-	-	-
Stage 2	666	638	-	467	489	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	208	249	535	172	246	819	1002	-	-	1333	-	-
Mov Cap-2 Maneuver	208	249	-	172	246	-	-	-	-	-	-	-
Stage 1	468	491	-	642	606	-	-	-	-	-	-	-
Stage 2	585	598	-	367	480	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay (s)	24.4		25.5		1.7		0.2					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBT	SBR
Capacity (veh/h)	1002	-	-	330	245	1333	-	-	-	-	-	-
HCM Lane V/C Ratio	0.054	-	-	0.445	0.288	0.012	-	-	-	-	-	-
HCM Control Delay (s)	8.8	0	-	24.4	25.5	7.7	0	-	-	-	-	-
HCM Lane LOS	A	A	-	C	D	A	A	-	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.2	1.2	0	-	-	-	-	-	-

HCM 6th TWSC
3: CR 31 & 14th Street

07/16/2019

Intersection												
Int Delay, s/veh	5.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	40	25	65	25	25	15	75	405	25	15	265	25
Future Vol, veh/h	40	25	65	25	25	15	75	405	25	15	265	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	27	71	27	27	16	82	440	27	16	288	27
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	973	965	302	1001	965	454	315	0	0	467	0	0
Stage 1	334	334	-	618	618	-	-	-	-	-	-	-
Stage 2	639	631	-	383	347	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	231	255	738	222	255	606	1245	-	-	1094	-	-
Stage 1	680	643	-	477	481	-	-	-	-	-	-	-
Stage 2	464	474	-	640	635	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	188	228	738	168	228	606	1245	-	-	1094	-	-
Mov Cap-2 Maneuver	188	228	-	168	228	-	-	-	-	-	-	-
Stage 1	619	631	-	435	438	-	-	-	-	-	-	-
Stage 2	386	432	-	544	624	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay (s)	25.2			27.4			1.2			0.4		
HCM LOS	D			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn	WBLn	N1	SBL	SBT	SBR			
Capacity (veh/h)	1245	-	-	317	230	1094	-	-	-			
HCM Lane V/C Ratio	0.065	-	-	0.446	0.307	0.015	-	-	-			
HCM Control Delay (s)	8.1	0	-	25.2	27.4	8.3	0	-	-			
HCM Lane LOS	A	A	-	D	D	A	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-	2.2	1.3	0	-	-	-			

TOTAL 2040

HCM 6th Signalized Intersection Summary

1: SH 52 & CR 31

10/03/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	145	475	70	40	605	85	115	195	80	170	170	245						
Future Volume (veh/h)	145	475	70	40	605	85	115	195	80	170	170	245						
Initial Q (Qb), 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	158	516	76	43	658	92	125	212	87	185	185	266						
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	277	982	832	396	708	600	310	539	457	325	539	457						
Arrive On Green	0.08	0.52	0.52	0.38	0.38	0.38	0.29	0.29	0.29	0.29	0.29	0.29						
Sat Flow, veh/h	1781	1870	1585	825	1870	1585	940	1870	1585	1080	1870	1585						
Grp Volume(v), veh/h	158	516	76	43	658	92	125	212	87	185	185	266						
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	825	1870	1585	940	1870	1585	1080	1870	1585						
Q Serve(g_s), s	3.2	11.6	1.5	2.3	21.7	2.5	7.8	5.8	2.7	10.6	5.0	9.2						
Cycle Q Clear(g_c), s	3.2	11.6	1.5	4.5	21.7	2.5	12.8	5.8	2.7	16.5	5.0	9.2						
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00						
Lane Grp Cap(c), veh/h	277	982	832	396	708	600	310	539	457	325	539	457						
V/C Ratio(X)	0.57	0.53	0.09	0.11	0.93	0.15	0.40	0.39	0.19	0.57	0.34	0.58						
Avail Cap(c_a), veh/h	280	1005	852	405	729	617	310	539	457	325	539	457						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	14.4	10.0	7.6	14.6	19.1	13.2	23.1	18.3	17.2	25.0	18.0	19.5						
Incr Delay (d2), s/veh	2.7	0.5	0.0	0.1	18.2	0.1	3.9	2.1	0.9	7.0	1.7	5.3						
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	1.1	3.3	0.4	0.4	10.8	0.7	1.9	2.7	1.0	3.2	2.3	3.4						
Unsig. Movement Delay, s/veh																		
LnGrp Delay(d),s/veh	17.1	10.5	7.7	14.7	37.3	13.3	27.0	20.5	18.1	32.0	19.8	24.9						
LnGrp LOS	B	B	A	B	D	B	C	C	B	C	B	C						
Approach Vol, veh/h	750			793			424			636								
Approach Delay, s/veh	11.6			33.3			21.9			25.5								
Approach LOS	B			C			C			C								
Timer - Assigned Phs	2			4			6		7		8							
Phs Duration (G+Y+Rc), s	24.5			39.7			24.5		9.4		30.3							
Change Period (Y+Rc), s	6.0			6.0			6.0		4.5		6.0							
Max Green Setting (Gmax), s	18.5			34.5			18.5		5.0		25.0							
Max Q Clear Time (g_c+I1), s	14.8			13.6			18.5		5.2		23.7							
Green Ext Time (p_c), s	0.8			2.9			0.0		0.0		0.6							
Intersection Summary																		
HCM 6th Ctrl Delay				23.3														
HCM 6th LOS				C														

Cottonwood Greens 04/24/2019 Total 2040 AM
R Rollins

Synchro 10 Light Report
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HCM 6th Signalized Intersection Summary

1: SH 52 & CR 31

10/03/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	600	80	80	680	175	105	250	60	125	205	220
Future Volume (veh/h)	160	600	80	80	680	175	105	250	60	125	205	220
Initial Q (Qb), 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	174	652	87	87	739	190	114	272	65	136	223	239
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	271	1066	903	341	810	686	255	503	426	248	503	426
Arrive On Green	0.08	0.57	0.57	0.43	0.43	0.43	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1781	1870	1585	720	1870	1585	930	1870	1585	1043	1870	1585
Grp Volume(v), veh/h	174	652	87	87	739	190	114	272	65	136	223	239
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	720	1870	1585	930	1870	1585	1043	1870	1585
Q Serve(g_s), s	3.7	17.1	1.9	6.8	27.6	5.7	8.6	9.3	2.3	9.5	7.4	9.7
Cycle Q Clear(g_c), s	3.7	17.1	1.9	13.7	27.6	5.7	16.0	9.3	2.3	18.8	7.4	9.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	271	1066	903	341	810	686	255	503	426	248	503	426
V/C Ratio(X)	0.64	0.61	0.10	0.26	0.91	0.28	0.45	0.54	0.15	0.55	0.44	0.56
Avail Cap(c_a), veh/h	338	1207	1023	368	880	746	255	503	426	248	503	426
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	10.6	7.3	18.5	19.8	13.6	29.2	23.3	20.7	31.3	22.6	23.4
Incr Delay (d2), s/veh	2.8	0.7	0.0	0.4	13.1	0.2	5.6	4.1	0.8	8.5	2.8	5.3
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	1.3	5.1	0.5	1.0	12.3	1.7	2.2	4.5	0.9	2.9	3.5	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	11.3	7.3	18.8	32.8	13.8	34.8	27.4	21.5	39.8	25.4	28.7
LnGrp LOS	B	B	A	B	C	B	C	C	C	D	C	C
Approach Vol, veh/h	913			1016			451			598		
Approach Delay, s/veh	12.4			28.1			28.4			30.0		
Approach LOS	B			C			C			C		
Timer - Assigned Phs	2			4			6		7	8		
Phs Duration (G+Y+Rc), s	26.0			48.4			26.0		10.2	38.2		
Change Period (Y+Rc), s	6.0			6.0			6.0		4.5	6.0		
Max Green Setting (Gmax), s	20.0			48.0			20.0		8.5	35.0		
Max Q Clear Time (g_c+I1), s	18.0			19.1			20.8		5.7	29.6		
Green Ext Time (p_c), s	0.5			4.3			0.0		0.1	2.6		
Intersection Summary												
HCM 6th Ctrl Delay				23.7								
HCM 6th LOS				C								

HCM 6th TWSC
2: CR 31 & 9th Street

10/03/2019

Intersection												
Int Delay, s/veh	9.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	85	25	100	25	25	15	125	175	25	15	390	205
Future Vol, veh/h	85	25	100	25	25	15	125	175	25	15	390	205
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	92	27	109	27	27	16	136	190	27	16	424	223

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1065	1057	536	1112	1155	204	647	0	0	217	0	0
Stage 1	568	568	-	476	476	-	-	-	-	-	-	-
Stage 2	497	489	-	636	679	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	200	225	545	186	197	837	939	-	-	1353	-	-
Stage 1	508	506	-	570	557	-	-	-	-	-	-	-
Stage 2	555	549	-	466	451	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	148	184	545	114	161	837	939	-	-	1353	-	-
Mov Cap-2 Maneuver	148	184	-	114	161	-	-	-	-	-	-	-
Stage 1	424	496	-	476	465	-	-	-	-	-	-	-
Stage 2	428	458	-	346	442	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	35.1			41.9			3.6			0.2		
HCM LOS	E			E								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	939	-	-	148	184	545	166	1353	-	-
HCM Lane V/C Ratio	0.145	-	-	0.624	0.148	0.199	0.426	0.012	-	-
HCM Control Delay (s)	9.5	0	-	63	27.9	13.2	41.9	7.7	0	-
HCM Lane LOS	A	A	-	F	D	B	E	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	3.4	0.5	0.7	1.9	0	-	-

HCM 6th TWSC
2: CR 31 & 9th Street

10/03/2019

Intersection												
Int Delay, s/veh	11.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	105	25	150	25	25	15	95	420	25	15	305	55
Future Vol, veh/h	105	25	150	25	25	15	95	420	25	15	305	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	114	27	163	27	27	16	103	457	27	16	332	60

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1092	1084	362	1166	1101	471	392	0	0	484	0	0
Stage 1	394	394	-	677	677	-	-	-	-	-	-	-
Stage 2	698	690	-	489	424	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	192	217	683	171	212	593	1167	-	-	1079	-	-
Stage 1	631	605	-	443	452	-	-	-	-	-	-	-
Stage 2	431	446	-	561	587	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	148	187	683	104	183	593	1167	-	-	1079	-	-
Mov Cap-2 Maneuver	148	187	-	104	183	-	-	-	-	-	-	-
Stage 1	555	594	-	389	397	-	-	-	-	-	-	-
Stage 2	343	392	-	400	576	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	40			43.4			1.5			0.3		
HCM LOS	E			E								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1167	-	-	148	187	683	162	1079	-	-
HCM Lane V/C Ratio	0.088	-	-	0.771	0.145	0.239	0.436	0.015	-	-
HCM Control Delay (s)	8.4	0	-	83.2	27.5	11.9	43.4	8.4	0	-
HCM Lane LOS	A	A	-	F	D	B	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	4.8	0.5	0.9	2	0	-	-

HCM 6th TWSC
3: CR 31 & 14th Street

08/29/2019

Intersection												
Int Delay, s/veh	5.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔↔↔↔↔↔↔↔↔↔↔											
Traffic Vol, veh/h	35	25	85	25	25	15	50	190	25	15	485	40
Future Vol, veh/h	35	25	85	25	25	15	50	190	25	15	485	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	27	92	27	27	16	54	207	27	16	527	43
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	931	923	549	969	931	221	570	0	0	234	0	0
Stage 1	581	581	-	329	329	-	-	-	-	-	-	-
Stage 2	350	342	-	640	602	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	247	270	535	233	267	819	1002	-	-	1333	-	-
Stage 1	499	500	-	684	646	-	-	-	-	-	-	-
Stage 2	666	638	-	464	489	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	208	249	535	166	246	819	1002	-	-	1333	-	-
Mov Cap-2 Maneuver	208	249	-	166	246	-	-	-	-	-	-	-
Stage 1	468	491	-	642	606	-	-	-	-	-	-	-
Stage 2	585	598	-	356	480	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay (s)	24.5		26.1		1.7		0.2					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1002	-	-	339	240	1333	-	-				
HCM Lane V/C Ratio	0.054	-	-	0.465	0.294	0.012	-	-				
HCM Control Delay (s)	8.8	0	-	24.5	26.1	7.7	0	-				
HCM Lane LOS	A	A	-	C	D	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	2.4	1.2	0	-	-				

HCM 6th TWSC
3: CR 31 & 14th Street

08/29/2019

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Vol, veh/h	40	25	70	25	25	15	85	405	25	15	265	25
Future Vol, veh/h	40	25	70	25	25	15	85	405	25	15	265	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	-	-	0	-	-	0	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	27	76	27	27	16	92	440	27	16	288	27
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	993	985	302	1023	985	454	315	0	0	467	0	0
Stage 1	334	334	-	638	638	-	-	-	-	-	-	-
Stage 2	659	651	-	385	347	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	224	248	738	214	248	606	1245	-	-	1094	-	-
Stage 1	680	643	-	465	471	-	-	-	-	-	-	-
Stage 2	453	465	-	638	635	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	180	219	738	159	219	606	1245	-	-	1094	-	-
Mov Cap-2 Maneuver	180	219	-	159	219	-	-	-	-	-	-	-
Stage 1	612	631	-	419	424	-	-	-	-	-	-	-
Stage 2	371	419	-	538	624	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay (s)	26.3			29.1			1.3			0.4		
HCM LOS	D			D								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1245	-	-	313	219	1094	-	-				
HCM Lane V/C Ratio	0.074	-	-	0.469	0.323	0.015	-	-				
HCM Control Delay (s)	8.1	0	-	26.3	29.1	8.3	0	-				
HCM Lane LOS	A	A	-	D	D	A	A	-				
HCM 95th %tile Q(veh)	0.2	-	-	2.4	1.3	0	-	-				

Appendix C

Figure and Table 4C-3 Manual on Uniform Traffic Control Devices

Excerpt from the Federal Highway Administration's, "Manual on Uniform Traffic Control Devices" (MUTCD), 2009

2009 EDITION PART 4 FIGURE 4C-3. WARRANT 3, PEAK HOUR

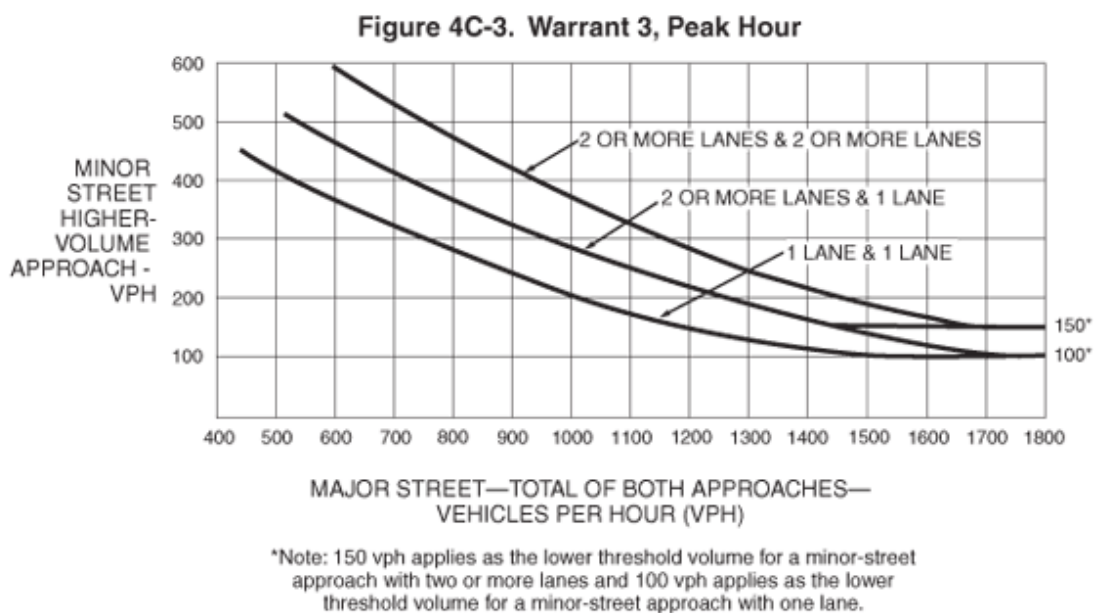


Figure 4C-3. Warrant 3, Peak Hour

This figure shows a graph depicting numerical values for Warrant 3, Peak Hour (see Section 4C.04 for further details). The figure displays three curves—one for each existing combination of approach lanes: one lane and one lane, two or more lanes and one lane, and two or more lanes and two or more lanes.

