June 9, 2022
Debbie Bickmire
City of Aurora Planning Department
15151 E. Alameda Parkway, Suite 2300
Aurora, CO 80012

Re: Initial Submission Review – Green Valley Ranch Master Plan Amendment No 2 - Comprehensive Plan Amendment, Zoning Map Amendments and Master Plan Amendment
Application Number: DA-1662-25
Case Numbers: 2002-1001-00; 2005-2018-01; 2005-2018-02; 2005-7006-02

Dear Ms. Bickmire,
On behalf of Oakwood Homes and Terracina Design, we have reviewed the comments dated April 20, 2022. The following is a response to comments.

Initial Submission Review

SUMMARY OF KEY COMMENTS FROM ALL DEPARTMENTS

- A package lift station is not an option to serve this development (Water)
- Include the entire Master Plan (Amendments 1 & 2 combined) in the analysis and maps (Planning)
- Clarify if any Planning Areas from Amendment 1may trigger roadway improvements (Public Works)
- Ensure each Planning Area has two approved points of access (Fire/Life safety)
- Coordinate access locations with the traffic study (Traffic)
- Update calculations based on current land dedication standards (PROS)
- Comments are forthcoming for Architecture, Landscape and Urban Design Standards (Planning)

PLANNING DEPARTMENT COMMENTS

1. Community Questions, Comments and Concerns

1A. Referrals were sent to 105 adjacent property owners, 4 registered community association and 10 outside agencies. No comments were received from any adjacent property owners. Five responses were received from outside agencies and are included in or attached to this letter. Please provide responses to each specific comment and questions within the response letter for your next submission. RESPONSE: Noted.

2. Zoning and Land Use Comments

2A. Please include the entire Master Plan in all graphics and discussion. The proposed amendment modifies the overall approved MP area; therefore, the final product and recordation needs to be representative of the whole development.
RESPONSE: Entire MP shown for both comp plan and rezone.

2B. The "310" references an old application. Since the application was withdrawn the reference is obsolete. Please remove all "310" references.
RESPONSE: 310 references removed.

2C. Please combine the justifications for the Comprehensive Plan and Zoning Map Amendments.
RESPONSE: Justifications combined.

2D. Provide a better description of the subject property location for the Comprehensive Plan Amendment.
RESPONSE: Revised

2E. Include an explanation about why the Comprehensive Plan Amendment is necessary. Is it to support a specific use?
RESPONSE: Explanation added.

2F. Expand the reason for the requested Zoning Map Amendment. Discuss limitation of residential uses in the MU-A District.
RESPONSE: Narrative revised

2G. The "310" references an old application. Since the application was withdrawn the reference is obsolete. Please remove all "310" references.
RESPONSE: 310 references removed.

3. Completeness and Clarification of Application

3A. Please reframe the explanation / evolution of the Master Plan (MP). The two amendment areas were included in the first approved MP; therefore, no area is being added. Briefly explain the purpose of the first and second amendments and that the remaining area of the original MP, located east of E-470, has been removed and will be developed as a separate MP.
RESPONSE: Narratives revised.

3B. Briefly mention there is a Comprehensive Plan Amendment and Zoning Map Amendment being requested concurrent with this MP amendment.
RESPONSE: Language added.

Tab #3 Context Map

3C. The Context Map needs to show information for a ½ mile radius around the site.
RESPONSE: Context map revised.

3D. Show adjacent site plans, proposed land uses, zoning districts, and jurisdictions.
RESPONSE: Adjacent land uses, etc shown on plans

3E. Show proposed streets and E-470 improvements.
RESPONSE: Additional information for E470 shown

3F. The Master Plan Manual requires showing existing platted lots. This may require a separate exhibit.
RESPONSE: Separate exhibit provided for clarity

Tab #4 Site Analysis

3G. In general, the site analysis needs to encompass the entire Master Plan area. Reading through the discussion, it is difficult to tell whether they are about the entire site or the second amendment area. Please add location references, acreages, etc. that will help clarify the discussion and provide orientation.
RESPONSE: More detail added to discussion.

3H. Provide more detail about area east of E-470 being removed from the overall Master Plan. Show or reference the map in Tab 3.
RESPONSE: This will be shown via exhibit or narrative.

3I. In addition to identifying adjacent planned development, describe the proposed/existing land uses surrounding the Master Plan area.
RESPONSE: Additional info added

3J. Use streets/intersections to further describe the locations of adjacent Master Plans.
RESPONSE: Noted

3K. Add arrows to indicate slope on Map 4.3.
RESPONSE: Noted

3L. Fonts on easement maps are too small and text overlaps. Please increase scale of maps so information is readable.
RESPONSE: Noted

3M. Enlarge street labels to be more visible on all maps.
RESPONSE: Enlarged
3N. See redlines to address all questions and comments.
RESPONSE: Redlines addressed

Tab #6 Narrative

3O. Use the Narrative to discuss the original approved master plan area, subsequent Amendment 1, which modified the land uses in a specific area of the approved MP, and that the second amendment is modifying the land uses in a second area of the approved MP, as well as, remove the area east of E-470 from the area included in the Master Plan.
RESPONSE: References to original MP added
3P. Move the residential component of the MP description to the character section.
RESPONSE: Revised
3Q. Clarify the regulatory conflicts section to identify all requirements and whether they are being met (or not).
RESPONSE: Revised
3R. Revise the narrative for all categories to discuss the entire MP.
RESPONSE: Noted

Tab #8 Land Use Map, Matrix and Standard Notes

3S. Revise the Land Use Summary to remove the reference to Amendment 2. Add a footnote to identify what is included and/or excluded from the summary.
RESPONSE: Revised
3T. Add the Land Use Codes (found in the MP Manual) to identify the different types of residential uses that are proposed in individual planning areas. There can be more than one per planning area.
RESPONSE: Land use codes added
3U. Per the Land Use Codes, is there any Mixed Commercial uses proposed?
RESPONSE: PA-58 is mixed use. This has been moved to the MU-A section.
3V. Show access east of Tibet that is coordinated with the Windler development. We expect the two developments to have a connecting roadway.
RESPONSE: Access at 52nd shown.
3W. E-470 required a 660' setback from their ramp on 56th Avenue.
RESPONSE: Noted. Main access point off 56th not feasible as full movement. Main street shifted.
3X. There is additional work regarding the conceptual layout to meet the MU-R requirements. Additional comments will be forthcoming in the Urban Design Standards.
RESPONSE: Noted

Tab #9 Open Space

3Y. Discuss the improvements of the entire Master Plan area, not just Amendment 2.
RESPONSE: Noted
3Z. Show/label the "Grand Park Corridor" and which Planning Areas are included.
RESPONSE: Planning areas described for grand park corridor and added to exhibit

Tab #10 Urban Design Standards

3AA. Comments are forthcoming by separate cover.
RESPONSE: Comments on redlines addressed

Tab #11 Landscape Standards

3BB. Comments are forthcoming by separate cover.
RESPONSE: Comments on redlines addressed

Tab #12 Architecture Standards

3CC. Comments are forthcoming by separate cover.
RESPONSE: Comments on redlines addressed

Public Improvement Plan

3DD. Include the entire MP area in the discussion and all graphics.
RESPONSE: MP exhibits included in the PIP

REFERRAL COMMENTS FROM OTHER DEPARTMENTS AND AGENCIES

4. Civil Engineering (Kristin Tanabe / 303-739-7306 / ktanabe@auroragov.org / Comments in green)

Public Improvement Plan

4A. The Master Plan Amendment will not be approved by public works until the Master Drainage Amendment is approved.
RESPONSE: Acknowledged.

4B. This is a stand-alone document that does not incorporate or reference the previous improvements. At a minimum there should be text referring to the overall development and an overall exhibit showing the entirety of the new Green Valley Ranch (GVR) development. The other planning documents have treated this as an addition to the whole rather than a stand-alone document.
RESPONSE: Text has been added to the PIP discussing the Amendments with an associated exhibit.

4C. Are there any Planning Areas from the rest of GVR that may trigger the identified roadway improvements? 4D. The approved PIFA for GVR does not extend north of 52nd Avenue. See Page 8.
RESPONSE: The majority of the improvements required for the GVRE Amendment 1 area do not extend north of 52nd Avenue.

4E. Half roadway section(s) adjacent to Planning Areas are required to be constructed with the Planning Area. This PIP does not identify when full sections of roadway will be completed.
RESPONSE: Acknowledged and the planning area text has been updated.

4F. Public improvements need to be completed with the first (not final) CO/TCO.
RESPONSE: Acknowledged and the planning area text has been updated.

4G. Show improvements noted on Page 13.
RESPONSE: The exhibit has been updated accordingly.

4H. Clarify off-site reference on Map Sheet 2 and show/label future potential signalized intersections.
RESPONSE: The potential signals have been added to the exhibit.

4I. It would be helpful to have the exhibits in the order they are described in the narrative.
RESPONSE: The exhibit order has been updated, as requested.

4J. Proposed grading is not a part of the PIP. Please remove.
RESPONSE: Acknowledged and removed.

5. Traffic Engineering (Carl Harline / 303-739-7336 / charline@auroragov.org / Comments in amber)

Traffic Impact Study

5A. Update accesses to match current site plan.
RESPONSE: Updated Traffic Impact Study provided

5B. Provide additional detail on development of background traffic. Provide relevant sheets from referenced traffic studies in the appendix.
RESPONSE: Appendix added

5C. Several recommended signals along Tibet St will not meet minimum spacing of 660' as currently proposed. Ideally there will only be one signal along Tibet between 48th and 56th.
RESPONSE: Access spacing per current site plan

5D. Provide site trip distribution to/from the east on 56th.
RESPONSE: Trip distribution revised

5E. Provide trip generation rates.
RESPONSE: 11th Edition ITE rates and equations provided in revised report

5F. See comments throughout the report.
RESPONSE: Redline comments addressed.

Public Improvement Plan

5G. Coordinate access locations with the traffic study. There are several inconsistencies. 5H. Show signal locations per the traffic study.
RESPONSE: The access locations have been updated to meet the TIA

5H. Show signal locations per the traffic study.
RESPONSE: The signal locations have been included, as requested.

6. Fire / Life Safety (Will Polk / 303-739-7371 / wpolk@auroragov.org / Comments in blue)

Tab #8 Land Use Map and Matrix

6A. Revise Note 8 on Sheet 17 to include “separate and approved” points of access. The developer is responsible for two separate and approved points of access.
RESPONSE: Revised.

Public Improvement Plan

6B. Revise emergency access to "two separate and approved points of access." The looped water supply and two points of access must be accounted for in the overall development and each individual phase of the project.
RESPONSE: Updated, as requested.

6C. Each individual site plan submittal must identify phasing requirements to include adjacent infrastructure needs to meet minimum water supply and access requirements.
RESPONSE: Acknowledged and they will be based upon the PIP.

6D. Please explain how PA 53-55 will achieve two approved points of access.
RESPONSE: PA53-55 will achieve two points of access through the roadway network or through the adjacent planning areas and will be presented within the future site plans for those parcels. During the site plan process, the access points will be reviewed and approved.

6E. Clarify if main in 52nd Avenue will serve as a connection point creating a looped water supply.
RESPONSE: The water main within 52nd Avenue will be utilized to create a looped water supply.

6F. Subsequent site plans will need to provide a letter from Petroleum or Gas Company, on company letter head that reflects their setback requirements from the easement line and the actual underground pipe to the exterior wall of your proposed structures. The setback established by Petroleum or Gas Company must be included on the site plan as part of the General Notes.
RESPONSE: Acknowledged.

7. Aurora Water (Steve Dekoski / 303-739-7490 / sdekoski@auroragov.org / Comments in red)

Master Utility Study

7A. All segments of the second creek interceptor and Possum Gully sanitary main must be constructed to serve this development. No temporary lift station will be permitted. Please provide the updated flows for each sanitary sewer basin.
RESPONSE: Each sanitary basin was originally calculated with the expectation of outfalling to the future Possum Gully Trunk Main (at least the basins that are tributary to it). Additionally, we remain in discussions with downstream developments about the design and construction of this facility and will continue to work with those downstream groups to advance the facility. However, the Possum Gully Trunk Main is located in lands not owned or controlled by our project and to our knowledge there are no existing easements or rights-of-way that allow us to construct it independent of those downstream developments. Therefore, we have kept the temporary lift station option, however our desire and efforts will continue toward the construction of the Possum Gully main.

7B. Please provide circular worksheets at all pipe size changes to show pipe capacities.
RESPONSE: Pipe sizing calculations were provided at all design points to demonstrate the required pipe size, slope and the resulting depth and velocity.

7C. A temporary lift station is not an option to serve this site development. Construction of the Second Creek interceptor and Possum Gully sanitary sewer must be coordinated and constructed with neighboring developers.
RESPONSE: Please see comment above.

7D. All master utility exhibits must also be submitted as stand-alone plans with signature approval blocks included. 7E. See all comments on the redlines.
RESPONSE: Acknowledged and updated.

Public Improvement Plan

7F. A package lift station is not an option to serve this development. Construction of the Second Creek interceptor will be required.
RESPONSE: Please see comment response above.

8. Public Art (Roberta Bloom / 303-739-6747 / rbloom@auroragov.org)

8A. Please add planning area numbers to the map indicating potential public art sites. And, if possible, please provide additional timeline information for specific planning areas.
RESPONSE: Planning areas added. Timing is difficult on any commercial public art as this is developed separately from the residential portions.

9. PROS (Michelle Teller / 303-739-7437 / mteller@auroragov.org / Comments in mauve)

Tab #8 Land Use Map

9A. Please update the calculations based on current land dedication standards. This includes multifamily calculations of 2.5, single family at 2.65, and active adult at 1.58.
RESPONSE: Revised

9B. Please provide a trigger for outstanding community park cash in lieu collection.
RESPONSE: Community park fee has been paid.

Tab #9 Open Space

9C. Based on the updated calculations, the plan is deficient in open space. Please include the floodplain calculations to go toward this deficiency.
RESPONSE: Open space within floodplain included in OS calcs.

9D. Neighborhood Parks must have playgrounds included; although the Amendment 2 area is primarily active

adult, playgrounds will be required to meet service radius requirements.
RESPONSE: Instead of a playground, we prefer play elements such as swing benches. Playground in an active adult park maintained by the district does not fit the demographic.

9E. See redlines to address all comments and questions.
RESPONSE: Redlines addressed

10. E-470 Highway Authority Chuck Weiss / cweiss@e-470.com)

10A. E-470 submits the following comments:

- E-470 discourages residential uses adjacent to the roadway.
  RESPONSE: Noted. This is zoned R2 between 38th and 42nd and residential will remain.
- E-470 is not responsible for noise mitigation.
  RESPONSE: Noted. Noise wall will be provided as planned for in amendment 1 area
- E-470 requires a minimum 660' separation between the E-470 ramp and the nearest intersection.
  RESPONSE: Noted
- Occupying space for utility work, access, and any construction within the E-470 ROW and MUE (multi-use easement) is subject to and will be in compliance with the E-470 Public Highway Authority Permit Manual, April 2008, as may be amended from time to time (the "Permit Manual") and will require an E-470 Construction or Access Permit. The administration fee is $750.00 and $75,000 per acre for construction.
  RESPONSE: Noted
- A permit will be required from E-470 for any encroachment or disturbance to E-470 ROW prior to construction.
  RESPONSE: Noted
- Here is a link to our permit: https://www.e-470.com/Pages/WorkingWithUs/Permits.aspx
- The highway will be widened beginning in 2022 to 3 lanes in each direction with grading and structures widened to the ultimate width accommodating 4 lanes in each direction. There will also be improvements to the 56th Avenue interchange.
  RESPONSE: Noted. ARTA has purchased the additional ROW necessary for this down by 38th Ave.
- A 10' regional trail will be constructed along the outside of the highway as part of the widening project, please coordinate recreational improvements along the E-470 corridor with the City of Aurora.
  RESPONSE: Noted. Connection points will be provided to the MUE trail as necessary.
- Drainage improvements upstream and downstream of E-470 cross culverts will need to be coordinated between the City, MHFD, and E-470.
  RESPONSE: Noted
- Any disturbance within E-470 ROW/MUE will need to be revegetated with an E-470 approved seed mix unless otherwise noted.
  RESPONSE: Noted
- Any fencing disturbed will need to be replaced meeting E-470 specifications.
  RESPONSE: Noted
- Any survey monuments disturbed will need to be replaced meeting E-470 specifications.
  RESPONSE: Noted
- A comment/response document would be helpful to track the revisions to each submittal.
  RESPONSE: Responses provided
- Additional comments will be issued as design progresses.
  RESPONSE: Noted

11. Aurora Public Schools / Josh Hensley / 303-365-7812 / jdhensley@aurorak12.org)

11A. The total school land requirement for the non-active adult portion of the Green Valley Ranch East Master Plan Amendment is approximately 28 acres. The master plan includes an 18 acre school site. This school site

is sufficient for the district to construct a P-8 school with capacity to serve the Green Valley Ranch East community. Aurora Public Schools agreed to apply the school dedication requirement for the purposes of calculating cash-in-lieu of land as site plans are approved. The district will request cash-in-lieu of land when the balance of the obligation from approved site plans exceeds 18 acres. Cash-in-lieu of land is required to serve high school age students at a district location outside of Green Valley Ranch.
RESPONSE: Noted

AURORA PUBLIC SCHOOLS - STUDENT YIELD
3/16/2022

GVRE - Master Plan Amndt NO 2 (DA-1662-25) - Non-Active Adult

Dwelling Type	Units	Yield Ratio	Student Yield
SFD	1,647	0.7	1,153
MF-LOW	103	0.3	31
MF-HIGH	192	0.145	28
TOTAL	1,942		1,212

	ELEMENTARY		MIDDLE SCHOOL		K-8 TOTAL	HIGH SCHOOL		K-12
YIELD	RATIO	STUDENTS	RATIO	STUDENTS	STUDENTS	RATIO	STUDENTS	TOTAL
SF	0.34	560	0.16	264	824	0.2	329	1,153
MF-LOW	0.17	18	0.08	8	26	0.05	5	31
MF-HIGH	0.075	14	0.04	8	22	0.03	6	28
TOTAL		592		279	871		340	1,212

SCHOOL TYPE	STUDENT YIELD	ACRES PER CHILD	ACRES REQUIRED
ELEMENTARY	592	0.0175	10.3581
MIDDLE	279	0.025	6.9860
HIGH	340	0.032	10.8899
TOTAL	1,212		28.2340

PA-58 Mixed Use calculated as MF-Low

12. Xcel Energy / Donna George / 303-571-3306 / donna.l.george@xcelenergy.com
12A. See attached comment letter. Comments added below for responses.

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the comprehensive plan amendment, zoning plan amendment, master plan amendment documentation **for Green Valley Master Plan A2**. Please be aware PSCo has an existing high-pressure natural gas transmission pipeline and associated land rights along Picadilly Road and note that an engineering review may be necessary. Any activity including grading, proposed landscaping, erosion control or similar activities involving our existing right-of-way will require Public Service Company approval. Encroachments across PSCo's easements must be reviewed for safety standards, operational and maintenance clearances, liability issues, and acknowledged with a Public Service Company License Agreement to be executed with the property owner. PSCo is requesting that, prior to any final approval of the amendments, it is the responsibility of the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement (upload all files in PDF format) at https://www.xcelenergy.com/encroachment_application (click *Colorado* if necessary). An engineer will then be in contact to request specific plan sheets.

RESPONSE: Noted

For future planning and to ensure that adequate utility easements are available within this development and per state statutes, PSCo requests the following utility easements *within each single-family residential lot*:

- 6-feet wide for natural gas facilities with a minimum 5-foot clearance from any

structure and where there is drivable pavement with space for service truck access (8-feet wide, 6- inches thick) with plowing in snowy conditions
RESPONSE: Noted. 6' easements provided for gas along the street.

- 8-feet wide for electric facilities including space for transformers, pedestals, and cabling
RESPONSE: 8' easements provided along the back of lots for electric.

- If natural gas and electric are within the same trench, a 10-foot-wide utility easement is required, not to overlap any wet utility easement
RESPONSE: Noted

- Bear in mind that these utility easements must have 5-feet of separation from gravity-fed wet utilities (typically sewer – going out of house) and 10-feet of separation from forced- fed water utilities (typically water – going into house)
RESPONSE: Noted

For easements within each *retail/commercial* lot, 10-foot-wide perimeter easements will be necessary.
RESPONSE: Noted. These areas have not been determined yet.
As the development areas progress, the property owner/developer/contractor must complete the application process for any new natural gas or electric service via xcelenergy.com/InstallAndConnect RESPONSE: Noted

13. Adams County Department of Planning and Development (developmentsubmittals@adcogov.org)
13A. Thank you for including Adams County in the review for Project Number: 1596069. We have no comment on the subject referral. RESPONSE: Noted

14. DEN Planning + Design (Lisa Nguyen / lisa.nguyen@flydenver.com)
14A. See attached comment letter.

Denver International Airport received your referral letter and we appreciate the opportunity to comment on the proposal. DEN provides the following comments:

- The property is located south of DEN, within the 55 DNL and will be subject to overflights. A White Paper on Noise DNL is attached, for reference.
RESPONSE: Noted

- The proposed development is in the **'10,000' Critical Area for Wildlife-Attractant' Separation Area** for the final build-out of future DEN Runways, as defined by the Federal Aviation Administration (FAA) and within. The USDA Wildlife Biologist assigned to DEN, assist in implementing DEN's Wildlife Hazard Management Plan (Benjamin.J.Massey@usda.gov). They have requested coordination as this project progresses. USDA and DEN will provide assistance with the requirements outlined in the current version of FAA Advisory Circular 150/5200- 33C (see attached). DEN also requests that the landscape plan include maintenance of trees and grasses to reduce attractants for wildlife such as raptor species, blackbirds/starlings, and geese. Fruit-producing trees and shrubs should be avoided. Water quality ponds/detention structures must be designed to meet a 40-hour drain time following a 100-year event.
RESPONSE: Noted. We have been working to meet these requirements on current development.

- The site is found within/under the navigable airspace associated with DEN, as promulgated and

regulated by the Federal Aviation Administration (FAA) under 14 CFR Part 77, Objects Affecting the Navigable Airspace. Based on Part 77 and the development site location, the proponent is required to file notice with the FAA, via the FAA Form 7460-1 process (Notice of Proposed Construction or Alteration), of any structure or temporary construction equipment (e.g., cranes) that penetrate Part 77 surfaces. The FAA website from which the need for the 7460 process can be determined ("Notice Criteria Tool") and/or the filing can be initiated is: https://oeaaa.faa.gov/oeaaa/external/portal.jsp.
RESPONSE: Noted

15. DEN CCD & DOTI

Wastewater:
As the downstream entity, Denver will need to know if temporary ponds will be constructed or the ultimate ponds for the Blue Grama and Second Creek drainage basins. Please update study upon confirmation with MHFD and the downstream property owners. RESPONSE: The temporary vs. ultimate ponds will not be known until development within the major basins occurs. If temporary facilities occur, they will be removed with the development of the future, downstream, regional facilities.

Transportation:
1. From Google, looks like there is a goat path east of Piccadilly at Maxwell and at 51st, doesn't seem like these paths will be maintained with the development. If they will be maintained, they should be analyzed for pedestrian crossing improvements. RESPONSE: A Private street into the active adult community is provided for at the 51st Street intersection. This access is gated. Sidewalks are provided at this access as well. Maxwell goat path will likely be removed with the development of commercial in that area. There is a potential access point here as well.

2. Could access at Maxwell and Piccadilly be ¾ movement or is it RIRO due to the signal proximity? RESPONSE: This intersection will need to be restricted to right turns only due to the proximity to 56th Avenue.

3. There is a CIP project for 56th Ave widening, it includes a signal at 56th & Piccadilly (design should accommodate what this study approves). RESPONSE: Noted.

4. Denver staff is not responsible for monitoring traffic on Piccadilly to determine the timing of the signal installation. How can we ensure that the developer is reaching out to DPS for potential safety improvements at Florida Pitt Waller School per page 29? RESPONSE: Potential safety improvements in this area can be made a part of the developer agreement.

5. Recommended storage lengths are long, but it is up to Aurora to approve them. RESPONSE: Noted.

END OF RESPONSES.

1

DEVELOPMENT APPLICATION

- Letter of Introduction
- Project Team

January 27, 2022

Debbie Bickmire
City of Aurora
Planning and Development Services Dept
15151 E. Alameda Parkway, Suite 2300
Aurora, CO 80012

mention rezone and comp plan amendment. refer to separate exhibits.

Revised

RE: Green Valley Master Plan Amendment 2 – 1st Formal Submittal

Dear Ms. Bickmire,

On behalf of Oakwood Homes, we are pleased to submit our Master Plan (MP) Amendment for the City of Aurora's review. We have made a concerted and diligent effort to respond to the comments from our preapplication meeting held on July 22, 2021.

As you kno rephrase. MP was approved for xx acres. Amendment 1 modified xy acres, but nothing else in the MP. Amendment 2 is for 300 acres at --- location. The remaining area of the approved MP, located east of E-470... has been removed and is now being developed as a separate MP. in November of 2008. This A 0 know as Amendme ing land original 2,500 acre MP approved back in 2008. ~~The only remaining portions of the original 2,500 Ac. not controlled by Oakwood Homes is Aurora Highlands to the east currently in development~~.

Revised

revision to the MP. this was in the approved MP.

Revised

This Amendment being submitted is for the ~~addition~~ of approximately 307 acres north and east of Amendment 1. When combined with the approved Amendment 1 area, this brings the total acreage to approximately 885 acres within this Master Plan. This is an amendment to the approved MP Amendment 1 and not a brand-new MP. The intent of this amendment is to provide Urban Design, Landscape and Architectural Standards for Commercial/Retail that were not included in the first Amendment as well as to revise land use maps to include new areas as well as revise previous land use areas to better align with current site plans.

This amendment includes changes to the following:

- Existing Conditions ~~for additional acreage~~
- Land Use, Open Space, Circulation and Neighborhood Plans
- Revisions to Amendment 1 area to reflect current conditions ~~more accurately~~
- Urban Design and Landscape Standards for Commercial/Retail
- Public Art ~~for additional acreage~~
- Commercial/Retail & Multifamily Architectural standards
- Public Improvements Plan ~~for additional acreage~~
- Master Drainage Report ~~for additional acreage~~
- Master Utility Report ~~for additional acreage~~
- Master Transportation Study ~~for additional acreage~~

Revised

The Landscape, Architecture and Urban Design Standards for residential are not

changing within this Am no. Revised The approved standards will apply.

are you keeping Ranch in the title? TYP

Green Valley ~~Amendment 2~~ Vision

Green Valley is envisioned as comprehensive planned community integrated with places to live, learn and play. It is bounded by the 56th Avenue and 38th Avenue to the north and south, and Picadilly Road and E-470 to the west and east respectively. The total site area of the proposed amendment community encompasses approximately 885 acres. It will include an interconnected series of neighborhoods served by nearby Neighborhood Activity Centers, schools, parks, open space, and trails.

Further amenities to the City will include approximately 21.5 acres of neighborhood parks, and over 70.7 acres of open space, greenbelts, and trails. The site identifies the potential for one Preschool - 8th grade school, one fire station site on a 5.8 acre site owned by the City of Aurora, located south of 48th Ave. ~~and north of the existing lift station~~.

Revised

We are excited about the opportunity to continue work in this rapidly changing E-470 Corridor. It is our intent to provide the framework to expand upon the successful Green Valley Ranch master-planned community and create long lasting value, which is an important component in implementing the City of Aurora's future for this area.

Thank you for your assistance in processing and reviewing this application. We trust that you will find this application complete in its response to your previous comments. Please contact us at your earliest convenience if you have any questions or need additional information regarding this submittal. We look forward to your review of the enclosed materials.

Sincerely,

Layla Rosales

PROJECT TEAM

APPLICANT
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Contacts: Dave Carro

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LANDSCAPE ARCHITECTURE
Terracina Design
10200 E. Girard Ave.
Suite A-314
Denver, CO 80231
(303) 632-8867
Contact: Layla Rosales

CIVIL ENGEREERING/UTILITY ANALYSIS
Dewberry
8100 East Maplewood Ave., Ste. 150
Greenwood Village, Co 80111
(720) 386-5601
Contacts: Jason Margraf

TRAFFIC
Felsburg Holt & Ullevig, Inc.
6300 S. Syracuse Way
Centennial, CO 80111
(303) 721-1440
Contact: Charles Buck

3

CONTEXT MAP

- Context Map Narrative
- Regional Location Map
- Context Map

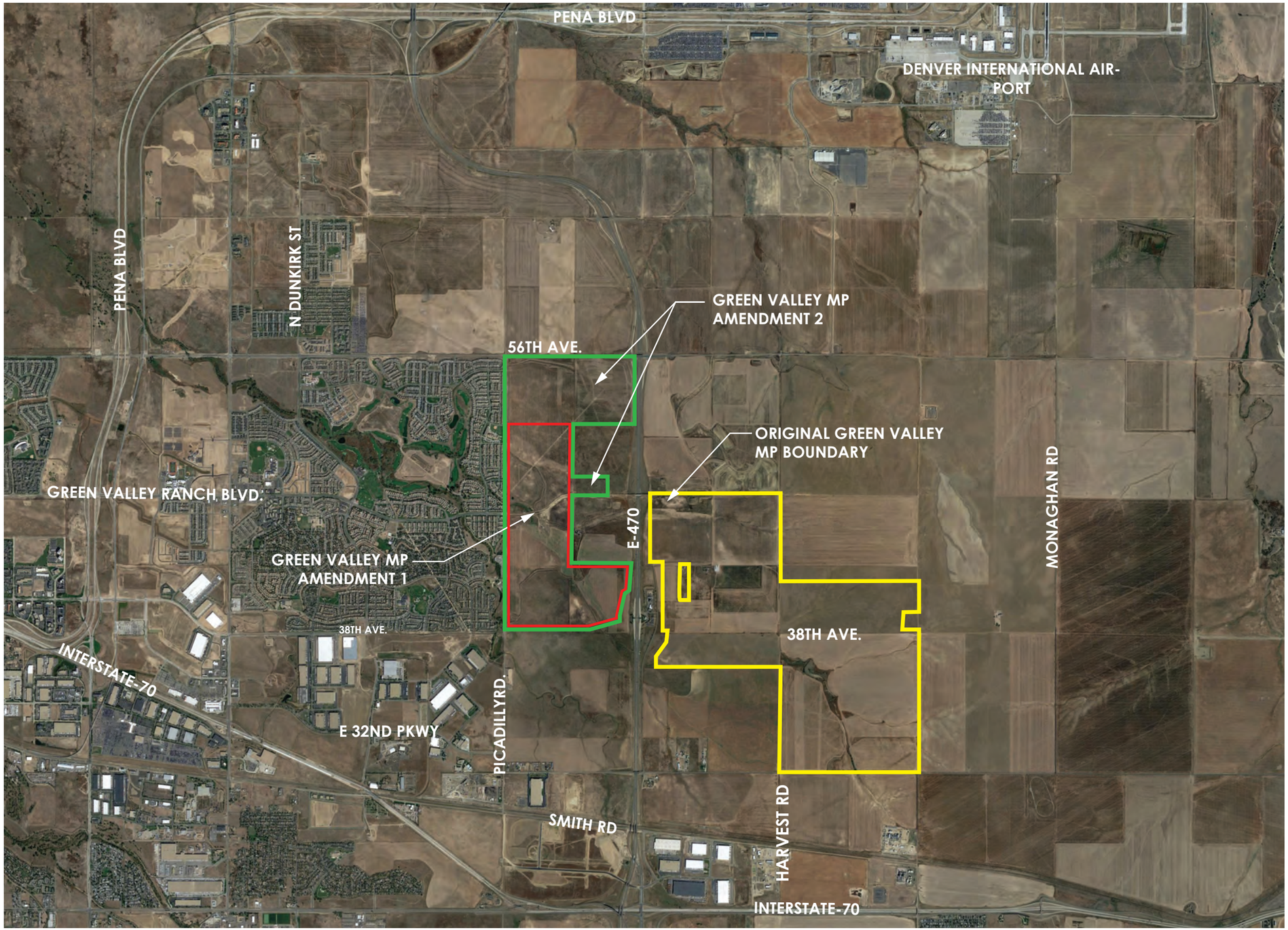
3.1 CONTEXT MAP

Green Valley Amendment 2 is a 885 acre portion of the approved 2,510 acre Green Valley MP. Amendment 2 is located between 56th Ave. to the North, and 38th Ave to the South, Picadilly Road to the West and E-470 to the East. The location of Amendment 2 in relation to the Green Valley MP can be found in Tabs 3.2 and 3.3, as well as Tab 4 – Site Analysis.

The terrain is consistent with the characteristics of the high plains prairie with rolling hills, shallow drainages and expansive views of the mountains to the west. The regional location of the site is shown on Tab 3.2.