The table below shows the approximate VPH on the major street and corresponding VPH on the minor street for each combination of approach lanes.

Table for Figure 4C-3					
One lane and one lane		Two or more lanes and one lane		Two or more lanes and two or more lanes	
VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)	VPH on the major street (Total of both approaches)	VPH on the minor street (Higher volume approach)
1800	100	1800	100 or 150*	1800	150
1700	100	1700	100 or 150*	1700	150
1600	100	1600	120 or 150*	1600	170
1500	100	1500	145 or 150*	1500	180
1400	120	1400	155	1400	220
1300	130	1300	190	1300	250
1200	150	1200	220	1200	285
1100	175	1100	250	1100	340
1000	200	1000	285	1000	370
900	245	900	325	900	425
800	285	800	360	800	475
700	325	700	420	700	540
600	360	600	460	600	590
500	420	500	Not available	500	Not available

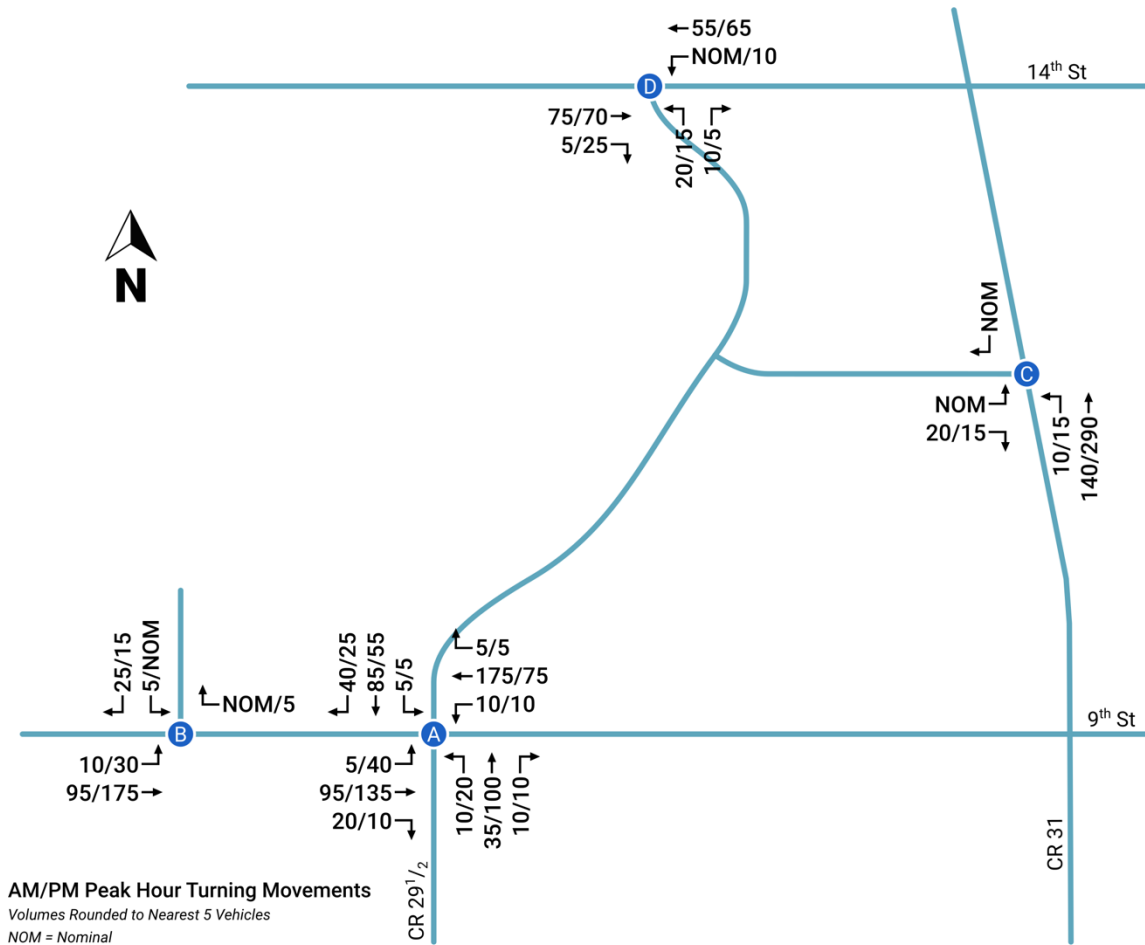
* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: Federal Highway Administration's on-line "Manual on Uniform Traffic Control Devices" (MUTCD) 2009

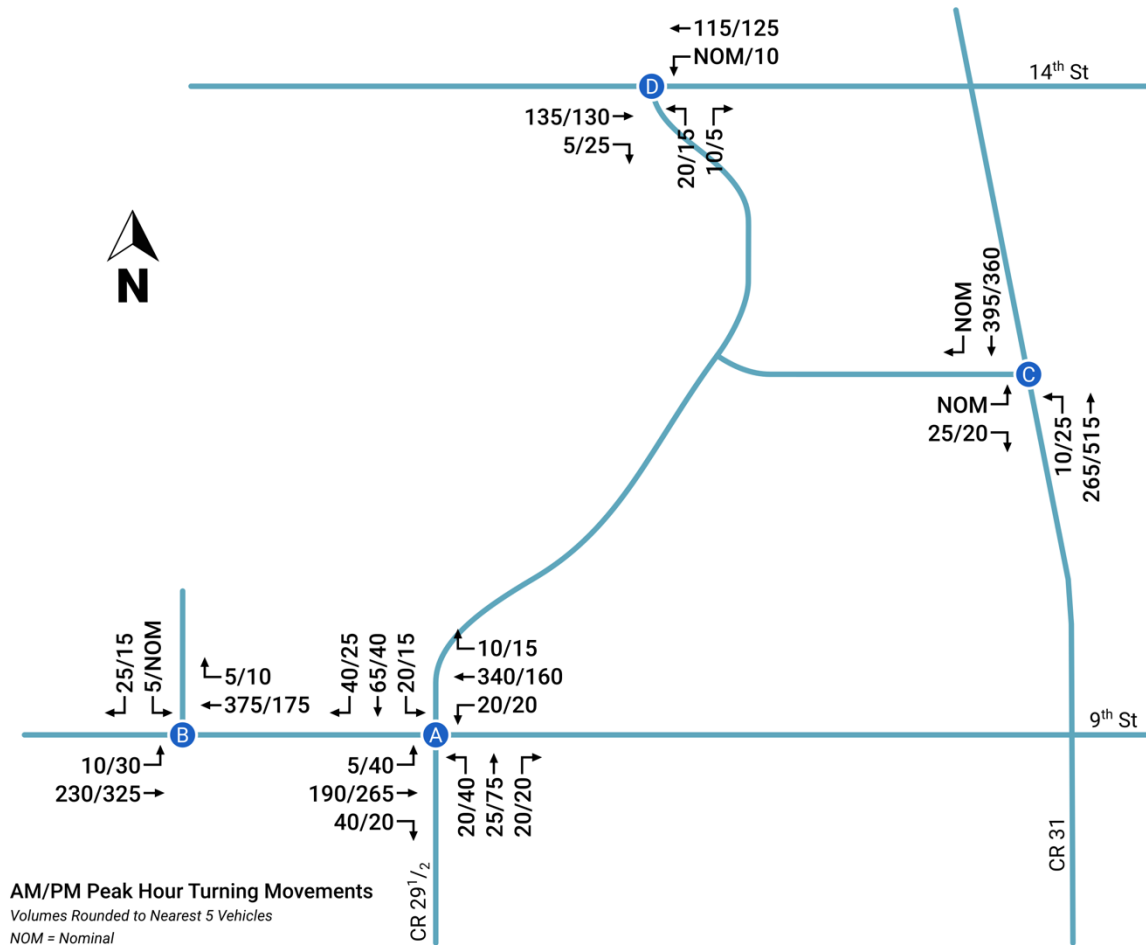
Appendix D

Project Access 2024 and 2040 Volumes and NCHRP REPORT 279

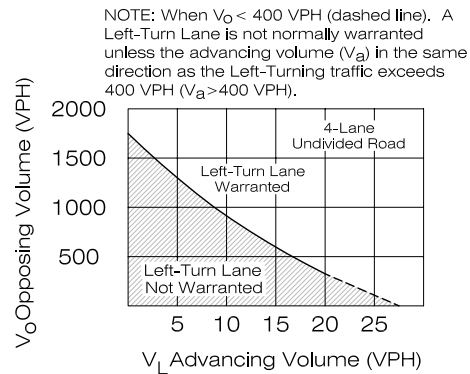
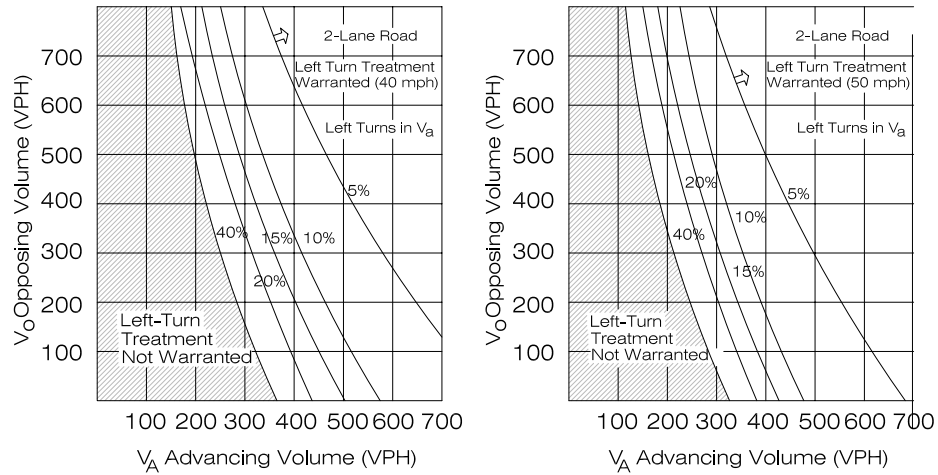
Project Access 2024 Peak Hour Volumes



Project Access 2040 Peak Hour Volumes

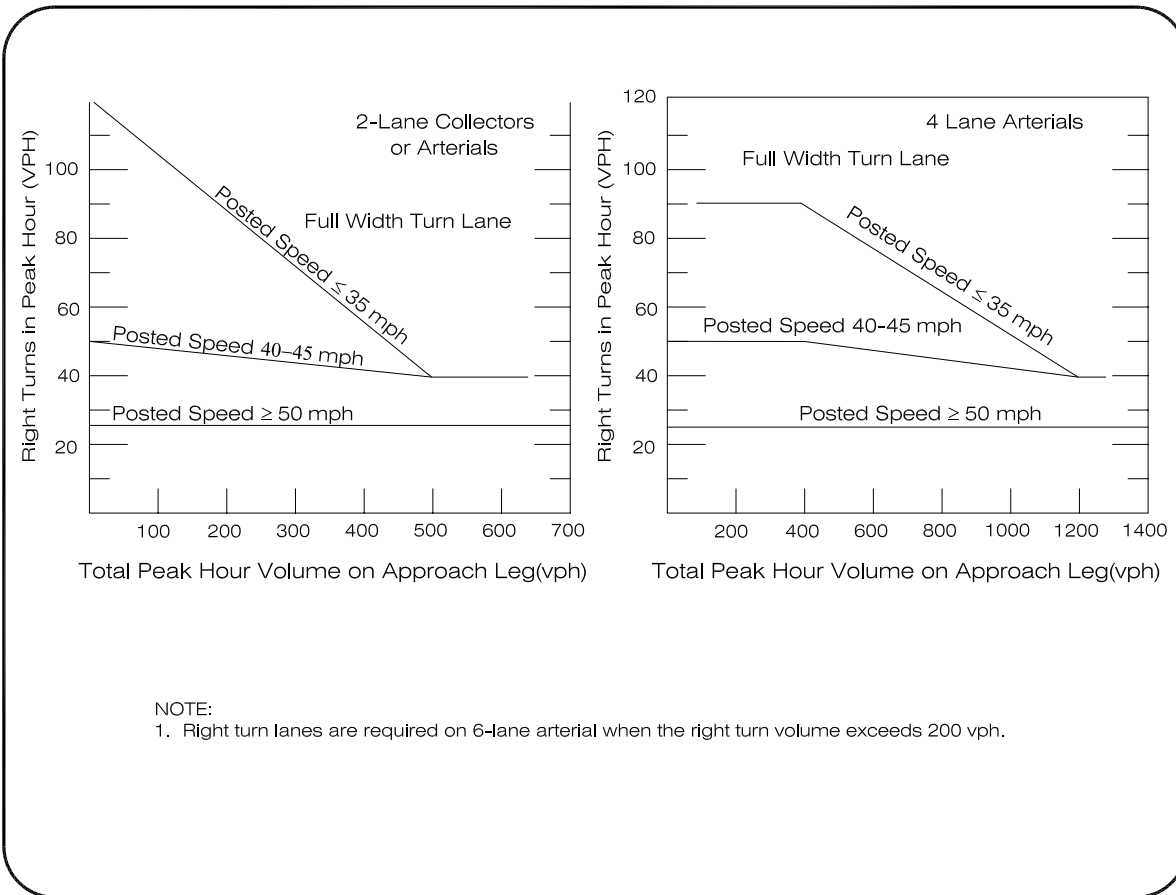


Based on Transportation Research Board's, *NCHRP – Report 279*, 1985



Notes: 1. Left turn lanes are required at **all** intersections and **all**-movement accesses on arterial roadways except where roundabouts are provided.

Based on Transportation Research Board's, *NCHRP – Report 279*, 1985





Phase III Drainage Report

Cottonwood Greens Filing No. 4

A part of the Cottonwood Greens Subdivision

A Tract of land in the South Half of Section 33, Township 2 North, Range 66 West of the Sixth Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado

Owner/Developer

Arbor Capital Partners, LLC
4040 MacArthur Drive, Suite 250
Newport Beach, California 92660
Contact: Mr. Jim Righeimer

Engineer

143 Union Boulevard
Suite 700
Lakewood, CO 80228
Tel: 303.462.1100
Contact: Daniel Rodriguez, PE

Atwell Project Number

20002948

City of Fort Lupton Project Number

T.B.D.

Submittal Date

June 2021



Signature Page

Engineer's Statement:

"I hereby affirm that this report and plan for the Phase III drainage design of the development, Cottonwood Greens Filing No. 4, was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Fort Lupton Storm Drainage Design and Technical Criteria for the owners thereof. I understand that the City of Fort Lupton does not and will not assume liability for facilities designed by others. I am also aware of the provisions of the City CODE as it pertains to the City's review."

SEAL & SIGNATURE: _____
Daniel Rodriguez, PE
Registered Professional Engineer State of Colorado No. 48683

Date

Developer's Statement:

"Arbor Capital Partners, LLC hereby affirms that the drainage facilities for the development, Cottonwood Greens Filing No. 4, shall be constructed according to the design presented in this report. I understand that the City of Fort Lupton does not and will not assume liability for drainage facilities designed and/or certified by my engineer. I understand that the City of Fort Lupton reviews drainage plans but cannot, on behalf of Arbor Capital Partners, LLC and/or their successors and/or assigns assume future liability for improper design. I am also aware of the provisions of the City CODE as it pertains to the City's review."

Authorized Signature

Date

Printed Name

Title



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APPENDIX A – Existing Conditions

APPENDIX B – Proposed Drainage Plans

APPENDIX C – Rational Method Calculations

APPENDIX D – Inlet and Street Capacity Calculations

APPENDIX G – Referenced Material

General Location and Description

Location

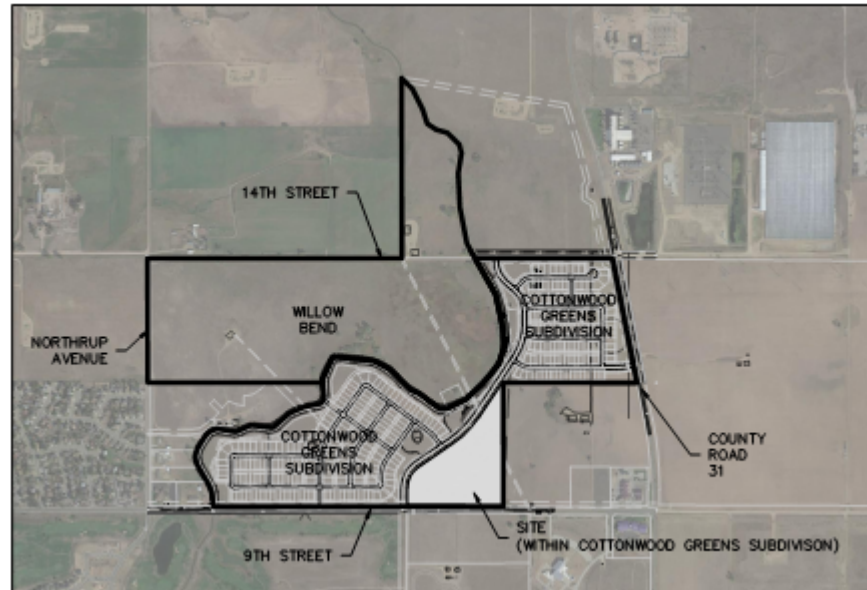


Figure 1 – Project Location

The Cottonwood Greens Filing No. 4 project site is a tract of land within the Cottonwood Greens Subdivision and is situated in the south half of Section 33, Township 2 North, Range 66 West of the Sixth Principal Meridian, City of Fort Lupton, County of Weld, State of Colorado. The site is bounded by Cottonwood Greens Filing No. 1-3 to the West, Fulton Ditch to the Northwest, Future Cottonwood Greens to the North, undeveloped land to the East, and 9th Street to the South. 9th Street is being improved with the College Ave/9th St Reconstruction Project by Wohnrade Civil Engineers for the City of Fort Lupton.

To the North, across the Fulton Ditch to 14th Street is the rest of the Cottonwood Greens P.U.D., soon to be developed as Willow Bend. To the South, across 9th Street, is Coyote Creek Golf Course, a Colorado Army National Guard Station, and a Weld County Facility. The Fort Lupton Fire Department is located at the Northwest corner of 9th Street and County Road 31. Further to the West is undeveloped land zoned R-1, and further to the East (across County Road 31) is also undeveloped land zoned R-1.

Description of Property

The proposed 16.2-acre Filing No. 4 development consists of 137 townhouse residential units in 27 buildings with on-site open spaces and detention. The site is part of the Cottonwood Greens PUD, recorded April 13th, 2006, and is currently undeveloped land used for farming, and houses gas facilities. An earlier Filing No. 1-3 of Cottonwood Greens proposed 291 single-family lots on 120 acres (including the Filing No. 4 property). The Filing No. 1-3 Cottonwood Greens Drainage Report assumed information



for this area of the site within their report. This Filing No. 4 Drainage Report will re-analyze the initial Report with updated information and confirm assumptions made.

The site's topography generally slopes from the southeast to northwest with the slopes ranging between 3 percent and 9 percent. An onsite soil report for the site is illustrated in the Web Soil Survey from the National Resource Conservation Service (NRCS) website. The soil report indicates that 95% of the site is Valent Sand with the remainder being loamy sands and clay loam. The site consists of mainly Hydrologic Soil Group A soils. A soil report has been included in Appendix A.

Existing condition plans show all easements within and surrounding the subject property and can be found in the construction drawings.

Historic Drainage Basin

The existing topography shows sheet flow from southeast to northwest with flows entering Fulton Ditch for the entirety of the site. Improvements constructed with College Avenue/9th Street Reconstruction and the Cottonwood Greens Subdivision Filing No. 1-3 will reduce the tributary area draining to Fulton Ditch. Detention Pond 3 proposed with Cottonwood Greens Subdivision Filing No. 1-3 Construction Plans, will be the outfall point for the Filing No. 4 site. The downstream outfall for this pond is to the Willow Bend site and ultimately to the existing Golden Pond, located at the southeast corner of Pacific Court and 14th Street. The ultimate outfall for Golden Pond is the South Platte River. For more information on the Golden Pond and Cottonwood Greens Subdivision Detention Pond 3, please see the Drainage Report for the Cottonwood Greens Subdivision Filing No. 1-3.

The project area is not within a FEMA regulated floodplain as shown on FEMA Map No. 08123C2110E in Appendix C. As illustrated, the project site lies within Zone X - determined to be outside of the FEMA 100 and 500-year floodplains.

Proposed Drainage Basins

Drainage Basins

This Filing No. 4 site contains 11 onsite drainage basins plus drainage basins from Cottonwood Green Filing 1-3, 9th Street improvements by others, and offsite undeveloped land. All basins drain to Detention Pond 3 that will be constructed as part of Cottonwood Greens Subdivision Filing No. 1-3. The Filing No. 4 project proposes an expansion to this pond for additional volume. These small detention areas will be hydraulically connected to Detention Pond 3.

A Drainage Basin Map has been included in Appendix B of this Report to graphically depict the drainage basins for this Site.

Sub-basin A1 is 0.68 acres comprised of College Avenue and lot drainage from the Townhome site. Runoff flows down College Avenue to design point 1, where is collected by an on-grade inlet. Bypass from this inlet will continue northeast on College Avenue where it will combine with flows at design point 11. This inlet will be existing and is to be built with Filing No. 1-3.



Sub-basin A2 is 3.85 acres comprised of residential lot areas and landscape areas. Runoff sheet flows from lots and into curb and gutter where it is conveyed to a sump inlet at design point 2.

Sub-basin A3 is 1.73 acres comprised of residential lots and landscaping. Runoff sheet flows to curb and gutter where it is conveyed to design point 3 where it enters a sump inlet.

Sub-basin A4 is 2.47 acres comprised of residential lots and landscaping. Runoff sheet flows to curb and gutter where it is conveyed to design point 4 and is collected in a sump inlet.

Sub-basin A5 is 0.42 acres comprised of residential lots. Runoff sheet flows to curb and gutter where it is conveyed to Design point 5 and is collected in a sump inlet.

Sub-basin A6 is 1.57 acres comprised of residential lots and landscaping. Runoff sheet flows to curb and gutter where it is conveyed to Design point 6 and is collected in a sump inlet.

Sub-basin A7 is 0.53 acres comprised of residential lots. Runoff sheets flows to curb and gutter where it collects at design point 7 and is collected in a sump inlet.

Sub-basin A8 is 1.10 acres comprised of residential lots and landscaping. This basin includes the pond expansion that is hydraulically linked to Detention Pond 3. An abandoned oil and gas well site makes up a part of this basin area. Runoff sheet flows to the Pond 3 expansion where it is conveyed to design point 8. A culvert connects this pond with the other portions of Pond 3.

Sub-basin A9 is 1.30 acres comprised of residential lots and landscaping. This basin includes the pond expansion that is hydraulically linked to Detention Pond 3. An abandoned oil and gas well site makes up a part of this basin area. Runoff sheet flows to the Pond 3 expansion where it is conveyed to design point 9. A culvert connects this pond with the other portions of Pond 3.

Sub-basin A10 is 0.70 acres comprised of landscaping. This basin includes the pond expansion that is hydraulically linked to Detention Pond 3. An abandoned oil and gas well site makes up a part of this basin area. Runoff sheet flows to the Pond 3 expansion where it is conveyed to design point 10. A culvert connects this pond with the other portions of Pond 3.

Sub-basin A11 is 1.40 acres comprised of pavement area from College Avenue and residential lot area. Runoff sheet flows overland to curb and gutter where it is conveyed to design point 11 and is collected in a sump inlet. This inlet will be existing and is to be built with Filing No. 1-3.

Drainage Design Criteria

The site drainage system has been designed per the City of Fort Lupton's criteria and discussions with the City of Fort Lupton. The storm system for this site has been designed to convey the 100-year event. Ponding area extensions have been proposed which are to be hydraulically linked to Detention Pond 3. This will provide additional capacity beyond what was provided with Filing No. 1-3. Please refer to the Cottonwood Greens Subdivision Filing No. 1-3 Construction Plans and Drainage Report for information pertaining to Detention Pond 3. Their Report included information that their ponds had been sized to



over-detain, beyond the 100-year event, and release at less than the historic rate. The system had been intended to pass the historic flow through from off-site basins. Once these upstream basins are developed, on-site detention (likely over-detention) will be required of them as well.

Hydrological Criteria

Rational Method calculations were run using spreadsheets provided by the Mile High Flood Control District and can be found in Appendix C.

Hydraulic Criteria

In order to prevent flooding downstream, outlet structures will need to release detained storm water based on the agreed upon release rate. This was determined by Filing No. 1-3 and included within their Report. The Filing No. 1-3 Report also includes information on Ponds 1 and 2 that are offsite from Filing No. 4, but must be considered in relation to the release rates of Pond 3. Per this agreement, the entire Cottonwood Greens property cannot release more than 1 cfs in the Minor (5-year) Storm and 47.5 cfs in the Major (100-year) Storm. Using these release rates, downstream drainage facilities will not be impacted for storms up to and including the 100-year storm.

Using the Modified FAA Method, required storage volumes were determined for both the minor and major storm events. This method uses a runoff hydrograph calculated using basin characteristics and an outflow hydrograph based on a specified release rate. All calculations can be found in Appendix E.

Table 1 shows Pond Release Rates that was included within the Cottonwood Greens Filing No. 1-3 Drainage Report. The Filing No. 4 Report further studied the future ponds to determine the ultimate sizing of Pond 3 at full build-out. It was decided that Pond 3 would be allowed additional release rates to better size the volume for future development. See Table 2 below for the updated Pond Release Rates.

Pond	5-yr Release Rate (cfs)	100-yr Release Rate (cfs)	Minor Storage Volume Req'd (ac-ft)	Major Storage Volume Req'd (ac-ft)	Proposed Storage (ac-ft)
Pond 1+2	0.1	4.75	4.038	5.043	14.538
Pond 3	0.29	13.77	2.940	3.041	3.048
Total	0.39	18.52	6.978	8.084	17.586
Remaining for Future Phases	0.61	28.98	–	–	–

Table 1 – Pond Release Rates and Storage Volumes from Cottonwood Greens

Pond	5-yr Release Rate (cfs)	100-yr Release Rate (cfs)	Minor Storage Volume Req'd (ac-ft)	Major Storage Volume Req'd (ac-ft)	Proposed Storage (ac-ft)
Pond 1+2	0.1	4.75	4.038	5.043	14.538
Updated Pond 3	0.73	33.00	3.615	11.279	Future
Future Pond 4+5	0.17	8.33	2.773	3.357	Future
Total	1.00	46.08	6.978	8.084	17.586
Remaining for Future Phases	0.00	1.42	–	–	–

Table 2 – Updated Pond Release Rates and Storage Volumes

For the calculation of the WQCV, the traditional UDFCD method was used, as follows:

WQCV Calculation:

$$WQCV = a(0.91I^3 - 1.19I^2 + 0.78I) \quad \text{Design Volume} = 1.2 \left(\frac{WQCV}{12} \right) A$$

Where:

$a = 1.0$ for a 40-hour release rate, per UDFDC Manual Volume 3

Using the calculations shown in above, the required volumes were calculated and shown below in Table 3:

Pond	Volume Required (Ac-Ft)		
	WQCV	5-year	100-year
1+2	0.79	4.038	5.043
3	0.69	2.940	3.041
4+5	Future	Future	Future

Table 3 – WQCV Pond Volume Requirements

All pond calculations, including outlet structure calculations, can be found in Appendix E of this report or within Filing No. 1-3 Drainage Report.

The natural drainage path leads to an irrigation ditch that cannot accept any additional runoff to prevent flooding of land downstream, so all pipes and inlets have been sized for the 100-Year Major Storm. This development will not increase runoff to the Fulton Ditch. Inlet and Street Capacity calculations can be found in Appendix D. Street Capacity is confirmed throughout the Site.

The final outfall for Pond 3 will combine the flows from Pond 1 and 2 outlets from Filing No. 1-3 and take them under Fulton Ditch, through an easement on the adjacent property (Willow Bend Development) to the Northwest. See Filing No. 1-3 for additional details on this outfall.



Summary

As shown in this report, adequate detention has been provided, and the combined release rate for rainfall events up to and including the 100-Year storm will be released below the historic release rates for the Site. The outfall shown with Filing No. 1-3 will convey drainage through Willow Bend and eventually to Golden's Pond. Additional flow from potential upstream development, not mentioned as part of this analysis, may trigger regional upgrades.



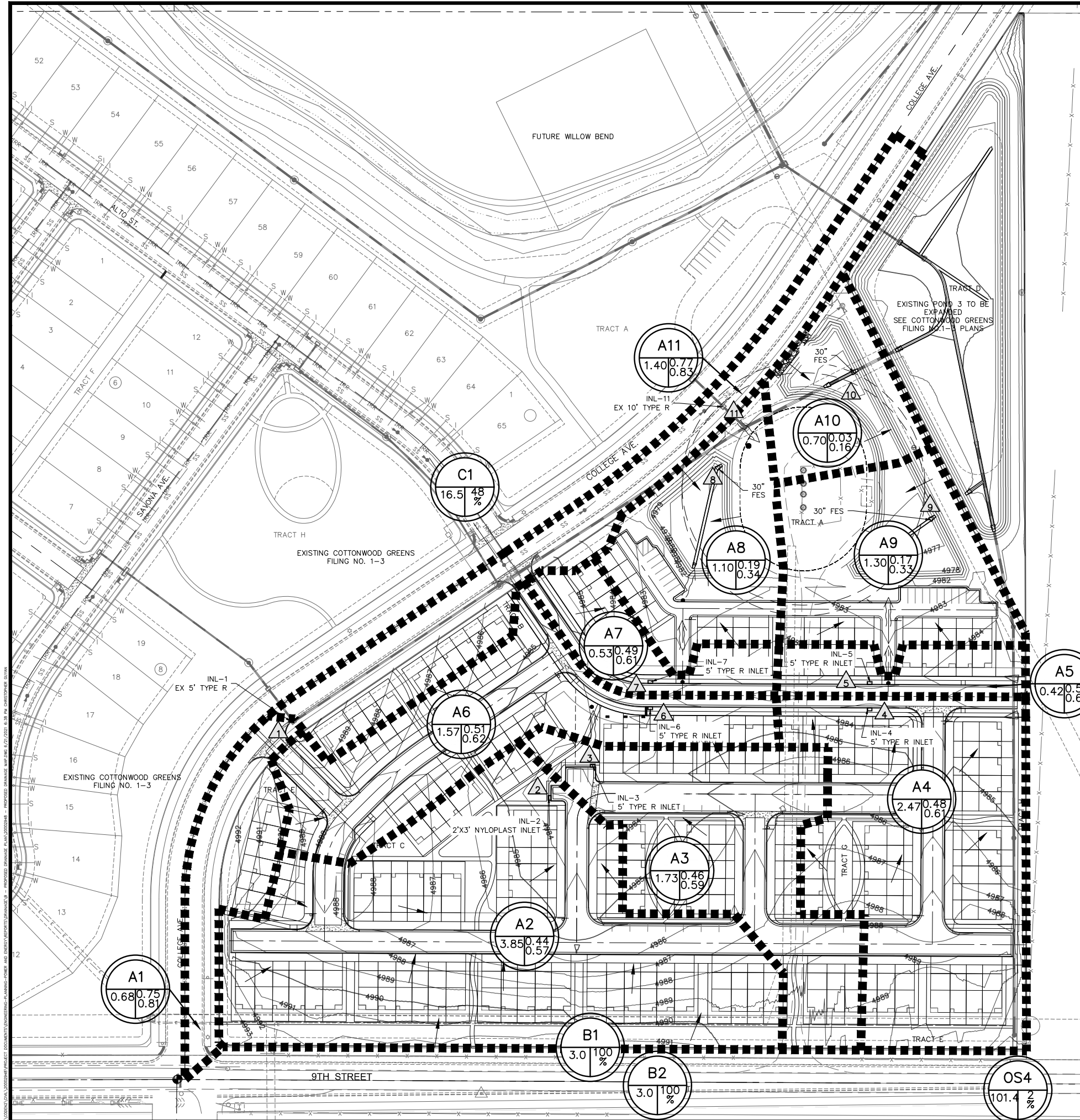
References

- 1) Storm Drainage Utility Plan, City of Fort Lupton; Adopted March 2015.
- 2) City of Fort Lupton Storm Drainage Design and Technical Criteria Manual; City of Fort Lupton
- 3) Drainage Criteria Manual, Volumes 1, 2, &3, Mile High Flood Control District; Volumes 1 & 2 – Originally Published September 1969, Updated January 2016; Volume 3 – Originally Published September 1992, Updated November 2010.
- 4) Construction Drawings for Cottonwood Greens Development, Atwell, LLC; November 2020.
- 5) Flood Insurance Rate Map of Weld County Colorado: Map No. 08123C2110E, Federal Emergency Management Agency; September 30, 2019.
- 6) USDA – NRCS – Web Soil Survey.