The site has been farmed for a number of years and contains little vegetation. One drainage channel crosses the site diagonally from southeast to northwest. A more detailed description of the site's characteristics may be found in Tab 4 – Site Analysis. The Context Map, Tab 3.3, shows existing uses, structures, streets, and parks and open space within ½ mile of the site's boundary.

TAB 3.2



GREEN VALLEY MP AMENDMENT 1 BOUNDARY

GREEN VALLEY MP AMENDMENT 2 BOUNDARY

ORIGINAL GREEN VALLEY MP BOUNDARY (No longer a part)

Revised

Sheet Title:

REGIONAL LOCATION MAP

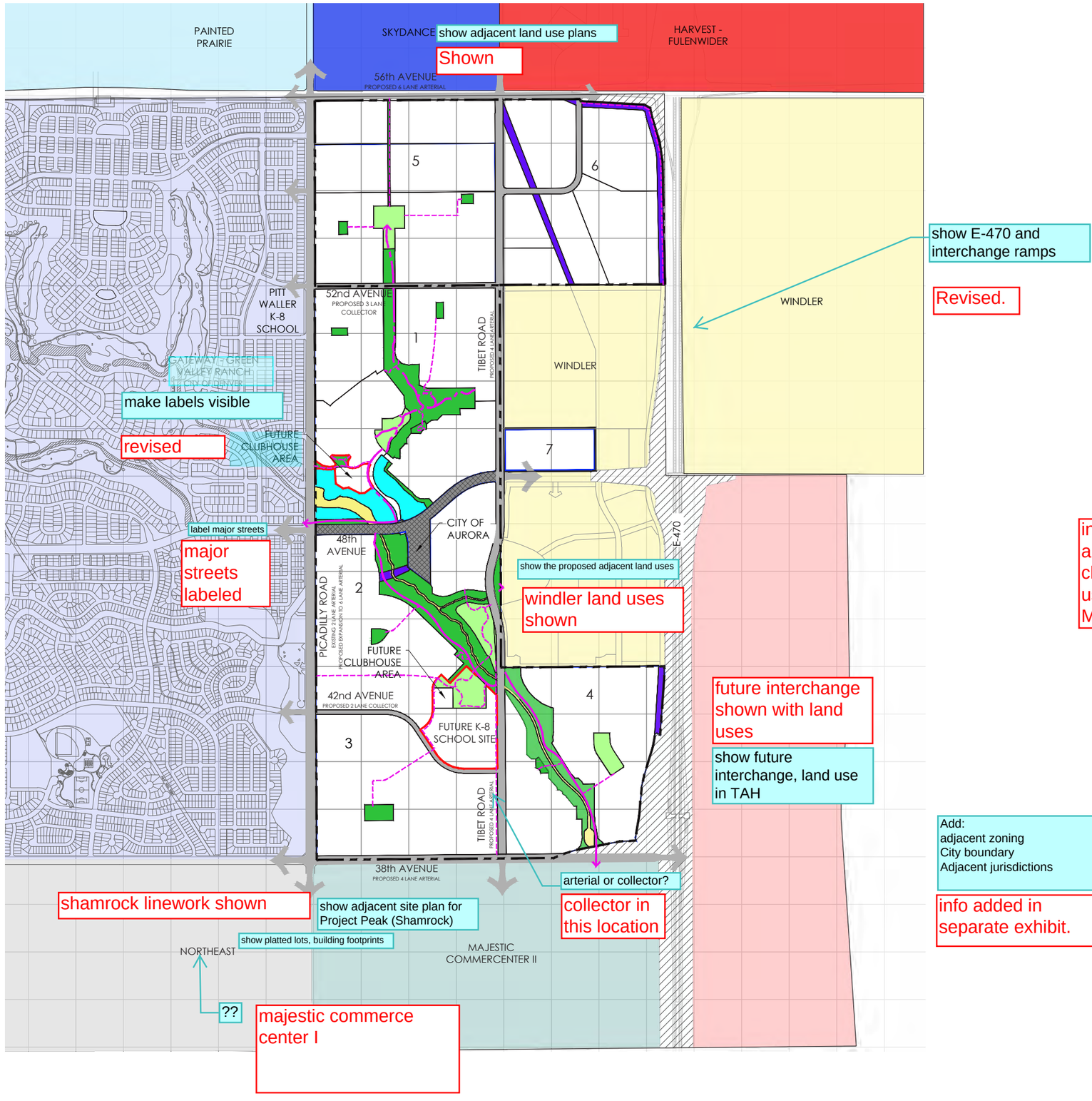
Context Maps
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 3.3



Sheet Title:

CONTEXT MAP

Context Maps
Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

4

SITE ANALYSIS

- Form A
- Site Analysis Narrative
- Site Analysis Maps

4.1 Site Analysis Narrative: Form A

1. General Site Character

Briefly describe the existing location and physical character of your site. What are its most important and distinguishing features?

The Site

The approved Green Valley MP is a 2,510 acre piece of land located on either side of the E-470 Toll way between 56th Avenue on the north and 26th Avenue on the south; it runs between Picadilly Road on the west to Powhaton Road on the east. The site is located three miles south of the Denver International Airport and one mile north of Interstate 70.

Green Valley Amendment 2 is a 885 acre portion of the approved 2,510 acre Green Valley MP. Amendment 2 is located between 56thAve. to the North, and 38th Ave to the South, Picadilly road to the West and E-470 to the East. The location of Amendment 2 in relation to the Green Valley MP can be found in Tab 3.2. The following analysis of the site describes the Green Valley Amendment 2. The remaining portions of the original MP are now part of the neighboring Aurora Highlands

narrative revised

revise this section to be more specific about the removal of ALL of the MP area east of E-470. Reference map in Tab 3

Existing Land Use

1 and 2 --

Revised

The approved Amendment 1 area is currently under construction.

acreage, types of land uses? location...

info added

Surrounding Land Uses

of Picadilly Rd

Revised

Surrounding land uses include Green Valley Ranch in the City and County of Denver to the west which encompasses single-family residences, parks, open space, a new public golf course, and a number of schools. The schools within Green Valley Ranch in Denver include two elementary, a K-8 Charter School and a middle school, which includes the new 21st Century High Technology Academy. Additional planned facilities include two additional K-8 schools, and a new high school. An Aurora/Denver joint school facilities agreement is in the formative stage which would allow Aurora-based [illegible] access to Denver schools in close proximity to their homes.

is this true?

no

include discussion of the land uses proximal to the MP

use streets/ markers to indicate locations

Revised

the northwest is Painted Prairie MP. North of 56th is Skydance [illegible] Mile-Fulenwider MP's. To the south is Majestic Commerce Cente[illegible] fourteen acre, out parcel, owned by the City of Aurora, exists within the site. It includes 48th Ave, a lift station, and a future fire station. To the east is the

Need to find MP for these developments

of Tibet

Revised

Windler MP and Aurora Highlands MP.

include discussion of the land uses proximal to the MP

Revised

not there

existing and surrounding land used shown on those tabs

ntext Map and Zoning Subarea Map, Tabs 3.2 and 3.3 show existing and
d land uses, zoning, streets, and parks and open space within ½ mile of
s perimeter.

Topography and Landform

The landform and topography consists of rolling hills, shallow drainages and grass-lined swales, and plowed fields. Elevations range between approximately 5410 ft. and 5470 ft. above mean sea level for a total relief of 60 feet.

Ten-foot contours are shown on Tab 4.3, "Waterbodies Map".

Slopes across the site are predominantly less than 4.99%. Slope analysis shows:

% Site Area	% Slope
87.0	00-4.99
10.2	05-7.99
01.8	08-11.99
01.0	12-100.0

A. Water Features

A drainage ditch runs from the southeast portion of the property and drains into Tributary T, an intermittent stream west of Picadilly Road that is tributary to First Creek.

Another minor drainage crosses east to west, south of 48th Avenue; this drainage also carries water intermittently.

These water bodies are shown on Tab 4.3, "Waterbodies Map".

B. Floodplains

There are multiple Special Flood Hazard Areas (SFHA) on the site. Near 38th Avenue at Picadilly Road where First Creek crosses the southwest corner of T3S R66W S 24, the floodplain is classified as Zone AE - Areas of 100-year flood with Base Flow Elevation (BFE) and Zone A – Areas of 100-year flood without BFE. There is also FEMA regulated floodplain, classified as Zone AE, along Tributary T. The FEMA floodplain will be altered for First Creek. The Tributary T floodplain will be revised and enhanced through a naturalized channel design. Both floodplains are shown on the Waterbodies Map- Tab 4.3.

C. Springs

isn't there a spring by the AA clubhouse?

there is a wellhead near the clubhouse but no spring

No springs have been identified on the property.

D. Riparian Areas

There are no true riparian zones along the drainage. There is no flowing water or springs along the drainage, and no channels have developed.

The understory is an overgrazed pasture with no bushes or willows.

E. Water Table

The water table will be determined during further site analysis and assessment.

Natural or Geologic Hazard Areas

The following generalized soil and geologic information was obtained from the Colorado Geological Survey and is shown on Tab 4.5 entitled "Soils Map."

A. Soils

The soils found on the site include "Low Swell Potential" found along the site's drainages. This category includes several bedrock formations and many surficial deposits. The thickness of the surficial deposits may be variable, therefore, bedrock with a higher swell potential may locally be less than 10' below the surface. "Windblown Sand and Silt" is found on the balance of the site. Although this category generally has low swell potential, the upper 6" to 12" may locally have moderate swell potential. Windblown material may be subject to severe settlement or hydro compaction when water is allowed to saturate the deposits. The thickness of windblown material may be very variable; therefore bedrock with higher swell potential may be locally less than 10' below the surface.

(Source: "Potentially Swelling Soil and Rock on the Front Range Urban Corridor, Colorado" Colorado Geological Survey, 1973, 1974.

B. Geology

The Geologic Map of Colorado identifies the following on the site:

1. Tkdi - Denver Formation or lower part of Dawson Arkose on the Northeastern portion of the site which includes Arkasis sandstone, shale, mudstone, conglomerate, and local coal beds.

2. Qe - Eolian deposits on the southeastern portion of the site which includes dune sand and silt and Peoria Loess.

(Source: "Geologic Map of Colorado," Colorado Geological Survey, 1979).

No geologic hazards have been identified on the site to date.

Existing Vegetation and Black Forest Trees

The Colorado Division of Wildlife provided the following generalized information regarding vegetation. This site is shown as containing Midgrass Prairie throughout the site area. This is shown on Tab 4.9, "Natural Features". (Source: "Gap Vegetation Classification for Adams, Arapahoe, and Denver Counties" Colorado Division of Wildlife, Sept., 1998).

The site is typical of Midgrass Prairie that has been farmed and grazed in the past. Trees are few and isolated in drainages. In the northwestern corner of Section 24, along the Tributary T drainage, some small Cottonwoods and Peach Willows may be found.

There are virtually no understory plants and grasses are sparse. The site receives little moisture. No Ponderosa Pines, regulated by the Black Forest Tree Preservation Ordinance, exist on this site as it is north of the Black Forest limits, which is approximately along Smoky Hill Road.

Existing Utilities is the ALTA current? created 12/15/2021

An Alta Survey has been prepared and is attached hereto which identifies existing easements on the site. See Tab 4.2- Existing Easements Plan.

Airport Overlay District

The entire site is outside of the 60 LDN Noise Contour Line as shown on the E-470 Corridor Land Use Study. The active adult portion of the Green Valley Amendment 2 site falls within the Airport Influence District and Noise Impact Boundary Area established for the Denver International Airport by the City of Aurora. This would require air conditioning and noise insulation for 25dba for all residential uses. These boundaries are shown on Tab 4.4. This will also require compliance with height restrictions which do not intrude into the Federal Aviation Administration Part 77 Surfaces as well as conveyance of an aviation and hazard easement to the City and Airport for right-of-way for unobstructed passage of aircraft above the property which will waive any right or cause of action against the City and the airport arising from noise, vibrations, fumes, dust, fuel particles and other effects caused by aircraft

and airport operations. The applicant will also be required to provide notice to prospective purchasers of being within the Airport Influence District.

Significant Views

include Amendment 1 area too

Revised

An on-site analysis was conducted to identify significant views. No significant views are located within the Amendment 2 boundary.

Vegetation / Drainage

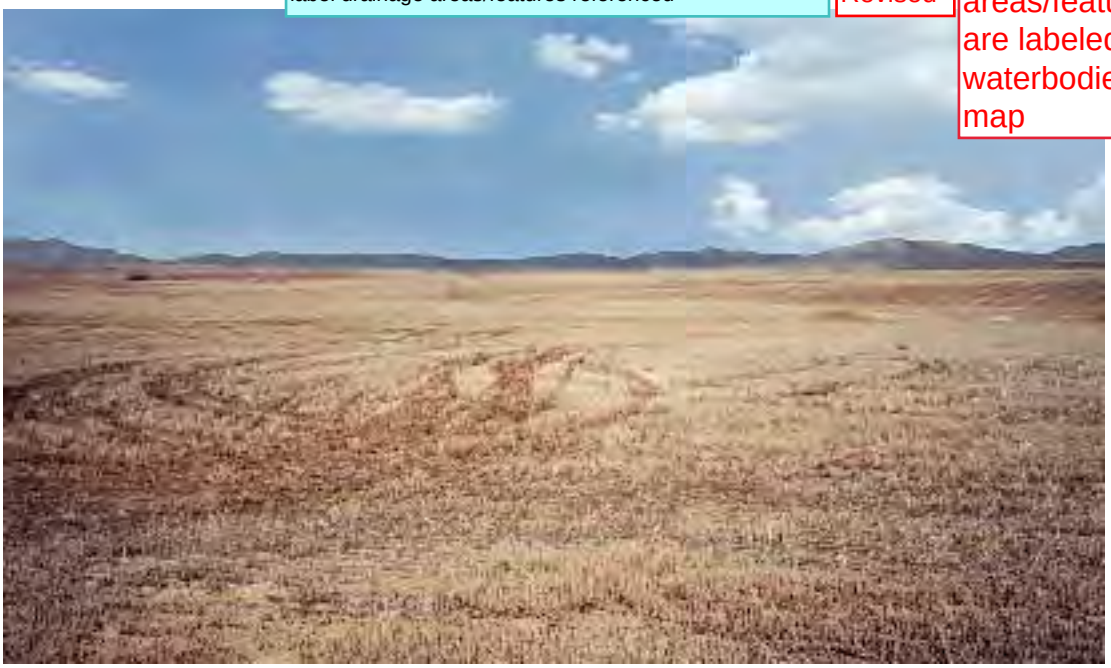
need better orientation/location

The topog Additional information added slopes down across these properties from the south and the northwest (lower), eventually collecting into a main drainage, Tributary T. Tributary T is an intermittent stream west of Picadilly Road that is tributary to First Creek. Past ditch and water control grading for farming has altered the natural drainage patterns on the property. The drainage areas from the plains to the east of the properties are not large enough to provide for water flow in the drainage ways, therefore, there are no defined channels and water flows only after a major storm. Most of the drainages are relatively flat, and the slow water flow leaves no discernible channel. For this reason, these drainages may not to be considered waters of the US. Generally, the sites do not have enough surface water flow to maintain wetlands along the drainage and on flatter bottom areas.

label drainage areas/features referenced

Revised

Drainage areas/features are labeled in waterbodies map



Southeast corner looking west towards Front Range

38th and E-470 or ?

Revised

Existing Structures:

There are no structures present on the site.

are you referencing the entire site? Briefly describe current areas of construction

Revised to include current filings under construction

Wildlife:

The site has been farmed and grazed so there is limited habitat for wildlife; however, the following generalized wildlife habitat information was obtained from the Colorado Division of Wildlife:

The entire site is the overall range for goose, duck, pronghorn antelope, and mule deer and within the winter range for geese. The southeastern part of the site is also within the foraging range for geese. This information is shown on Tab 4.7 entitled "Natural Features".

(Source: "Natural Diversity Information Source - Significant Wildlife Habitat Maps - Adams, Arapahoe, and Denver Counties, Colorado." Colorado Division of Wildlife, September, 1998).

Wildlife Species:

Common wildlife species observed or expected on the property are typical open plains species. Raptors (northern harrier, red-tailed hawk, American kestrel) were observed on the site, but no active nests were observed or noted. No deer or pronghorn were observed, and were not expected due to the open agricultural fields, lack of cover, and the barrier to migration from E-470. We evaluated the area up-gradient from Picadilly Road along Tributary T for potential federal or state listed sensitive species habitat. No potential habitat exists on the properties for the Preble's meadow jumping mouse (Zapus hudsonius preblei), currently listed as threatened under the Endangered Species Act. Preble's jumping mouse requires habitat with perennial streams and a good cover of shrubs. As already stated, this type of habitat is not present on these properties. Also no habitat for the Ute ladies-tresses orchid (Spiranthes diluvialis) was observed on the property. Farming practices have removed the native vegetation and wet meadow habitat normally associated with the orchid. We are recommending that no surveys for these species are needed due to lack of habitat.

The Colorado Division of Wildlife has mapped western portions of this property as Midgrass Prairie. This was probably one of the former types of vegetation present; however no native undisturbed midgrass or shortgrass prairie remains due to current and former land use. Some of the lower drainage swales could have supported midgrass prairie, however the upland slopes and broad ridges were most likely shortgrass prairie dominated by blue grama (Bouteloua gracilis), buffalo grass (Buchloe dactyloides), and other short grasses, and dryland forbs. We observed no undisturbed native prairie on any portion of the property.

There is the potential for restoration of midgrass and shortgrass prairie in some areas of the property, however most prairie soils have been disturbed and would require planting and maintenance.

The Colorado Division of Wildlife has mapped wildlife habitat for goose, duck pronghorn antelope (Antilocapra americana), and mule deer (Odocoileus hemionus) in portions of Section 13 and 24 west of E-470. At the present time there is a very little goose and duck habitat due to lack of water and suitable vegetation. There is a lack of cover and forage for mule deer, and use of this property as habitat is limited. Pronghorn may have occupied some of the area in the past, but roads and increasing traffic also limit their current use of the property as habitat. Mule deer are still common on the Rocky Mountain Arsenal to the west and have been observed on the Green Valley Ranch Golf Course west of Picadilly Road.

Proposed Land Uses

The approved MP Amendment 1 area is within the R-2 zone district. The additional acreage being added as part of Amendment 2 is currently mixed-use MU-A and MU-R. A Zone Map Amendment is concurrently being proposed with this MP Amendment to create R-2 within the MU-A along with changing a portion of MU-R to MU-A.

2. Site Assets

Based on your site analysis, what are your site's most important physical assets and potential amenities? Consider location, relationship to existing and proposed transportation networks, scenic beauty, recreation potential, special natural resources, etc.

- There are several, low-flow drainages that cross the site; these flow from the south and east to the northwest into Tributary T, an intermittent stream west of Picadilly Road.

- The landform and topography consists of rolling hills; there are no major ridge lines or major swales.

- The site has very few natural features, other than swales.

Historical/Archeological

- The Colorado Historical Society Office of Archaeology and Historic Preservation conducted a search of the Colorado Inventory of

Cultural Resources; a number of items have been inventoried on the site, but none were found have significant historic or archaeological value. The Colorado Historical Society search of the "Inventory of Cultural Resources" indicated this property was not eligible for designation as a historic site because of the severely dilapidated condition of the buildings and lack of unique architectural qualities.

Existing Utilities

- There are PSCo easements running diagonally thru the site. These are shown on the Existing Easement Exhibits.

be more specific about the location.

3. Site Restrictions

Description for CIG esmt added. Revised

Based on your site analysis, what are the physical restrictions and site characteristics that may pose a challenge to development? Consider location, nature of surrounding conditions, environmental pollution, lack of existing infrastructure, steep slopes, etc.

reference PSCo easements. They are a design constraint

Revised

- As indicated above, the site has few physical constraints, other than the existence of E- 470, the proposed and existing arterials, and the low-flow drainages across the site. The site is predominantly developable.
- Infrastructure will need to be brought to serve the site from to the west and south as the project progresses in a phased manner.

needs context.

Revised

Existing/Planned Streets

- The E-470 Tollway is complete to the east of the site and includes an interchange at 56th Avenue, with an additional interchange planned at 38th Avenue. Picadilly Road consist of a paved two-lane roadway. 48th and 38th Avenues are in various stages of construction between Picadilly Road and Tibet Road.

- 56th Avenue, 48th Avenue and Picadilly Road are planned as six-lane Principal Arterials, and 38th is planned as a four-lane Minor Arterial consistent with the City of Aurora Northeast Area Transportation Study. The arterials will require improvements to City standards with development phasing as applied in accordance with this MP.

- 52nd Avenue is planned as three-lane collector. Tibet Road is planned as a three lane collector between 38th Ave. and 48th Ave., then a 4 lane minor arterial between 48th Ave and 56th Ave. 42nd Avenue is planned as a two-lane collector.

4. Design Response to Site Assets

How does your proposed development plan take advantage of all the site assets identified by your analysis?

- The Green Valley MP Amendment Land Use Plan was designed using the natural features and terrain as its foundation; it contains open space corridors along the primary natural features and drainages.

- The intermittent stream corridors/drainages may be preserved within an open space corridor and will be dedicated to the City of Aurora as Open Space. Numerous parks are planned along these open space corridors. These corridors are planned to connect to off-site open space areas at First Creek and Tributary T.

5. Design Response to Site Challenges

How does your development plan deal with the site's development constraints as identified above? Have you considered alternate strategies to deal with these problems? If so, why did you select the particular approach shown on your development plan?

- As noted above, the plan was designed to preserve the natural features to the extent possible.

Highway and Airport Noise

Generous setbacks will be utilized along the edges of the E-470 Corridor. In residential areas, where acoustical studies indicate the need for noise mitigation, a fence, wall, or berm or combination thereof will be installed consistent with the City of Aurora requirements. As previously discussed, all development within the Noise Impact Boundary will be required to achieve an interior noise level reduction of 25 db in A-weighted levels. Noise reduction measures shall include central air conditioning or the equivalent.

Grading

Grading will follow the natural contours to the extent possible and will be limited to the extent possible in the stream/drainage areas.

what considerations were there regarding the gas easements?

No structures will be allowed over gas easements. Grading over these gas lines will be kept at a minimum.

6. Development Impacts on Existing Site Conditions

What are the impacts of your project on the existing character of the site and its immediate surroundings? What improvements will your development make? How have any impacts been mitigated? Consider impacts on environmental quality, aesthetic appearance, existing open space and natural features, physical infrastructure, etc.

- The construction of the Green Valley MP Amendment will change the existing rural/agricultural character of the land to that of a planned community. The impacts of this change will be mitigated by the preservation of a generous amount of open space, parks, and trails, and the design of the community as a pedestrian-friendly development that has a combination of housing, park and recreational uses.
- With regard to infrastructure, the development of the Green Valley MP Amendment, which lies within the City of Aurora Water Zones 3 and 4, will start in Section 13 and work south. Water will be looped from the existing 12-inch line along E-470 to the existing 24-inch line in Picadilly Road and 48th Avenue.
- The Site is located within three separate tributaries as ~~previously~~ identified within the Green Valley Ranch East Master Utility Report. That Report created three basins to correspond with those tributaries, as follows: Basin 310-1 which is tributary to the Second Creek Lift Station approximately two miles downstream of the Site. Basin 310-2 which is tributary to the Painted Prairie Development, and Basin 310-3 which is tributary to the First Creek lift station within the Green Valley Ranch East subdivision. Due to serviceability issues within the Painted Prairie Development, Aurora Water has required downstream development within Sky Dance, Fullenwider, and High Point to accommodate the effluent from th understood that those downstream developments are aware of this requirement and will accommodate the Aurora 310 parcel effluent Please refer to the Appendix for correspondence within Aurora Wat this topic. Consistent with this direction, Fullenwider has designed Phase 1 of the 20-inch sanitary trunk main from the Second Creek lift station up Possum Gully to the E-470. Phase I is under construction at the time of this report. Future Phases of this trunk main will be extended west under E-470 and generally along the 60th Avenue and Tibet Road alignments to the Tibet Road and 56th Avenue intersection. This extension(s) will occur by others as a portion of downstream development or Oakwood will endeavor to make this extension to service the Aurora 310 parcel and will implement a reimbursement agreement or private de agreement to share the costs with those that benefit. Ple additional discussion within the Sanitary System Plan section.

1 and/or 2?

Revised

only one L TYP

Revised

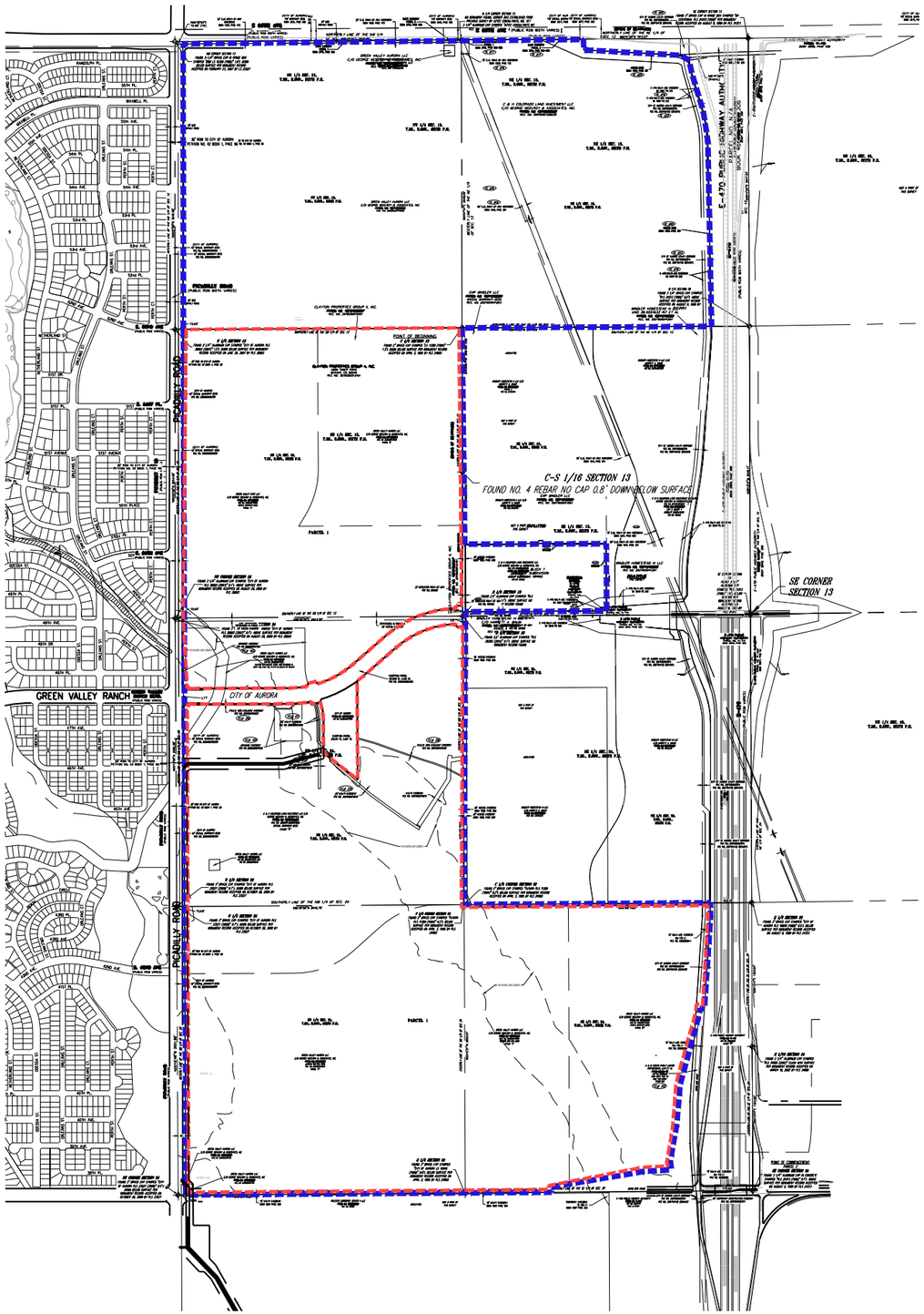
Is this an old reference or are they still referenced as "310"

the E-470 what?

Revised

is this a reference to the MUS?