APPENDIX A – Existing Conditions



APPENDIX B – Proposed Drainage Plans



A

B

C

D

#

A = BASIN DESIGNATION
B = AREA IN ACRES
C = 5 YR RUNOFF COEFFICIENT
D = 100 YR RUNOFF COEFFICIENT

DESIGN POINT

→

MINOR DRAINAGE BASIN BOUNDARY

DRAINAGE FLOW ARROW

NOTE: TRICKLE CHANNELS WILL BE
INSTALLED IN EVERY POND AT THE
MIN. SPECIFIED SLOPE OF 0.4%

600

0

60

120

(IN FEET)

1 inch = 60 ft.

811

Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING
UNDERGROUND UTILITIES ARE
SHOWN IN AN APPROXIMATE WAY
ONLY AND HAVE NOT BEEN
INDEPENDENTLY VERIFIED BY THE
OWNER OR ITS REPRESENTATIVE.
THE CONTRACTOR SHALL DETERMINE
THE EXACT LOCATION OF ALL
EXISTING UTILITIES BEFORE
COMMENCING WORK, AND AGREES TO
BE FULLY RESPONSIBLE FOR ANY
AND ALL DAMAGES WHICH MIGHT BE
OCCASIONED BY THE CONTRACTOR'S
FAILURE TO EXACTLY LOCATE AND
PRESERVE ANY AND ALL
UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE
SOLE RESPONSIBILITY OF THE
CONTRACTOR. NEITHER THE OWNER
NOR THE ENGINEER SHALL BE
EXPECTED TO ASSUME ANY
RESPONSIBILITY FOR SAFETY OF
THE WORK OF PERSONS ENGAGED
IN THE WORK, OF ANY NEARBY
STRUCTURES, OR OF ANY OTHER
PERSONS.

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LAKEWOOD, CO 80228
303.462.1100

DEVELOPER

ARBOR CAPITAL PARTNERS, LLC

CLIENT

ARBOR CAPITAL PARTNERS, LLC
COTTONWOOD GREENS FILING NO. 4
FORT LUPION, COLORADO

DATE

6/21/2021

REVISIONS

PLANS UNDER
REVIEW
NOT FOR
CONSTRUCTION

DR. NA

CH. CJG

P.M. DJR

JOB

20002948

SHEET NO.

1 OF 1

CAD FILE: 20002948 - PROPOSED DRAINAGE MAP.DWG

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APPENDIX C – Rational Method Calculations

PERCENT IMPERVIOUS CALCULATION

PROJECT NAME: Cottonwood Greens Filing No. 4
 PROJECT NO: 20002948
 LOCATION: Fort Lupton, Colorado



*Calculations on this sheet come from Figure 603: Fort Lupton Drainage Manual

NRCS Hydrologic Soil Group:

A

<u>Single Family</u>	45% Impervious
<u>Multi-Unit (attached)</u>	70% Impervious
<u>Parks, cemeteries</u>	7% Impervious
<u>Paved</u>	100% Impervious
<u>Drive and walks</u>	96% Impervious
<u>Lawns, clayey soil</u>	7% Impervious
<u>Historic flow analysis</u>	2% Impervious

PROPOSED DRAINAGE AREA

BASIN ID	Notes	A _{total} (ft ²)	Single Family (ft ²)	Multi-Unit (attached) (ft ²)	Parks, cemeteries (ft ²)	Paved (ft ²)	Drive and walks (ft ²)	Lawns, clayey soil (ft ²)	Historic flow analysis (ft ²)	A _{total} (Ac)	Percent Impervious
A1		29772	0	10438	0	19334	0	0	0	0.68	89%
A2		167766	0	137594	30172	0	0	0	0	3.85	59%
A3		75285	0	65200	10085	0	0	0	0	1.73	62%
A4		107475	0	96584	10891	0	0	0	0	2.47	64%
A5		18212	0	18212	0	0	0	0	0	0.42	70%
A6		68252	0	63999	4253	0	0	0	0	1.57	66%
A7		22872	0	20733	2139	0	0	0	0	0.53	64%
A8		48078	0	17588	30490	0	0	0	0	1.10	30%
A9		56742	0	19187	37555	0	0	0	0	1.30	28%
A10		30696	0	0	30696	0	0	0	0	0.70	7%
A11		61039	0	16221	0	44818	0	0	0	1.40	92%
B1	from 9th Street	130680	0	0	0	130680	0	0	0	3.00	100%
B2	from 9th Street	130680	0	0	0	130680	0	0	0	3.00	100%
C1	from Cottonwood Greens F1-3	717832	245491	0	0	162602	59241	250498	0	16.48	48%
OS-3	East Property	1906345	0	0	0	0	0	0	1906345	43.76	2%
OS-4	South Property	4414806	0	0	0	0	0	0	4414806	101.35	2%
Subtotals:		7,986,532	245,491	465,756	156,281	488,114	59,241	250,498	6,321,151		14%

Drainage Area= 183.35

Calculation of Peak Runoff using Rational Method

Designer:

Company: Atwell, LLC

Date: 6/21/2021

Project: Cottonwood Greens Filing No. 4

Location: Fort Lupton, Colorado

Version 2.00 released May 2017

Cells of this color are for required user-input

Cells of this color are for optional override values

Cells of this color are for calculated results based on overrides

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

$$t_i = \frac{L_i}{60K\sqrt{S_i}} = \frac{L_i}{60V_i}$$

Computed $t_c = t_i + t_t$

$$\text{Regional } t_c = (26 - 17i) + \frac{L_i}{60(14i + 9)\sqrt{S_i}}$$

$t_{\text{minimum}} = 5 \text{ (urban)}$

$t_{\text{minimum}} = 10 \text{ (non-urban)}$

Selected $t_c = \max\{t_{\text{minimum}}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

1-hour rainfall depth, P1 (in) =

2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
0.83	1.09	1.33	1.69	1.99	2.31	3.14

Rainfall Intensity Equation Coefficients =

a	b	c
28.50	10.00	0.786

$$I(\text{in/hr}) = \frac{a * P_i}{(b + t_c)^c}$$

$$Q(\text{cfs}) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time				Channelized (Travel) Flow Time						Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)								
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L _i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S _i (ft/ft)	Overland Flow Time t _i (min)	Channelized Flow Length L _i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S _i (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V _i (ft/sec)	Channelized Flow Time t _t (min)	Computed t _c (min)	Regional t _c (min)	Selected t _c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A1	0.68	A	89.5	0.73	0.75	0.76	0.78	0.79	0.81	0.83	10.00			0.020	1.60	433.00			0.010	20	2.00	3.61	5.21	14.14	5.21	2.77	3.66	4.46	5.67	6.68	7.75	10.53	1.37	1.87	2.32	3.02	3.60	4.27	5.98
A2	3.85	A	58.7	0.42	0.44	0.45	0.49	0.53	0.57	0.63	121.00			0.020	10.49	510.00			0.015	20	2.45	3.47	13.96	20.06	13.96	1.94	2.56	3.12	3.97	4.67	5.42	7.37	3.13	4.30	5.44	7.42	9.46	11.84	17.95
A3	1.73	A	61.6	0.45	0.46	0.48	0.51	0.55	0.59	0.65	118.00			0.020	9.93	458.00			0.011	20	2.10	3.64	13.57	19.67	13.57	1.96	2.59	3.16	4.02	4.73	5.49	7.47	1.51	2.08	2.62	3.56	4.50	5.60	8.40
A4	2.47	A	63.6	0.47	0.48	0.50	0.53	0.57	0.61	0.66	117.00			0.020	9.58	403.00			0.015	20	2.45	2.74	12.32	18.25	12.32	2.05	2.71	3.30	4.19	4.94	5.73	7.79	2.35	3.23	4.07	5.50	6.92	8.57	12.77
A5	0.42	A	70.0	0.53	0.55	0.56	0.59	0.62	0.66	0.71	50.00			0.020	5.62	154.00			0.010	20	2.00	1.28	6.91	15.47	6.91	2.55	3.37	4.11	5.22	6.14	7.13	9.69	0.56	0.77	0.97	1.29	1.60	1.95	2.86
A6	1.57	A	66.1	0.49	0.51	0.52	0.55	0.59	0.62	0.68	45.00			0.020	5.71	490.00			0.020	20	2.83	2.89	8.60	17.93	8.60	2.36	3.12	3.81	4.84	5.70	6.62	8.99	1.81	2.48	3.13	4.21	5.26	6.48	9.59
A7	0.53	A	64.1	0.47	0.49	0.50	0.54	0.57	0.61	0.67	75.00			0.020	7.61	141.00			0.017	20	2.61	0.90	8.51	16.10	8.51	2.37	3.13	3.82	4.86	5.72	6.64	9.03	0.59	0.80	1.01	1.37	1.72	2.13	3.16
A8	1.10	A	30.0	0.18	0.19	0.20	0.23	0.28	0.34	0.45	35.00			0.010	9.77	190.00			0.070	7	1.85	1.71	11.48	21.80	11.48	2.11	2.79	3.40	4.32	5.09	5.91	8.03	0.41	0.57	0.75	1.09	1.58	2.24	3.97
A9	1.30	A	28.3	0.16	0.17	0.18	0.21	0.27	0.33	0.44	32.00			0.010	9.48	226.00			0.060	20	4.90	0.77	10.25	22.37	10.25	2.21	2.92	3.56	4.53	5.33	6.19	8.41	0.47	0.65	0.86	1.26	1.85	2.66	4.78
A10	0.70	A	7.0	0.03	0.03	0.03	0.04	0.08	0.16	0.30	121.00			0.070	11.19	1.00			0.010	7	0.70	0.02	11.22	24.83	11.22	2.13	2.82	3.44	4.36	5.14	5.97	8.11	0.04	0.06	0.08	0.14	0.31	0.69	1.71
A11	1.40	A	92.0	0.75	0.77	0.79	0.81	0.81	0.83	0.85	20.00			0.020	2.09	655.00			0.010	20	2.00	5.46	7.55	15.34	7.55	2.47	3.27	3.99	5.07	5.97	6.93	9.41	2.61	3.55	4.40	5.72	6.78	8.02	11.18

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APPENDIX D – Inlet and Street Capacity Calculations

INLET MANAGEMENT

Worksheet Protected

INLET NAME	INL-1	INL-2	INL-3
Site Type (Urban or Rural)	URBAN	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	On Grade	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{Known} (cfs)	3.7	2.6	2.6
Major Q_{Known} (cfs)	7.7	5.4	5.5

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0

Watershed Characteristics

Subcatchment Area (acres)			
Percent Impervious			
NRCS Soil Type			

Watershed Profile

Overland Slope (ft/ft)			
Overland Length (ft)			
Channel Slope (ft/ft)			
Channel Length (ft)			

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	3.7	2.6	2.6
Major Total Design Peak Flow, Q (cfs)	7.7	5.4	5.5
Minor Flow Bypassed Downstream, Q_b (cfs)	1.2	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	4.3	N/A	N/A

INLET MANAGEMENT

Worksheet Protected

INLET NAME	INL-4	INL-5	INL-6
Site Type (Urban or Rural)	URBAN	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET	STREET
Hydraulic Condition	In Sump	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{known} (cfs)	2.7	3.4	3.1
Major Q_{known} (cfs)	5.7	7.1	6.6

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0	0.0

Watershed Characteristics

Subcatchment Area (acres)			
Percent Impervious			
NRCS Soil Type			

Watershed Profile

Overland Slope (ft/ft)			
Overland Length (ft)			
Channel Slope (ft/ft)			
Channel Length (ft)			

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)			
One-Hour Precipitation, P_1 (inches)			

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	2.7	3.4	3.1
Major Total Design Peak Flow, Q (cfs)	5.7	7.1	6.6
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A	N/A

INLET MANAGEMENT

Worksheet Protected

INLET NAME	INL-7	INL-11
Site Type (Urban or Rural)	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT**User-Defined Design Flows**

Minor Q_{Known} (cfs)	3.1	3.3
Major Q_{Known} (cfs)	6.6	6.9

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	INL-1
Minor Bypass Flow Received, Q_b (cfs)	0.0	1.2
Major Bypass Flow Received, Q_b (cfs)	0.0	4.3

Watershed Characteristics

Subcatchment Area (acres)		
Percent Impervious		
NRCS Soil Type		

Watershed Profile

Overland Slope (ft/ft)		
Overland Length (ft)		
Channel Slope (ft/ft)		
Channel Length (ft)		

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)		
One-Hour Precipitation, P_1 (inches)		

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)		
One-Hour Precipitation, P_1 (inches)		

CALCULATED OUTPUT

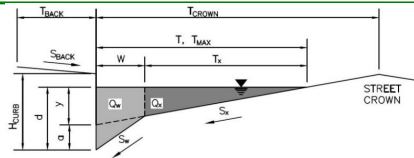
Minor Total Design Peak Flow, Q (cfs)	3.1	4.5
Major Total Design Peak Flow, Q (cfs)	6.6	11.3
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-1

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	23.5	ft
$W =$	2.00	ft
$S_x =$	0.020	ft/ft
$S_w =$	0.083	ft/ft
$S_o =$	0.010	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Allow Flow Depth at Street Crown (check box for yes, leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	23.5	23.5	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☒	

MINOR STORM Allowable Capacity is based on Depth Criterion

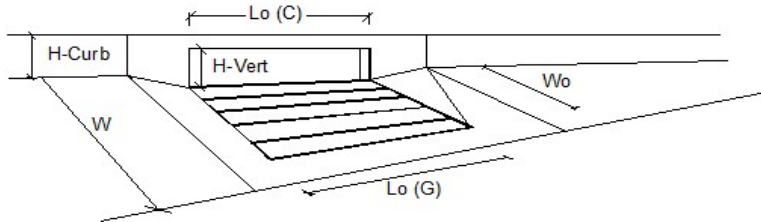
MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	13.8	124.8	cfs

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'**Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'**

INLET ON A CONTINUOUS GRADE

MHFD-Inlet, Version 5.01 (April 2021)



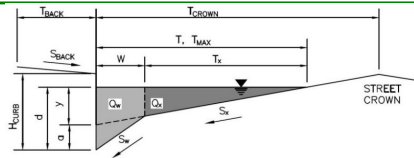
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	CDOT Type R Curb Opening			
Local Depression (additional to continuous gutter depression 'a')		a _{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)		L _o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W _o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C _{r-G} =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C _{r-C} =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity		MINOR		MAJOR	
Total Inlet Interception Capacity		Q =	2.4	3.4	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)		Q _b =	1.2	4.3	cfs
Capture Percentage = Q _i /Q _a =		C% =	66	44	%

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-2

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	14.0	ft
$W =$	2.00	ft
$S_X =$	0.020	ft/ft
$S_W =$	0.083	ft/ft
$S_O =$	0.000	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☐	

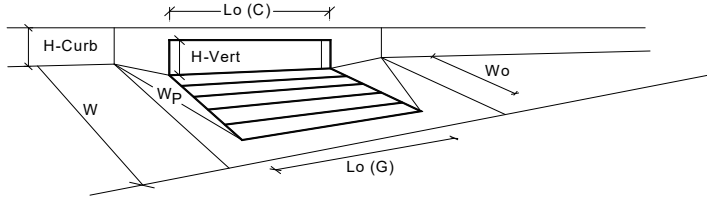
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



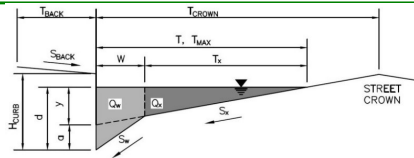
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		N_o =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	☒ Override Depths
Length of a Unit Grate		$L_o (G)$ =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		$C_f (G)$ =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		$C_w (G)$ =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		$C_o (G)$ =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		$L_o (C)$ =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_o =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		$C_f (C)$ =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		$C_w (C)$ =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		$C_o (C)$ =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		Q_s =	5.4	12.3	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		$Q_{PEAK REQUIRED}$ =	2.6	5.4	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-3

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$$\begin{aligned} T_{\text{BACK}} &= 10.0 \text{ ft} \\ S_{\text{BACK}} &= 0.020 \text{ ft/ft} \\ n_{\text{BACK}} &= 0.020 \end{aligned}$$

$$\begin{aligned} H_{\text{CURB}} &= 6.00 \text{ inches} \\ T_{\text{CROWN}} &= 14.0 \text{ ft} \\ W &= 2.00 \text{ ft} \\ S_x &= 0.020 \text{ ft/ft} \\ S_w &= 0.083 \text{ ft/ft} \\ S_o &= 0.000 \text{ ft/ft} \\ n_{\text{STREET}} &= 0.016 \end{aligned}$$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
T_{MAX}	14.0	14.0	ft
d_{MAX}	6.0	12.0	inches

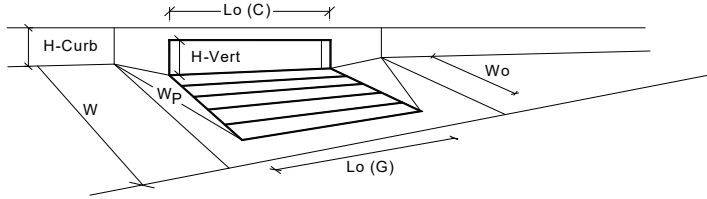
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q_{allow}	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



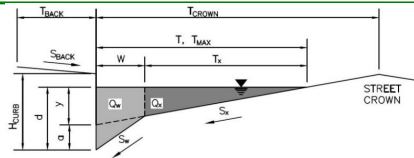
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	☒ Override Depths
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L _o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			MINOR	MAJOR	
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		Q _a =	5.4	12.3	cfs
		Q _{PEAK REQUIRED} =	2.6	5.5	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-4

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	14.0	ft
$W =$	2.00	ft
$S_x =$	0.020	ft/ft
$S_w =$	0.083	ft/ft
$S_o =$	0.000	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☐	

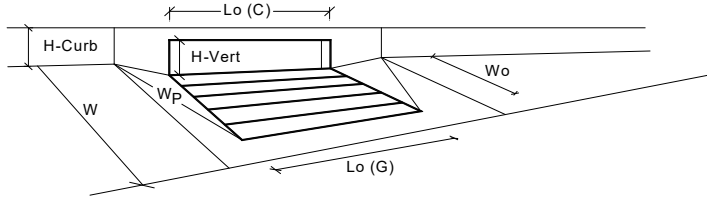
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



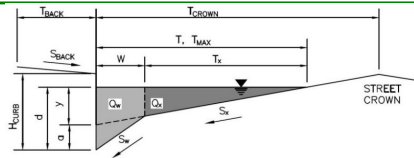
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		N_o =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information		MINOR		MAJOR	
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_o =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR		MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
		Q_a =	5.4	12.3	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK REQUIRED}$ =	2.7	5.7	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-5

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$$\begin{aligned} T_{\text{BACK}} &= 10.0 \text{ ft} \\ S_{\text{BACK}} &= 0.020 \text{ ft/ft} \\ n_{\text{BACK}} &= 0.020 \end{aligned}$$

$$\begin{aligned} H_{\text{CURB}} &= 6.00 \text{ inches} \\ T_{\text{CROWN}} &= 14.0 \text{ ft} \\ W &= 2.00 \text{ ft} \\ S_x &= 0.020 \text{ ft/ft} \\ S_w &= 0.083 \text{ ft/ft} \\ S_o &= 0.000 \text{ ft/ft} \\ n_{\text{STREET}} &= 0.016 \end{aligned}$$

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{\text{MAX}} =$	14.0	14.0	ft
$d_{\text{MAX}} =$	6.0	12.0	inches
	☐	☐	

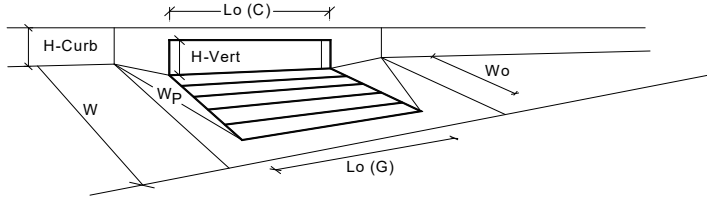
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

$$Q_{\text{allow}} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ \text{SUMP} & \text{SUMP} \end{matrix} \text{ cfs}$$

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



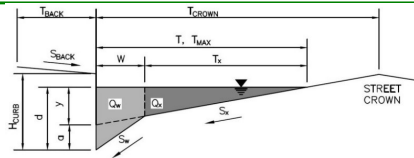
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		N_o =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	☒ Override Depths
Length of a Unit Grate		$L_o (G)$ =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		$C_f (G)$ =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		$C_w (G)$ =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		$C_o (G)$ =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		$L_o (C)$ =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_o =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		$C_f (C)$ =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		$C_w (C)$ =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		$C_o (C)$ =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		Q_a =	5.4	12.3	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		$Q_{PEAK REQUIRED}$ =	3.4	7.1	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-6

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	14.0	ft
$W =$	2.00	ft
$S_x =$	0.020	ft/ft
$S_w =$	0.083	ft/ft
$S_o =$	0.000	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☐	

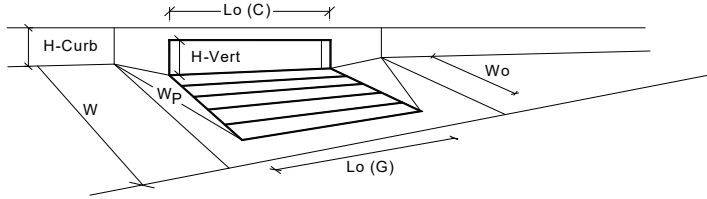
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



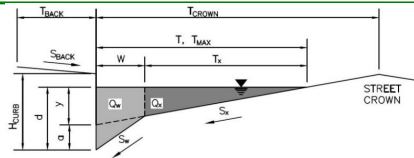
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information			MINOR	MAJOR	☒ Override Depths
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L _o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)			MINOR	MAJOR	
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		Q _s =	5.4	12.3	cfs
		Q _{PEAK REQUIRED} =	3.1	6.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-7

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	14.0	ft
$W =$	2.00	ft
$S_x =$	0.020	ft/ft
$S_w =$	0.083	ft/ft
$S_o =$	0.000	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{MAX} =$	14.0	14.0	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☐	

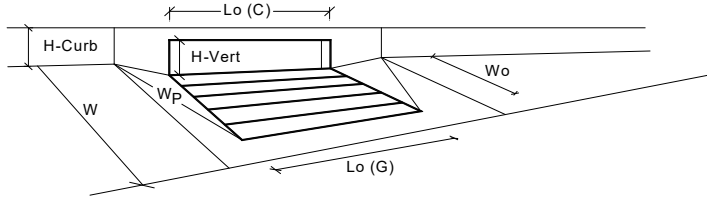
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



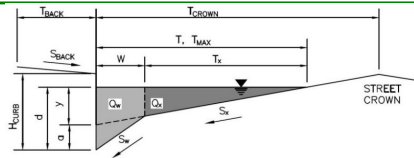
Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		N_o =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	12.0	inches
Grate Information		MINOR		MAJOR	
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_o =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR		MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.33	0.83	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.77	1.00	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
		Q_a =	5.4	12.3	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		$Q_{PEAK REQUIRED}$ =	3.1	6.6	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: Cottonwood Greens Townhomes

Inlet ID: INL-11

**Gutter Geometry:**

Maximum Allowable Width for Spread Behind Curb

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

Height of Curb at Gutter Flow Line

Distance from Curb Face to Street Crown

Gutter Width

Street Transverse Slope

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

Street Longitudinal Slope - Enter 0 for sump condition

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$T_{BACK} =$	10.0	ft
$S_{BACK} =$	0.020	ft/ft
$n_{BACK} =$	0.020	

$H_{CURB} =$	6.00	inches
$T_{CROWN} =$	23.5	ft
$W =$	2.00	ft
$S_X =$	0.020	ft/ft
$S_W =$	0.083	ft/ft
$S_O =$	0.000	ft/ft
$n_{STREET} =$	0.016	

Max. Allowable Spread for Minor & Major Storm

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

Check boxes are not applicable in SUMP conditions

	Minor Storm	Major Storm	
$T_{MAX} =$	23.5	23.5	ft
$d_{MAX} =$	6.0	12.0	inches
	☐	☐	

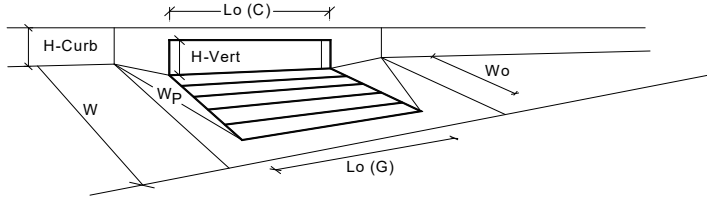
MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
$Q_{allow} =$	SUMP	SUMP	cfs

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



Design Information (Input)		MINOR		MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a _{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	6.0	7.2	inches
Grate Information		MINOR		MAJOR	
Length of a Unit Grate		L _o (G) =	N/A	N/A	feet
Width of a Unit Grate		W _o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A _{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C _f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C _w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C _o (G) =	N/A	N/A	
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening		L _o (C) =	10.00	10.00	feet
Height of Vertical Curb Opening in Inches		H _{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H _{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W _p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C _f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C _w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C _o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR		MAJOR	
Depth for Grate Midwidth		d _{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d _{Curb} =	0.33	0.43	ft
Combination Inlet Performance Reduction Factor for Long Inlets		RF _{Combination} =	0.57	0.67	
Curb Opening Performance Reduction Factor for Long Inlets		RF _{Curb} =	0.93	0.99	
Grated Inlet Performance Reduction Factor for Long Inlets		RF _{Grate} =	N/A	N/A	
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
		Q _a =	8.3	12.9	cfs
Inlet Capacity IS GOOD for Minor and Major Storms(>0 PEAK)		Q _{PEAK REQUIRED} =	4.5	11.3	cfs



Nyloplast Inlet Capacity Table

DISCLAIMER: SAFETY FACTORS ARE NOT INCLUDED IN THESE CALCULATIONS. ACTUAL CALCULATIONS SHOULD BE CARRIED OUT AND VERIFIED BY THE DESIGN ENGINEER TAKING INTO ACCOUNT ALL LOCAL CONDITIONS. NYLOPLAST RECOMMENDS USING A MINIMUM SAFETY FACTOR OF 1.25 FOR PAVED AREAS AND 2.0 FOR TURF AREAS. ADS/NYLOPLAST IS NOT RESPONSIBLE FOR MISUSE OF THIS TOOL.

Input	
Type of Grate	2'x3' Curb Inlet Diagonal
Head (ft)	0.5
Properties	
Orifice Flow Area (in)	331.50
Orifice Flow Area (ft)	2.30
Weir Flow Perimeter (in)	124.20
Weir Flow Perimeter (ft)	10.35
Solution	
Capacity (cfs)	7.83
Capacity (gpm)	3516.18

$$Q_{weir} = CLH^{3/2}$$

$C = 3.33$ Weir Discharge Coefficient

L = Perimeter of Grate Opening (ft)

H = Flow Height of Water Surface Above Weir (ft)

$$Q_{orifice} = CA\sqrt{2gh}$$

$C = 0.60$ Orifice Discharge Coefficient

A = Area of the Orifice (ft²)

g = Gravitational Constant $\left(32.2 \frac{ft}{s^2}\right)$

H = Depth of Water Above Center of Orifice (ft)

REV 2.1.21

APPENDIX E – Pond Calculations

Table 1401

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

Project: Cottonwood Greens Filing No. 4
Basin ID: Pond 3
(For catchments less than 160 acres only. For larger catchments, use hydrograph routing method)
Warning: This worksheet is not intended for catchments larger than 160 acres.

Determination of MINOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness
Catchment Drainage Area
Predevelopment NRCS Soil Group
Return Period for Detention Control
Time of Concentration of Watershed
Allowable Unit Release Rate
One-hour Precipitation
Design Rainfall IDF Formula
Coefficient One
Coefficient Two
Coefficient Three

I_a = 14.00 percent

A = 183.350 acres

Type = A

T = 5 years (2, 5, 10, 25, 50, or 100)

T_c = 70 minutes

q = 0.0040 cfs/acre

P₁ = 1.42 inches

C₁ = 28.50

C₂ = 10

C₃ = 0.786

<- WARNING

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient
Inflow Peak Runoff
Allowable Peak Outflow Rate

C = 0.09

Q_{p-in} = 21.32 cfs

Q_{p-out} = 0.73 cfs

Mod. FAA Minor Storage Volume = 157.455 cubic feet
Mod. FAA Minor Storage Volume = 3.615 acre-ft

Determination of MAJOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness
Catchment Drainage Area
Predevelopment NRCS Soil Group
Return Period for Detention Control
Time of Concentration of Watershed
Allowable Unit Release Rate
One-hour Precipitation
Design Rainfall IDF Formula
Coefficient One
Coefficient Two
Coefficient Three

I_a = 14.00 percent

A = 183.350 acres

Type = A

T = 100 years (2, 5, 10, 25, 50, or 100)

T_c = 70 minutes

q = 0.18 cfs/acre

P₁ = 2.71 inches

C₁ = 28.50

C₂ = 10

C₃ = 0.786

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient
Inflow Peak Runoff
Allowable Peak Outflow Rate

C = 0.30

Q_{p-in} = 135.64 cfs

Q_{p-out} = 33.00 cfs

Mod. FAA Major Storage Volume = 491.326 cubic feet
Mod. FAA Major Storage Volume = 11.279 acre-ft