TAB 4.2



add major street labels or make them visible for better orientation. TYP all maps

Revised

GREEN VALLEY AMENDMENT 1 BOUNDARY

GREEN VALLEY AMENDMENT 2 BOUNDARY

SCALE 0 300 600 1200 2400

Sheet Title:

EXISTING EASEMENTS PLAN

Site Analysis
Master Plan

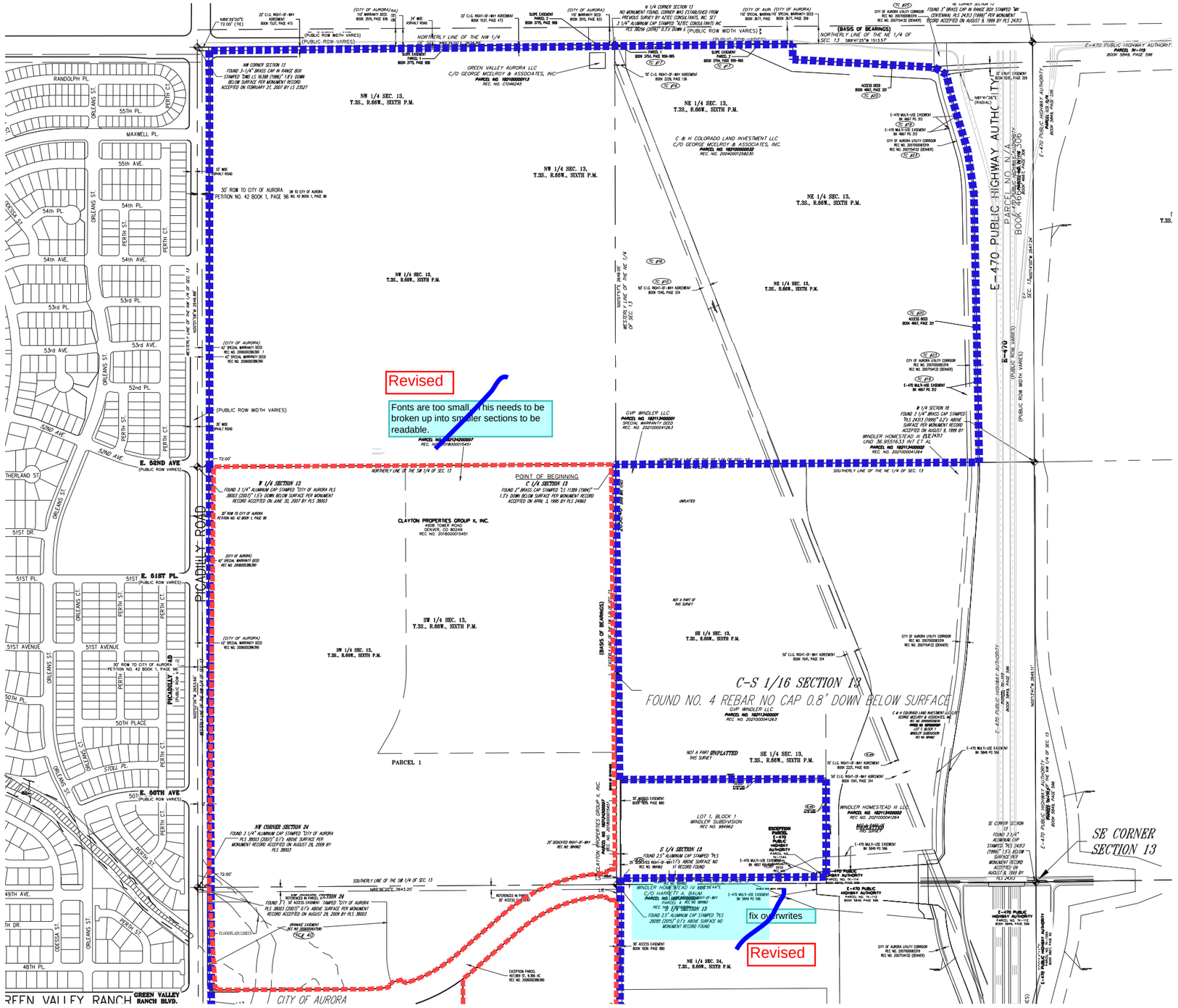
Project Title:

Green Valley Amendment 2
Aurora, Colorado

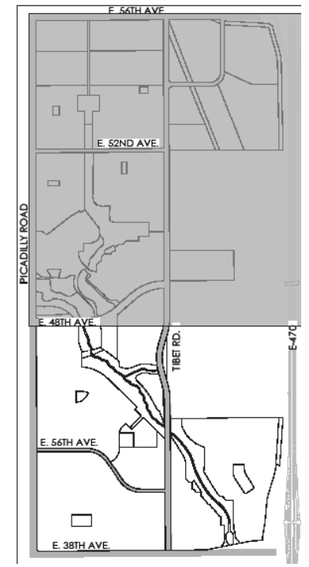
GREEN VALLEY RANCH

January 27, 2022 Tab 4.2

TAB 4.2



KEY MAP



GREEN VALLEY AMENDMENT 1 BOUNDARY

GREEN VALLEY AMENDMENT 2 BOUNDARY

SCALE

0 150 300 600 1200

Sheet Title:

EXISTING EASEMENTS PLAN

Site Analysis

Master Plan

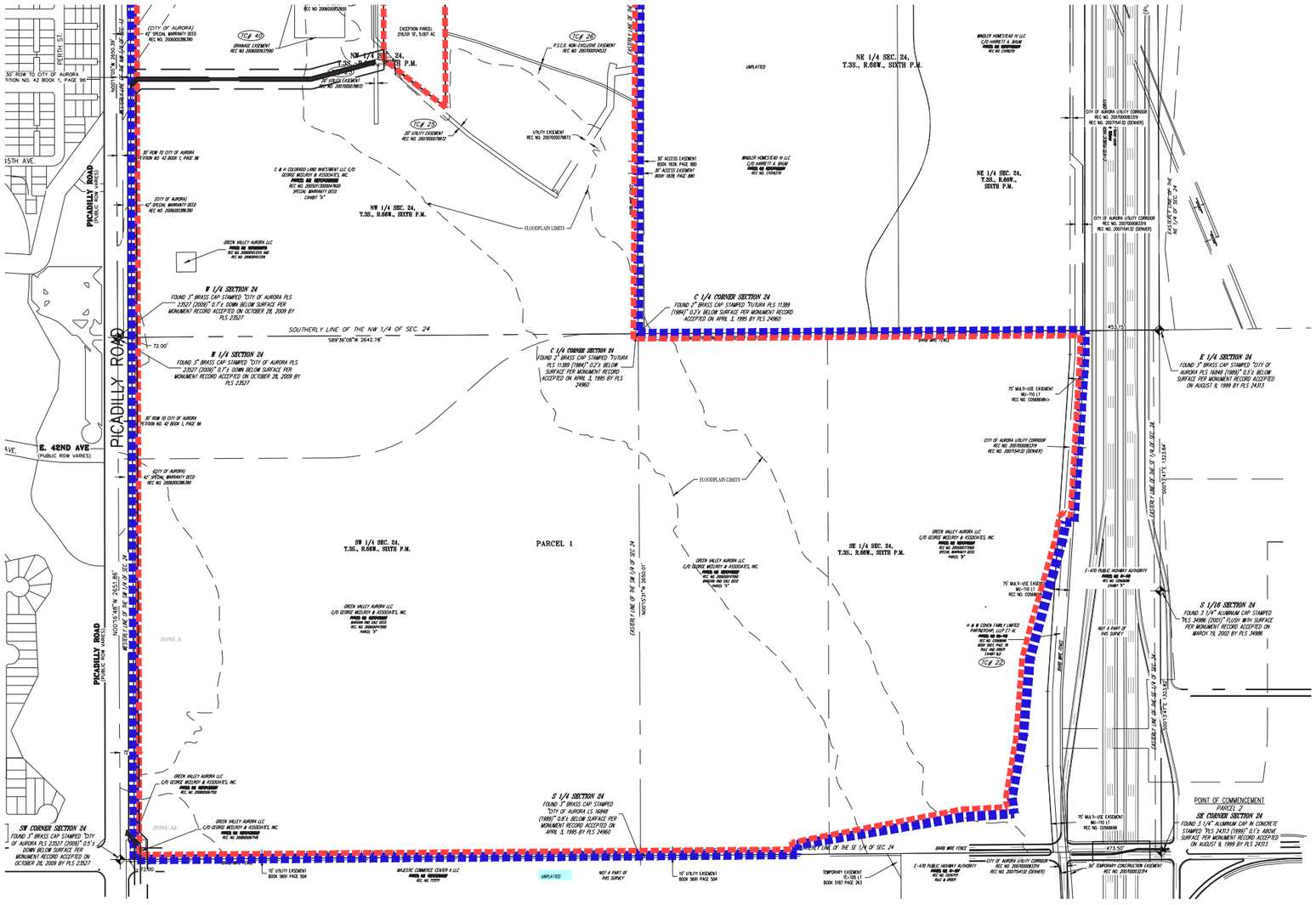
Project Title:

Green Valley Amendment 2

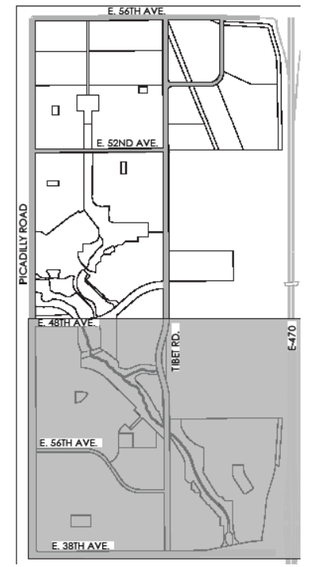
Aurora, Colorado

GREEN VALLEY RANCH

TAB 4.2



KEY MAP



GREEN VALLEY AMENDMENT 1 BOUNDARY

GREEN VALLEY AMENDMENT 2 BOUNDARY

SCALE

0 150 300 600 1200

Sheet Title:

EXISTING EASEMENTS PLAN

Site Analysis

Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

TAB 4.3

LEGEND

- INTERMITTENT STREAMS
- FLOODPLAIN
- FLOODWAY
- + HP HIGH POINT
- PROPERTY BOUNDARY

add arrows to indicate direction of slope

Revised

discussion of drainage includes names - Trib T, fist Creek, etc..
Add labels to illustrate discussion

Revised

SCALE 0 300 600 1200 2400

Sheet Title:

WATERBODIES MAP

Site Analysis
Master Plan

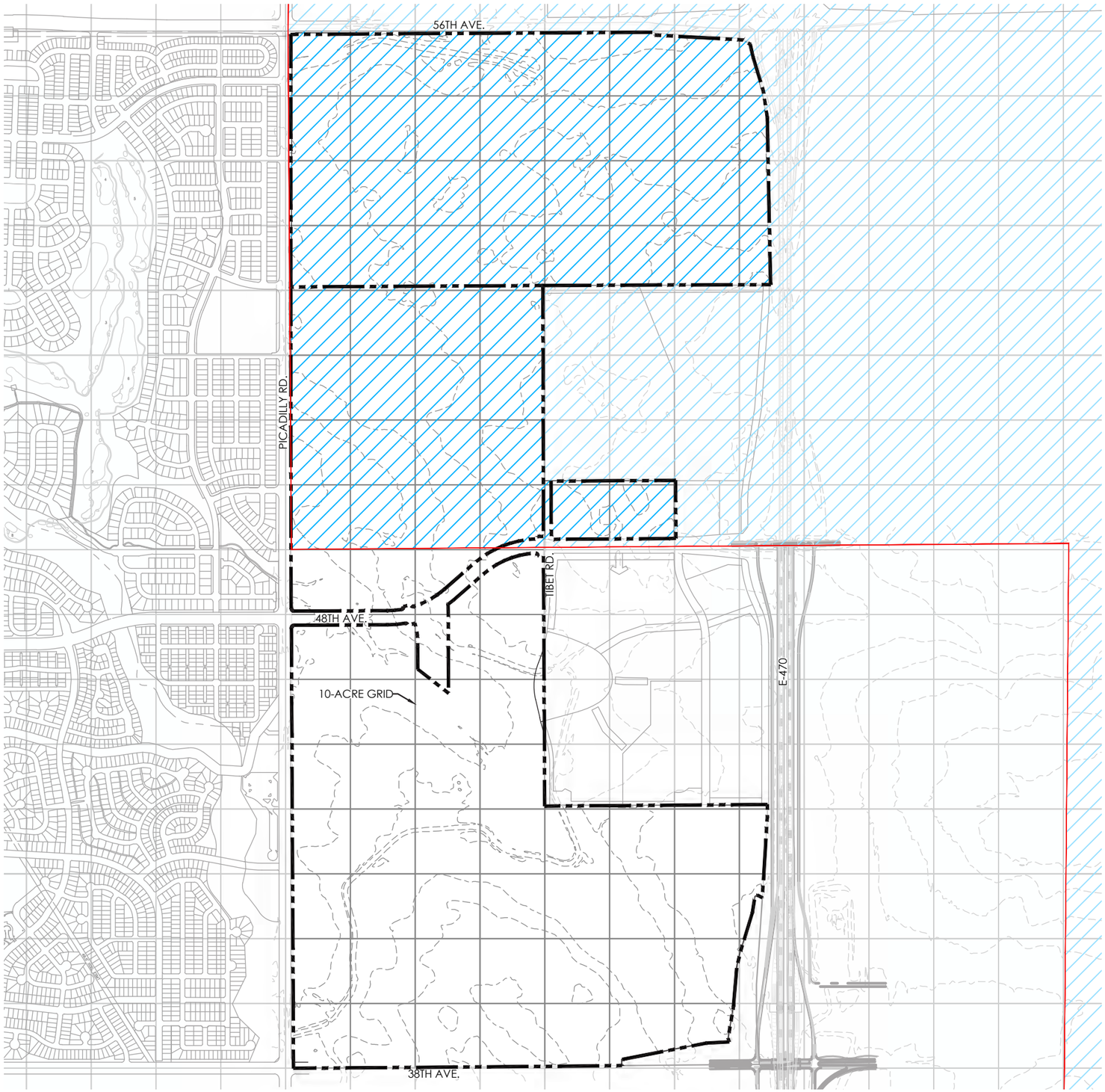
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 4.3

TAB 4.4



LEGEND

AIRPORT INFLUENCE AREA

PROPERTY BOUNDARY

*Denver International Airport and Front Range Airport, Noise Exposure Contours, City of Aurora

SCALE

0 300 600 1200 2400

Sheet Title:

AIRPORT NOISE IMPACT MAP

Site Analysis
Master Plan

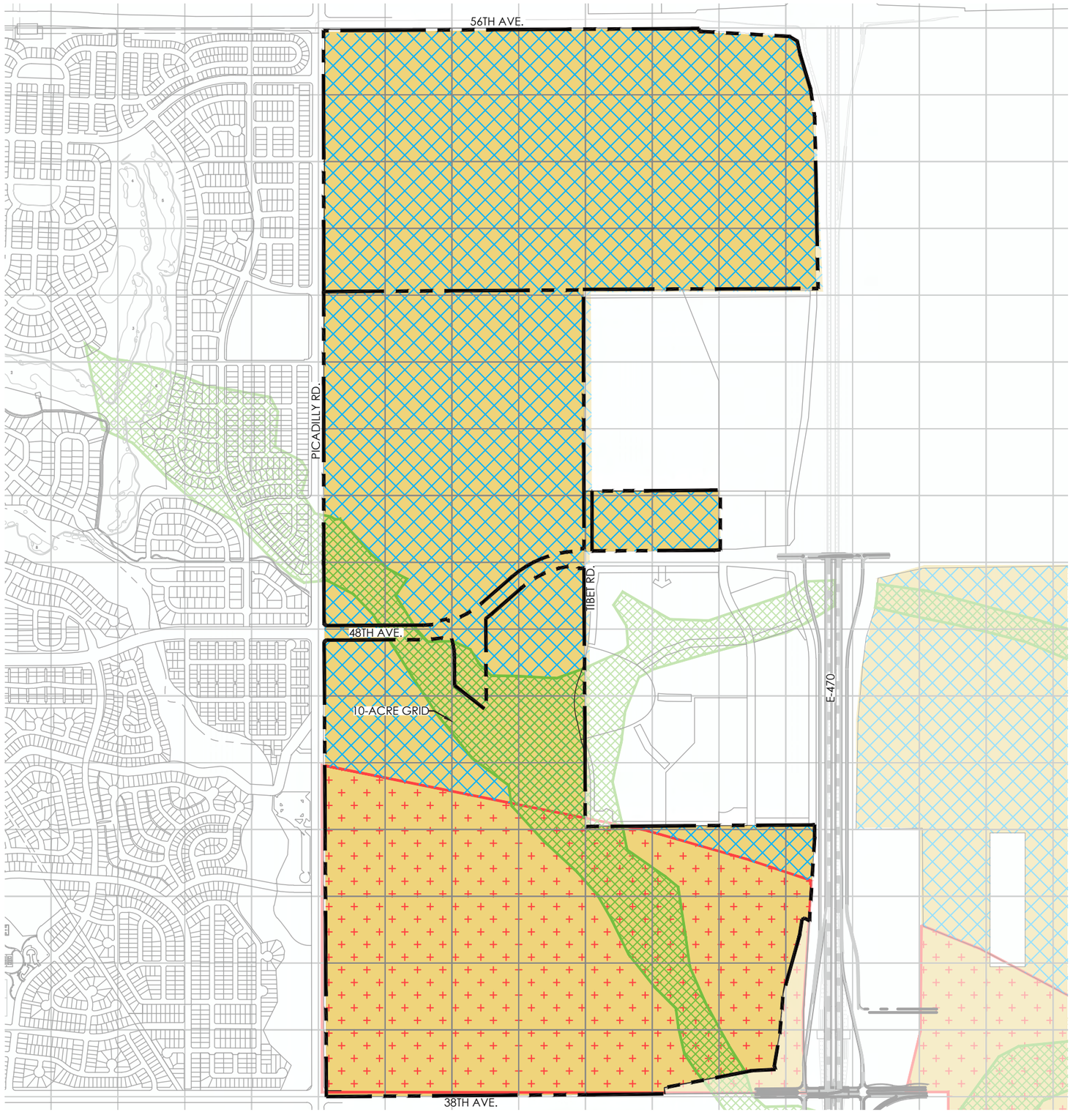
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 4.4

TAB 4.5



LEGEND

TKdi - DENVER FORMATION OR LOWER PART OF DAWSON ARKOSE -
ARKOSIC SANDSTONE, SHALE, MUDSTONE, CONGLOMERATE, AND LOCAL COAL BEDS.

Qe - ELOIAN DEPOSITS - INCLUDES DUNE SAND AND SILT AND PEORIA LOESS

LOW SWELL POTENTIAL - THIS CATEGORY INCLUDES SEVERAL BEDROCK FORMATIONS AND MANY SURFICIAL DEPOSITS. THE THICKNESS OF THE SURFICIAL DEPOSITS MAY BE VARIABLE, THEREFORE, BEDROCK WITH A HIGHER SWELL POTENTIAL MAY LOCALLY BE LESS THAN 10' BELOW THE SURFACE.

WINDBLOWN SAND OR SILT -
Although this material generally has low swell potential, the upper 6" to 12" may locally have moderate swell potential. Windblown material may be subject to severe settlement or hydrocompaction when water is allowed to saturate the deposits. The thickness of windblown material may be very variable, therefore bedrock with higher swell potential may be locally less than 10' below the surface.

SOURCE: GEOLOGIC MAP OF COLORADO, 1979 POTENTIALLY SWELLING SOIL AND ROCK IN THE FRONT RANGE URBAN CORRIDOR, COLORADO, 1973, 1974 COLORADO GEOLOGICAL SURVEY

NOTE: LOCATIONS OF GEOLOGIC HAZARDS ARE APPROXIMATE DUE TO THE VERY GENERAL NATURE OF THE SURVEYS. DETAILED, ON-SITE STUDIES WILL BE NECESSARY TO DETERMINE MORE ACCURATE HAZARD LOCATIONS.

SCALE
0 300 600 1200 2400

Sheet Title:

SOILS MAP

Site Analysis
Master Plan

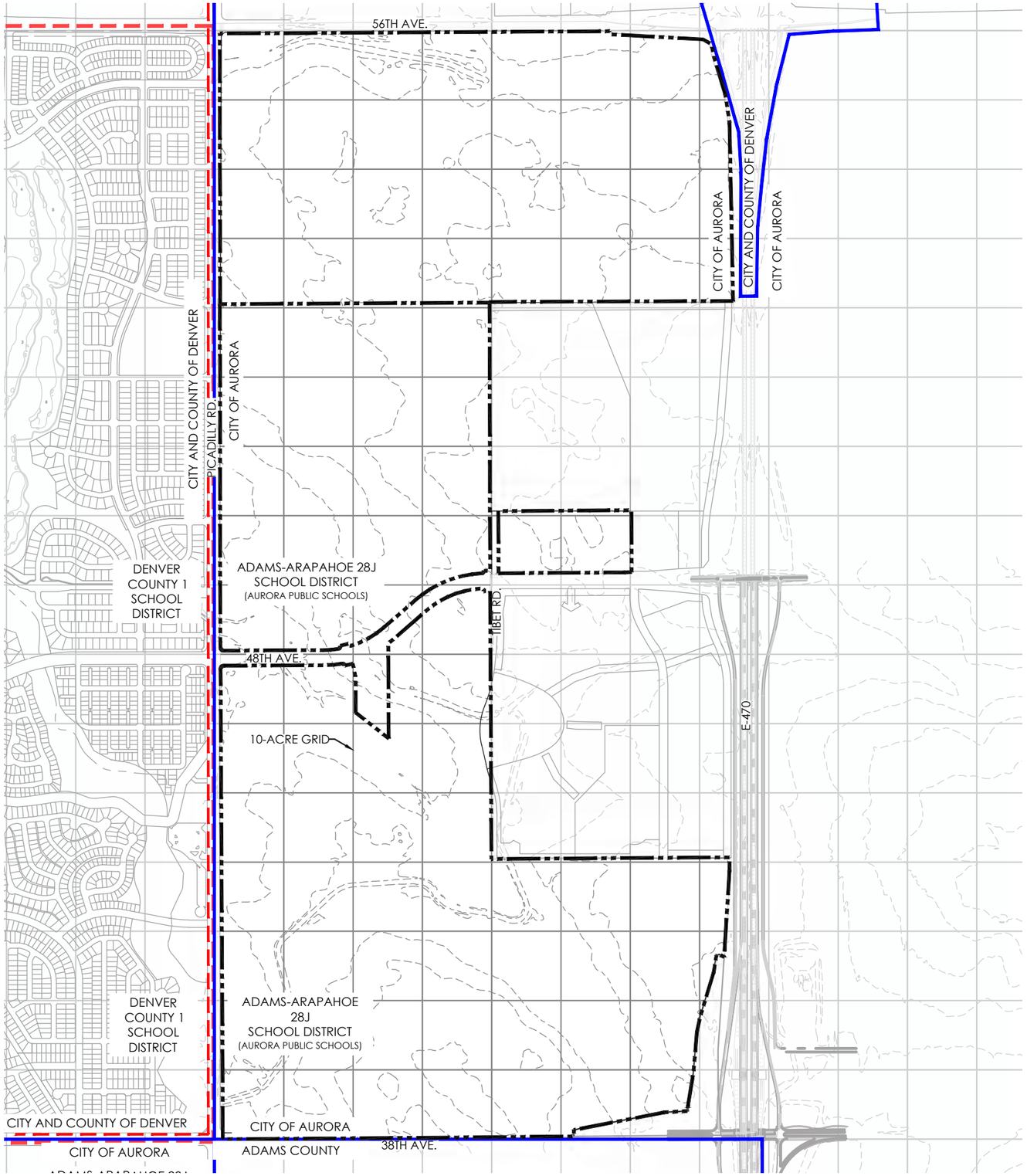
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 4.5

TAB 4.6



LEGEND

- SCHOOL DISTRICT BOUNDARY
- JURISDICTIONAL BOUNDARY
- PROPERTY BOUNDARY

SCALE

0 300 600 1200 2400

Sheet Title:

BOUNDARIES MAP

Site Analysis
Master Plan

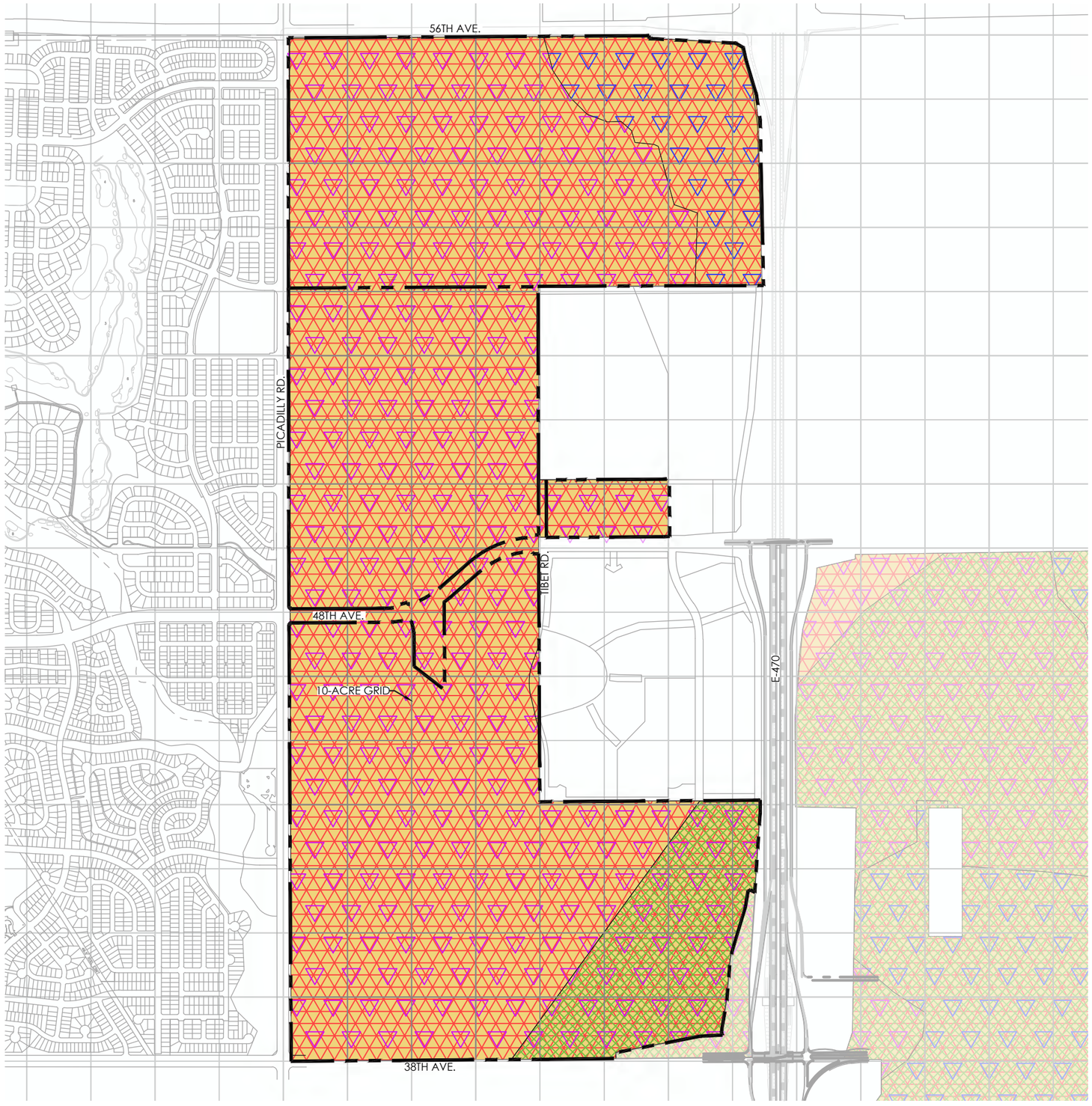
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 4.6

TAB 4.7



LEGEND

- OVERALL RANGE: Goose, Duck, Pronghorn Antelope and Mule Deer distribution
- WINTER RANGE: Goose
- FORAGING RANGE: Goose
- DRYLAND AGRICULTURE
- MIDGRASS PRAIRIE
- SIGNIFICANT VIEWS TO FRONT RANGE (NONE)

SOURCE: Natural Diversity information
SOURCE - SIGNIFICANT WILDLIFE HABITAT MAPS - ADAMS, ARAPAHOE, AND DENVER COUNTIES, CO. COLORADO DIVISION OF WILDLIFE, SEPT. 1998

SCALE 0 300 600 1200 2400

Sheet Title:

NATURAL FEATURES

Site Analysis
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 4.7

6

FORM B – MP NARRATIVE

Form B: MP Narrative

see comments in Tab 1 & make discussion compatible

1. General Description of the MP

Briefly describe the general character of your proposed MP. What will be the predominant land uses? What market segment is the proposed development designed to serve?

clarify location

Additional descriptions of the past amendment added in.

the "original" MP area and amendment map would be useful to illustrate boundary

In 2008 a 2,500 Ac. Master Plan (MP) for Green Valle approved. This MP included a variety of uses includ l, commercial, mixed use and a variety of parks and open space throughout. T In 2018, a MP amendment was approved for a ** acre area located west of E-470 known as Green Valley Amendment 1 and received approval in 2018. Ranch

Describe the land uses approved in Am 1

The remaining portions of the original MP that are currently in development are Aurora Highlands to the east and Windler to the east, which are both brand new MP's and not controlled by Oakwood Homes.

maybe discuss the purpose of amendment 2 = revise the amendment 2 land uses (which were included in the original approval) and to remove the area east of E-470 from the MP

Green Valley Amendment 2 is to revise the land uses on approximately 307 a north and east of Amendment 1. This is the last remaining piece of th original 2,500 Ac MP. When combined with the approved Amendmer area, this brings the total acreage to approximately 885 acres within t Master Plan. This is an amendment to the approved MP ~~Amendment 1~~ and not a brand-new MP. The intent of this amendment is to provide Urban Design, Landscape and Architectural Standards for Commercial/Retail that are being added to this MP in addition to revising land use maps to include these new areas and to better align with current site plans.

include narrative of the first amendment, but try to use more locational references instead of amendment 1 or 2

street added in along with amend 1

The predominant land use within Amendment 2 is mixed use. As part of this Amendment, the Active Adult neighborhood is being expanded to the north. This community is focused on the 55+ age group, while residential uses south of 48th Ave are focused on all age groups. North and east of the active adult community will be commercial/retail uses to serve this community and other surrounding communities.

these descriptions are more about the character of the MP.

revised

reference residential uses

Green Valley Amendment 2 will not be a series of villages varying in architectural styles and visual themes, but rather a unified community following the "Colorado" theme. This theme reflects the beauty of the Colorado foothills landscape and will have a more rustic character. Predominant architectural styles will include Classic, Contemporary, Homestead, and Victorian with materials complementing the surrounding area.

The architecture is not defined by neighborhood, but rather by a mix of product types. The residential areas throughout the development consist of five varying housing types: single family detached, single family attached (duplex), motorcourts (Fairmont Duplex, Carriage House, Bungalow and Porchlight) and Multi-Family. When mixed, these varying styles create diverse neighborhoods in both style and affordability.

The primary landscape theme consists of large sweeping native areas that use landforms and native plantings indicative of the Colorado foothills. Large planting beds located along streets and trails will be made up of masses of grasses, shrubs, and trees to provide both seasonal interest and views into and out of the site. Landforms will be accentuated with the use of berming and rock outcroppings to create spaces for both wildlife and residents to enjoy.

2. Defining Character of the MP

Describe how your proposed MP will create a unique community with a definable character and special "sense of place". What facilities, amenities and special design features will set it apart in the marketplace from similar develop our area?

revised

move residential discussion above into character

revised

include

~~With the commercial/retail parcels being the focus of the 2nd Amendment, the character will be defined by this addition~~. The commercial planning areas will be a variety of land uses, including office, institutional and retail. A component of the commercial development is a Main Street per Aurora standards. Due to close proximity to E470 and the interchange at 56th, the commercial center is positioned attract a variety of commercial uses which may include large scale retail, office warehouse retail. This 'City Corridor' Placetype will focus on commercial activity including retail shops, restaurants, pedestrian spaces, and outdoor plazas. The vision for Main Street will be to create a high-quality public space for the Green Valley Ranch community. The commercial planning areas and Main Street will reflect the community 'Colorado' theme through architecture, signage, urban spaces, and site furnishings.

see requirements of MU-R and include components. See more comments in Urban Design Standards

revised

3. Zoning Conformance

Does the MP accurately reflect adopted zone district boundaries?

is

The approved MP Amendment 1 area within the R-2 zone district ~~will remain~~. The ~~additional acreage being added as part of~~ Amendment 2 is ~~currently~~ MU-A and MU-R. A Zone Map Amendment is concurrently being

area

revised

zoned

revised

spell out. TYP

proposed with this MP Amendment to create R-2 within the MU-A along with changing a portion of MU-R to MU-A.

doesn't make sense.

revisd for clarity

4. Potential Regulatory Conflicts

Are there any existing or potential conflicts between MP design ordinance requirements and the terms of any existing annexation agreements or agreements with other jurisdictions or interest groups? If so what are they and how you propose to resolve them?

The Original Annexation Agreements include the following school and park dedication requirements:

Public Land Dedication - 6% of the area zoned for residential uses to be used for open space, and 2% of the area zoned for non-residential uses to be used for municipal purposes including fire facilities. School site dedications- up to 4% of the area zoned for residential uses. The following dedications were provided in Amendment 1:

identify what is required vs. proposed for entire MP. Summarize that all requirements are being met (or not)

Public Facilities

2% of non-residential acreage (149.7 x 2% = 3.0 Ac)

- Land dedicated to city for future fire station

the numbers below were for amendment 1 and the original annexation agreement.

We've gone ahead and added in the overall parks and open space requirements for the combined areas which line up with Tab 8.

Schools

P-8 School:
614 Elementary School Students (.0175 acres/child) = 10.75 ac
289 Middle School Students (.025 acres/child) = 7.23 ac
Subtotal: 17.98 ac

- Amendment 1 included an 18.0 Ac school site
- No additional acreage required since additional residential is active adult

High School:
361 High School Students (.032 acres/child) = 11.565 ac

Total Acres Required = 29.55 ac

Open Space:
6% of residential acreage (564 Ac x 6% = 34 Ac)

Proposed Plan:
See MP Open Space/Circulation/Neighborhood Map for Parks and Open Space

Dedications.

5. Adjustments

Does your current design require any ordinance waivers in order to be approved? If so, list each proposed waiver, and answer the following questions for each:

- *What are the specific site-related characteristics of your site that have led to the waiver request? (Do not include self-imposed hardships or constraints as a justification. Financial constraints may be considered, but only as they relate to unusual site conditions. Do not simply respond that meeting all development standards would be too costly.)*
- *What design alternatives have you considered to avoid the waiver? Why weren't these alternatives chosen?*
- *What measures have been taken to reduce the severity or extent of the proposed waiver?*
- *What compensating increases in design standards have you proposed to mitigate the waiver's impact?*

There are no adjustments eing requested in the MP.

revised

6. Required City Facilities

What additional city facilities or services will the City of Aurora have to provide in order for your MP to be implemented? What police, fire, and recreation facilities are required and where are they located (inside or outside your MP boundary.) To what extent will your development plan help to fun or construct these facilities?

- The City of Aurora will need to provide sewer and water services, police, fire, and library services. The City will also need to provide maintenance for public parks and public streets following dedication to the City. See Public Improvements Phasing Plan, Form J and the Development Agreement.
- A summary of the proposed water and sewer service strategy is contained in Form A. For additional detail, please refer to the Master Utility Plan and the Development Agreement.

- Picadilly Road, 56th Avenue and 48th Avenue are planned as six- lane Principal Arterials. 38th Avenue is planned as a four-lane Minor Arterial. 52nd Avenue, Tibet Road from 38th Ave to 48th Ave, and 38th Avenue are planned as three-lane collectors. 42nd Avenue is planned as a two-lane collector. Tibet Road from 48th Ave to 56th Ave is planned as a four-lane Minor Arterial. The arterials will require improvements based on City standards with development phasing. See Public Improvements Phasing Plan and the Development Agreement.

revised

7. Vehicular Circulation

of Picadilly. East half of Picadilly is in Aurora

Do your proposed arterial and collector roadways align with the arterials and collectors of adjacent properties? Do your roadway cross-sections match adjacent cross-sections? If not, explain why.

- To the west, all roadways are within the City and County of Denver, so road standards necessarily differ. Principal and Minor Arterials align to connect with the arterials to the north, south, east, and west. To the east, 48th Ave is aligned to connect with 48th Ave. in the approved Windler MP. Collectors in Aurora are spaced at half-mile intervals, but to the west in Denver, collectors are not spaced at the same interval. Due to the differences, the road alignments within Green Valley Amendment 2 have been aligned to match existing roads within Denver.

indent → See Street Cross Sections on Tab 10.13.

revised

8. Pedestrian Circulation

discuss Am 1 too and how circulation will be connected (esp. @ 52nd Ave)

discussion about the grade separated crossing added in addition to the main street connection to AA

Do off-street trails on your site connect with those on ac
Do your cross sections match adjacent cross sections? If not, explain why.

- Off-street trails within Green Valley Amendment 2 are aligned to connect with trails to the west in Green Valley Ranch, including the one along the First Creek Drainage and along Tributary T.

(Denver)

revised

- Trail sections in Green Valley Amendment 2 will be constructed to the City of Aurora standards and shall be constructed of concrete in the more urban areas of the community, and in the more natural areas, other materials, such as decomposed granite, may be proposed at the time of Site Plan review. Trails along drainage channels will be constructed according to maintenance road / trail standards of the Urban Drainage and Flood Control District and the P&OSD standards and will be a minimum of 10 feet wide. These trails shall both act as

pedestrian trails and maintenance trails. Regional trails outside of the drainage ways will be ten (10) feet wide and community trails shall have a minimum width of eight (8) feet. Refer to the Open Space Plan for regional and community trail locations. Five (5) foot wide minimum neighborhood trails will also be incorporated into the trail network. These trail locations will be determined at SP.

9. Protection of Natural Features, Resources and Sensitive Areas.

Describe how the development will be designed to protect, use or enhance natural resources and features. In particular, describe how the design of the development will respond to:

- *Water features, such as floodplains, streams, and arroyos.*
  - Open space is planned along the drainages. This open space becomes part of the open space/trail network that crosses the site linking neighborhoods to parks, a school, and activity centers.

- *Adjacent parks and public open space*
  - There are four (4) neighborhood parks within close proximity to the Open Space Corridor. This corridor begins south of 38th Avenue and extends diagonally, northwest to southeast, within Green Valley Amendment 2. Two other neighborhood parks are along open space corridors in the active adult community and connect up to this main Tributary T open space.

- *Historic or archeological sites*
  - A review of the records of The Colorado Historical Society Office of Archaeology and Historic Preservation "Inventory of Cultural Resources" identified a number of items inventoried on the site, but none were found have significant historic or archaeological value.
  - The majority of these sites occur within the site's drainage areas, which will be enhanced as open space/trail corridors.

- *Significant views of the Front Range and views from public parks and I-70 and E- 470 and other collector and arterial streets*
  - Views from public parks and other collector streets west will be protected at strategic points within the development. The use of topography and vegetation will frame scenic vistas.

- *Riparian wildlife habitat*
  - There are no true riparian zones along the drainage. There is no flowing water or springs along the drainage, and no channels have developed.
  - Tributary T just east of Picadilly Road in Section 24 has one old mature cottonwood along the drainage. This is also not a true riparian zone since there is no flowing water except after a storm, and there is no definite channel. The understory is an overgrazed pasture with no brushes or willow.
- *The approximate topographic form of major ridgelines and swales*
  - There are no major ridgelines or swales. The drainages will be enhanced as a part of the planned community's open space/trail network.
- *Natural or geologic hazard areas, including unstable slopes and expansive soils*
  - No geologic hazard areas or expansive soils have been identified on the site.
- *Other natural features such as bluffs, ridges, steep slopes, stands of mature trees, rock outcroppings, or wetlands.*
  - Slopes over 6% are primarily found in the drainage areas that will be preserved/ enhanced as open space. There are no bluffs, ridges, or rock outcroppings. There are a few mature trees in and around the drainage areas that will be preserved to the extent possible within the open space areas.

10. Neighborhood Concept

Briefly describe the location of your individual neighborhoods. How have you defined the boundaries for each neighborhood? How are the architectural styles and other design features distributed among the neighborhoods? Are there any styles or other design standards that are restricted to specific areas?

discuss the residential as a whole for the MP

mention of AA and traditional neighborhoods added

Green Valley ~~Amendment 2~~ will not be a series of villages with distinct architectural styles and visual themes, but rather a unified community. The architecture is defined by a mix of product types, which vary by location and quantity throughout the entire development. When mixed together, these varying types create diverse neighborhoods in both style and

affordability.

11. Black Forest Ordinance

Is the Black Forest Ordinance applicable to your site? If so where do the impacted areas show on your exhibits, and how will the requirements of the ordinance be carried out?

- The Green Valley ~~Amendment 2~~ site is outside of the Black Forest Ordinance jurisdictional area.

12. Steep Slope Standards

Does your development plan include building on areas with an existing slope of 6% or greater? If so, what standards and design strategies have you adopted to deal with drainage and aesthetic issues? Have you reviewed and considered our recommended steep slope design guidelines? If not, why?

- Slopes over 6% are primarily located in the drainage areas that are enhanced as open space.

13. Consultations with Outside Jurisdictions and Agencies

Have you consulted with representatives of your local school district, the Colorado Division of Wildlife, the Colorado Department of Public Health and Environment, or other applicable local, state or federal agencies? If so, list the dates, contact person, and results of your discussions. Include any letters you've received from these agencies as an appendix to your application.

- A number of meetings have been held between representatives of the applicant and the Aurora Public Schools to reach agreement on servicing the Green Valley A MP ~~ment 1 and Green Valley areas~~.

revised

8

USE Revised

MP LAND US MAP MATRIX AND STANDARD NOTES

- Land Use Plan Narrative
- 470-RMED Spreadsheet
- Land Use Plan (Color)
- Land Use Plan (B&W)
- Neighborhood Plan
- Neighborhood Boundary Spreadsheet
- Fire Exhibit and Notes
- Standard MP Notes

8.1 Land Use Plan Narrative

Revised

The Master Plan ~~Amendment 2~~ for Green Valley consists of 885.4 acres. Proposed land use is Residential Medium Density, Multi-Family Residential, Commercial/Retail and Mixed-Use.

A total of approximately 3,237 dwelling units are planned, ranging in density from 4.1 to 20.0 dwellings per acre. A broad range of housing types will be offered, including single family detached homes in both active adult and traditional, motorcourt homes in both active adult and traditional, single family attached homes in active adult, and multi-family homes.

A total of 5 Neighborhood Parks on 21.5 acres, along with 5.9 acres of pocket parks and 64.8 gross acres of open space mo[d]e[Revised]parks and open space system that are interconnected by a network of trails along the Open Space Corridor and greenways that follow the drainages. The public dedications and open space areas expressly provided for in this MP will satisfy all dedication and open space requirements applicable to the MP site.

With respect to school dedications, the total acreage allocated under this MP for that purpose equals approximately 18.0 acres. This school dedication plan has been designed with input from Aurora Public Schools (APS). One P-8 school is proposed to serve this development west of E-470.

The Land Use Plan (Tab 8.4) shows the configuration of these land uses. Acres, density, and total number of dwelling units are detailed in Tab 8.3, below. All lots size standards and setbacks will follow code unless specified.

8.2 Land Use Summary

Ranch Master Plan [1]

GREEN VALLEY ~~AMENDMENT 2~~

Green Valley Master Plan

TOTAL PROJECT

LAND USE	ACRES	DENSITY	DU	% OF RES DU
Active Adult Residential	232.7	5.8/7.0	1295	40.0%
Single Family Residential	289.8	4.1/6.3	1647	50.9%
Multi Family Residential	9.6	20.0	192	5.9%
Mixed Use	17.2	6.0	103	3.2%
Commercial	138.2			
Sub Total	687.5		3237	100.0%
Neighborhood Activity Center / Clubhouse	5.3			
Neighborhood Parks	21.5			
P-8 School	18.0			
Pocket Parks & Open Space	70.7			
Detention	14.3			
Floodway Channel	7.7			
Easements	13.6			
Right of Way	46.9			
Sub Total	197.9			
TOTAL	885.45			

total is 198.0

Revised

Active Adult Residential will contain a mix of standard, small, motorcourt (standard and small), and duplex (front-loaded and motorcourt) lots.

Single Family Residential will contain a mix of standard, small (front loaded), and motorcourt (standard and small) lots.

[1] Master Plan area includes development proposed in Amendments 1 and 2. Area east of E-470 has been permanently removed from the Master Plan.

Footnote added

TAB 8.3

FORM D: MP Land Use Matrix							
A. LAND USE ITEM	**B. PLANNING AREA MAP NUMBER**	**C. MAP AREA CODE**	**D. GROSS LAND AREA IN ACRES**	**E. LAND USE FORMULA**	**F. MAX POTENTIAL DENSITY BY CODE (in DU's)**	**G. ACTUAL PROPOSED MAXIMUM DENSITY (in DU's)**	**H. LAND USE DETAILS AND COMMENTS**
1. Floodway Channel	PA-28	CHANNEL	3.4				Storm flow conveyance. Not counted towards public land dedication requirement.
	PA-29	CHANNEL	2.0				Storm flow conveyance. Not counted towards public land dedication requirement.
	PA-30	CHANNEL	2.3				Storm flow conveyance. Not counted towards public land dedication requirement.
Subtotal			7.7				
2. Required Land Dedication Areas for Park, Schools, & Fire Stations	PA-10	CLUBHOUSE	3.5				Amenity Area and Pool
	PA-11	CLUBHOUSE	1.8				Amenity Area and Pool
	PA-12	SCHOOL-P-8	18.0				Public School P-8
	PA-13	NEIGHBORHOOD PARK	5.7	3.0 ACRES PER 1,000 RESIDENTS			5.7 AC net counted toward neighborhood park requirement.
	PA-14	NEIGHBORHOOD PARK	5.7	3.0 ACRES PER 1,000 RESIDENTS			5.7 AC net counted toward neighborhood park requirement.
	PA-15	NEIGHBORHOOD PARK	3.0	3.0 ACRES PER 1,000 RESIDENTS			3.0 AC net counted toward neighborhood park requirement.
	PA-16	OS-D	18.1	7.8 ACRES PER 1,000 RESIDENTS			18.1 AC net counted toward open space requirement.
	PA-17	OS-D(Corridor)	2.8	7.8 ACRES PER 1,000 RESIDENTS			2.8 AC net counted toward open space requirement.
	PA-18	OS-D(Corridor)	1.7	7.8 ACRES PER 1,000 RESIDENTS			1.7 AC net counted toward open space requirement.
	PA-19	OS-D (Collector)	3.8	7.8 ACRES PER 1,000 RESIDENTS			3.8 AC net counted toward open space requirement.
	PA-20	OS-D(Corridor)	10.6	7.8 ACRES PER 1,000 RESIDENTS			10.6 AC net counted toward open space requirement.
	PA-21	OS-D(Collector)	1.2	7.8 ACRES PER 1,000 RESIDENTS			1.2 AC net counted toward open space requirement.
	PA-22	OS-D(Corridor)	3.9	7.8 ACRES PER 1,000 RESIDENTS			3.9 AC net counted toward open space requirement.
	PA-23	OS-D(Corridor)	10.2	7.8 ACRES PER 1,000 RESIDENTS			10.2 AC net counted toward open space requirement.
	PA-24	OS-D(Corridor)	6.5	7.8 ACRES PER 1,000 RESIDENTS			6.5 AC net counted toward open space requirement.
	PA-25	DETENTION	5.4				0 AC net counted toward open space requirement.
	PA-26	DETENTION	6.8				0 AC net counted toward open space requirement.
	PA-27	DETENTION	2.1				0 AC net counted toward open space requirement.
	PA-31	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5 AC net counted toward open space requirement.

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.3

FORM D: MP Land Use Matrix								
A. LAND USE ITEM	**B. PLANNING AREA MAP NUMBER**	**C. MAP AREA CODE**	**D. GROSS LAND AREA IN ACRES**	**E. LAND USE FORMULA**	**F. MAX POTENTIAL DENSITY BY CODE (in DU's)**	**G. ACTUAL PROPOSED MAXIMUM DENSITY (in DU's)**	**H. LAND USE DETAILS AND COMMENTS**	
2. Required Land Dedication Areas for Park, Schools, & Fire Stations	PA-32	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net counted toward open space requirement.
	PA-33	OS-D	0.8	7.8 ACRES PER 1,000 RESIDENTS			0.8	AC net counted toward open space requirement.
	PA-34	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net counted toward open space requirement.
	PA-35	OS-D	0.4	7.8 ACRES PER 1,000 RESIDENTS			0.4	AC net counted toward open space requirement.
	PA-36	OS-D	1.1	7.8 ACRES PER 1,000 RESIDENTS			1.1	AC net counted toward open space requirement.
	PA-37	OS-D	1.0	7.8 ACRES PER 1,000 RESIDENTS			1.0	AC net counted toward open space requirement.
	PA-38	OS-POCKET PARK	0.9	7.8 ACRES PER 1,000 RESIDENTS			0.9	AC net counted toward open space requirement.
	PA-39	NEIGHBORHOOD PARK	3.0	3.0 ACRES PER 1,000 RESIDENTS			3.0	AC net counted toward neighborhood park requirement.
	PA-40	OS-POCKET PARK	2.0	7.8 ACRES PER 1,000 RESIDENTS			2.0	AC net counted toward open space requirement.
	PA-41	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net counted toward open space requirement.
	PA-42	EASEMENT	0.5				0	AC net counted toward open space requirement.
	PA-43	EASEMENT	0.5				0	AC net counted toward open space requirement.
	PA-44	EASEMENT	1.7				0	AC net counted toward open space requirement.
	PA-59	OS- POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net counted toward open space requirement.
	PA-60	OS- POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net counted toward open space requirement.
	PA-61	OS-D(Corridor)	1.0	7.8 ACRES PER 1,000 RESIDENTS			1.0	AC net counted toward open space requirement.
	PA-62	OS-D(Corridor)	1.7	7.8 ACRES PER 1,000 RESIDENTS			1.7	AC net counted toward open space requirement.
	PA-63	NEIGHBORHOOD PARK	4.1	3.0 ACRES PER 1,000 RESIDENTS			4.1	AC net counted toward neighborhood park requirement.
	PA-64	EASEMENT	5.8				0	AC net counted toward open space requirement.
	PA-65	EASEMENT	0.2				0	AC net counted toward open space requirement.
	PA-66	EASEMENT	2.4				0	AC net counted toward open space requirement.
	PA-67	EASEMENT	2.5				0	AC net counted toward open space requirement.
Subtotal			143.3					

verify.

Revised as necessary

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes

Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.3

FORM D: MP Land Use Matrix

A. LAND USE ITEM	B. PLANNING AREA MAP NUMBER	C. MAP AREA CODE	D. GROSS LAND AREA IN ACRES	E. LAND USE FORMULA	F. MAX POTENTIAL DENSITY BY CODE (in DU's)	G. ACTUAL PROPOSED MAXIMUM DENSITY (in DU's)	H. LAND USE DETAILS AND COMMENTS
see MP Manual and add different codes for proposed types of Res. per PA: SFD-Stand, SFD-SM, 2 FAM, SFA-TH, etc.... Include all that are applicable.	PA-1	ACTIVE ADULT RESIDENTIAL	30.2	5.2 DU/AC	241	**157**	Max. Potential Density by Code is 8 DU/AC
	PA-2	ACTIVE ADULT RESIDENTIAL	42.2	5.6 DU/AC	338	**236**	Max. Potential Density by Code is 8 DU/AC
	PA-3	ACTIVE ADULT RESIDENTIAL	30.0	5.0 DU/AC	240	**150**	Max. Potential Density by Code is 8 DU/AC
	PA-4	ACTIVE ADULT RESIDENTIAL	26.3	4.0 DU/AC	210	**105**	Max. Potential Density by Code is 8 DU/AC
	PA-5	RESIDENTIAL	26.4	4.1 DU/AC	211	**108**	Max. Potential Density by Code is 8 DU/AC
	PA-6	RESIDENTIAL	78.9	5.3 DU/AC	631	**418**	Max. Potential Density by Code is 8 DU/AC
Land codes added	PA-7	RESIDENTIAL	91.9	5.9 DU/AC	735	**542**	Max. Potential Density by Code is 8 DU/AC
ppment Areas Subzone: -2 Subarea-C	PA-8	RESIDENTIAL	30.1	6.2 DU/AC	241	**186**	Max. Potential Density by Code is 8 DU/AC
	PA-9	RESIDENTIAL	62.5	6.3 DU/AC	500	**393**	Max. Potential Density by Code is 8 DU/AC
	PA-45	ACTIVE ADULT RESIDENTIAL	26.5	5.8 DU/AC	212	**153**	Max. Potential Density by Code is 8 DU/AC
	PA-46	ACTIVE ADULT RESIDENTIAL	39.2	5.8 DU/AC	314	**227**	Max. Potential Density by Code is 8 DU/AC
	PA-47	ACTIVE ADULT RESIDENTIAL	15.8	7.0 DU/AC	126	**110**	Max. Potential Density by Code is 8 DU/AC
	PA-48	ACTIVE ADULT RESIDENTIAL	22.5	7.0 DU/AC	180	**157**	Max. Potential Density by Code is 8 DU/AC
	PA-49	MULTI FAMILY RESIDENTIAL	9.6	20.0 DU/AC	192	**192**	Max. Potential Density by Code is 20 DU/AC
moved PA58 to MUA section below	PA-58	MIXED USE	17.2	6.0 DU/AC	310	**103**	Max. Potential Density by Code is 18 DU/AC
		RIGHT-OF-WAY	46.9				
Sub			596.2				
	PA-50	COMMERCIAL	9.6				
	PA-51	COMMERCIAL	4.0				
	PA-52	COMMERCIAL	22.0				
3b. Development Areas Subzone: MU-A & MU-R	PA-53	COMMERCIAL	14.1				
	PA-54	COMMERCIAL	29.7				
	PA-55	COMMERCIAL	24.5				
is any area Mixed Comm too?	PA-56	COMMERCIAL	20.2				
	PA-57	COMMERCIAL	14.1				
Sub			138.2				
SUB yes. PA58 should be here			**885.4**		**4681**	**3237**	

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.3

FORM D: MP Land Use Matrix

A. LAND USE ITEM	B. PLANNING AREA MAP NUMBER	C. MAP AREA CODE	D. GROSS LAND AREA IN ACRES	E. LAND USE FORMULA	F. MAX POTENTIAL DENSITY BY CODE (in DU's)	G. ACTUAL PROPOSED MAXIMUM DENSITY (in DU's)	H. LAND USE DETAILS AND COMMENTS
4. Total Map Acreage (Sub-Area Total Above)			885.4				
5. Less 1/2 of Perimeter Streets Not Owned by Applicant			16.3				
6. Applicant's Acreage Listed in Application (Line 4 minus Line 5)			869.2				
7. Total Floodplain Acreage			7.7				
8. Total Adjusted Gross MP Acreage (Line 4 minus Line 7)			877.7				
9. Total Active Adult Planning Areas			232.7	1.58 PERSONS PER UNIT	1861	1295	2046 Estimated Residents
10. Total Single Family Planning Areas			289.8	2.65 PERSONS PER UNIT	2318	1647	4364 ~~Estimated~~ Residents
11. Total Multi Family Planning Areas			9.6	2.2 PERSONS PER UNIT	192	192	422 Estimated Residents
12. Total Mixed Use Planning Areas			17.2	2.2 PERSONS PER UNIT	310	103	226 Estimated Residents
12. Total Residential			**532.1**		**4681**	**3237**	**7058 Estimated Residents**
13. Check for avg. residential density in subzone				5 DU's/AC TIMES LINE 8	4389	3237	
14. Small Lot Total				50% of TOTAL UNITS	2341	1619	
15. Check for maximum allowable number of multi-family units							
16. Total Retail Planning Areas			0.0				
17. Total Office Planning Areas			0.0				
18. Total Industrial Planning Areas			0.0				
19. Total Mixed Commercial Planning Areas			138.2				
20. Total Commercial			**138.2**				
21. Total Neighborhood Parks			21.5	3.0 AC / 1000 RESIDENTS			Required Land Dedication = 21.2 AC. Provided Land Dedication = 21.5 AC.
22. Total Community Parks			0.0	1.1 AC / 1000 RESIDENTS			Requirement of 7.8 AC will be met by applicant cash-in-lieu payment (6.6 AC. Cash-in-lieu payment made as part of Amendment 1)
23. Total other Open Space inclu corridors, greenbelts, and special			70.7	7.8 AC / 1000 RESIDENTS			Required Land Dedication = 55.1 AC. Provided Land Dedication = 70.7 AC.
24. Total Open Space			**92.2**				**Required Land Dedication = 76.2 AC.** **Provided Land Dedication = 92.2 AC.** **Provided Cash-In-Lieu Payment = 7.8 A**

Revised
2047

Revised
4365

This is 2.5 please update.

Total for all MF is 738

We have 480 Proposed.
192 x 2.5 = 480
Estimated Residents

58.4. Not all open space is getting OS credit so its less that the PA's

Add when; such as 'at first residential plat of either PA45-48'

language added

Totals should be 21.44 neighborhood park, 7.86community park (cash in lieu), and 55.75 open space

Required is 85.05

We have 7154 Estimated Residents
Required OS is:
7154 / 1000 x 3 = 21.5 AC. of Neighborhood Park
7154 / 1000 x 1.1 = 7.9 AC. of Community Park
7154 / 1000 x 7.8 = 55.8 AC. of Open Space

Sheet Title:

LAND USE MATRIX

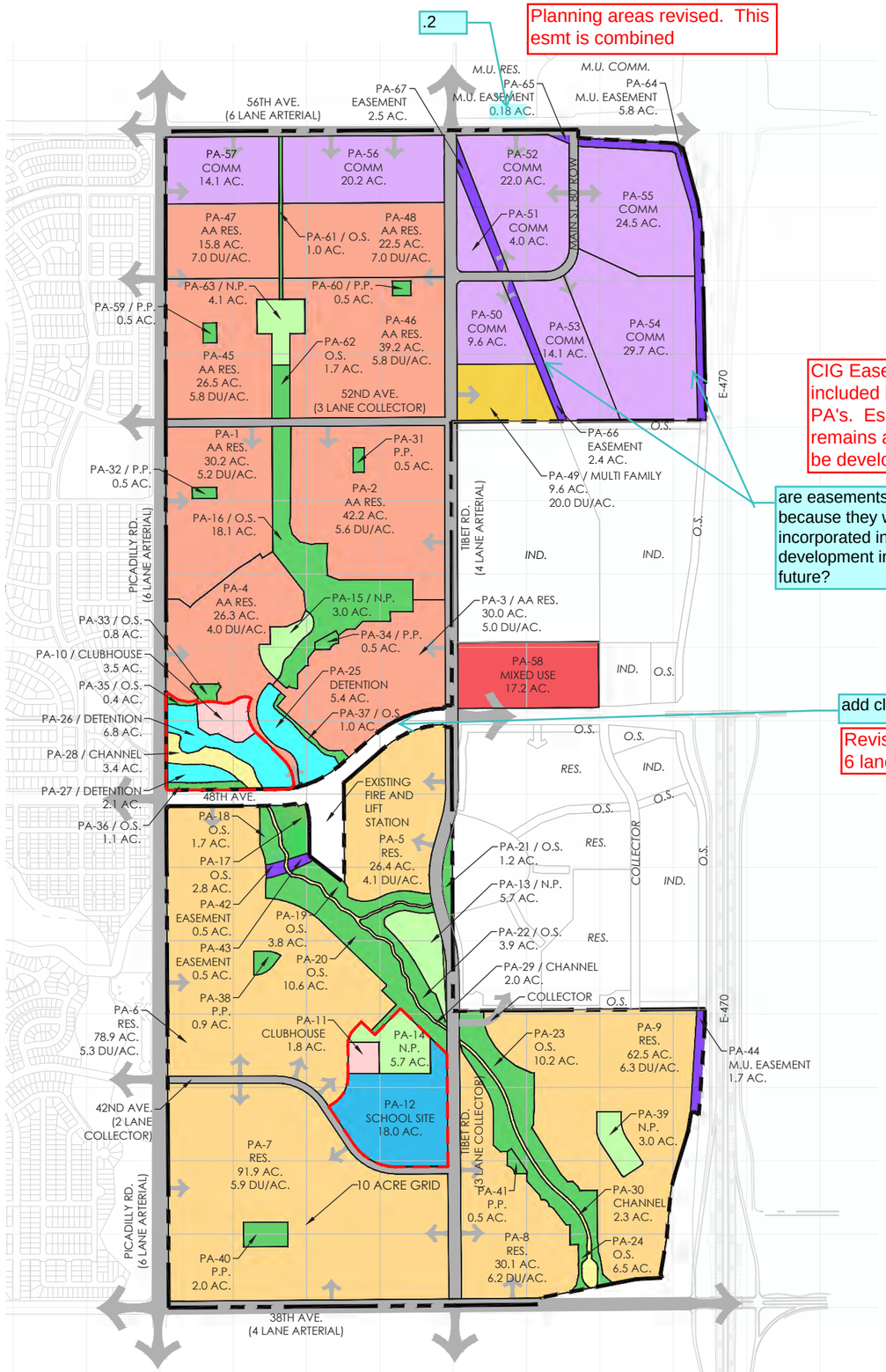
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.4



LEGEND

- SINGLE FAMILY RES.
- ACTIVE ADULT RES.
- OPEN SPACE
- DETENTION POND
- FLOODWAY CHANNEL
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- ROAD RIGHT OF WAY
- EASEMENT
- COMMERCIAL
- MULTI FAMILY RESIDENTIAL
- MIXED USE
- NAC BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

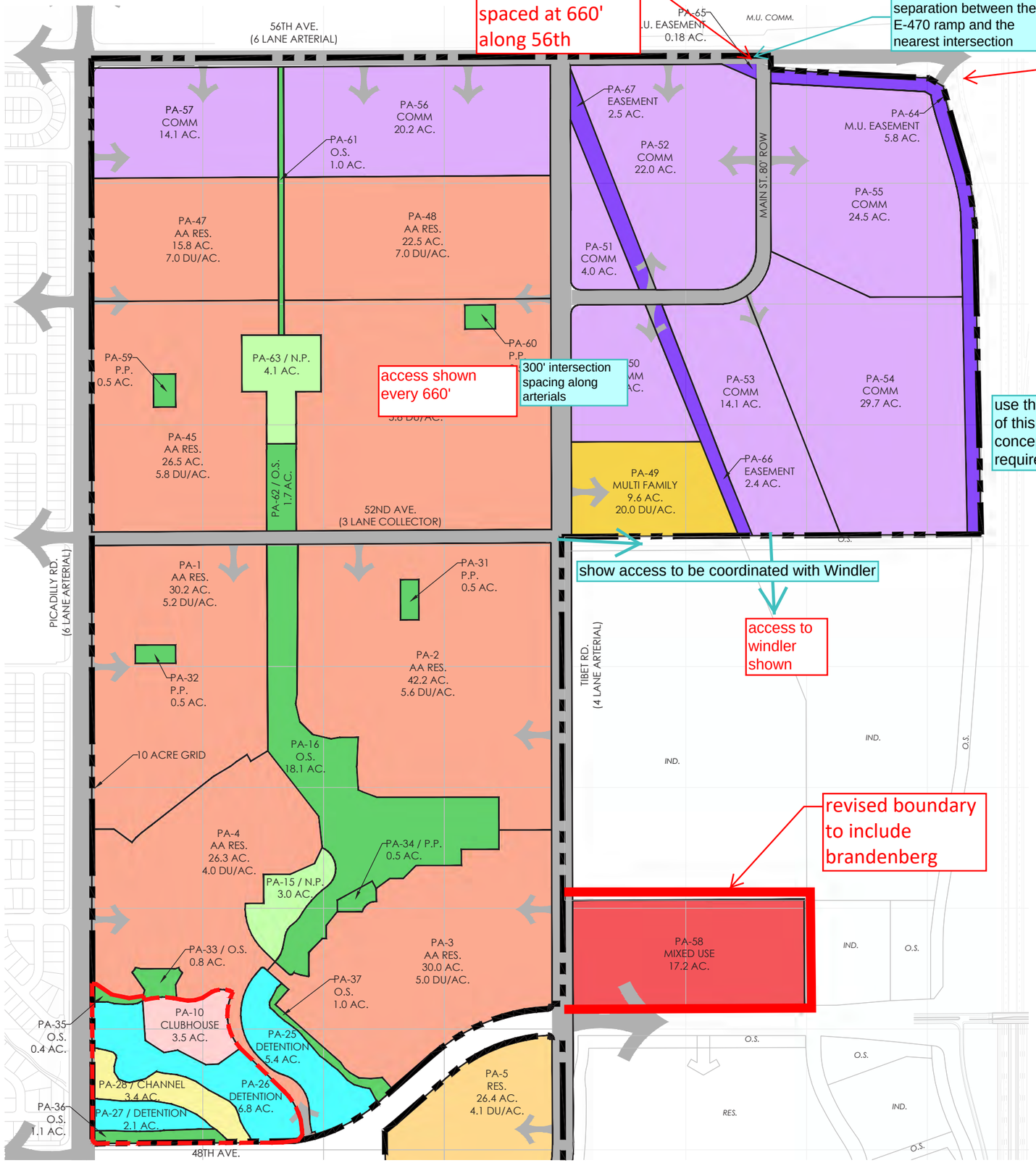
SCALE 0 300 600 1200 2400

Sheet Title:
LAND USE PLAN OVERALL
Land Use Map, Matrix and Standard Notes
Master Plan

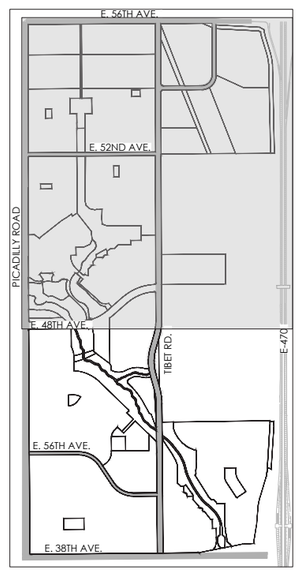
Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.4



KEY MAP



SCALE

0 150 300 600 1200

Sheet Title:

LAND USE PLAN SHEET 1

Land Use Map, Matrix and Standard Notes

Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 8.4

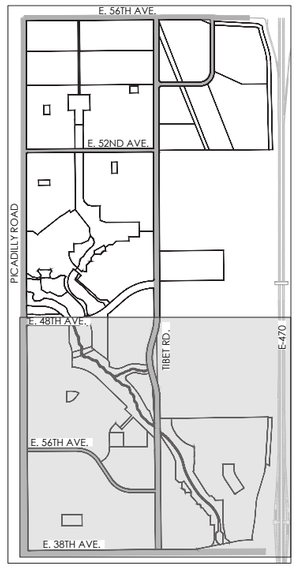
TAB 8.4

LEGEND

- SINGLE FAMILY RES.
- ACTIVE ADULT RES.
- OPEN SPACE
- DETENTION POND
- FLOODWAY CHANNEL
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- ROAD RIGHT OF WAY
- EASEMENT
- COMMERCIAL
- MULTI FAMILY RESIDENTIAL
- MIXED USE
- NAC BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

KEY MAP



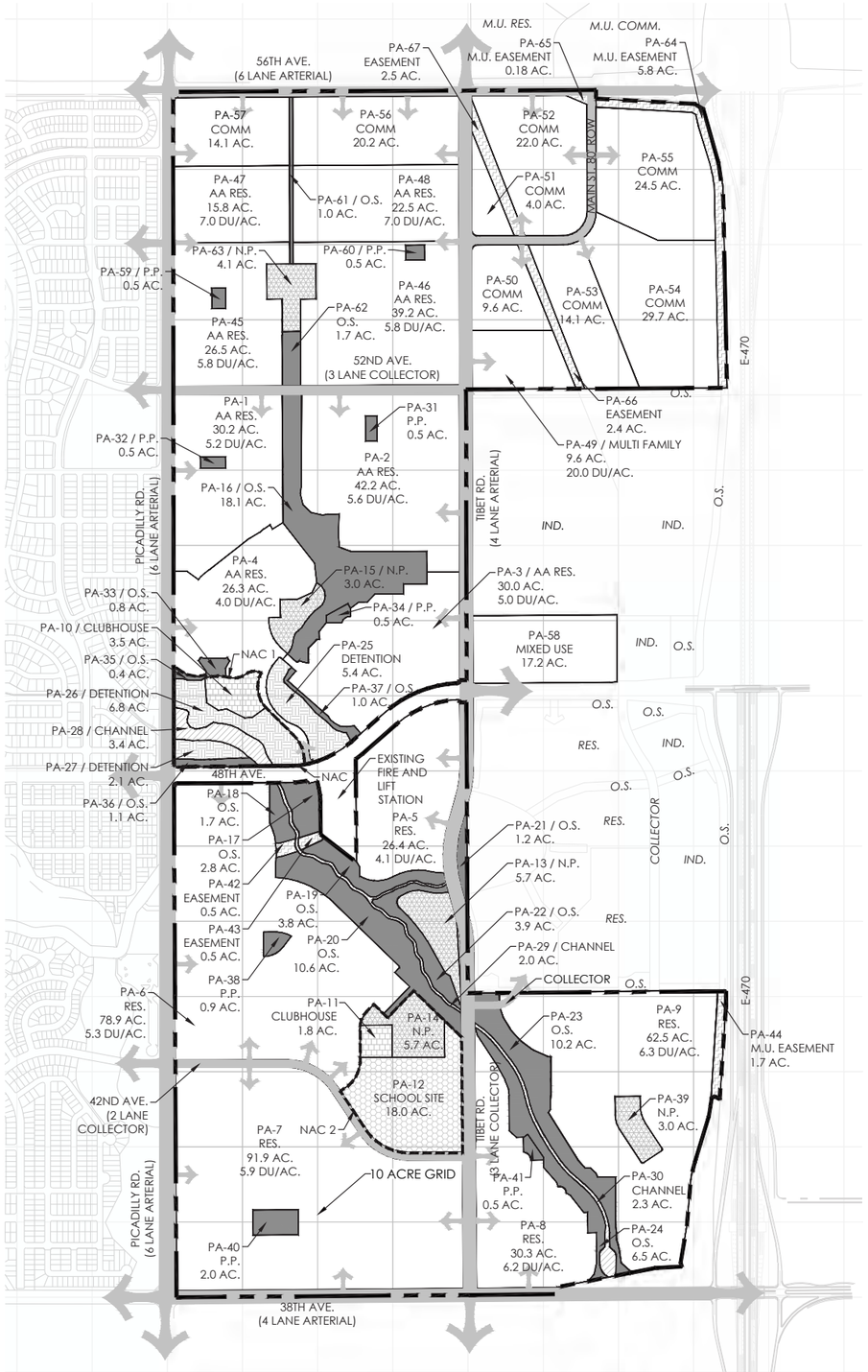
SCALE
0 150 300 600 1200

Sheet Title:
LAND USE PLAN SHEET 2
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.5



black and white maps are no longer required

Removed

LEGEND

- OPEN SPACE
- DETENTION POND
- FLOODWAY CHANNEL
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- EASEMENT
- ROAD RIGHT OF WAY
- NAC BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