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume cubic feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume cubic feet (output)	Storage Volume cubic feet (output)
150	<- Enter Rainfall Duration Incremental Increase Value Here (e.g. 5 for 5-Minutes)					
5	4.82	23,844	1.00	0.73	220	23,623
155	0.73	112,253	0.73	0.53	4,950	107,302
305	0.44	132,873	0.61	0.45	8,251	124,622
455	0.32	145,949	0.58	0.42	11,551	134,398
605	0.26	155,778	0.56	0.41	14,851	140,927
755	0.22	163,756	0.55	0.40	18,152	145,604
905	0.19	170,522	0.54	0.40	21,452	149,070
1055	0.17	176,426	0.53	0.39	24,752	151,674
1205	0.15	181,685	0.53	0.39	28,053	153,632
1355	0.14	186,437	0.53	0.39	31,353	155,084
1505	0.13	190,783	0.52	0.38	34,653	156,130
1655	0.12	194,793	0.52	0.38	37,953	156,840
1805	0.11	198,522	0.52	0.38	41,254	157,268
1955	0.10	202,009	0.52	0.38	44,554	157,455
2105	0.10	205,289	0.52	0.38	47,854	157,435
2255	0.09	208,387	0.52	0.38	51,155	157,232
2405	0.09	211,325	0.51	0.38	54,455	156,870
2555	0.08	214,119	0.51	0.38	57,755	156,364
2705	0.08	216,786	0.51	0.38	61,056	155,731
2855	0.08	219,338	0.51	0.38	64,356	154,982
3005	0.07	221,785	0.51	0.38	67,656	154,129
3155	0.07	224,137	0.51	0.37	70,956	153,181
3305	0.07	226,401	0.51	0.37	74,257	152,145
3455	0.07	228,586	0.51	0.37	77,557	151,029
3605	0.06	230,696	0.51	0.37	80,857	149,839
3755	0.06	232,738	0.51	0.37	84,158	148,580
3905	0.06	234,715	0.51	0.37	87,458	147,258
4055	0.06	236,634	0.51	0.37	90,758	145,876
4205	0.06	238,497	0.51	0.37	94,059	144,438
4355	0.06	240,308	0.51	0.37	97,359	142,949
4505	0.05	242,070	0.51	0.37	100,659	141,411
4655	0.05	243,787	0.51	0.37	103,959	139,827
4805	0.05	245,460	0.51	0.37	107,260	138,200
4955	0.05	247,092	0.51	0.37	110,560	136,532
5105	0.05	248,686	0.51	0.37	113,860	134,825
5255	0.05	250,243	0.51	0.37	117,161	133,082
5405	0.05	251,765	0.51	0.37	120,461	131,304
5555	0.05	253,254	0.51	0.37	123,761	129,493
5705	0.05	254,712	0.51	0.37	127,062	127,650
5855	0.04	256,139	0.51	0.37	130,362	125,777
6005	0.04	257,538	0.51	0.37	133,662	123,876
6155	0.04	258,910	0.51	0.37	136,962	121,947
6305	0.04	260,255	0.51	0.37	140,263	119,993
6455	0.04	261,576	0.51	0.37	143,563	118,013
6605	0.04	262,872	0.51	0.37	146,863	116,009
6755	0.04	264,145	0.51	0.37	150,164	113,982
6905	0.04	265,396	0.51	0.37	153,464	111,932
7055	0.04	266,626	0.50	0.37	156,764	109,862
7205	0.04	267,835	0.50	0.37	160,065	107,771
7355	0.04	269,025	0.50	0.37	163,365	105,660
7505	0.04	270,196	0.50	0.37	166,665	103,531
7655	0.04	271,348	0.50	0.37	169,965	101,382
7805	0.04	272,482	0.50	0.37	173,266	99,217
7955	0.03	273,600	0.50	0.37	176,566	97,034
8105	0.03	274,701	0.50	0.37	179,866	94,835
8255	0.03	275,786	0.50	0.37	183,167	92,619
8405	0.03	276,855	0.50	0.37	186,467	90,388
8555	0.03	277,910	0.50	0.37	189,767	88,143
8705	0.03	278,950	0.50	0.37	193,068	85,883
8855	0.03	279,976	0.50	0.37	196,368	83,608
9005	0.03	280,988	0.50	0.37	199,668	81,320

Mod. FAA Minor Storage Volume (cubic ft.) = 157,455
Mod. FAA Minor Storage Volume (acre-ft.) = 3.6147

Mod. FAA Major Storage Volume (cubic ft.) = 491,326
Mod. FAA Major Storage Volume (acre-ft.) = 11.2793

UDFCD DETENTION BASIN VOLUME ESTIMATING WORKBOOK Version 2.3, Released March 2012

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

Project: Cottonwood Greens Filing No. 4
Basin ID: Pond 3

Inflow and Outflow Volumes vs. Rainfall Duration

UDFCD DETENTION BASIN VOLUME ESTIMATING WORKBOOK Version 2.3, Released March 2012

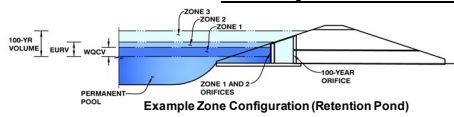
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MHFD-Detention, Version 4.04 (February 2021)

Basin ID: Pond 3 ~ Stage 0=4973



Watershed Information

Note: L / W Ratio < 1
 L / W Ratio = 0.38

Optional User Overrides

	acre-feet
	acre-feet
1.00	inches
1.42	inches
1.68	inches
	inches
	inches
2.71	inches
	inches

Initial Surcharge Area (A_{S1})	=	user	ft ²
Surcharge Volume Length (L_{S1})	=	user	ft
Surcharge Volume Width (W_{S1})	=	user	ft
Depth of Basin Floor (H_{FLOOR})	=	user	ft
Length of Basin Floor (L_{FLOOR})	=	user	ft
Width of Basin Floor (W_{FLOOR})	=	user	ft
Area of Basin Floor (A_{FLOOR})	=	user	ft ²
Volume of Basin Floor (V_{FLOOR})	=	user	ft ³
Depth of Main Basin (H_{MAIN})	=	user	ft
Length of Main Basin (L_{MAIN})	=	user	ft
Width of Main Basin (W_{MAIN})	=	user	ft
Area of Main Basin (A_{MAIN})	=	user	ft ²
Volume of Main Basin (V_{MAIN})	=	user	ft ³
Calculated Total Basin Volume (V_{TOTAL})	=	user	acre-feet

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Table 1401

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

DETENTION VOLUME BY THE MODIFIED FAA METHOD
(See USDCM Volume 2 Storage Chapter for description of method)

Project: Cottonwood Greens Filing No. 4

Project: Cottonwood Greens Filing No. 4

Basin ID: Pond 4+5 (Future)

Basin ID: Pond 4+5 (Future)

(For catchments less than 160 acres only. For larger catchments, use hydrograph routing method)
(NOTE: for catchments larger than 90 acres, CUHP hydrograph and routing are recommended)

Determination of MINOR Detention Volume Using Modified FAA Method

Determination of MAJOR Detention Volume Using Modified FAA Method

Design Information (Input):
Catchment Drainage Imperviousness $I_p = 48.00$ percent
Catchment Drainage Area $A = 33.320$ acres
Predevelopment NRCS Soil Group Type = A A, B, C, or D
Return Period for Detention Control $T = 5$ years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed $T_c = 22$ minutes
Allowable Unit Release Rate $q = 0.0050$ cfs/acre
One-hour Precipitation $P_1 = 1.42$ inches
Design Rainfall IDF Formula $i = C_1 \cdot P_1 / (C_2 + T_c) \cdot C_3$
Coefficient One $C_1 = 28.50$
Coefficient Two $C_2 = 10$
Coefficient Three $C_3 = 0.786$

Design Information (Input):
Catchment Drainage Imperviousness $I_p = 48.00$ percent
Catchment Drainage Area $A = 33.320$ acres
Predevelopment NRCS Soil Group Type = A A, B, C, or D
Return Period for Detention Control $T = 100$ years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed $T_c = 22$ minutes
Allowable Unit Release Rate $q = 0.25$ cfs/acre
One-hour Precipitation $P_1 = 2.71$ inches
Design Rainfall IDF Formula $i = C_1 \cdot P_1 / (C_2 + T_c) \cdot C_3$
Coefficient One $C_1 = 28.50$
Coefficient Two $C_2 = 10$
Coefficient Three $C_3 = 0.786$

Determination of Average Outflow from the Basin (Calculated):
Runoff Coefficient $C = 0.29$
Inflow Peak Runoff $Q_{p-in} = 25.98$ cfs
Allowable Peak Outflow Rate $Q_{p-out} = 0.17$ cfs
Mod. FAA Minor Storage Volume = 120,811 cubic feet
Mod. FAA Minor Storage Volume = 2.773 acre-ft
150 <- Enter Rainfall Duration Incremental Increase Value Here (e.g. 5 for 5-Minutes)

Determination of Average Outflow from the Basin (Calculated):
Runoff Coefficient $C = 0.44$
Inflow Peak Runoff $Q_{p-in} = 75.21$ cfs
Allowable Peak Outflow Rate $Q_{p-out} = 8.33$ cfs
Mod. FAA Major Storage Volume = 146,225 cubic feet
Mod. FAA Major Storage Volume = 3.357 acre-ft

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume cubic feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume cubic feet (output)	Storage Volume cubic feet (output)
5	4.82	13,962	1.00	0.17	50	13,912
155	0.73	65,732	0.57	0.09	882	64,850
305	0.44	77,806	0.54	0.09	1,632	76,175
455	0.32	85,464	0.52	0.09	2,382	83,082
605	0.26	91,219	0.52	0.09	3,131	88,088
755	0.22	95,891	0.51	0.09	3,881	92,010
905	0.19	99,853	0.51	0.09	4,631	95,222
1055	0.17	103,310	0.51	0.08	5,380	97,930
1205	0.15	106,389	0.51	0.08	6,130	100,259
1355	0.14	109,172	0.51	0.08	6,880	102,293
1505	0.13	111,717	0.51	0.08	7,629	104,088
1655	0.12	114,065	0.51	0.08	8,379	105,686
1805	0.11	116,249	0.51	0.08	9,129	107,120
1955	0.10	118,291	0.51	0.08	9,879	108,412
2105	0.10	120,211	0.51	0.08	10,628	109,583
2255	0.09	122,025	0.50	0.08	11,378	110,647
2405	0.09	123,746	0.50	0.08	12,128	111,618
2555	0.08	125,382	0.50	0.08	12,877	112,505
2705	0.08	126,944	0.50	0.08	13,627	113,317
2855	0.08	128,438	0.50	0.08	14,377	114,061
3005	0.07	129,871	0.50	0.08	15,126	114,745
3155	0.07	131,248	0.50	0.08	15,876	115,372
3305	0.07	132,574	0.50	0.08	16,626	115,948
3455	0.07	133,853	0.50	0.08	17,376	116,478
3605	0.06	135,089	0.50	0.08	18,125	116,964
3755	0.06	136,284	0.50	0.08	18,875	117,409
3905	0.06	137,443	0.50	0.08	19,625	117,818
4055	0.06	138,566	0.50	0.08	20,374	118,192
4205	0.06	139,657	0.50	0.08	21,124	118,533
4355	0.06	140,717	0.50	0.08	21,874	118,844
4505	0.05	141,749	0.50	0.08	22,623	119,126
4655	0.05	142,754	0.50	0.08	23,373	119,381
4805	0.05	143,734	0.50	0.08	24,123	119,611
4955	0.05	144,690	0.50	0.08	24,873	119,817
5105	0.05	145,623	0.50	0.08	25,622	120,001
5255	0.05	146,535	0.50	0.08	26,372	120,163
5405	0.05	147,426	0.50	0.08	27,122	120,305

APPENDIX G – Referenced Material

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/24/2019 at 2:38:40 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.





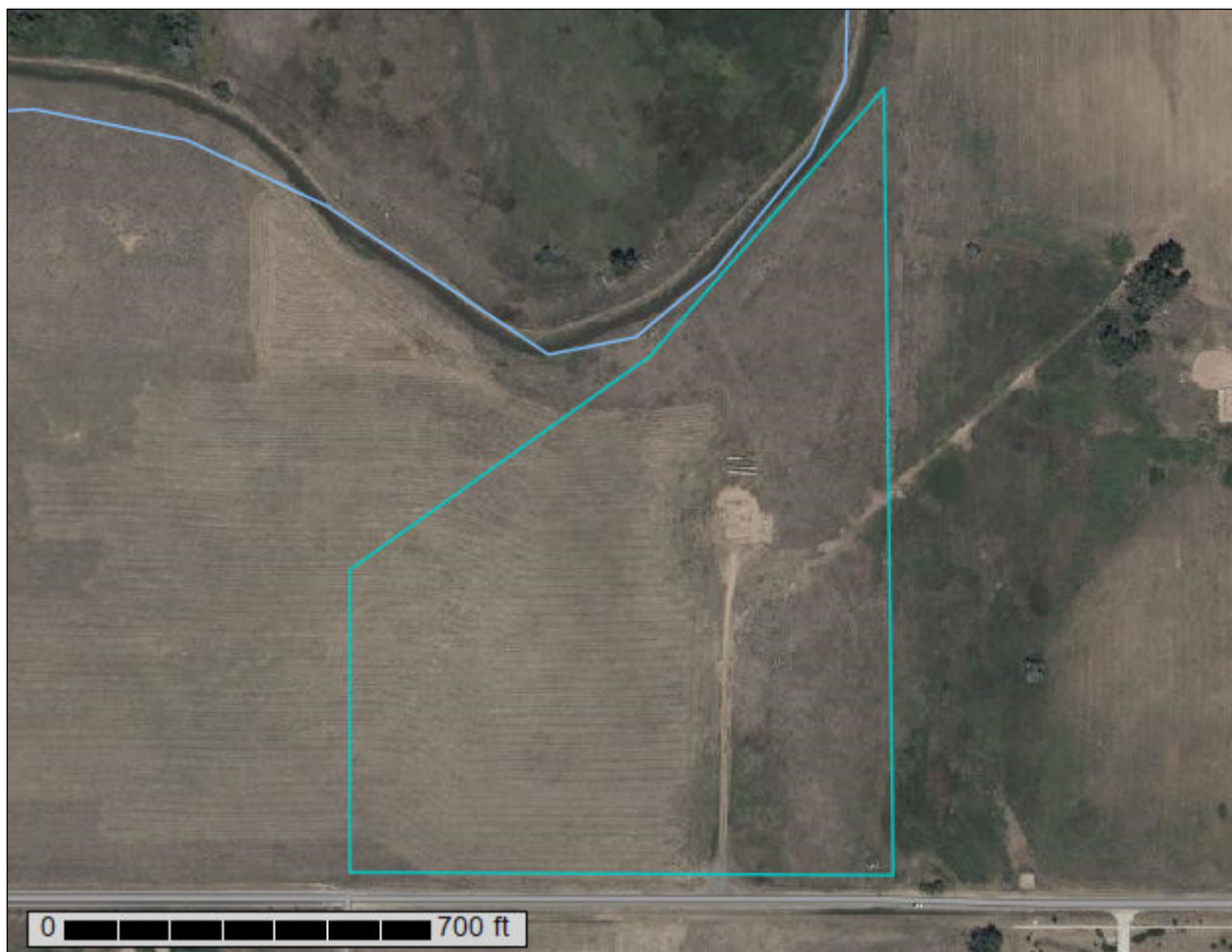
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Weld County, Colorado, Southern Part**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 19, Jun 5, 2020

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

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
35	Loup-Boel loamy sands, 0 to 3 percent slopes	0.4	1.8%
56	Reno hill clay loam, 0 to 3 percent slopes	0.6	2.7%
69	Valent sand, 0 to 3 percent slopes	14.2	60.6%
70	Valent sand, 3 to 9 percent slopes	8.1	34.4%
72	Vona loamy sand, 0 to 3 percent slopes	0.1	0.5%
Totals for Area of Interest		23.4	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Weld County, Colorado, Southern Part

35—Loup-Boel loamy sands, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 362f
Elevation: 4,550 to 4,750 feet
Mean annual precipitation: 11 to 15 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Loup and similar soils: 55 percent
Boel and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Loup

Setting

Landform: Swales, drainageways, streams
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

H1 - 0 to 16 inches: loamy sand
H2 - 16 to 40 inches: loamy sand
H3 - 40 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Ecological site: R067BY029CO - Sandy Meadow
Hydric soil rating: Yes

Description of Boel

Setting

Landform: Swales, drainageways, streams
Down-slope shape: Linear

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Across-slope shape: Linear

Parent material: Stratified sandy alluvium

Typical profile

H1 - 0 to 14 inches: loamy sand

H2 - 14 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): 4w

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: A

Ecological site: R067BY029CO - Sandy Meadow

Hydric soil rating: No

Minor Components

Osgood

Percent of map unit: 5 percent

Hydric soil rating: No

Valent

Percent of map unit: 5 percent

Hydric soil rating: No

56—Renohill clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3635

Elevation: 4,850 to 5,200 feet

Mean annual precipitation: 11 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 100 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Renohill and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Renohill

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 32 inches: clay loam
H3 - 32 to 36 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R067BY042CO - Clayey Plains
Hydric soil rating: No

Minor Components

Ulm

Percent of map unit: 10 percent
Hydric soil rating: No

Shingle

Percent of map unit: 5 percent
Hydric soil rating: No

69—Valent sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tczd
Elevation: 3,000 to 5,210 feet
Mean annual precipitation: 13 to 20 inches
Mean annual air temperature: 48 to 52 degrees F

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Frost-free period: 130 to 166 days

Farmland classification: Farmland of local importance

Map Unit Composition

Valent and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valent

Setting

Landform: Interdunes

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Noncalcareous eolian sands

Typical profile

A - 0 to 5 inches: sand

AC - 5 to 12 inches: sand

C1 - 12 to 30 inches: sand

C2 - 30 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 39.96 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 1 percent