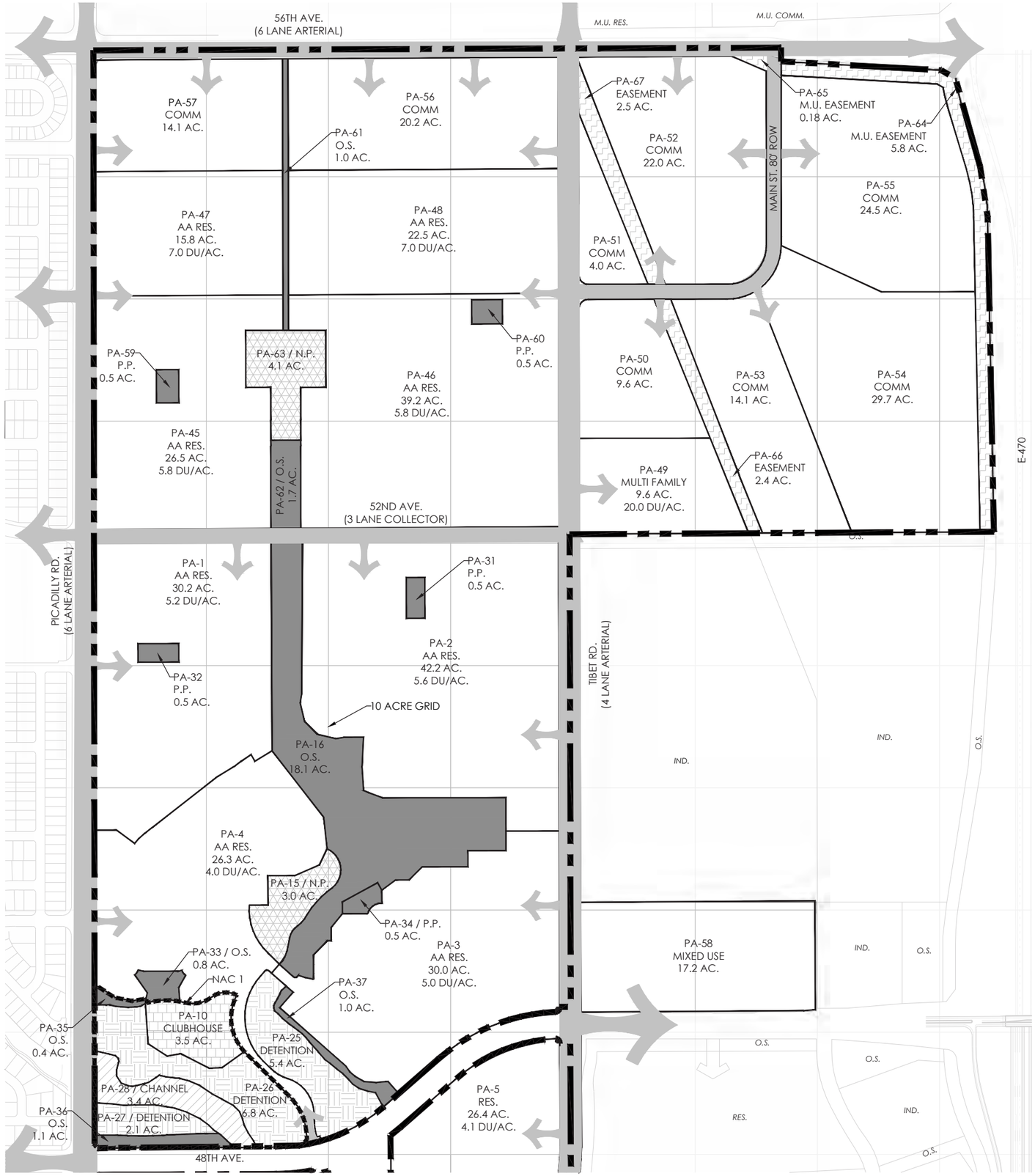
SCALE
0 300 600 1200 2400

Sheet Title:
LAND USE PLAN
B&W OVERALL
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.5

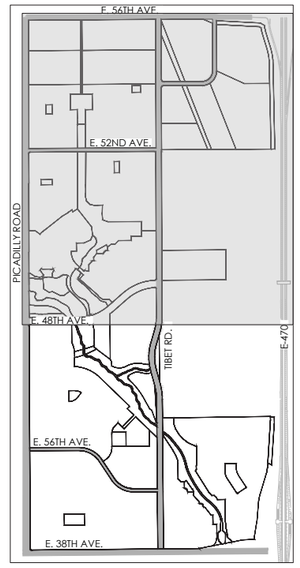


LEGEND

- OPEN SPACE
- DETENTION POND
- FLOODWAY CHANNEL
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- EASEMENT
- ROAD RIGHT OF WAY
- NAC BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

KEY MAP



SCALE
0 150 300 600 1200

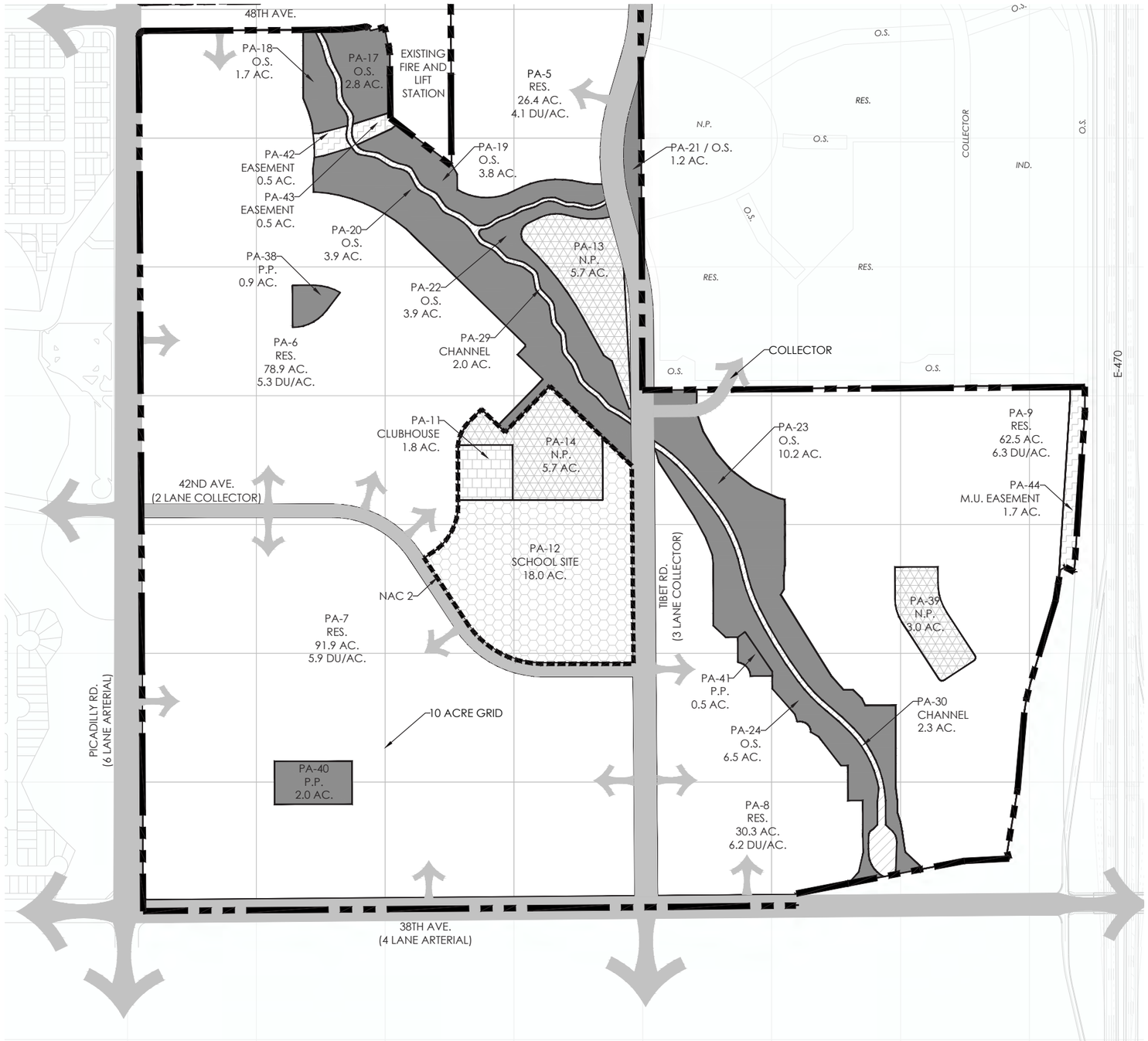
Sheet Title:
LAND USE PLAN
B&W SHEET 1
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 8.5

TAB 8.5

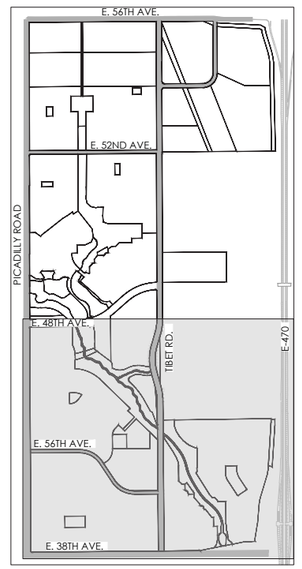


LEGEND

- OPEN SPACE
- DETENTION POND
- FLOODWAY CHANNEL
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- EASEMENT
- ROAD RIGHT OF WAY
- NAC BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

KEY MAP



SCALE
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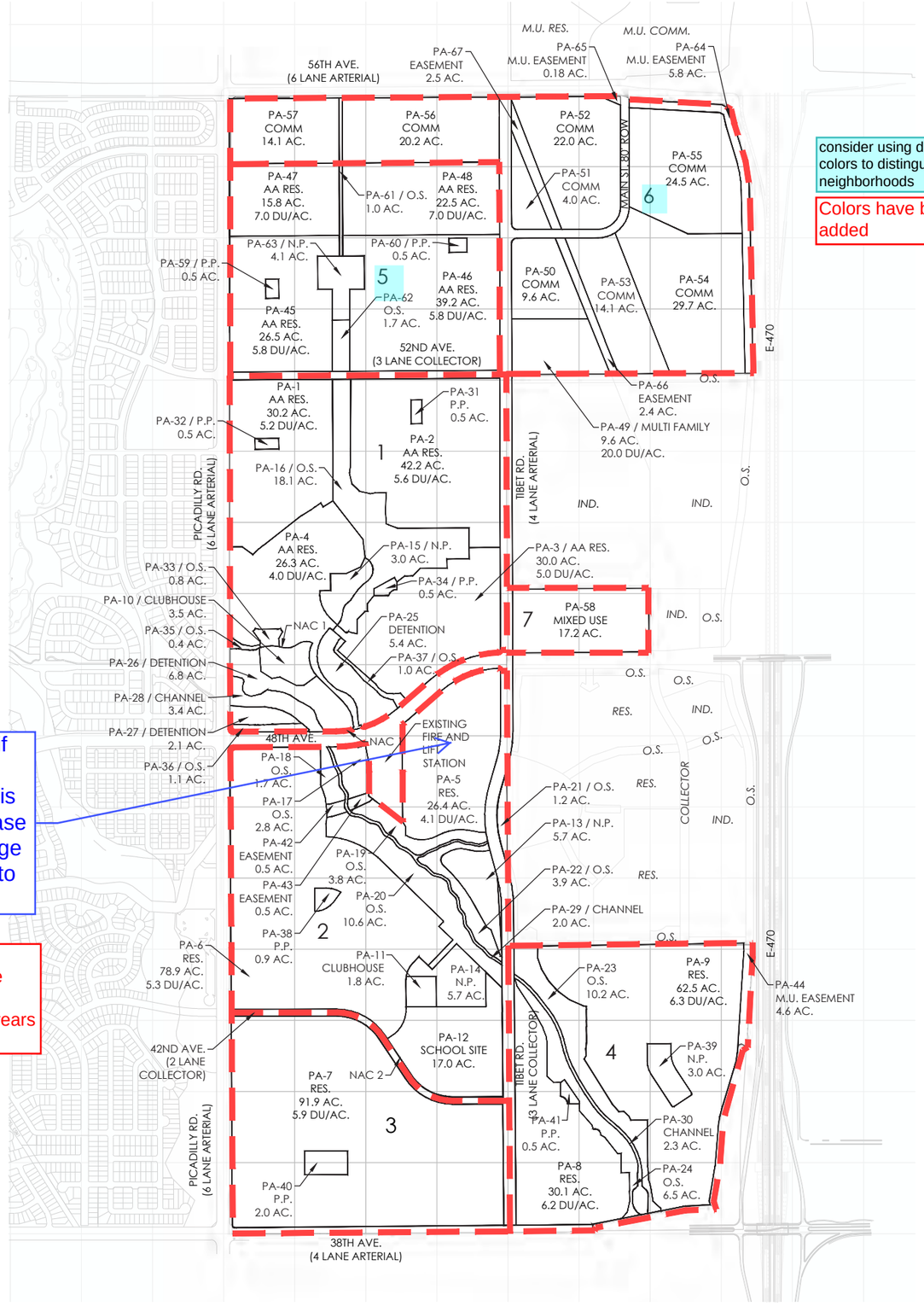
Sheet Title:
LAND USE PLAN
B&W SHEET 2
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 8.5

TAB 8.6



consider using different, light colors to distinguish neighborhoods

Colors have been added

Please advised if changes have been made to this PA-5. If so, please revise the acreage and land matrix to reflect changes.

No change from Amendment 1. Fire station parcel was dedicated to COA years ago.

LEGEND

NEIGHBORHOOD BOUNDARY

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
IND. = INDUSTRIAL

make numbers more visible

Revised

Neighborhood	Size (AC)	North Boundary	South Boundary	East Boundary	West Boundary
1	180.7	52nd Ave	48th Ave	Tibet Road	Picadilly Road
2	174.7	48th Ave	42nd Ave	Tibet Road	Picadilly Road
3	101.8	42nd Ave	38th Ave	Tibet Road	Picadilly Road
4	115.1	44th Ave	38th Ave	E-470	Tibet Road
5	114.5	Neighborhood 6	52nd Ave	~~E-470~~	Picadilly Road
6	171.3	56th Ave	Windler	E-470	Tibet/Picadilly Road
7	18.1	Windler	Windler	Windler	Tibet Road
Total	876.2				

48thAve

Revised

Tibet Rd

Revised

SCALE 0 300 600 1200 2400

Sheet Title:

NEIGHBORHOOD DEFINITION PLAN

Land Use Map, Matrix and Standard Notes

Master Plan

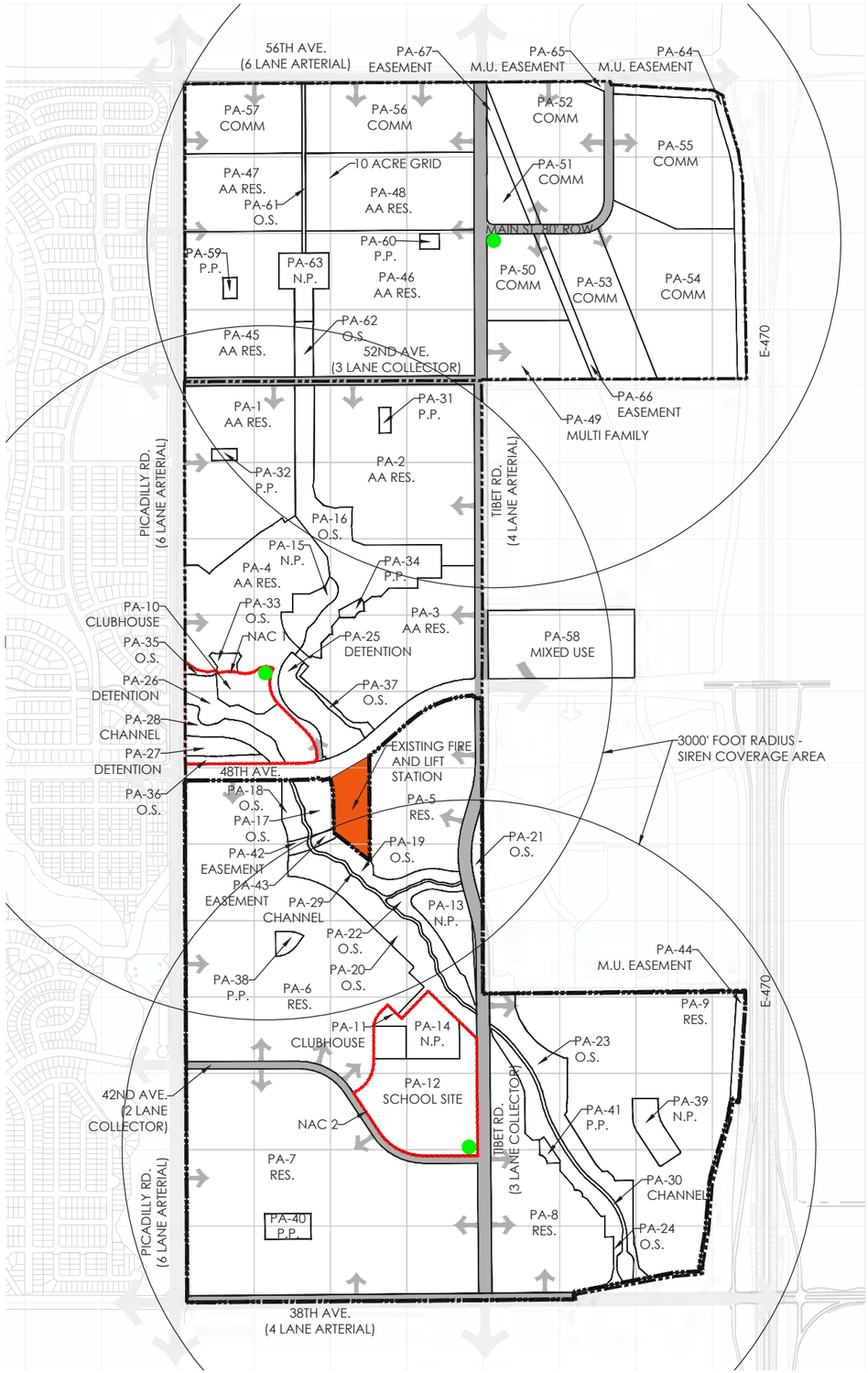
Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.7



LEGEND

- PROPOSED ENTRY POINT
- WHELEN ALERT SIREN TOWER LOCATION
- DEDICATED FIRE STATION
- PROPERTY LINE
- NEIGHBORHOOD ACTIVITY CENTER

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL

STANDARD FIRE NOTES

1. In the event that a permanent fire station is not operational, the Aurora Fire Department may require that a temporary fire station be provided by the developer and/or annexing party. The property has been dedicated to the City and is no less than 1 ¾ acres with the location and dimensions such that optimal emergency response times can be achieved.
2. The City of Aurora requires that a permanent station be platted at the time of development approval. The property has been dedicated to the City and is no less than 1 ¾ acres with the location and dimensions such that optimal emergency response times can be achieved. Shared use sites (police, fire, etc) must be at least 8 acres in size and situated such that optimal emergency response times can be achieved. These sites shall be contiguous to collector streets.
3. Permanent or temporary fire stations: the exact placement of permanent or temporary fire stations will be determined and approved by the city of aurora's fire marshal to insure that coordinated coverage is provided within the city. For specific questions, the fire marshal can be reached through the fire department main switchboard, 303-326-8999, or 303-326-8986 (fax).
4. The FEMA requirement for outdoor emergency warning systems is a 60-70 foot monopole tower using an alert siren. The City of Aurora uses the Whelen Siren System. The land requirement for the tower is a 10' x 10' easement. Each siren covers approximately 3,000 radial feet at 70 db and is typically spaced one siren per square mile.
5. In newly annexed/developing areas of the city, sirens should be sited on every ½ section of ground (320 acres) or 6000 feet apart to provide edge to edge coverage.
6. The exact placement of sirens will be determined by the City of Aurora's Office of Emergency Management to insure that coordinated coverage is provided on a system wide basis. For specific questions, the Office of Emergency Management can be reached at 303-739-7636 (phone), 30-326-8986 (fax), or afd_oem@auroragov.org.

SCALE
0 300 600 1200 2400

Sheet Title:
FIRE AND SAFETY EXHIBIT
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 8.7

8.8 Standard MP Notes

1. Traffic Signal Costs. Owner and/or developers are responsible for 100 percent of signal costs for interior intersections. Public Improvement Funding Agreement (PIFA) will dictate the payment and timing of signals at perimeter intersections.

2. Street Lights. Streetlights must be constructed along all public streets as required by City Code Section 126-236.

3. Archeological finds. The owner, developer and/or contractors will notify the City if archeological artifacts are uncovered during construction.

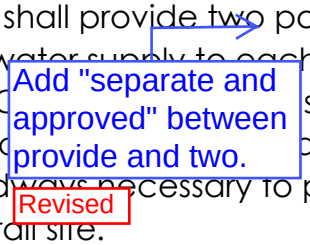
4. Parks. Neighborhood park sites shall not exceed 4:1 slopes.

5. Residential Density Reductions. The developer has the right to build at a lower residential density in any map area provided the City has determined that the use is permitted and compatible with surrounding land uses. A finding of compatibility will be determined at the time of CSP review. This reduction shall be considered an administrative MP amendment.

6. Master Drainage Plan. No subdivision shall be approved prior to the City's approval of the Master Drainage Plan. In the event of any plan conflicts with the MP, including, but not limited to, the size, location and regional detention ponds and/or drainage way locations, cross sections and widths, the Master Drainage Plan, as approved by the City, shall govern. Drainage ponds drop structures and other facilities are subject to preliminary plat or site plan review.

7. 404 Permit. The developer is responsible to comply with any requirements of the Army Corps of Engineers (if any) with regards to 404 permitting and wetlands mitigation.

8. Emergency Access. The developer shall provide two points of paved emergency access and a looped water supply to each phase of the development as approved by the City. The developer shall provide emergency crossings that meet all City requirements. The developer/applicant is required to provide all offsite roadways necessary to provide the two distinct points of access to the overall site.



9. The Master Utility Study, Master Drainage Study and Master Transportation Study are incorporated as a part of the MP. Final approval of these documents is required before acceptance of an application for the first within the project.

10. Landscaping Standards. Unless otherwise noted herein in a adjustment, the landscaping standards outlined in the UDO apply to this MP. Where the standards outlined in the UDO with standards within this MP, the more restrictive shall apply.
11. Future Amendments. Any future amendments to architecture, landscape architecture and other urban design standards and related drawings must demonstrate an equal or better quality than the approved MP standards.
12. MP Adjustments. Except for any adjustments listed below, this MP will be interpreted to mean that all standards contained in the MP will meet or exceed all city code requirements.
13. Major arterial medians to be publicly maintained shall be designed and constructed in accordance with P&OSD Public Median Standards. (These policies are pending completion.)
14. Major arterial medians to be privately maintained shall be designed and constructed in accordance with P&OSD Private Median Standards. (These policies are pending completion.)

9

MP OPEN SPACE, CIRCULATION, AND NEIGHBORHOOD PLAN

- Open Space Narrative
- Form J
- OS Neighborhood Map (Color)
- OS Neighborhood Map (B&W)

9.1 Open Space/ Circulation/ Neighborhood Map

Include the entire MP in the discussion.

Revised

1. Open Space

The parks and open space system for Green Valley Amendment 2 is extensive and includes 21.5 acres in 5 Neighborhood Parks and over 70.7 net acres of open space. The open space includes a 200 to 400 foot wide open space corridor that runs northwest to southeast along the drainages and connects all park, school, and NAC sites together. The Grand Park Corridor is scheduled for improvement with a trail system, benches, scenic overlooks, and landscaping. See Form J for further detail.

what/where is this? Label/define on map. Which PA's are included

Revised

2. Connectivity

In concert with the Zone District requirements, all subdivisions and developments within Green Valley will be designed to create an integrated system of lots, streets, sidewalks, trails, and bikeways that provides for optimal movement of people, bicycles, and automobiles within the Green Valley community to and from adjacent streets, developments and uses.

3. Pedestrian and Bicycle Circulation System

The pedestrian circulation system at Green Valley consists of detached meandering pedestrian trails along the arterials and collectors, in addition to walks along local streets. All community facilities including parks, schools, the Grand Park Corridor, and the NAC's are connected to the trail system. This system is shown on the Open Space, Circulation, and Neighborhood Map.

The Green Valley Amendment 2 Plan encourages pedestrian and bicycle activity throughout the community by providing:

- 10 foot regional off-street trails leading through the Grand Park Corridor and its associated greenways that connect to Community and Neighborhood Activity Centers, parks, open space, schools, and neighborhoods. All regional trails will cross arterials at either a signalized intersection or a grade separated crossing. Signalized intersections may include Rectangular Rapid flashing Beacon (RRFB) signs. The potential of a grade separated crossing will be evaluated at time of Site Plan;
- 8-foot community detached trails along Minor Arterials.
- Landscaped tree lawns adjacent to a majority of the local streets will be provided;
- 5-foot neighborhood trails will be provided within each neighborhood.

Revised

Local trails are 6', please update.

4. Primary Access

One principal Arterial 48th Avenue, traverses Green Valley in an east/west direction; this is planned to eventually accommodate 6-lanes. 56th Avenue along the northern boundary is also a 6-lane arterial and will be the main thoroughfare for commercial/retail in this area. 38th Avenue is planned as a four-lane Minor Arterial. Along 52nd Avenue, a three-lane collector is planned.

In a North/South direction, Picadilly Road is planned as a six-lane Principal Arterial. East of Picadilly, a three-lane collector is planned along Tibet Road between 38th Ave. and 48th Ave. Tibet Rd. is a 4 lane arterial between 48th Ave. and 56th Ave.

In addition to these roadways, local roadways will serve the individual neighborhoods, designed to meet the City of Aurora Subdivision Ordinance.

Sidewalks are planned along all streets, and pedestrian/bicycle trails are planned along the Grand Park Corridor and all its associated greenways. These trails will be 10 feet wide, constructed of concrete or other materials determined at the SP level.

Tab 10.13, Street Standards, show the cross sections for these streets.

5. Public Land Dedication Requirements

Revised to 84.8

Update per Tab 8 comments (should be 85.05)

The City's parks/open space dedication requirements under the current City Code, when applied to the MP Amendment 2 site, would require approximately 21.2 acres of neighborhood parks and 55.1 acres of further open space/parks, resulting in an aggregate public land dedication requirement of approximately 76.2 acres. This proposed MP Amendment 2 does not reduce the amount of dedicated open space within the approved Green Valley Ranch MP Amendment 1 and is not meant to stand alone, but be a portion of the overall approved Green Valley Ranch MP. Therefore, any public land dedication calculations should be inclusive of the entire MP area. Any PLD shortfalls will be provided with a cash in-lieu payment to the City accordance with City Code Section 147-48(b)(4).

All NP/OS must be met on site.

We meet all NP/OS requirements on site

Mention community park via CIL

Revised

Under this MP Amendment, the applicant will dedicate 21.5 acres for neighborhood parks, and another 70.7 acres to open space. As a part of the 70.7 acres the applicant will establish "pocket parks" within the development to minimize any gaps in service. These are further described hereinafter as contemplated in the approved MP.

Pocket Parks will be maintained through one or more metropolitan districts, which will be implemented at the Site Plan (SP) stage. Applicant will determine the improvements and amenities for the pocket parks based on the criteria outlined below. These pocket parks will enhance the recreational and open space amenities afforded to Green Valley, and the Parks and Open Space Department Dedication and Development Criteria specifically mandate open space credit for such pocket parks. The City will also derive economic benefit from the implementation of this system because the pocket parks will not be dedicated to the City, and accordingly the City will not have to absorb ongoing maintenance responsibilities with respect thereto (which responsibilities the City would bear for incremental neighborhood parks). From a policy standpoint, the desired land use utility to be derived from open space is realized, but the City does not have to

bear the resulting economic burdens.

Pocket parks may range from one-half to 2.0 acres in size and generally serve as neighborhood focal points to supplement park and open space opportunities in close proximity to residents' homes. A minimum of one park will be at least three (2.0) acres. This park is intended to be a passive park space for unstructured recreational activity and contemplative use unless it will serve as a key site for a neighborhood where no other type of park or school is nearby and if projected recreational needs warrant supplemental park facilities.

Pocket parks will be typically located on a local street and be bordered by low intensity uses, including primarily residential lots. Open turf lawns suitable for informal play and games, landscaping and site furniture such as benches, tables, trash receptacles and lighting will be the standard program for each site. Additional facilities that may be provided to augment pocket park opportunities may include, but not be limited to playgrounds, picnic pavilions, basketball courts and volleyball courts depending on the needs of the neighborhood being served by the park and the character of adjoining land uses. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale.

The final location, size and park program for each pocket park will be determined in the SP based, in part, on the overall design intent of the neighborhood, the relationship of the park land to other land use components of the development and recreation facility needs.

The pocket parks will be constructed, owned and maintained by the Metropolitan Districts of Green Valley as indicated on Form J. The pocket park land acreage dedicated by each SP will be tracked to ensure that the dedication requirement in Form J is being sufficiently met with for the amendment area.

When the parks and open space dedications and credits outlined above for the proposed MP are totaled (as summarized in the Form J table), they produce an aggregate area of approximately 92.2 acres. The MP also integrates the parks, open space and trail system in a coherent fashion that will effectively serve the recreational needs of the Green Valley community as well as greater interests of the City.

6. Park and Recreational Improvement Requirements

The applicable Metropolitan District(s) will be responsible for the improvement of parks within the MP Amendment as herein after set forth. The City will be responsible for maintenance of the parks upon dedication by the applicant / land owners (pocket parks will not be dedicated to the City.) The program elements for the parks to be improved by the applicable Metropolitan District(s) shall be limited to the list shown below. No further improvements will be required by the City. Refer to the Development Agreement for details on funding of the park improvements.

Applicant will construct pedestrian/bicycle/recreational trails provided for in the Open Space/Circulation/Neighborhood Map which is a part of this MP Amendment 1. The 10-foot regional trails will be dedicated to and maintained by

one or more of the metropolitan districts unless determined otherwise. The 8-foot and 5-foot community and neighborhood trails will be dedicated to and maintained by one or more of the metropolitan districts.

Neighborhood parks in the Single Family residential area and the improvements therein (including irrigation systems) will be dedicated to and maintained by the City, where indicated. These park facilities will be designed and constructed by the applicable Metropolitan District(s). The following is a list of program elements that may be provided within a neighborhood park in Green Valley Amendment 2. Additional items may be provided at the discretion of the applicable Metropolitan District(s).

- Playground equipment for ages 2-5 and ages 5-12 (minimum 4000 sf)
- Informal multi-purpose field
- Loop trail system
- Picnic pavilion with seating for 15 people
- Picnic Tables
- Grills
- Benches (as needed)
- Trash receptacles (as needed)
- On street parking (no parking lot)
- Landscaping with automatic irrigation system
- Park sign

Neighborhood parks in Active Adult residential area and the improvements therein (including irrigation systems) will be owned and maintained by the Metropolitan District. These park facilities will be designed and constructed by the applicable Metropolitan District(s). The following is a list of program elements that may be provided within a neighborhood park in the Active Adult Residential areas. Additional items may be provided at the discretion of the applicable Metropolitan District(s).

- Loop Trail System
- Picnic Pavilion
- Picnic Tables
- Grills
- Benches
- Community Garden
- Trash
- Parking Lot
- Landscape
- Activity Systems

Playgrounds are a requirement and will need to be included with NP 63.