Maximum salinity: Nonsaline (0.1 to 1.9 mmhos/cm)

Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R067BY015CO - Deep Sand, R072XA021KS - Sands (North) (PE 16-20)

Hydric soil rating: No

Minor Components

Julesburg

Percent of map unit: 5 percent

Landform: Interdunes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY024CO - Sandy Plains, R072XA022KS - Sandy (North)

Draft (April 2010) (PE 16-20)

Hydric soil rating: No

Dailey

Percent of map unit: 5 percent

Landform: Interdunes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R067BY015CO - Deep Sand, R072XA022KS - Sandy (North) Draft
(April 2010) (PE 16-20)

Hydric soil rating: No

Vona

Percent of map unit: 5 percent

Landform: Interdunes

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY024CO - Sandy Plains, R072XA022KS - Sandy (North)
Draft (April 2010) (PE 16-20)

Hydric soil rating: No

70—Valent sand, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2tczf

Elevation: 3,050 to 5,150 feet

Mean annual precipitation: 12 to 18 inches

Mean annual air temperature: 48 to 55 degrees F

Frost-free period: 130 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Valent and similar soils: 80 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valent

Setting

Landform: Hills, dunes

Landform position (two-dimensional): Backslope, shoulder, footslope, summit

Landform position (three-dimensional): Side slope, head slope, nose slope, crest

Down-slope shape: Linear, convex

Across-slope shape: Linear, convex

Parent material: Noncalcareous eolian sands

Typical profile

A - 0 to 5 inches: sand

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AC - 5 to 12 inches: sand
C1 - 12 to 30 inches: sand
C2 - 30 to 80 inches: sand

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 39.96 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R067BY015CO - Deep Sand, R072XY109KS - Rolling Sands
Hydric soil rating: No

Minor Components

Dailey

Percent of map unit: 10 percent
Landform: Interdunes
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R067BY015CO - Deep Sand, R072XA021KS - Sands (North) (PE 16-20)
Hydric soil rating: No

Vona

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Footslope, backslope, shoulder
Landform position (three-dimensional): Side slope, head slope, nose slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R067BY024CO - Sandy Plains, R072XA022KS - Sandy (North) Draft (April 2010) (PE 16-20)
Hydric soil rating: No

Haxtun

Percent of map unit: 5 percent
Landform: Interdunes
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave

Ecological site: R067BY024CO - Sandy Plains, R072XY111KS - Sandy Plains
Hydric soil rating: No

72—Vona loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 363r
Elevation: 4,600 to 5,200 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of local importance

Map Unit Composition

Vona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vona

Setting

Landform: Plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or eolian deposits

Typical profile

H1 - 0 to 6 inches: loamy sand
H2 - 6 to 28 inches: fine sandy loam
H3 - 28 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water capacity: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R067BY024CO - Sandy Plains
Hydric soil rating: No

Minor Components

Remmit

Percent of map unit: 10 percent

Hydric soil rating: No

Valent

Percent of map unit: 5 percent

Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Custom Soil Resource Report

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Weld County, Colorado, Southern Part
 Survey Area Data: Version 19, Jun 5, 2020

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

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35	Loup-Boel loamy sands, 0 to 3 percent slopes	A/D	0.4	1.8%
56	Renohill clay loam, 0 to 3 percent slopes	D	0.6	2.7%
69	Valent sand, 0 to 3 percent slopes	A	14.2	60.6%
70	Valent sand, 3 to 9 percent slopes	A	8.1	34.4%
72	Vona loamy sand, 0 to 3 percent slopes	A	0.1	0.5%
Totals for Area of Interest			23.4	100.0%

Rating Options—Hydrologic Soil Group*Aggregation Method:* Dominant Condition*Component Percent Cutoff:* None Specified*Tie-break Rule:* Higher

References

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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

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Magaly Morales-Tejada

From: Kristen Thompson
Sent: Wednesday, October 13, 2021 10:04 AM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

Magaly,

I am not sure if I responded to this referral. We do not have any comments.

Thank you
Kris



Kristen Thompson | Inclusion Specialist
220 Water Ave | Berthoud, CO 80513
Direct: (970) 622-2237
Main: 800-369-RAIN (7246)
www.northernwater.org

[Facebook](#) | [Twitter](#) | [Instagram](#) | [LinkedIn](#)

Disclaimer Notice: An allotment of Colorado-Big Thompson water is subject to the Water Conservancy Act, C.R.S 37-45-101 et seq, the authority of the Board of Directors of the Northern Colorado Water Conservancy District, and other relevant laws and regulations. The information provided in this email is not binding on Northern Water because the legal rights to Colorado-Big Thompson Project Allotments are subject to the continuing discretion of the Board of Directors of Northern Water and other legal limitations and requirements. Northern Water staff and counsel cannot provide you with legal advice, and you are advised to seek legal counsel with respect to the subject matter of this email. You also have an independent obligation to review and confirm the accuracy and completeness of any information provided to you by Northern Water, and to supplement or correct the records of Northern Water with respect to any errors or omissions.

From: Magaly Morales-Tejada
Sent: Monday, September 13, 2021 11:03 AM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

External Message - Please be cautious when replying or opening links or attachments in this email

Good Morning,

The documentation located at the following link is submitted to you for review and recommendation for a preliminary and final plat being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: <https://www.fortlupton.org/DocumentCenter/Index/622>.

Any comments you consider relevant to this request would be appreciated. Please reply by **October 4, 2021**, so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department.

The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, October 14, 2021 at 6:00 PM; and
- City Council: Tuesday, November 2, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!



Public Works

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694

Fax: 303.857.0351

www.fortluptonco.gov

MEMO

To: Todd Hodges
Alyssa Knutson

From: Roy Vestal

Date: October 7, 2021

Subject: Cottonwood Greens Townhomes (LUP2021-0019)
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments for inclusion with the Final Plat submittal. Be advised, review of construction drawings is for general compliance with city standards. There may be additional concerns as this design develops.

1. PUD/Plat

- a. Please coordinate with the Filing 1-3 revisions to the ROW of College Avenue. Changes were required from southern most curve to intersection of 9th Avenue.
- b. The lots along the eastern property line will require a drainage easement as shown. Option to relocate the storm sewer from 9th Street to be in the middle of the space of lots and property line.
- c. I think you want Alto Street to be designated as ROW.

2. Drainage

- a. Final Drainage Study as submitted is acceptable. Please convey one copy signed and sealed to Public Works.
- b. On-site storm sewer will be considered private.
- c. Coordination with 9th Street storm is required.
- d. Participation with current staff planning for this basin is required.
 - i. Future storm line in 14th Street in coordination with Tri-State, Willow Bend and other basin properties from the east.

3. Transportation

- a. Traffic memorandum as submitted is acceptable. This development does comply with original Traffic Study.

4. Landscape / Grading - Chapter 2 Design Standards

- a. A SWMP and Stormwater Discharge permit must be acquired from CDPH&E. Please submit proof of prior to receiving construction permits. Please provide copy of permit from CDPH&E.

5. Utilities

a. Water - Chapter 3

- i. Section 3.21.00 Water service lines shall be located a minimum of 10 feet away from all sewer services and a minimum of 5 feet away from all fire protection service lines (measured horizontally). All service lines shall be constructed perpendicular to the front property line of the property they are going to serve and not less than 5 feet from the side of a front property line.
- ii. Include City standard detail W2. Specify "Red Mueller Super Centurion" hydrants in final construction drawings.

b. Non Potable Irrigation

- i. Are all areas of landscape to be irrigated with the nonpotable system? I need to see intended irrigation scheme from the 2 meter locations.

c. Sanitary Sewer - Chapter 4

- i. *Section 4.18.00 Services. All service lines shall be constructed perpendicular to the property line of the property they are going to serve and not less than five feet from the side property line.*

d. Storm Sewer - Chapter 5

- i. The area on the eastern property line is not adequate for the storm sewer alignment. Easement requirements are the same as the sanitary sewer.

4.16.00 EASEMENTS *All sanitary sewer mains shall be in an easement which has a width of at least two times the depth to the pipe invert. The minimum easement shall be 20 feet in width for one utility, 30 feet in width for two utilities and 40 feet in width for three utilities. Site specific circumstances may dictate the need for wider easements. The main shall be located a minimum of ten feet from and parallel to the edge of the easement.*

e. Roadway - Chapter 6

- i. Designation of Private streets and Public is needed. I think we discussed City ownership and maintenance of Alto Street?
- ii. Preliminary Soils Report indicates presence of swelling soils, collapsible soils and shallow groundwater.

- iii. *Section 6.33.00* A Pavement Design Report is required prior to roadway paving. City preferred pavement section is a composite section of asphalt surface with Class VI base.
 - iv. *Section 6.18.02* At the intersection of two public streets or a private driveway and a public street, sight distance shall be evaluated across a "sight distance triangle" where obstructions are restricted according to the following criteria.
 - v. Do not use Standard detail R10. The ADA requirements will not be met. Detail R11 is good for the cross pan, but not the ramp. I do not think you have any ramps that match with our R9. You do not need the R2-3 detail
 - vi. Coordination on participation of 9th Street Improvements with City project will be required. Costs associated with the property frontage on 9th Street is \$149,248.30.
6. **Public Improvement Agreement** – A Subdivision Improvements Agreement will be required for the construction of roadways, water, sewer and nonpotable water systems. See attached template.
7. A Geotechnical report for final pavement design will be required prior to paving public roads.

There may be additional concerns as this design develops.

Magaly Morales-Tejada

From: John Fryar
Sent: Monday, September 13, 2021 11:27 AM
To: Magaly Morales-Tejada
Subject: RE: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

No LE issues.



Chief John Fryar

From: Magaly Morales-Tejada
Sent: Monday, September 13, 2021 11:03 AM
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

Good Morning,

The documentation located at the following link is submitted to you for review and recommendation for a preliminary and final plat being reviewed by the City of Fort Lupton. The application documents can be reviewed at the following link: <https://www.fortlupton.org/DocumentCenter/Index/622>.

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The Public Hearings for this matter are scheduled for:

- Planning Commission: Thursday, October 14, 2021 at 6:00 PM; and
- City Council: Tuesday, November 2, 2021 at 7:00 PM

Your time in this matter is greatly appreciated!

Magaly Morales-Tejada
Planning assistant
130 S. McKinley Ave.
Fort Lupton, CO 80621
Direct: 720-466-6111



Magaly Morales-Tejada

From: Jonathan Gesick
Sent: Monday, September 13, 2021 4:50 PM
To: Magaly Morales-Tejada
Cc: Alyssa Knutson; Todd Hodges; Maria Lancto
Subject: RE: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

Good Afternoon.

Building has no concerns at this time.

Jonathan Gesick

Certified Building Official

(970) 305-3161

www.procodeinc.net



Confidentiality Notice: This electronic transmission and any attached documents or other writings are intended only for the person or entity to which it is addressed and may contain information that is privileged, confidential or otherwise protected from disclosure. If you have received this communication in error, please immediately notify sender by return e-mail and destroy the communication. Any disclosure, copying, distribution or the taking of any action concerning the contents of this communication or any attachments by anyone other than the named recipient is strictly prohibited.

From: Magaly Morales-Tejada
Sent: Monday, September 13, 2021 11:03 AM
Cc: Alyssa Knutson; Todd Hodges ; Maria Lancto
Subject: Referral Response Request: Cottonwood Greens Townhomes (LUP2021-0019)

Good Morning,

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Your time in this matter is greatly appreciated!

Magaly Morales-Tejada

Planning assistant

130 S. McKinley Ave.

Fort Lupton, CO 80621

Direct: 720-466-6111



The information transmitted is intended only for the person or entity to which it is addressed and may contain CONFIDENTIAL material. If you receive this information in error, please delete or destroy the information.

Please be cautious

This email was sent outside of your organization



October 6, 2021

Fort Lupton Planning Department
130 S. McKinley Avenue
Fort Lupton, CO 80621
www.fortlupton.org

Re: Cottonwood Greens Preliminary and Final PUD Plat; Project No. LUP2021-0019; Plan No. PUD2021-0002; PPL2021-0004 FPL2020-0004

Dear Mr. Hodges and Ms. Knutson:

On behalf of United Power, Inc., thank you for inviting us to review and comment on the Cottonwood Greens Preliminary and Final PUD Plat. After review of the information, we have the following comments:

- **Front or Rear Lot Distribution** – United Power requires continuous dry utility easements for reliable electric facility installation. This allows us to install electric facilities in a continuous manner for our loop feed which provides reliability. We prefer the separation of gas and electric. Typically, with electric in the rear of the subdivision lots. We will need 8' to 10' wide dry utility easements in the rear of all lots. These utility easements will need to be on sides of lots abutting roads, and across tracts. If gas and electric will be sharing front lot distribution, we will need a 10' to 15' wide dry utility easements in the front of all lots. These utility easements will need to be on sides of lots abutting roads, and across tracts as well.
- Easements utilized by United Power cannot be encumbered by any hard surfaces such as streets or sidewalks. Although the roadways/tracts on the plat are dedicated to utilities, we have above ground equipment that cannot be placed within these areas. In addition, sidewalks take away from the use of the easement & reduces the area, limiting where our equipment can be placed.
- **Tracts/Open Space/Parks** – United Power prefers dedicated blanket utility easement use within tracts as this gives us the opportunity to set above ground equipment, coordinated with the developer, and limit the impact to home lots. If Blanket utility easement(s) cannot be given, we will need a 10' to 12' wide dry utility easements along the perimeter of all tracts, along perimeter of tracts abutting roads, and through tracts between lots.
- **Streetlights** – When streetlight locations are identified in a subdivision, we need a 5' wide dry utility easement along one side of the lot closest to the streetlight location. All streetlight locations must be approved and signed off by the city/town, etc. Please note, if we do not get these through the platting process, we will have to get individual ones during the design which will slow United Power's ability to start construction significantly.

Please have the property owner/developer/contractor submit an application for new electric service, any modification to existing facilities including relocation and/or removal along with CAD data via <https://www.unitedpower.com/construction>. United Power would like to work with these persons early in the construction process on getting an electric design prepared so that we can request any additional easements needed and hopefully have those easements dedicated on the plat rather than obtaining separate instrument. Obtaining easements via a separate instrument can be time consuming and could cause delays.

As a Reminder: No permanent structures are acceptable within the dry utility easement(s); such as, window wells, wing walls, retaining walls, basement walls, roof overhang, anything affixed to the house like decks, etc. United Power considers any structure that impedes the access, maintenance, and safety of our facilities a permanent structure. No exceptions will be allowed, and any encroachments could result in penalties.

Service will be provided according to the rules, regulations, and policies in effect by United Power at the time service is requested. We would like to remind the developer to call the Utility Notification Center by dialing 811 to have all utilities located prior to construction. We look forward to safely and efficiently providing reliable electric power and outstanding service.

Thank you,

Amber Mendoza

Amber Mendoza, RWA
ROW Agent
720.249.9315 | platreferral@unitedpower.com



Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

September 29, 2021

City of Fort Lupton Planning Department
130 South McKinley Avenue
Fort Lupton, CO 80621

Attn: Alyssa Knutson and Todd Hodges

Re: Cottonwood Greens Townhomes PUD Filing No. 4, Case # LUP2021-0019

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has determined **there is a conflict** with **Cottonwood Greens Townhomes PUD F4** in that there are no utility easements dedicated for natural gas distribution facilities. Will the gas meters potentially be banked?

Please note that natural gas distribution utilities require minimum 6-foot wide utility easements *within each residential lot* on the side of the lot that is drivable pavement (minimum 8-foot wide, 6-inches thick) with space for service truck access and plowing in snowy conditions with a minimum 5-foot clearance from any structure.

PSCo also requests that Tracts E and L are dedicated for utility use, particularly for crossing and connectivity throughout the development.