Play feature added. Swing Benches have accomodated this requirement in Filing 11 previously.

At the SP stage, the program elements shown above may be reduced in parks located adjacent to school sites in order to avoid duplication with equipment located on the school site.

TAB 9.2

9.2

Form J: Parks and Open Space Inventory and Phasing Approval

A. Planning Area Designation (Or feature in an area)	B. Description and Inventory of Facilities	C. Total Acreage	D. Parks Dept. Credited Acreag	E. Final Ownership & Facility Funding	Phasing Plan and Trigger for Each Phase
PA-13	Neighborhood Park - Program elements that may be provided within a neighborhood park: Playground equipment for ages 2-5 and ages 5-12 (minimum 4000 sf), Informal multi-purpose field, Loop trail system, Picnic pavilion with seating for 15 people, Picnic Tables, Grills, Benches (as needed), Trash receptacles (as needed), On street parking (no parking lot), Landscaping with automatic irrigation system, Park sign, additional items may be provided at the discretion of the applicable Metropolitan District(s). Service area to include Planning Areas 5 and 6, which total 106.4 acres and 613 dwelling units. Conceptual design determined at CSP. The neighborhood park will benefit recreation by including facilities for contemplative recreation that include seating areas and enhanced landscape for gathering and passive recreation as well as open grass areas that offer scenic vistas to the west, benefit conservation by preserving land to establish an interconnected park and open space system, and benefit education thru the implementation of land management practices that support interpretation goals. Trail connections to the school will be provided.	6.2 Ac			urrent with adjacent plats. Construction shall e issuance of the 300th pancy within Planning bined or within 6 months nfrastructure including water service extension
PA-14	Neighborhood Park - Program elements that may be provided within a neighborhood park: Playground equipment for ages 2-5 and ages 5-12 (minimum 4000 sf), Informal multi-purpose field, Loop trail system, Picnic pavilion with seating for 15 people, Picnic Tables, Grills, Benches (as needed), Trash receptacles (as needed), On street parking (no parking lot), Landscaping with automatic irrigation system, Park sign, additional items may be provided at the discretion of the applicable Metropolitan District(s). Service area to include Planning Area 7, which totals 90.9 acres and 572 dwelling units. Conceptual design determined at CSP. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale. Conceptual design determined at CSP. The neighborhood park will benefit recreation by providing trail connections to the school and facilities primarily oriented to active recreation, including athletic fields, sports courts, playgrounds, etc. that will coordinate well with the neighboring school, benefit conservation by fostering the concept of outdoor classrooms by setting aside natural areas for environmental study, and benefit education with the provision of signs for environmental education for self guided learning or programmatic tours.	5.7	5.7	Metro District to construct and the City of Aurora to own/maintain.	Dedication c planning are the park shall including all programmatic elements of the park, except t and a section loop, shall be the 300th C.O 7 combined c completion o adjacent roa to the site, whichever is later. Construction of the multi-purpose playfield and completion of the looped trail for Phase 2 shall be complete within 6 months of approval of final civil construction drawings for Tributary T, which should include design for the drainageway and Tibet Road, adjacent to the park.
PA-15	Neighborhood Park - Program elements that may be provided within a neighborhood park: Loop Trail System, Picnic Pavilion, Picnic Tables, Grills, Benches, Community Garden, Trash, Parking Lot, Landscape, Activity Systems, additional items may be provided at the discretion of the applicable Metropolitan District(s). Service area to include Planning Areas 1-4, which total 137.0 acres and 793 dwelling units. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale. Conceptual design determined at CSP. The neighborhood park will benefit recreation by including facilities for contemplative recreation that include seating areas and enhanced landscape for gathering and passive recreation as well as trails throughout, benefit conservation by setting aside natural areas that have overlapping resources of value and interest for environmental study, and benefit education with the provision of signs for environmental education for self guided learning or programmatic tours.	3.0	3.0	Metro District to construct, own, and maintain.	Dedication concurrent with adjacent planning area final plat. Construction shall be complete by the issuance of the 400th certificate of occupancy within Planning Areas 1, 2, 3 and 4 combined or within 6 months of completion of infrastructure including adjacent roads and water service extension to the site
PA-39	Neighborhood Park - Program elements that may be provided within a neighborhood park: Playground equipment for ages 2-5 and ages 5-12 (minimum 4000 sf), Informal multi-purpose field, Loop trail system, Picnic pavilion with seating for 15 people, Picnic Tables, Grills, Benches (as needed), Trash receptacles (as needed), On street parking (no parking lot), Landscaping with automatic irrigation system, Park sign, additional items may be provided at the discretion of the applicable Metropolitan District(s). Service area to include Planning Areas 8-9 which total 98.9 acres and 622 dwelling units. Conceptual design determined at CSP. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale. Conceptual design determined at CSP. The neighborhood park will benefit recreation by providing facilities for both passive and active recreation including seating areas and playgrounds, conservation benefits with naturalized amenities where prior to development there was no value, and education benefits thru the provision of hardscape improvements as well as landscape planting to support interpretation goals.	3.0	3.0	Metro District to construct, own, and maintain.	Dedication concurrent with adjacent planning area final plat. Construction shall be complete by the issuance of the 300th C.O. within planning area 9 or within 6 months of completion of infrastructure including adjacent roads and water servic extension to the site, whichever is later.

PA-63	Neighborhood Park - Program elements that may be provided within a neighborhood park: Loop Trail System, Picnic Pavilion, Picnic Tables, Grills, Benches, Community Garden, Trash, Parking Lot, Landscape, Activity Systems, additional items may be provided at the discretion of the applicable Metropolitan District(s). Service area to include Planning Areas 45-48, which total 124.0 acres and 647 dwelling units. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale. Conceptual design determined at SP. The neighborhood park will benefit recreation by including facilities for contemplative recreation that include seating areas and enhanced landscape for gathering and passive recreation as well as trails throughout, benefit conservation by setting aside natural areas that have overlapping resources of value and interest for environmental study, and benefit education with the provision of signs for environmental education for self guided learning or programmatic tours.	4.1	4.1		
PA 16, 33, 35-37, 61, 62	Open Space Corridor with trails, street furniture, shade structures, vista points, and outdoor art. These open spaces provide conservation benefits by preserving land to establish an interconnected park and open space system throughout the development and recreational benefits with the provision of trails and paths. Conceptual design determined at CSP.	24.1	24.1		draina
PA: 17-20, 22-24	Open Space in 200-400 foot wide Open Space Corridor with trails, site furnishings, shade structures, vista points, and outdoor art. These open spaces provide conservation benefits by preserving land to establish an interconnected park and open space system throughout the development and recreational benefits with the provision of trails and paths. Conceptual design determined at CSP.	39.5	39.5	Metro District to construct, own, and maintain.	Dedication c adjacent to t CLOMR/LOMR and construction of drainage improvements, whichever is later. Improvements and landscaping to be completed with construction of associated drainageway.
PA-21	Windler Homestead	1.2	1.2	City of Aurora to own and Windler to construct.	Dedication to be concurrent with dedication of adjacent open space by Windler under the Windler MP entitlements(AC37). Landscaping and maintenance by Windler as outlined in the Agreement Regarding Realignment of Tibet Street South of 48th Avenue, executed March 2004.
PA 31, 32, 34, 38, 40, 41, 59, 60	Pocket parks will be typically located on a local street and be bordered by low intensity uses, including primarily residential lots. Open turf lawns suitable for informal play and games, landscaping and site furniture such as benches, tables, trash receptacles and lighting will be the standard program for each site. Additional facilities that may be provided to augment pocket park opportunities may include but not be limited to playgrounds, picnic pavilions, basketball courts and volleyball courts depending on the needs of the neighborhood being served by the park and the character of adjoining land uses. Other improvements may include features that are supportive of a theme for the neighborhood or the development, such as public art at an appropriate scale. Conceptual design determined at CSP. The pocket parks will provide a combination of conservation, recreational, and educational benefits.	5.9	5.9	Metro District to construct, own, and maintain.	Metro District improvements complete prior to issuance of 50% of C.O.'s of residential units within the Filing in which the proposed pocket park is located.
Landscape Medians	Located in 6-Lane Arterials. Refer to Open Space / Circulation / Neighborhood Map for specific locations.	N/A	N/A	Metro District to construct and the City of Aurora to own/maintain.	Construction by Metro District per P&OSD Dedication & Development Criteria Manual. To be dedicated to the City for maintenance.
TOTAL		**92.2**	**92.2**		92.9 acres of neighborhood park and open space provided.
Director of Parks, Recreation, and Open Space					

*Community parks deficit will be made up with cash in lieu unless otherwise specified.

Although this is within the older adult community, playgrounds need to be provided to meet the service radius requirements and compliance with PROS manual. (PROS suggests doing 2-5 and 5-12 combined small playground area and small 'older adult' playground)

Play feature added. Swing Benches have accomodated this requirement in Filing 11 previously.

Confirm that the park boundary and plat ended up being larger than the original FDP depicted. (Floodplain does not go toward neighborhood park.)

For the 310 area, 61&62 must meet the local trail standards at a minimum (30' wide, 6' walk)

Noted. these are designed at 30' wide.

This sliver of land was dedicated to the city as part of the Trib T Phase 1 plans since there was floodplain within this area. Windler has inquired about incorporating this into thier park.

This area adjacent to the homestead is now going to be privately owned/maintained by Windler unless floodplain. Please confirm this is not floodplain. If so, connect with PROS on how we can have this small section remain private.

since this has already been dedicated how should we update this language?

Note added

GVRE portion has already been paid. Please note that total equivalent of CP that was already collected.

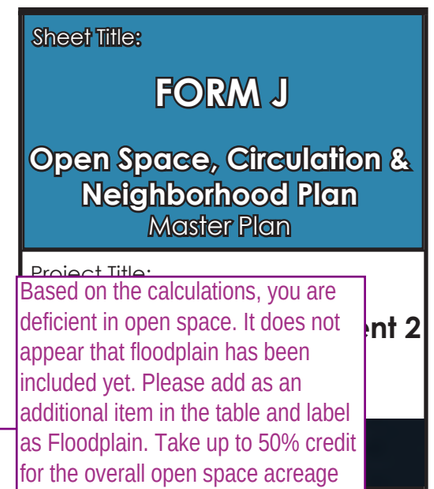
Provide a wider area to include signature and date. This must be signed prior to recordation.

Revised

Floodplain/ located within the 100 year floodplain, meeting the MHFD eligibility and design as stated within the PROS manual, total OS required is 55.75 acres therefore 50% credit is equivalent to 27.88 acres/ 27.88 creditted/ COA owned/ maintained/ completion in line with the PIP.

55.8 AC. of Open Space required. We are providing 58.4 AC. of open space. We have 24.7 AC of Open Space within the 100 Year Floodplain, we are dedicating 12.3 AC of that to the 58.4 AC. of credited acreage.

Based on the calculations, you are deficient in open space. It does not appear that floodplain has been included yet. Please add as an additional item in the table and label as Floodplain. Take up to 50% credit for the overall open space acreage required (aka up to 27.88 acres). Note this only applies to MHFD eligible corridors.



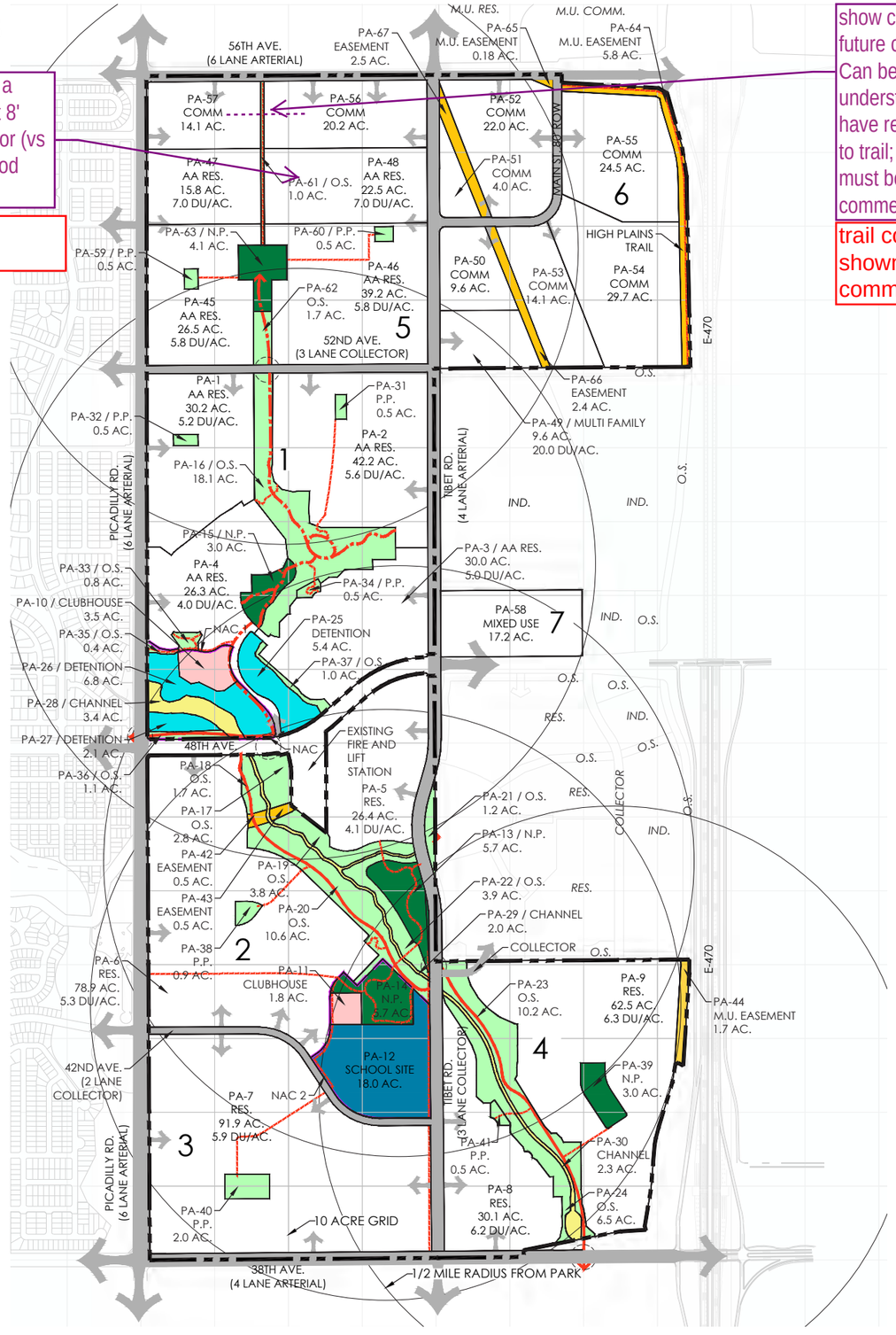
TAB 9.3

Please make this a community trail at 8' within a 30' corridor (vs the 6' neighborhood shown).

trail line type changed to 8'

show connectivity to the future commercial here. Can be 6' sidewalk. It's understood that AA may have resident only gates to trail; public access must be provided near commercial.

trail connections shown into commercial



NOTE: Feasibility studies for potential grade separated regional trail crossings will be conducted during the corresponding SP.

LEGEND

- 6 LANE ARTERIAL (144' ROW)
- 4 LANE ARTERIAL (114' ROW)
- 3 LANE COLLECTOR (80' ROW)
- 2 LANE COLLECTOR (80' ROW)
- OPEN SPACE
- DETENTION POND
- CHANNEL
- EASEMENT
- CLUBHOUSE
- NEIGHBORHOOD PARK
- SCHOOL SITE
- PROPOSED ENTRY POINT
- 1 NEIGHBORHOOD BOUNDARY & NUMBER
- RIGHT OF WAY
- REGIONAL TRAIL
- COMMUNITY TRAIL
- NEIGHBORHOOD TRAIL
- POTENTIAL GRADE SEPARATED REGIONAL TRAIL CROSSING

O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
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SCALE 0 300 600 1200 2400

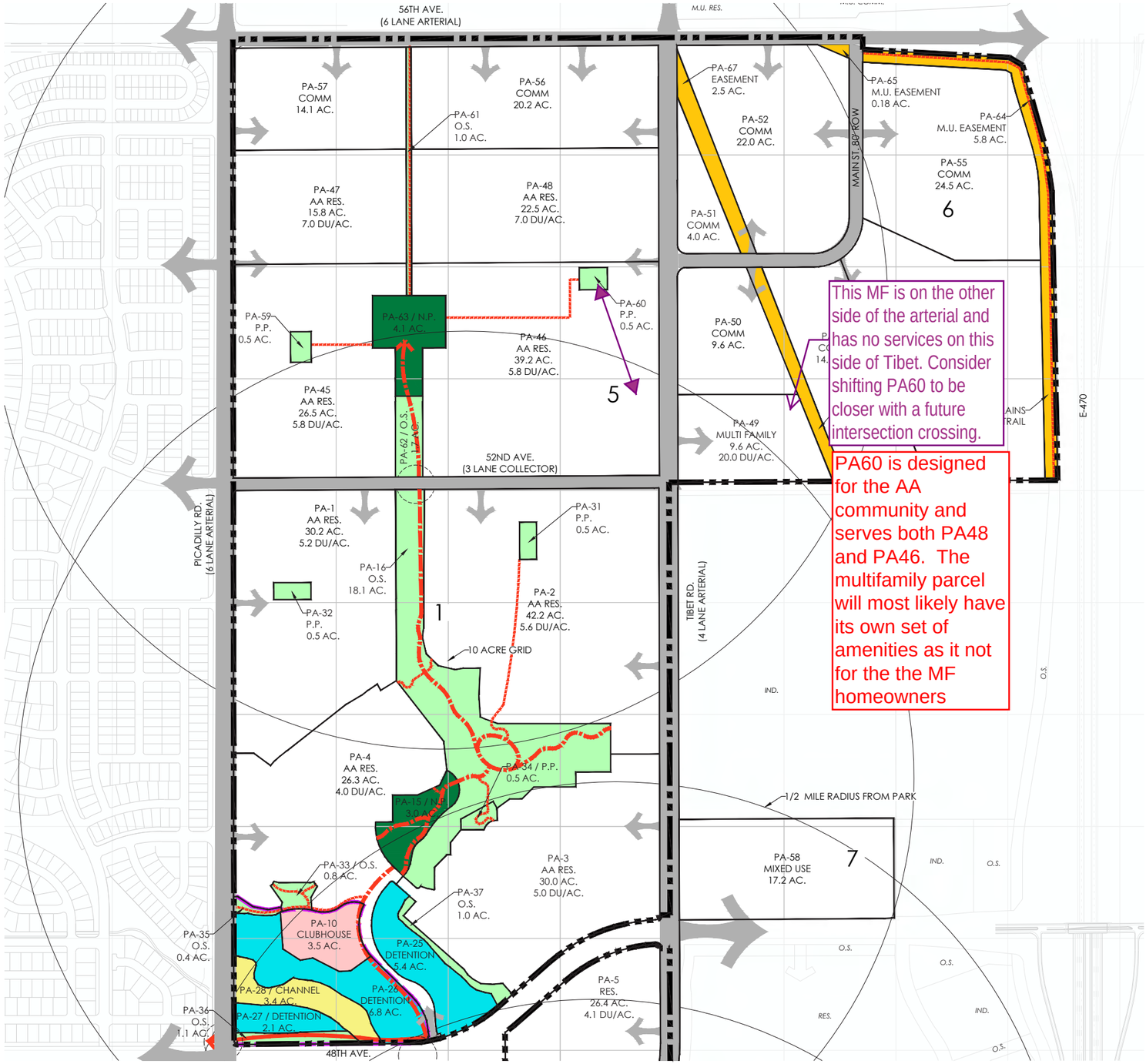
Sheet Title:
OPEN SPACE PLAN OVERALL
Open Space, Circulation & Neighborhood Plan
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 9.3

TAB 9.3



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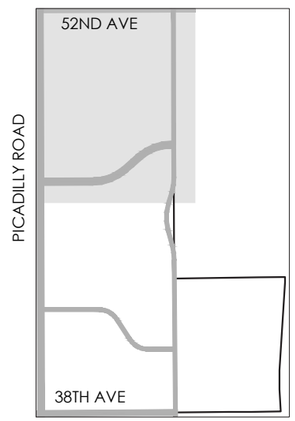
KEY MAP



SCALE

0 150 300 600 1200

Sheet Title:
OPEN SPACE PLAN SHEET 1
Open Space, Circulation & Neighborhood Plan
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 9.3

TAB 9.3

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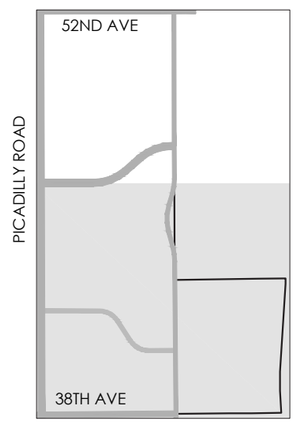

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GREEN VALLEY RANCH

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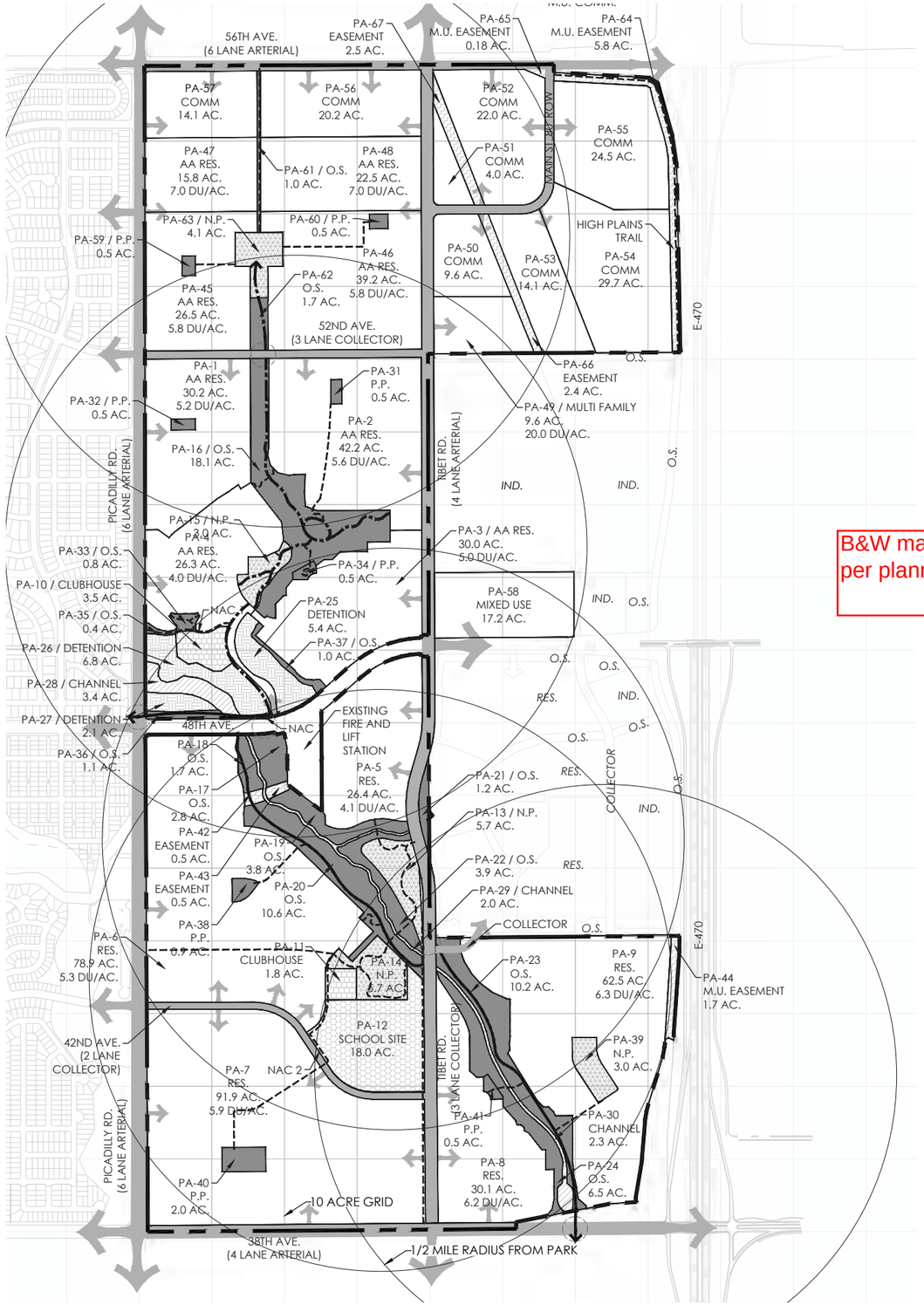
TAB 9.4



B&W maps no longer needed per planning

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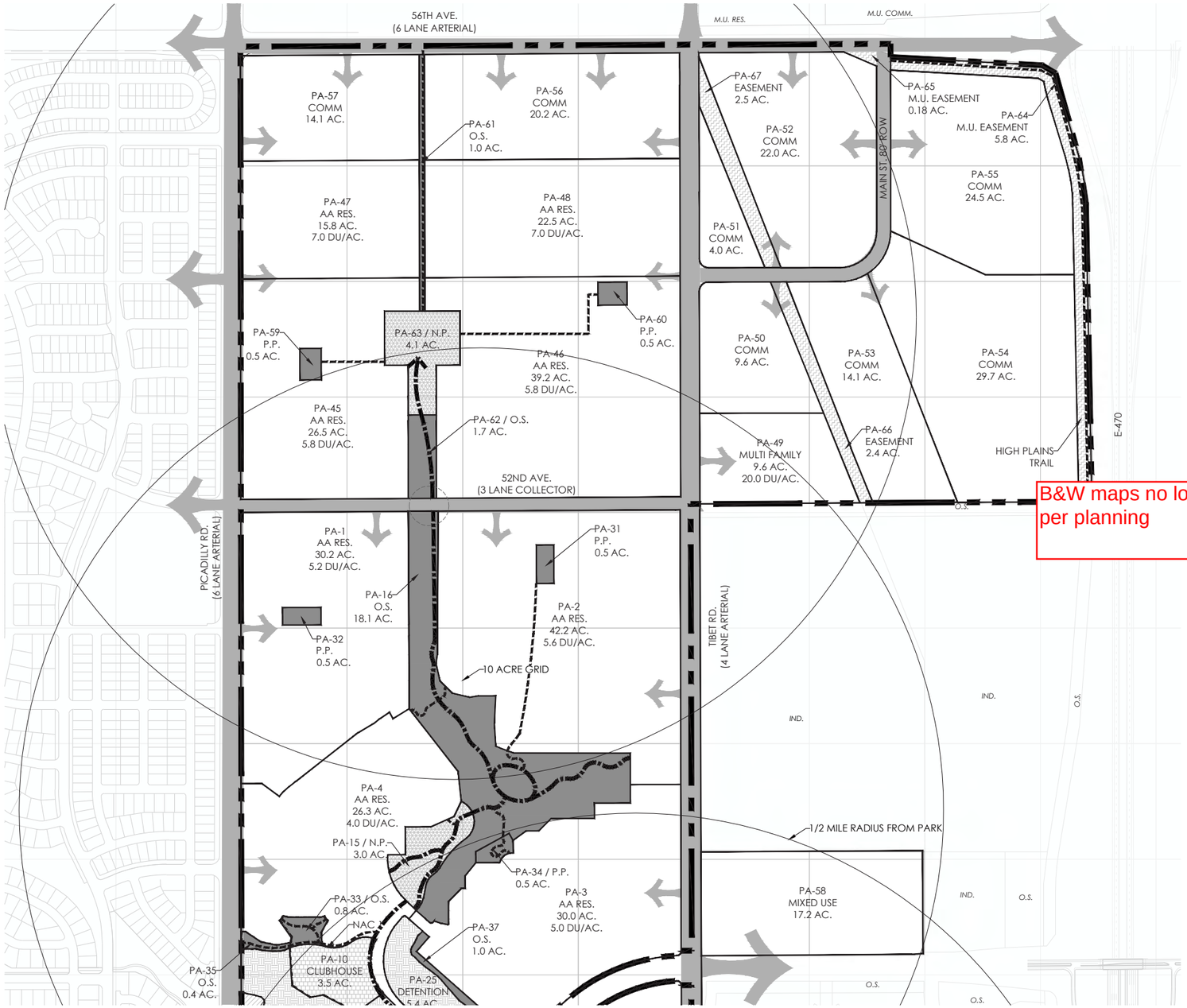
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 9.4

TAB 9.4



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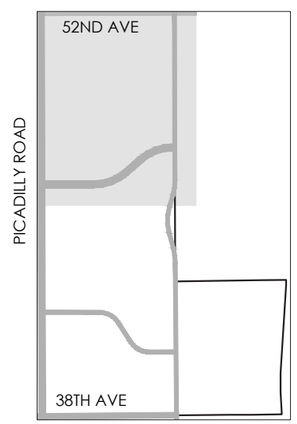

SCALE

0 150 300 600 1200

Sheet Title:

OPEN SPACE PLAN
B&W SHEET 1
Open Space, Circulation & Neighborhood Plan
Master Plan

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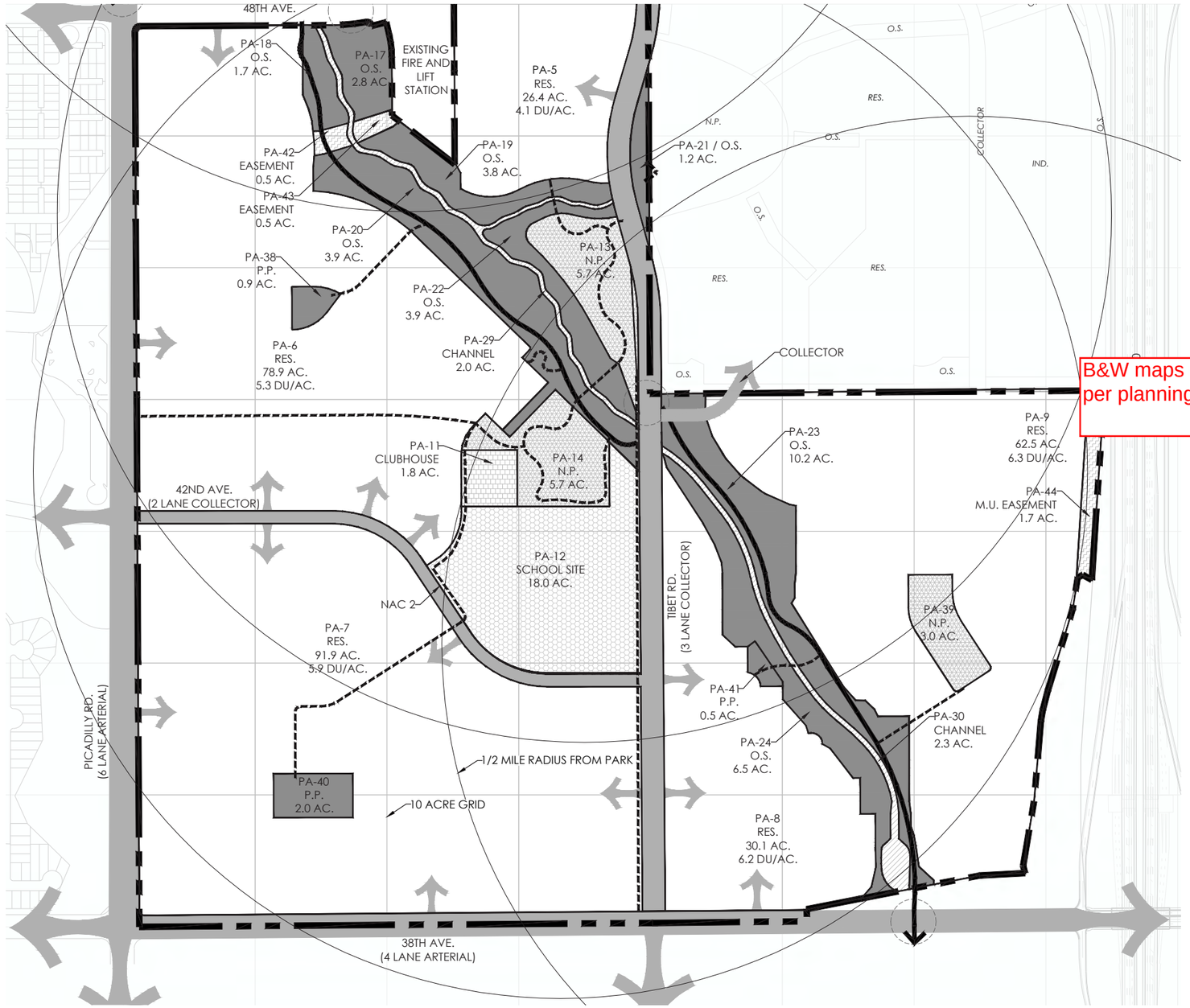
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

NOTE: Feasibility studies for potential grade separated regional trail crossings will be conducted during the corresponding SP submittals.