The property owner/developer/contractor must complete the application process for any new natural gas service via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

If additional easements need to be acquired by separate PSCo document, a Right-of-Way Agent will need to be contacted.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

Colorado Community Media
750 W. Hampden Ave. Suite 225
Englewood, CO 80110

City of Fort Lupton ***
130 SOUTH MCKINLEY AVENUE
FT LUPTON CO 80621-0000

Description: FLP411 Notice of Hearing

AFFIDAVIT OF PUBLICATION

State of Colorado }
County of Weld } ss

This Affidavit of Publication for the Fort Lupton Press, a weekly newspaper, printed and published for the County of Weld, State of Colorado, hereby certifies that the attached legal notice was published in said newspaper once in each week, for 1 successive week(s), the last of which publication was made 9/29/2021, and that copies of each number of said paper in which said Public Notice was published were delivered by carriers or transmitted by mail to each of the subscribers of said paper, according to their accustomed mode of business in this office.



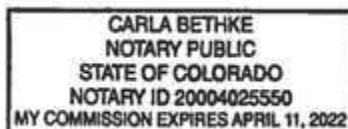
For the Fort Lupton Press

State of Colorado }
County of Weld } ss

The above Affidavit and Certificate of Publication was subscribed and sworn to before me by the above named Linda Shapley, publisher of said newspaper, who is personally known to me to be the identical person in the above certificate on 9/29/2021. Linda Shapley has verified to me that she has adopted an electronic signature to function as her signature on this document.

20004025550-990473

Carla Bethke
Notary Public
My commission ends April 11, 2022



PUBLIC NOTICE

CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a Preliminary and Final PUD Plat known as the Cottonwood Greens Townhomes Preliminary Plat and Preliminary PUD Plan, located north and adjacent to 9th Street and approximately 0.29 miles west of County Road 31 within the City of Fort Lupton, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission Thursday, October 14, 2021, at 6:00 P.M., and before the City Council on Tuesday, November 2, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that the City Hall is closed at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND

LEGAL DESCRIPTION

A TRACT OF LAND BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO, ALSO BEING A PORTION OF THAT TRACT OF LAND DESCRIBED IN RECEPTION NO. 2039953, WELD COUNTY RECORDS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE EAST END BY A FOUND 2-1/2" ALUMINUM CAP STAMPED "GEOSURV 1998 PLS 22097" AND AT THE WEST END BY A FOUND 3-1/4" ALUMINUM CAP STAMPED "2017 LS 38091". SAID SOUTH LINE BEARS NORTH 89°42'22" WEST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 33:

THENCE NORTH 57°59'05" EAST 79.52 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS OF 15.00 FEET AND A CENTER WHICH BEARS NORTH 00°17'38" EAST, ALSO BEING THE POINT OF BEGINNING;

THENCE 23.48 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 89°42'14";

THENCE NORTH 00°00'08" WEST 165.60 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 257.50 FEET;

THENCE 250.80 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 55°48'14";

THENCE NORTH 55°48'06" EAST 428.22 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 1042.50 FEET;

THENCE 401.38 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 22°03'35";

THENCE NORTH 33°44'31" EAST 40.07 FEET;

THENCE SOUTH 26°57'18" EAST 495.94 FEET TO THE EAST LINE OF SAID TRACT OF LAND;

THENCE ALONG SAID EAST LINE SOUTH 00°08'34" EAST 513.75 FEET TO THE NORTH RIGHT-OF-WAY LINE OF 9TH STREET;

THENCE ALONG SAID NORTH RIGHT-OF-WAY LINE NORTH 89°42'22" WEST 981.32 FEET TO THE POINT OF BEGINNING;

SAID TRACT OF LAND CONTAINS 619.698 SQUARE FEET, OR 14.23 ACRES, MORE OR LESS.

Legal Notice No. FLP411
First Publication: September 29, 2021
Last Publication: September 29, 2021
Publisher: Fort Lupton Press

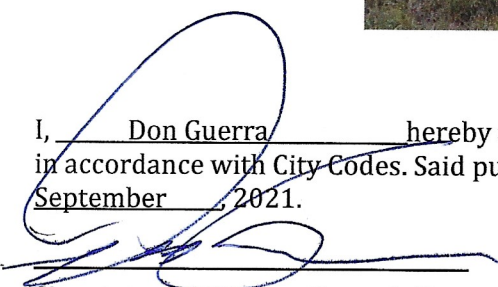
Sign Posting Affidavit

Cottonwood Greens Townhomes PUD Preliminary and Final Plat
Project No. LUP2021-0019 / Plan Nos. PUD2021-0002; PPL2021-0004 & FPL2021-0004



Facing 9th St.

I, Don Guerra hereby acknowledge that the aforementioned property was posted in accordance with City Codes. Said public hearing notice was posted on this 29th day of September, 2021.


Signature of Owner or Owner's Representative

The foregoing instrument was acknowledged before me by Don Guerra, this 30th day of September, 2021. Witness my hand and seal.

My commission expires 12/04/21.

ctt
Notary Public

(SEAL)

CLAYTON CHESAREK
Notary Public - State of Colorado
Notary ID 20134072122
My Commission Expires Dec 4, 2021

CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 28th day of September 2021, a true and correct copy of the foregoing Notice of Public Hearings and Exhibit of Proposes Change for the Cottonwood Greens Townhomes Preliminary and Final PUD Plat was sent via U.S. Mail, postage pre-paid, to the following addresses:

COYOTE CREEK NORTH LLC
5300 DTC PKWY
STE 100
GREENWOOD VILLAGE, CO 80111

LGI HOMES COLORADO LLC
1450 LAKE ROBBINS DR
STE 430
THE WOODLANDS, TX 77380

THERMO - FARMS
5305 W 86TH AVE
ARVADA, CO 80003

CONNER FAMILY TRUST
1621 FAIR HOUSE RD
SPRING HILL, TN 77380

C/O NATIONAL GUARD
STATE OF COLORADO
6848 S REVERE PKWY
CENTENNIAL, CO 80112

ROWLEY DOWNS LAND COMPANY
260 KRAMERIA ST
DENVER, CO 80220

KP KAUFFMAN COMPANY, INC
1675 BROADWAY
STE 2800
DENVER, CO 80202

KERR-McGEE OIL & GAS CORPORATION
1999 BROADWAY
STE 3700
DENVER, CO 80202

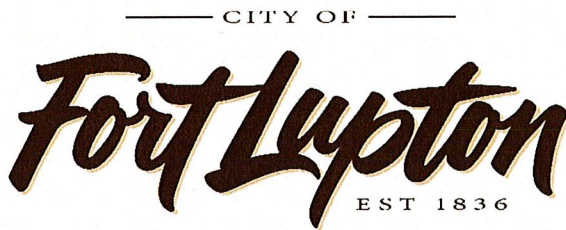
ANADARKO LAND CORPORATION
PO Box 1330
HOUSTON, TX 77251

THE RANCH ESTATES
8791 CIRCLE DR
WESTMINSTER, CO 80031

RENNOC CORPORATION
2 OSPREY CIR
THORNTON, CO 80241



City Official



Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621

Phone: 303.857.6694
Fax: 303.857.0351

www.fortluptonco.gov

CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a Preliminary and Final PUD Plat known as the Cottonwood Greens Townhomes Preliminary Plat and Preliminary PUD Plan, located north and adjacent to 9th Street and approximately 0.29 miles west of County Road 31 within the City of Fort Lupton, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on Thursday, October 14, 2021, at 6:00 P.M., and before the City Council on Tuesday, November 2, 2021, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held at the Fort Lupton City Hall, 130 S. McKinley Avenue in Fort Lupton, Colorado. In the event that the City Hall is closed at the time of the hearings, the public hearings will be held remotely, accessible to the public by phone and internet. Information on how to attend the hearings will be provided in the agenda as posted on the City's website, www.fortluptonco.gov.

Further information is available through the City Planning and Building Department at (303) 857-6694.

ALL INTERESTED PERSONS MAY ATTEND.

ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FLDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: COTTONWOOD GREENS TOWNHOMES PUD PRELIMINARY AND FINAL PUD PLAT

LEGAL DESCRIPTION

A TRACT OF LAND BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO, ALSO BEING A PORTION OF THAT TRACT OF LAND DESCRIBED IN RECEPTION NO. 2039953, WELD COUNTY RECORDS, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2 NORTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE EAST END BY A FOUND 2-1/2" ALUMINUM CAP STAMPED "GEOSURV 1998 PLS 22097" AND AT THE WEST END BY A FOUND 3-1/4" ALUMINUM CAP STAMPED "2017 LS 38091". SAID SOUTH LINE BEARS NORTH 89°42'22" WEST, WITH ALL BEARINGS CONTAINED HEREIN RELATIVE THERETO;

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 33:

THENCE NORTH 57°59'05" EAST 79.52 FEET TO THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS OF 15.00 FEET AND A CENTER WHICH BEARS NORTH 00°17'38" EAST, ALSO BEING THE POINT OF BEGINNING;

THENCE 23.48 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 89°42'14";

THENCE NORTH 00°00'08" WEST 165.60 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE RIGHT HAVING A RADIUS OF 257.50 FEET;

THENCE 250.80 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 55°48'14";

THENCE NORTH 55°48'06" EAST 428.22 FEET TO THE BEGINNING OF A TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 1042.50 FEET;

THENCE 401.38 FEET ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 22°03'35";

THENCE NORTH 33°44'31" EAST 40.07 FEET;

THENCE SOUTH 26°57'18" EAST 495.94 FEET TO THE EAST LINE OF SAID TRACT OF LAND;

THENCE ALONG SAID EAST LINE SOUTH 00°08'34" EAST 513.75 FEET TO THE NORTH RIGHT-OF-WAY LINE OF 9TH STREET;

THENCE ALONG SAID NORTH RIGHT-OF-WAY LINE NORTH 89°42'22" WEST 981.32 FEET TO THE POINT OF BEGINNING;

SAID TRACT OF LAND CONTAINS 619,698 SQUARE FEET, OR 14.23 ACRES, MORE OR LESS.

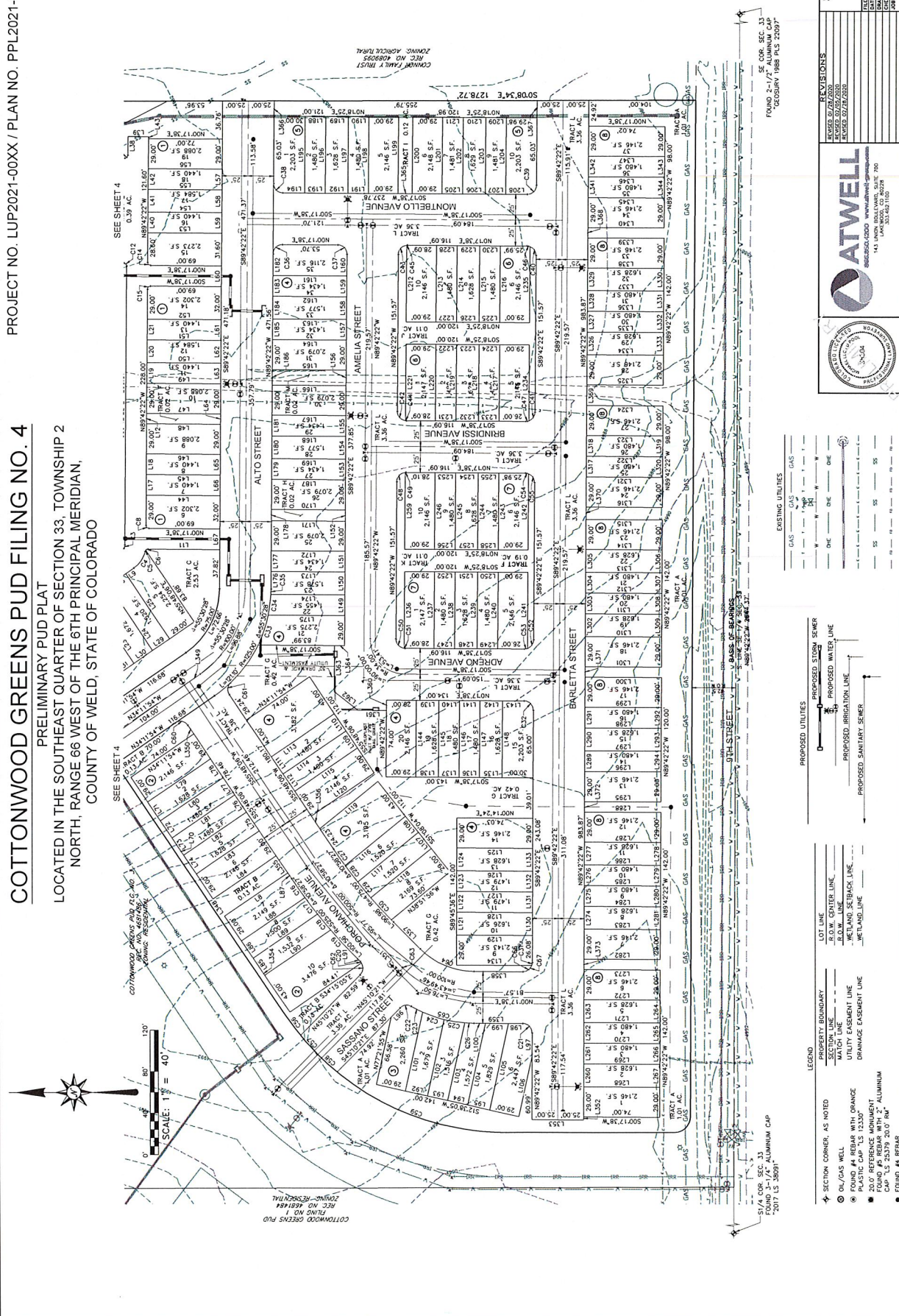
ADDITIONAL INFORMATION AND DOCUMENTS ON THIS APPLICATION CAN BE FOUND AT BIT.LY/FDEVELOPMENT AND SCROLLING DOWN TO THE ROW TITLED: COTTONWOOD GREENS TOWNHOMES PUD PRELIMINARY AND FINAL PUD PLAT

COTTONWOOD GREENS PUD FILING NO. 4

PROJECT NO. LUP2021-00XX / PLAN NO. PPL2021-00XX

PRELIMINARY PUD PLAT

LOCATED IN THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 2
NORTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN,
COUNTY OF WELD, STATE OF COLORADO



Colorado Community Media
750 W. Hampden Ave. Suite 225
Englewood, CO 80110

City of Fort Lupton ***
130 SOUTH MCKINLEY AVENUE
FT LUPTON CO 80621-0000

Description: FLP411 Notice of Hearing

AFFIDAVIT OF PUBLICATION

State of Colorado }
County of Weld } ss

This Affidavit of Publication for the Fort Lupton Press, a weekly newspaper, printed and published for the County of Weld, State of Colorado, hereby certifies that the attached legal notice was published in said newspaper once in each week, for 1 successive week(s), the last of which publication was made 9/29/2021, and that copies of each number of said paper in which said Public Notice was published were delivered by carriers or transmitted by mail to each of the subscribers of said paper, according to their accustomed mode of business in this office.



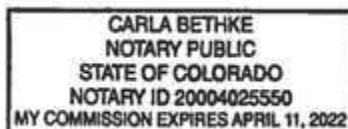
For the Fort Lupton Press

State of Colorado }
County of Weld } ss

The above Affidavit and Certificate of Publication was subscribed and sworn to before me by the above named Linda Shapley, publisher of said newspaper, who is personally known to me to be the identical person in the above certificate on 9/29/2021. Linda Shapley has verified to me that she has adopted an electronic signature to function as her signature on this document.

20004025550-990473

Carla Bethke
Notary Public
My commission ends April 11, 2022



PUBLIC NOTICE

CITY OF FORT LUPTON NOTICE OF PUBLIC HEARING

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Legal Notice No. FLP411
First Publication: September 29, 2021
Last Publication: September 29, 2021
Publisher: Fort Lupton Press

Sign Posting Affidavit

Cottonwood Greens Townhomes PUD Preliminary and Final Plat
Project No. LUP2021-0019 / Plan Nos. PUD2021-0002; PPL2021-0004 & FPL2021-0004



Facing 9th St.

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Signature of Owner or Owner's Representative

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My commission expires 12/04/21.

Clayton Chesarek
Notary Public

(SEAL)

CLAYTON CHESAREK
Notary Public - State of Colorado
Notary ID 20134072122
My Commission Expires Dec 4, 2021