TAB 9.4



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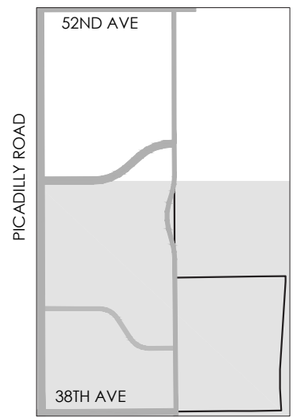

SCALE

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OPEN SPACE PLAN B&W SHEET 2
Open Space, Circulation & Neighborhood Plan
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

MP URBAN DESIGN

10

- Form F-1: Urban Design
- Standards Matrix 10.1
- Form F-2 Neighborhood Character Matrix 10.2
- Overall Monument Plan 10.3
- Primary Entry Monument 10.4
- Secondary and Tertiary Entry 10.5
- Gated Entries 10.5
- Walls and Fencing 10.7
- Lighting Standards 10.8
- Paving Standards 10.9
- Site Furnishings 10.10
- Specialty Structures 10.11
- Signage Standards 10.12
- Street Standards 10.13
- Commercial Design Standards 10.14
- Main Street Design 10.15
- Main Street Plazas 10.16
- Main Street Signage 10.17
- Main Street Site Furnishings 10.18

TAB 10.1

Form F-1: Urban Design Standards Matrix

SPECIAL URBAN DESIGN FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
1. ENTRY MONUMENTATION	THE PRIMARY FEATURES OF THE ENTRY MONUMENTATION WILL HELP TO PROVIDE COMMUNITY IDENTIFICATION, INCLUDING A TRAPEZOIDAL SHAPED COLUMN THAT WILL BE REPEATED THROUGHOUT THE PROJECT. WOODEN BEAMS AND PANELS IN THE MONUMENTATION WILL ALSO BE ESTABLISHED AS A RECURRING THEME. ALL ENTRY MONUMENTS WILL BE CONSTRUCTED OF STONE OR NATURAL LOOKING STONE VENEER; PRE-CAST CONCRETE OR LIMESTONE WILL BE USED FOR THE CAP AND TRIM PIECES; METAL ROOFS WILL CAP COLUMN AND TOWERS. PANELS WITHIN PARTS OF THE ENTRY FEATURES WILL BE MADE OF ACRYLLIC PANELS TRIMMED IN METAL TO SUGGEST THE APPEARANCE OF LIGHTED GLASS PANES. SIGN LETTERING SHALL FOLOW THE STANDARD LOGO STYLE SHOWN IN THE SIGNAGE STANDARDS.	10.4, 10.5, 10.6
2. RETAINING WALLS	RETAINING WALLS SHALL BE SPLIT FACE MASONRY BLOCK IN A VARIETY OF EARTH TONED COLORS THAT INTEGRATE RANDOM SIZES AND PATTERNS FOR INTEREST.	10.7
3. FENCE AND PRIVACY WALLS	FENCING ALONG LOTS ADJACENT TO OPEN SPACE AND DETENTION FACILITIES WILL BE THREE-RAIL OR OPEN RAIL WOOD FENCE. INTERNAL FENCING ALONG LOTS ADJACENT TO OTHER LOTS OR NEARBY ROADS WILL BE PRIVACY FENCING CONSISTING OF VINYL WITH MASONRY COLUMNS, OR VINYL FENCING WITHOUT COLUMNS. COLUMNS SHOULD BE PLACED AT LOT CORNERS AND USED IN HIGH VISIBILITY AREAS. ALONG ARTERIAL AND COLLECTOR ROADS COLUMNS SHOULD BE PLACED EVERY 100 FEET OR EVERY TWO LOTS.	10.7
4. LIGHTING STANDARDS	LIGHT FIXTURES INDICATIVE OF THE ARTS AND CRAFTS AND CRAFTSMAN STYLES FOUND WITHIN THE MONUMENTATION WILL BE THE STANDARD IN THE POCKET PARKS AND NACS.	10.8
Residential Paving Standards	SCORED AND COLORED CONCRETE PAVING AREAS MAY BE USED AT THE NAC RECREATION CENTERS AS WELL AS THE PLAZA AREAS WITHIN THE POCKET PARKS. CONCRETE PAVERS OR STAMPED CONCRETE WILL BE USED IN ALL CARRIAGE HOUSE AND MOTORCOURT DRIVEWAYS AS A STANDARD TREATMENT.	10.9
6. STREET FURNITURE STANDARDS	BENCHES AND TRASH RECEPTACLES WILL BE MADE OF WROUGHT IRON/METAL TO MATCH THE METAL DETAILING ON THE MONUMENTATION. BOLLARDS, WHERE NEEDED, ARE TO BE METAL. VARIATIONS IN COLOR MAY OCCUR PER AMENITY SPACE.	10.10
7. SIGNAGE STANDARDS	STANDARDIZED TYPE FACE, LOGO, AND A SERIES OF THEMATIC COLORS SHALL BE USED PROGRAM THROUGHOUT THE COMMUNITY'S SIGNAGE.	10.12

SPECIAL URBAN DESIGN FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
8. SPECIAL NEIGHBORHOOD CONCEPTS	THIS DEVELOPMENT IS CENTERED AROUND THE GRAND PARK CORRIDOR WHICH MOVES THROUGH MOST OF THE AREA. A SERIES OF OPEN SPACES AND TRAILS WILL ALLOW RESIDENTS ACCESS TO THE ENTIRE DEVELOPMENT WITHOUT THE USE OF AUTOMOBILES. ALONG THIS CORRIDOR WILL BE NEIGHBORHOOD PARKS, SCHOOLS, OPEN SPACE, CLUBHOUSES, POCKET PARKS, AND A VARIETY OF AMENITIES.	
9. SPECIAL FACILITIES AND STRUCTURES SUCH AS CLUBHOUSES AND RECREATIONAL FACILITIES	THIS MP INCLUDES A CLUBHOUSE LOCATED IN THE ACTIVE ADULT COMMUNITY THAT IS AVAILABLE TO RESIDENTS LIVING WITHIN THAT GATED COMMUNITY. A SECOND CLUBHOUSE WILL BE LOCATED FURTHUR SOUTH AND BE OPEN TO ALL RESIDENTS OF GVR AMENDMENT 1.	10.11
10. STREET STANDARDS	60' LOCAL, 64' LOCAL, 80' COLLECTOR, 114' FOUR LANE ARTERIAL WITH RAISED MEDIAN, AND 144' ROW SIX LANE ARTERIAL WITH RAISED MEDIAN PER CITY OF AURORA STANDARDS.	10.13
11. COMMERCIAL STANDARDS	ALONG WITH STANDARDS COMMERCIAL PARCELS, THE MAIN FEATURE OF THE GREEN VALLEY RANCH EAST COMMERCIAL DEVELOPMENT WILL BE THE MAIN STREET DISTRICT. TWO ROADS, MAIN STREET NORTH SOUTH AND MAIN STREET EAST WEST, WILL PROVIDE A CITY CORRIDOR FOR THE NEW DEVELOPMENT. THIS DISTRICT WILL FOCUS ON A PEDESTRIAN EXPERIENCE WITH RETAIL, RESTAURANTS, OFFICE SPACES, AND OUTDOOR GATHERING PLAZAS. ALONG THE ROADSIDE ZONE, PROGRAMMED SHARED SPACES ALONG THE STREET WILL CREATE A SENSE OF COMMUNITY	10.14

added in 110' arterial for Tibet Ph3, 168' ROW six lane arterial for 56th

add in Commercial Paving Standards to this form
add description and tab reference

standards, the higher standards shall govern.

add in info from tabs 10.16; 10.17; 10.18

themes and concepts as shown, and will be at the same or higher level of design quality, extent, and detail.

Sheet Title:
URBAN DESIGN STANDARDS MATIX
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Form F-2: Neighborhood Character Matrix

DISTINGUISHING CHARACTERISTICS			
URBAN DESIGN	**FEATURES**	**LANDSCAPE**	**ARCHITECTURE**
NAC 1 will include a clubhouse complex overlooking a large open space area. This complex includes a pool and may include other amenities such as pickle ball courts, event lawns, outdoor terraces, pergolas, outdoor fire pits. This complex will serve residents living north of 48th Avenue and south of 52nd Avenue. **NAC 2** will contain a school site and neighborhood park. This complex will serve residents south of 48th Avenue and north of 38th Avenue.	Each NAC shall contain a public plaza or outdoor meeting area clearly visible from an ajacent street and at least two of the following: 1. Civic/cultural facilities 2. Clubhouse and recreational facilities 3. Parks and open space 4. Public uses or facilities 5. Schools, elementary or secondary	The primary landscape theme throughout the development is known as the "Colorado" theme. This consists of large sweeping native areas that use land forms and native plantings that is indicative of the Colorado foothills. Large planting beds located along streets and trails will be made up of masses of grasses, shrubs, and trees to provide both seasonal interest and views into and out of the site. Land forms will be accentuated with the use of berming and rock outcroppings to create spaces for both wildlife and residents to enjoy.	The architecture is not defined by neighborhood, but rather by a mix of product types. The residential areas throughout the development consist of five varying types: single family detached, single family attached (duplex), alley loaded single family, Carriage House, and Bungalow. When mixed together, these varying styles create diverse neighborhoods in both style and affordability. The architecture for the clubhouses will be included in a future site plan submittal.

are these labeled on the map? What about north of 52nd?

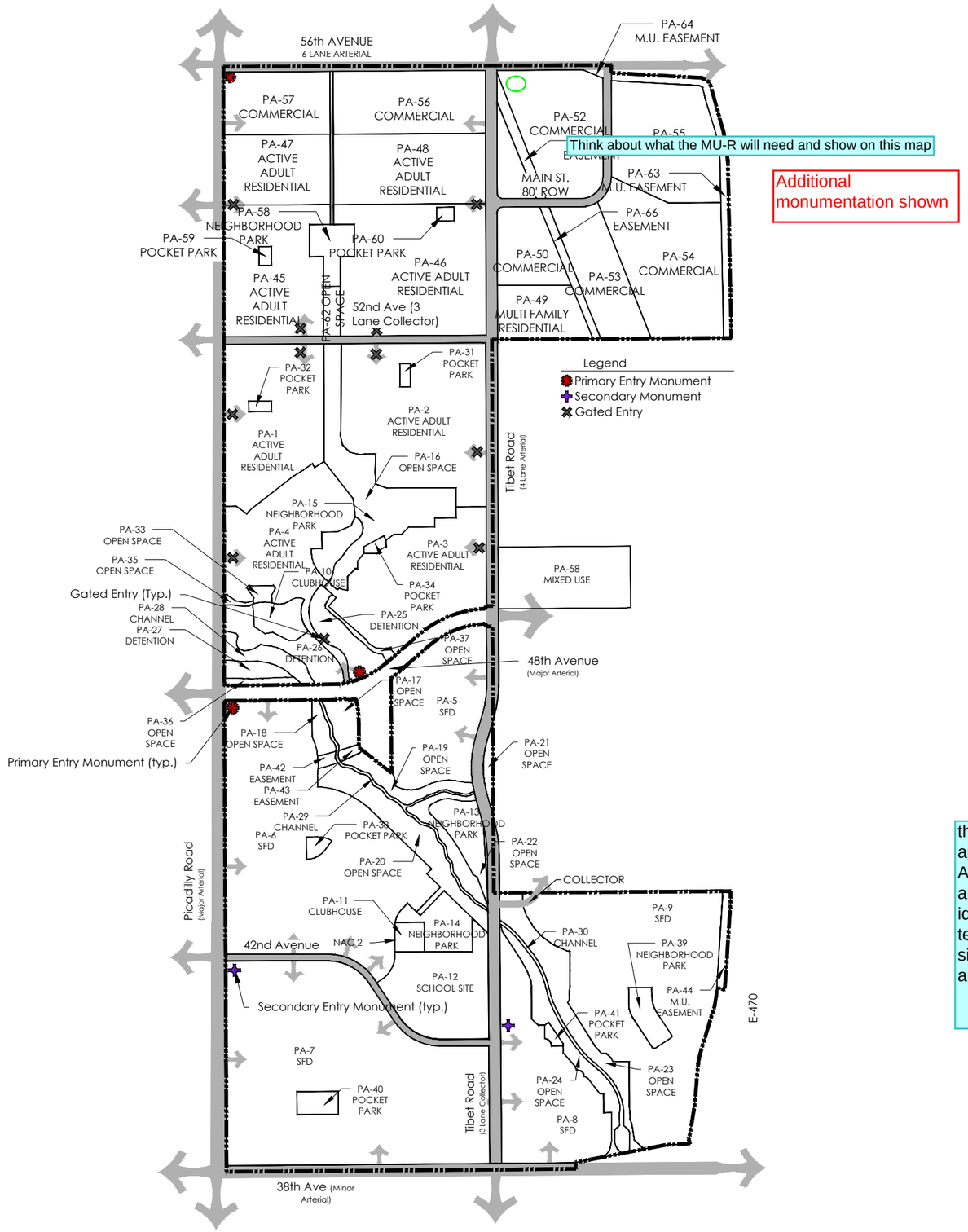
We currently only have a park planned for the area north of 52nd. We do not have the other qualifying features listed above.

Sheet Title:
NEIGHBORHOOD CHARACTER MATRIX
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.3



Think about what the MU-R will need and show on this map

Additional monumentation shown

GENERAL NOTES

Primary entry monuments will be located along arterial roads such as Picadilly Road and 48th Avenue to distinguish primary points of interest within the development. Secondary entry monuments will be located at collector streets and minor arterials such as Tibet Road and 42nd Avenue to identify the main points of entry into neighborhoods within the development. Parks may also utilize secondary entry monuments as identification signs. Locations of tertiary monuments will be located at the SP level. Gated entries will be used to enclose the active adult neighborhood and will be located at all vehicular access points surrounding this neighborhood.

Commercial Monuments may include a gateway or featured monument element celebrating the Main Street District. These monuments will complement the existing Green Valley Ranch monuments and towers, focusing on the Colorado theme. Additional commercial signage or monuments will continue to complement the family of monument walls, materials, and lettering styles. All locations will be submitted within separate SP's.

Additional locations shown for commercial uses per comment

these primarily specify signage applicable to Residential.
Add for Commercial, mixed use and/or office uses.
identify / recommend joint tenant signage, large identity signage visible to the highway and/or 56th

Sheet Title:

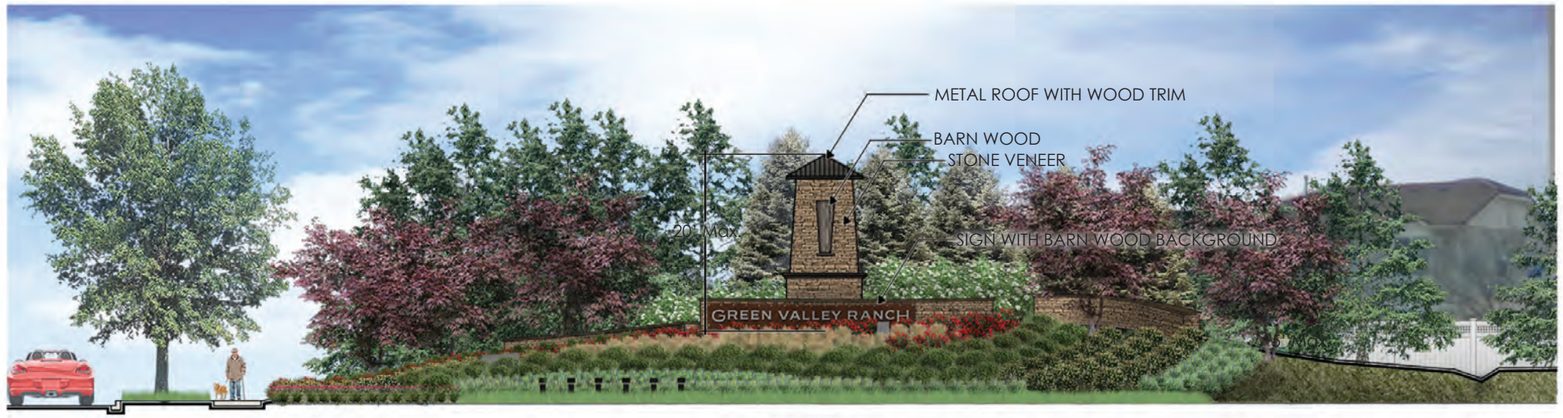
OVERALL MONUMENT PLAN

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH



Primary Entry Monument Elevation

Primary Entry Monument Plan View

GENERAL NOTES

The primary entry monument will consist of a series of stone walls with a sign face and a separate vertical stone monument. Both the wall, sign face, and vertical monument should utilize similar stone, metal, and barn wood materials.

The sign face shall be a maximum of 96 square feet. Sign dimensions to be specified in corresponding Site Plan, not to exceed city code.

Sheet Title:
PRIMARY ENTRY MONUMENT
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Note: These images are not representative of the actual proposed architectural structures in Green Valley Amendment 2 and are solely a reference to material and style.

SECONDARY ENTRY

The secondary entry monument will utilize similar stone materials to the primary entry monument. A hanging sign will be fashioned to a horizontal wooden beam to identify the location. It will be located at collector streets and minor arterials such as Tibet Road and 42nd Avenue to identify the main points of entry into neighborhoods within the development. Parks may also utilize secondary entry monuments as identification signs.

TERTIARY ENTRY

Tertiary entry monuments will utilize similar stone materials to the primary and secondary entry monument. Tertiary monuments will have no signage. Locations of tertiary monuments will be located in the SP.

Note: These images are not representative of the actual proposed architectural structures in Green Valley Amendment 2 and are solely a reference to material and style.

GENERAL NOTES

The secondary and tertiary entry monuments should resemble the Colorado theme by utilizing similar forms and materials to the primary entry monument. Secondary or tertiary entry monuments should be placed based upon hierarchy of points of interest.

Secondary and tertiary entry monument shall not exceed 8' in height.

Sign area and dimensions to be specified in corresponding Site Plan, not to exceed city code.

Sheet Title:
SECONDARY & TERTIARY ENTRY
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.6

GATED ENTRY ELEVATION

The gated entry monument may utilize similar stone materials to the primary entry monument and may also utilize black metal components. Gated entries will be used to enclose the active adult neighborhood and will be located at all vehicular access points surrounding this neighborhood.

CHARACTER IMAGES

Note: These images are not representative of the actual proposed architectural structures in Green Valley Amendment 2 and are solely a reference to material and style.

Stone Gate House

Stone Gate House

Stone Gate House

Stone Column

Wooden Entry Marker

Horizontal Wooden Material

Black Metal Gate

Sheet Title:

GATED ENTRIES

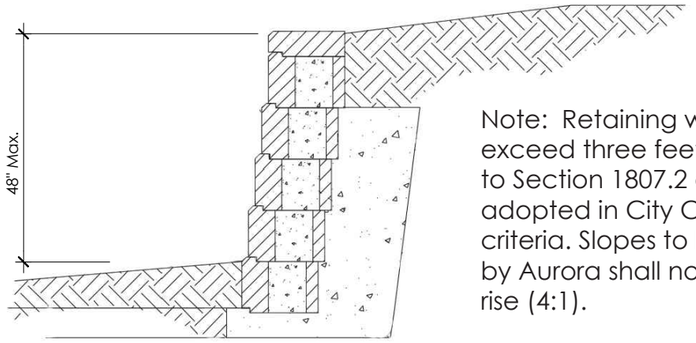
Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

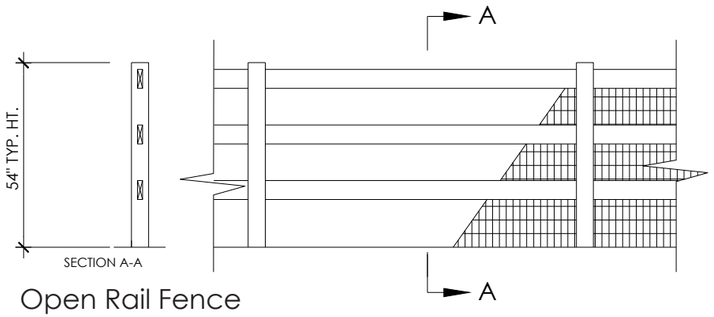
GREEN VALLEY RANCH

TAB 10.7

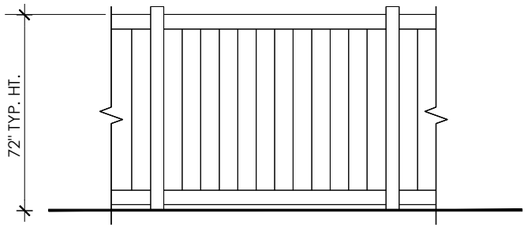


Modular Block Retaining Wall

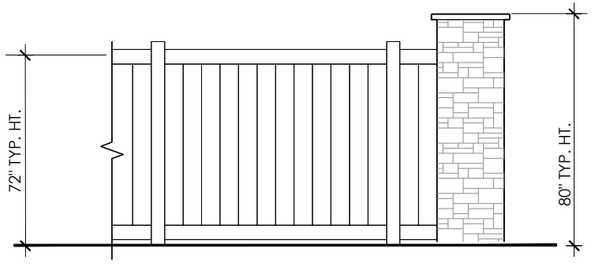
Note: Retaining walls shall be required whenever slopes exceed three feet of run to one foot in rise (3:1). Refer to Section 1807.2 of the International Building Code, as adopted in City Code Section 22-131, for additional design criteria. Slopes to be revegetated and to be maintained by Aurora shall not exceed four feet of run to one foot of rise (4:1).



Open Rail Fence



Typical Privacy Fence



Privacy Fence with Stone Column

Note: These images are not representative of actual proposed architectural structures in Green Valley and are solely a reference to material and style.

GENERAL NOTES

Walls and fencing throughout the development will further embrace the Colorado theme and accent other built structures on the site.

Fencing will have a sense of openness where desirable landscape features and beneficial views will enhance the quality of the development. Privacy fencing, in contrast, will provide the opportunity for privacy while framing vistas to the landscape. Fencing along local roads and interior lots should be made of vinyl material and utilize earth tone colors. Fencing along arterial and collector roads should be made of composite material and utilize earth tone colors. Along arterial and collector roads columns should be placed ever 100 feet or every two lots. Open rail fencing will be used along open space areas.

Revised to "composite material or wood.

Walls will utilize local and on-site materials when possible to create parallels between the built and native environment. Where retention on site is necessary, modular block walls will be utilized. On-site boulders will also be used throughout planting beds and for soil retention.

vinyl is no longer permitted. It has been permitted in the Amendment 1 area because of the previous approval. There needs to be an alternative now for the second amendment. A brown composite has been used around the overall site....

Noted

Sheet Title:

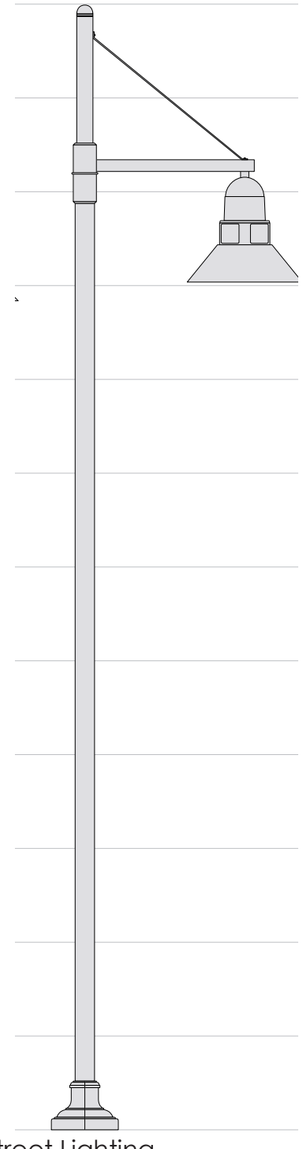
WALLS & FENCING

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

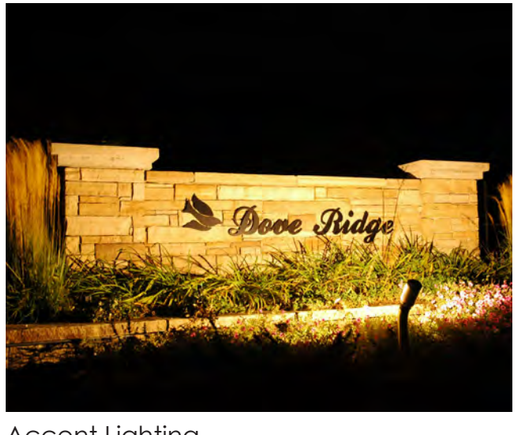
GREEN VALLEY RANCH



Street Lighting

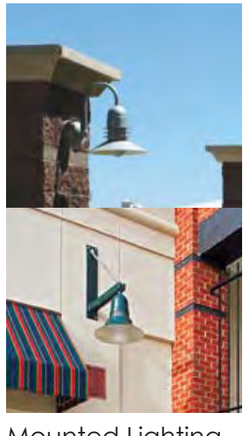
Street Lighting

Bollard Lighting



Accent Lighting

Accent Lighting



Mounted Lighting

GENERAL NOTES

Lighting will occur within right-of-ways, near shared sidewalks, trails, and at entry monuments located throughout the development. The goal of lighting is to assure safety and encourage circulation between amenities within the area. Lighting shall also accent other built and natural structures within the site to embrace the Colorado theme.
Lighting will include a mixture of street pole lighting, bollard lighting, and accent lighting for entry features, landscape, and other important elements.

Sidewalks, internal pedestrian paths, and bicycle paths shall be lit with full cutoff fixtures no more than 16 feet tall and providing consistent illumination of at least one foot-candle on the walking surface. On- site streets and parking areas shall be lit with full cutoff type fixtures no more than 25 feet tall. Fixtures should be of the downcast type.

Note: These images are not representative of actual proposed lighting fixtures in Green Valley and are solely a reference to material and style.

Sheet Title:
LIGHTING STANDARDS
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Carriage House/Bungalow Pavers

Brushed and Scored Concrete

Concrete Trail Paving

Stone Clubhouse Pavers

Decomposed Granite Trail Paving

Stamped Concrete Clubhouse Pavers

MOTORCOURT PAVING

Paving within motorcourt clusters should utilize concrete pavers, or scored concrete paving to embrace a more pedestrian scale within the cluster. Asphalt is not permitted. This paving should also meet standards for fire truck access into the clusters.

TRAIL PAVING

Trails shall utilize a brushed concrete surface to be optimal for all proposed recreational uses in the development. Trails within parks may also utilize decomposed granite for more passive trail types.

CLUBHOUSE PAVING ENHANCEMENT

Decorative pavers or scored/colored concrete are encouraged to bring additional visual interest to areas which may be most utilized by the community.

again, emphasis on residential. Add commercial/ office materials.

additional information on paving added to Tab 10 in the commercial section of this document. Residential and Commercial are kept separate.

Note: These images are not representative of actual proposed Paving in Green Valley and are solely a reference to material and style.

Sheet Title:
RESIDENTIAL STANDARDS
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Metal Bench

Metal Bench

Trash Receptacle

Trash Receptacle

Metal Bike Rack

Metal Bike Rack

GENERAL NOTES

Site elements throughout Green Valley will be selected to include like material and forms. In general, site furnishings such as benches, bike racks and trash cans will all utilize powder coated steel as the main material. Green Valley's site furnishings will include horizontal forms to embrace the Colorado theme.

BENCHES

Benches should be located along open space trails, sidewalks within the right-of-way, parks and clubhouse locations. Benches may vary in size from 4'-6' length.

TRASH RECEPTACLES

Trash receptacles should be located at points of interest such as parks, clubhouse locations, and trail head locations.

BIKE RACKS

Bike Racks should be located at all parks and clubhouse locations to enhance bicycle usability.

Note: These images are not representative of actual site furnishings in Green Valley and are solely a reference to material and style.

Sheet Title:

RESIDENTIAL SITE FURNISHINGS

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Playground Components

Playground Components

Solo Spinners

Climbing Boulder

Pavilion

Shade Structure

PLAYGOUND COMPONENTS

Playground equipment should abide by Green Valley's Colorado theme. Colors and structures will be selected to accent its surrounding landscape. Pre-manufactured playground equipment shall be selected for pocket parks, neighborhood parks, and neighborhood activity centers where specified. Playground colors should be consistent throughout all play structures and vary in form to add visual interest. The landscape architect shall approve color samples prior to construction. All play equipment within the community shall be owned and maintained by the Metropolitan District.

PAVILIONS

Pavilions varying in size may be provided in pocket parks, neighborhood parks, and other community gathering spaces. The pavilion structures may be designed and composed with treated timber or metal materials to accent the Colorado theme. Colors shall be complimentary to those chosen for site furnishings.

PARK SHADE STRUCTURES

Shade structures should be provided near selected site amenities throughout Green Valley. Structures may be custom built to utilize similar treated timber and iron materials as the pavilions. Colors shall be complimentary colors to those chosen for site furnishings.

Note: These images are not representative of actual proposed STRUCTURES in Green Valley and are solely a reference to material and style.

Sheet Title:

RESIDENTIAL SPECIALTY STRUCTURES

Urban Design Standards

Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

Trail Signage

Secondary Entry Marker

Tertiary Entry Marker

Note: These images are not representative of actual proposed signage in Green Valley and are solely a reference to material and style.

GENERAL NOTES

Green Valley shall have consistently themed signage to identify with the Colorado theme. Signage should appear on local street intersections, beginnings of pedestrian trails and NAC entries. All signage shall conform to local code regulations.

LOCAL STREET SIGNAGE

All local street signage shall comply with the Manual for Uniform Traffic Control Devices (MUTCD). Material for these signs is to be powder coated metal; detailing on the top and bottom of post will be encouraged for additional interest. The nameplates are to be metal.

TRAILHEAD SIGNS

Trailhead markers should delineate the destination and length of trail. Markers will be composed of 6"x6" cedar posts with metal signage. The ownership and maintenance of all trailhead signage shall be the responsibility of the Metro District.

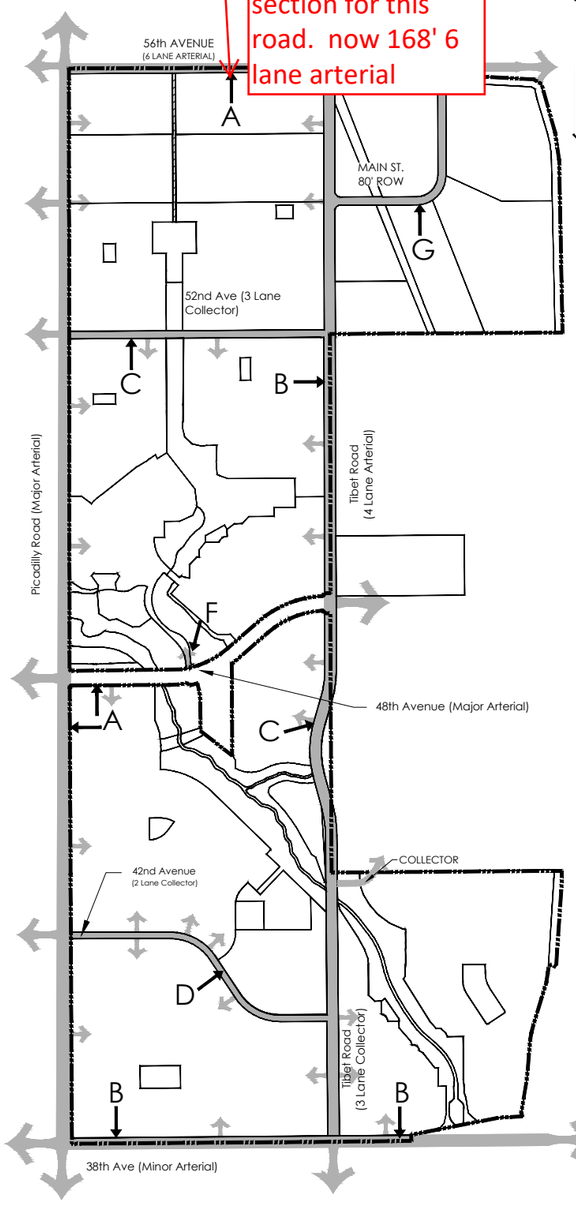
Sheet Title:
RESIDENTIAL SIGNAGE STANDARDS
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

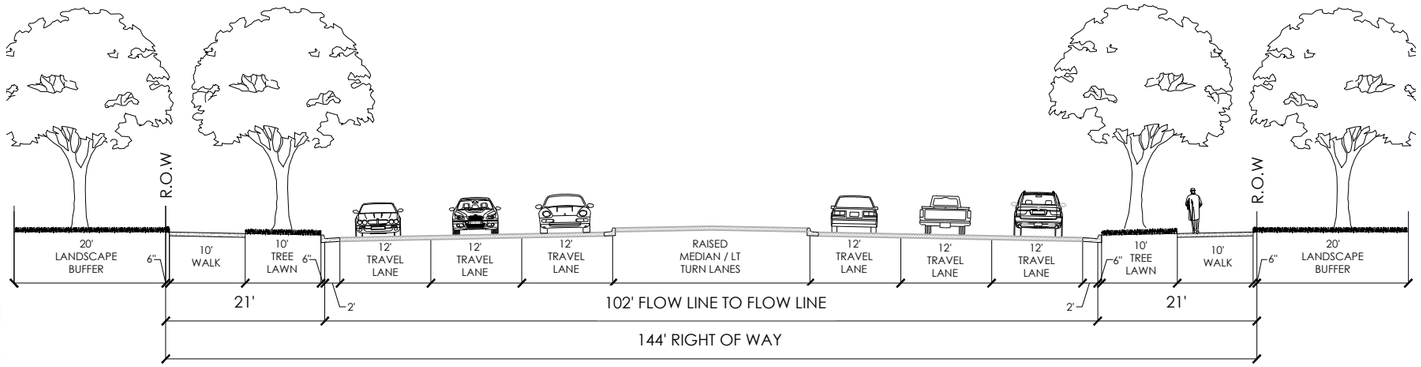
GREEN VALLEY RANCH

TAB 10.13

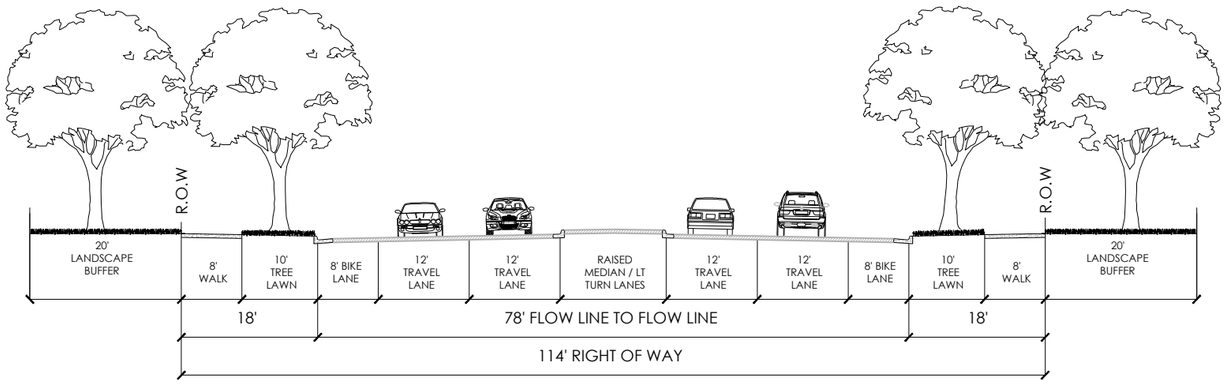
need another classification and section for this road. now 168' 6 lane arterial



Street Key Map

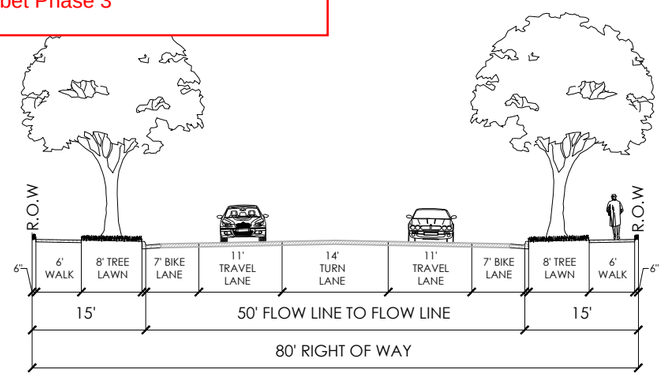


A. MAJOR SIX LANE ARTERIAL



B. MINOR FOUR LANE ARTERIAL (RAISED MEDIAN)

added 114' 4 lane minor arterial section for Tibet Phase 3



C. THREE LANE COLLECTOR

STREET INFORMATION

MAJOR ARTERIAL ROADWAY (6 LANE):
All six lane arterials within and adjacent to Green Valley will meet City of Aurora Street Standards.

MINOR ARTERIAL ROADWAY (4 LANE):
All four lane arterials adjacent to Green Valley will meet City of Aurora Street Standards.

COLLECTOR (3 LANE):
All three lane collectors within and adjacent to Green Valley will meet City of Aurora Street Standards.

Sheet Title:

STREET STANDARDS

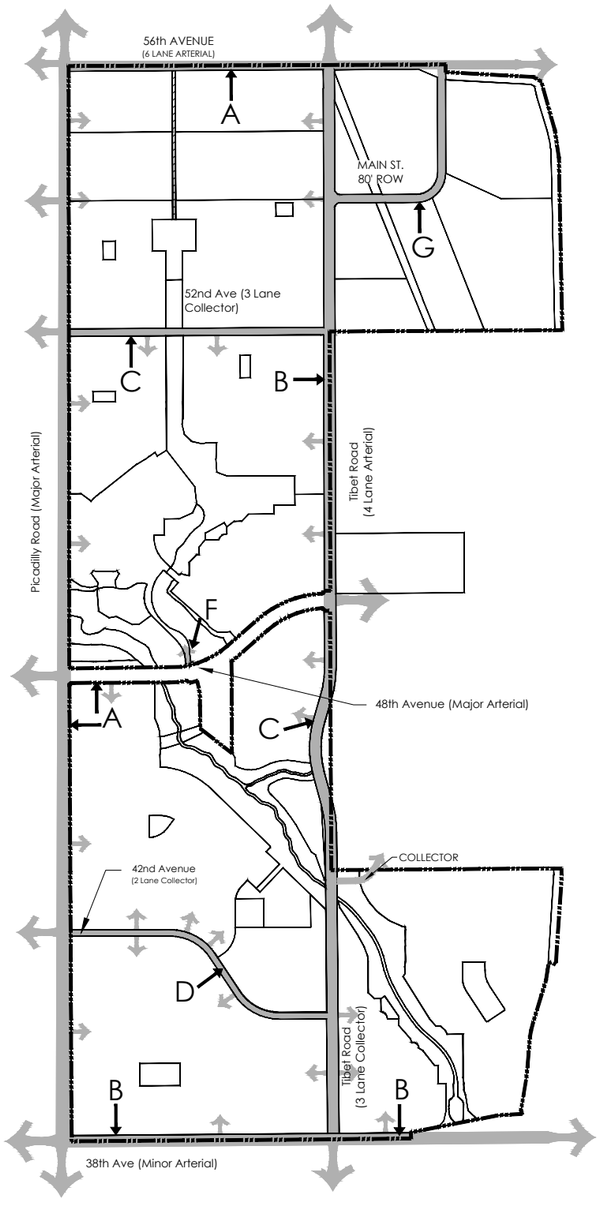
Urban Design Standards
Master Plan

Project Title:

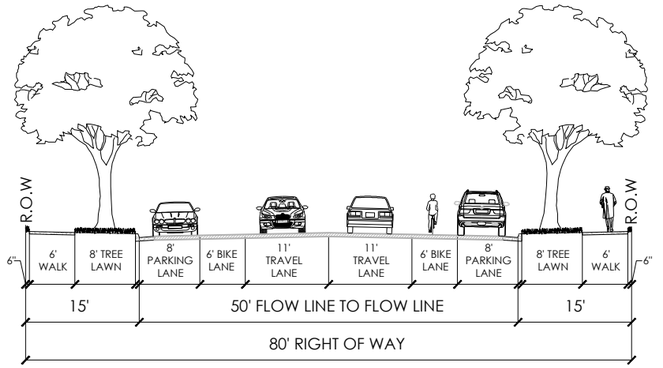
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

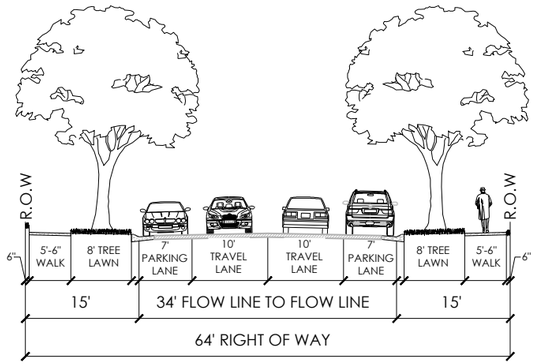
TAB 10.13



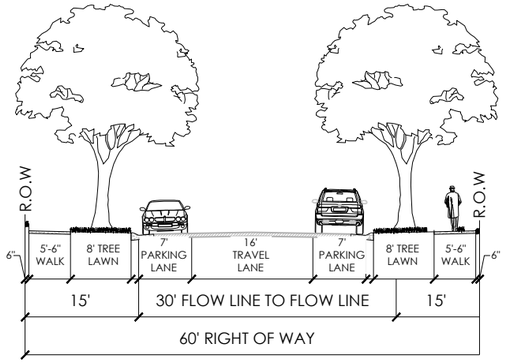
Street Key Map



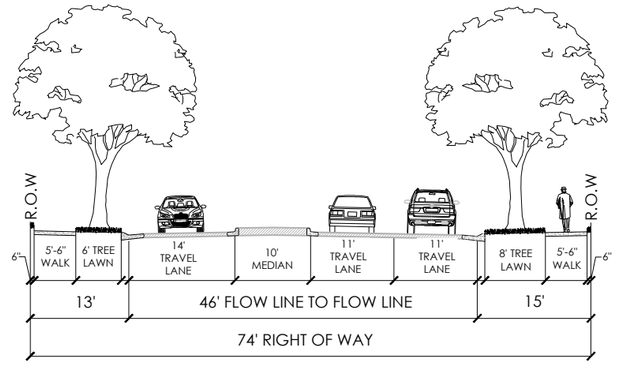
D. TWO LANE COLLECTOR



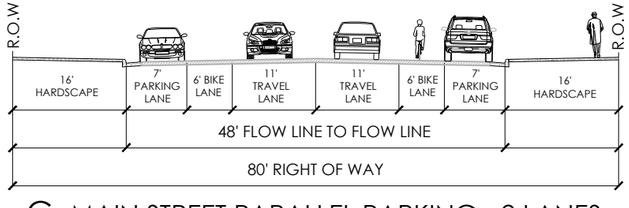
E. LOCAL STREET #1



E.1. LOCAL STREET #2



F. LOCAL STREET #1 INTERSECTION W/ ARTERIAL



G. MAIN STREET PARALLEL PARKING - 2 LANES

STREET INFORMATION

COLLECTOR (2 LANE):
All two lane collectors within Green Valley will meet City of Aurora Street Standards.

LOCAL ROADWAYS:
All local roadways within Green Valley will meet City of Aurora Street Standards.

ENTRYWAY (LOCAL-ARTERIAL INTERSECTION):
The primary entrance to the active adult neighborhood to Green Valley will contain a series of large medians with separated drive aisles. The drive lanes should meander to slow traffic and create views.

Sheet Title:

STREET STANDARDS

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.14

OPEN PLAZAS AT MIXED USE BUILDINGS

PEDESTRIAN CONNECTIONS - BUSINESS PARK WITH WIDE CORRIDORS AND COFFEE SHOPS

OPEN TURF AREAS FOR OUTDOOR ACTIVITIES

CENTRALIZED OUTDOOR 'MEETING SPACE'

INDOOR/ OUTDOOR CONNECTIONS

AMPHITHEATER GATHERING AREAS

Commercial Design Standards

The Green Valley MP ~~Amend 2~~ commercial architecture, materials and outdoor spaces will be designed to identify with the Colorado theme. With commercial areas adjacent to active adult residential and multi-family residential, pedestrian nodes and connections are encouraged to promote walkability. Commercial developments shall tie into the surrounding community by using complementary themes. They will blend into the neighborhoods by using appropriately scaled buildings. Office complexes, medical campuses and light industrial should all include outdoor open spaces to enhance the visitors and employees experience. Small lunch nodes, large plazas that could host larger events, or promenades. Street and building signage should be consistent with the overall development theme and site. And site furnishings should promote uses such as outdoor offices and lunch breaks within business offices. Medical and Institutional furnishings shall be specific to the individual use.

BUILDING CAMPUS WITH LANDSCAPE AND DECORATIVE HARDSCAPE

ACTIVATED PARK SPACES

list preferred materials, locations, etc.. Identify anything that you might want prohibited.

paving portion added to Tab 10. Narrative above revised per comments. materials section added to this tab

Note: These images are not representative of actual proposed stree design in Green Valley and are solely a reference to concerptual design standards.

Sheet Title:
COMMERCIAL DESIGN STANDARDS
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.15

LEGEND

1. MAIN STREET (NORTH TO SOUTH)
2. MAIN STREET (EAST TO WEST)
3. ADJACENT PARKING LOTS
4. CONNECTING LOCAL/BOUNDARY ROAD
5. PARALLEL STREET PARKING
6. PARKING LOT PLAZA - SPACE FOR EVENTS WITH VENDORS AND FOOD TRUCKS
7. BIKE LANES
8. OUTDOOR COMMON AREA
9. OUTDOOR CAFE/ DINING
10. STRING LIGHTING AT MAIN STREET 'T'
11. ACTIVATED ALLEYS TO PARKING LOTS
12. FOCAL POINT ARCHITECTURAL ELEMENT
13. PUBLIC PLAZA
14. STREET FRONTAGE
15. MAIN STREET BUILDINGS
16. PEDESTRIAN WALK
17. SITE VIEWS TO E-470
18. PUBLIC ART

CENTRALIZED MAIN STREET INTERSECTION

PLAZA AND ALLEY CONNECTIONS

TYPICAL MAIN STREET SECTION - BUILDING RELATIONSHIPS WITH PEDESTRIAN CORRIDOR AND VEHICULAR PARKING

PEDESTRIAN WALKS ACTIVATED WITH SITE FURNISHINGS

Main Street Design Standards

The Main Street District will be more urban in nature by providing enhanced building and street design within the community. These centralized streets will focus on the pedestrian experience by providing a walkable main street, outdoor common area, and a public plaza. The streets will also be bicycle friendly with bike lanes on both sides of the street and plenty of bike parking. By creating a unique experience, retail, restaurants, office and commercial will flourish by providing goods and services to the local community. Main Street will become a destination by hosting community events within the public plaza or common areas. The area will also be visible from adjacent communities and E-470.

Note: These images and graphics are not representative of actual proposed street design in Green Valley Ranch and are solely a reference to concerptual design standards.

Sheet Title:

MAIN STREET

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

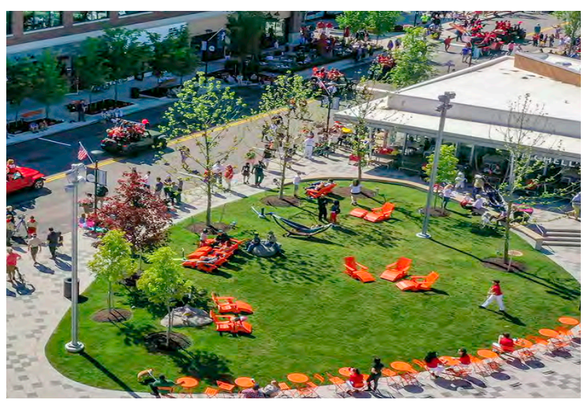
GREEN VALLEY RANCH

PLAZAS WITH SEATING AND FIRE PITS

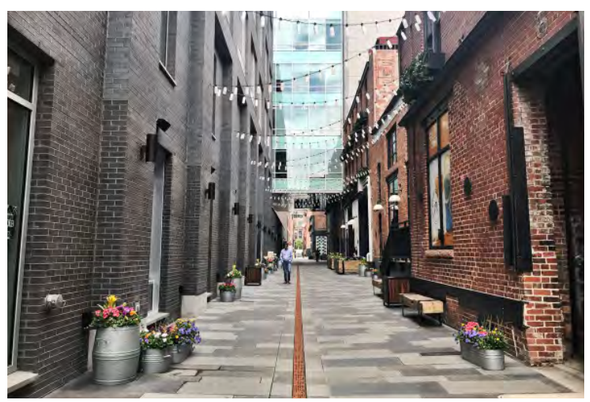
OPEN PLAZAS FOR COMMUNITY EVENTS

PEDESTRIAN CONNECTIONS BETWEEN OUTDOOR SPACES, RESTAURANTS AND RETAIL.

CENTRALIZED PLAZA SURROUNDED BY BUILDINGS



PLAZAS SHOULD ENCOURAGE MANY ACTIVITES INCLUDING PLAY AND LOUNGING.



SPACES BETWEEN BUILDINGS SHOULD BE ACTIVATED WITH FURNISHINGS, LIGHTING AND LANDSCAPE.

PARKING LOTS COULD BE DESIGNED WITH USEABLE SPACES FOR MARKETS OR FOOD TRUCK EVENTS.

Note: These images are not representative of actual proposed plazas in Green Valley and are solely a reference to concerptual design standards.

Main Street Outdoor Spaces and Public Plaza

Outdoor common areas and central plazas will enhance the Main Street Corridor. While focusing on the walkability of main street, these high activity spaces will provide outdoor seating for pedestrian users. By activating areas in front of, between, and behind buildings, the Main Street will create memorable experiences for visitors of all ages. Areas in front of buildings should encourage restaurants and retail to create café seating that tie into the overall Main Street character. The spaces between buildings that connect parking lots to Main Street could create entry ways. A memorable experience with lighting, unconventional seating, bright colors, or local art. And areas behind buildings, which still serve as entries to some buildings and include parking lots, should be considered as an extended outdoor space. With enlarged parking islands, spaces for white tent sales, events or food trucks could be created.

The Public Plaza should be at the center of Main Street, located at an intersection to take advantage of centralized views and focal points. The high visibility plaza should create space for large community events as well as intimate seating enclaves. A well-developed plaza could add many benefits to adjacent buildings. It could create a frontage to surrounding restaurants with shaded arcades, a courtyard approach to a mixed-use facility, or a centralized space to relax after a day of shopping. The plaza could be home to smaller kiosks offering boutique pop-ups, coffee, or ice cream. It could also have shade structures, fun seating opportunities, play pieces, public art, fountains, or a stage for local events. The main goal of the plaza is to create a memorable adventure for visitors of all ages, so they continue to return to Main Street. Additional public plazas maybe incorporated into other commercial development areas.

Sheet Title:
COMMERCIAL STREET PLAZAS
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

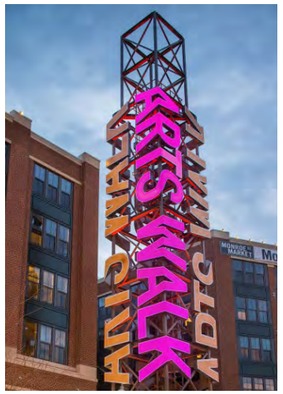
GREEN VALLEY RANCH

Commerical Signage and Focal Point

The Green Valley Ranch Commercial signage program should have a consistent theme throughout the development. All wayfinding signage should have a variety of signs and hierarchy. Main Street signage should have a distinctive feel and look for the district. The signage family should have a variety of wayfinding signs, business signs and interactive signs for visitors.

The main commercial district should have a focal point that is visible throughout the community and from E-470 to create interest. This could be achieved with large towers, building facade enhancements or public art installations that can create a sense of arrival.

split this up into focal point, and major and minor signs



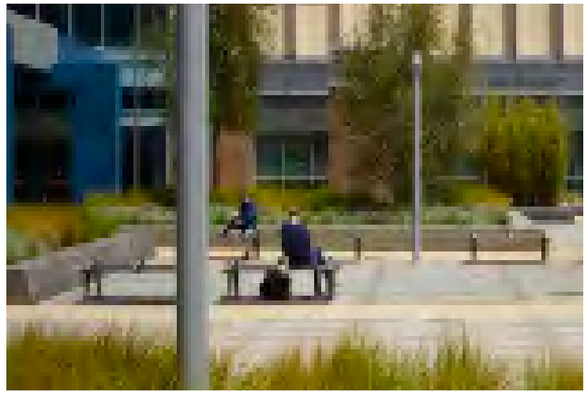
Note: These images are not representative of actual proposed stree design in Green Valley and are solely a reference to concerptual design standards.

Sheet Title:
COMMERCIAL SIGNAGE & FOCAL POINT
Urban Design Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.18



Note: These images are not representative of actual proposed stree design in Green Valley and are solely a reference to concerptual design standards.

Site Furnishings

Main Street furnishing should be consistent with the overall district theme. Throughout the different areas on Main Street, furnishings are encouraged to provide different experiences. From the walkable main street, to common areas, to the main plaza, site furnishings should be creative and functional for all. Furnishing designs should use the element of lighting, metal, wood, and bright colors to enhance spaces at all times of the day.

Site furnishings for other commercial development areas including business parks, medical or 'large box' office will support the community theme. These furnishings should be appropriate for the intended use of the space.

Sheet Title:

COMMERIAL STREET SITE FURNISHINGS

Urban Design Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

MP LANDSCAPE STANDARDS

- Form G 11.1
- Front Yard Landscape 11.2
- Landscape Typicals 11.2
- Plant Materials 11.3
- Entry Monument Landscape 11.4
- Street Standards 11.5
- Clubhouse 11.6
- Neighborhood Park 11.7
- Pocket Park 11.8
- Detention and Drainage Channel Standards 11.9
- Open Space Landscape 11.10
- Commercial Landscape 11.11
- E470 Landscape Buffer 11.12

11

TAB 11.1

Form G: Landscape Matrix

SPECIAL LANDSCAPE FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
1. OVERALL LANDSCAPE CONCEPT AND PALETTE OF PLAN MATERIALS USED TO CARRY IT OUT	THE PRIMARY LANDSCAPE THEME THROUGHOUT THE DEVELOPMENT IS KNOWN AS THE "COLORADO" THEME. THIS CONSISTS OF LARGE SWEEPING NATIVE AREAS THAT USE LAND FORMS AND NATIVE PLANTINGS THAT ARE INDICATIVE OF THE COLORADO FOOTHILLS. LARGE PLANTING BEDS LOCATED ALONG STREETS AND TRAILS WILL BE MADE UP OF MASSES OF GRASSES, SHRUBS, AND TREES TO PROVIDE BOTH SEASONAL INTEREST AND VIEWS INTO AND OUT OF THE SITE. LAND FORMS WILL BE ACCENTUATED WITH THE USE OF BERMING AND ROCK OUTCROPPINGS TO CREATE SPACES FOR BOTH WILDLIFE AND RESIDENTS TO ENJOY. THE COMMUNITY IS COMMITTED TO MAINTAINING XERIC PRINCIPLES THROUGHOUT THE LANDSCAPE DESIGN.	11.3
2. LANDSCAPE DESIGN AT ENTRY MONUMENTATION AND KEY ENTRY POINTS	DISTINCTIVE LANDSCAPED AREAS SHALL BE PROVIDED AT ENTRY MONUMENTS THAT VISUALLY FRAME AND ENHANCE THE ENTRY EXPERIENCE. LANDSCAPING IN THESE AREAS SHALL CONSIST OF PLANT SPECIMENS HAVING A HIGH DEGREE OF VISUAL INTEREST DURING ALL SEASONS. A MIXTURE OF SHRUBS, ORNAMENTAL GRASSES, ORNAMENTAL TREES, FLOWERS, AND/OR GROUND COVER SHALL BE PLANTED AROUND SIGN BASES AND AT CURB RETURNS NEAR SITE ENTRANCES. THE USE OF LAND FORMS INCORPORATED INTO THE ENTRY MONUMENT DESIGN IS ALSO ENCOURAGED. LANDSCAPE STANDARDS FOR PRIMARY ENTRY MONUMENTS ARE 1.5 TREES AND 12 SHRUBS PER 4,000 SQUARE FEET.	11.4
3. LANDSCAPE STANDARDS ALONG E-470 OR I-70 (IF APPLICABLE)	LAND FORMS AND NATIVE PLANTINGS INDICATIVE OF THE COLORADO FOOTHILLS ALONG WITH AN EIGHT (8) FOOT TALL DECORATIVE MASONRY SOUND WALL THAT WILL MITIGATE THE NEGATIVE EFFECTS OF THE NEARBY HIGHWAY WILL BE PROVIDED. A SEVENTY-FIVE (75) FOOT MULTI-USE EASEMENT IS LOCATED BETWEEN E-470 AND THE GVR MP PROPERTY. REFER TO ATLA IN TAB 14. ALL BUFFERS ADJACENT TO E-470 SHALL BE AT LEAST THIRTY (30) FEET IN WIDTH.	11.11

SPECIAL LANDSCAPE FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
4. LANDSCAPE STANDARDS ALONG ARTERIAL AND COLLECTOR ROADS	THE PICADILLY ROAD, 48TH AVENUE AND 38TH AVENUE CORRIDORS ARE TO MAINTAIN A MINIMUM OF 20' LANDSCAPE BUFFER ALONG THEIR ENTIRE LENGTH. 1 TREE AND 10 SHRUBS PER 40 LINEAR FEET IS REQUIRED WITHIN THIS BUFFER. THE STANDARD WITHIN THE RIGHT OF WAY WILL BE 1 TREE PER 40 LINEAR FEET. identify the width of the curbside landscape if only trees will provided. Is the standard consistent with the UDO? Is there any plan to do xeric landscape in the curbside landscape? language revised to be more consistent with UDO. treelawn widths added along with different treatments for each type of road.	11.5
5. LANDSCAPE STANDARDS ALONG LOCAL ROADWAYS	THE BUILDER/DEVELOPER IS RESPONSIBLE FOR ONE 2.5" CALIPER STREET TREE PER 40 LF. ALL OTHER LOCAL ROADS NOT FRONTED BY A RESIDENTIAL PROPERTY WILL BE PLANTED IN A SIMILAR MANNER WITH TREES 40' ON CENTER IN THE MIDDLE OF THE TREE LAWN. ALL TREE LAWNS TO BE LANDSCAPED WITH DROUGHT RESISTANT TURF GRASS. confirm since this is not being done right now. standards revised per what we're doing Xerically now per waterwise sheets	11.5
6. LANDSCAPE STANDARDS IN COMMERCIAL AND PUBLIC GATHERING AREAS. (TREE GRATES & PROTECTORS, PLANTERS, FLOWER BEDS, SCREENING AT PARKING LOTS, ETC.)	WE DO NOT ANTICIPATE ANY COMMERCIAL PARCELS WITHIN THE DEVELOPMENT. it may not be by Oakwood, but there will be commercial. Add standards we do have commercial. language revised	N/A

Sheet Title:
LANDSCAPE STANDARDS
Landscape Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.1

Form G: Landscape Matrix

SPECIAL LANDSCAPE FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
7. LANDSCAPE STANDARDS AT DETENTION/ RETENTION PONDS AND WATER FEATURES	DETENTION, RETENTION, AND WATER QUALITY PONDS SHALL BE INTEGRATED PHYSICALLY, FUNCTIONALLY, AND AESTHETICALLY INTO THE TOTAL LANDSCAPE DESIGN. PEDESTRIAN ACCESS WILL BE CONSTRUCTED IN THE FORM OF MEANDERING TRAILS THAT PROVIDE BENEFICIAL VIEWS TO THE PONDS AND OTHER LANDSCAPE FEATURES PROVIDING ANNUAL INTEREST. MEANDERING POND EDGES AND OTHER LANDSCAPE FEATURES SUCH AS ROCK OUTCROPPINGS AND NATIVE PLANTINGS ARE ENCOURAGED TO INTEGRATE THE DETENTION AREAS INTO THE SURROUNDING OPEN SPACES. DETENTION PONDS WILL BE PLANTED WITH BOTH DRYLAND AND WETLAND SEED MIXES TO REESTABLISH A NATIVE STATE. TREE AND SHRUB PLANTINGS SHOULD BE SCATTERED THROUGHOUT THE EDGES OF DETENTION AREAS TO CREATE A MORE DIVERSE HABITAT FOR NATIVE WILDLIFE. EDGES OF PONDS SHALL BE PLANTED AT 1 TREE AND 10 SHRUBS PER 4,000 SQUARE FEET.	11.9
8. LANDSCAPE BUFFERS AT PARKS, OPEN SPACE, AND DRAINAGE	LANDSCAPE BUFFERS BETWEEN GREEN VALLEY RANCH EAST AND ADJACENT LAND USES VARY PER CITY OF AURORA STANDARDS FOUND IN TABLE 14.2. WHERE RESIDENTIAL LOTS WITHIN THE DEVELOPMENT ABUT A NEIGHBORING RESIDENTIAL PARCEL, BUFFERS SHALL INCLUDE 1 TREE AND 5 SHRUBS PER 40 LINEAR FEET OF BUFFER. WHERE RESIDENTIAL LOTS ABUT NEIGHBORING NON-RESIDENTIAL LAND USES, BUFFERS SHALL INCLUDE 1 TREE AND 5 SHRUBS PER 25 LINEAR FEET OF BUFFER. FIFTY PERCENT (50%) OF THE TREES SHALL BE EVERGREEN SPECIES WITHIN THIS BUFFER. BUFFERS ADJACENT TO PUBLIC OPEN SPACE AND PUBLIC PARKS SHALL FOLLOW THE LANDSCAPE REQUIREMENTS SET FORTH IN SECTION 146-1424 (C) PER CITY OF AURORA STANDARDS. BUFFERS SHALL INCLUDE 1 TREE AND 10 SHRUBS PER 30 LINEAR FEET OF BUFFER. LANDSCAPE STANDARDS WITHIN POCKET PARKS WILL BE 1 TREE AND 10 SHRUBS PER 4000 S.F. PER CITY OF AURORA STANDARDS.	11.9 and 11.10 update code sections to UDO, TYP Revised
9. SPECIAL STANDARDS AT RESIDENTIAL LOTS. (IF RESIDENTIAL BACKYARDS BORDER OPEN SPACE OR PARKS, INDICATE SPECIAL STANDARDS.)	NO SPECIAL STANDARDS IN REAR YARDS ARE ANTICIPATED.	N/A

SPECIAL LANDSCAPE FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
10. LANDSCAPE INTEGRATION AT RETAINING WALLS	LANDSCAPING PLANTINGS ABOVE AND BELOW ALL RETAINING WALLS WILL BE PER CITY OF AURORA STANDARDS OF 1 TREE AND 10 SHRUBS PER 4000 SQUARE FEET. Include in between walls. Revised	N/A
11. LANDSCAPE STANDARDS AT SPECIAL FACILITIES	NO SPECIAL STANDARDS AT SPECIAL FACILITIES ARE ANTICIPATED MU-R is special - Just note landscape features will be provided at the time of future site plan. revised per above	N/A
12. BUFFER AND SETBACK EXEMPTIONS FOR TRADITIONAL STREET FRONTAGES	REFER TO INDIVIDUAL SPs FOR SETBACK WAIVERS	N/A

THE DESIGN STANDARDS LISTED IN THIS MATRIX IMPLEMENT THE DESIGN THEMES OF THE MP AND OTHER ORDINANCE STANDARDS. IF A CONFLICT SHOULD EXIST BETWEEN ANY SPECIFIC PROVISIONS OF THIS MATRIX AND ANY OTHER ORDINANCE STANDARDS, THE HIGHER STANDARDS SHALL GOVERN.

ALL THE PHOTOS AND ILLUSTRATIONS REFERENCED BY THIS MATRIX ARE REPRESENTATIVE OF THE LEVEL OF DESIGN QUALITY REQUIRED BY THIS MP. FINAL DESIGNS TO BE SUBMITTED AT THE SITE PLAN LEVEL WILL NOT NECESSARILY DUPLICATE THE EXACT ILLUSTRATIONS, BUT WILL CONTAIN THE SAME THEMES AND DIMENSIONS AS SHOWN, AND WILL BE AT THE SAME OR HIGHER LEVEL OF DESIGN QUALITY, EXTENT, AND DETAIL.

All tabs revised per below

change all Tabs.. TYP

Sheet Title:

LANDSCAPE STANDARDS

Landscape Standards Master Plan

Project Title:

Green Valley Master Plan

Au Amendment 2 ado

GREEN VALLEY RANCH

TAB 11.2

Table 14.3A Home Yard Landscaping—Turf option
Front, Side, and Rear Yard Landscaping Requirements for Single-Family Detached, Two-Family, and Single-Family Attached Duplex Homes.

	(A) Plant Quality and Type	(B) Requirements
FRONT YARD		
1.	Turf. (At corner lots with a side yard visible to public view, turf areas shall include both front and side yard areas.)	**Minimum and Maximum Turf per Lot Size: (See Note 2)** Small – 40% Min. and 50% Max. Standard – 30% Min and 40% Max. Large – 25% Min. and 40% Max. Estate – 25% Min. and 40% Max.
2.	1 Shade Tree, and either	2 ½ inch caliper
	1 Ornamental Tree	2 inch caliper
	Or 1 Evergreen Tree	6 foot height
3.	Front yard shrubs per lot size: Small – 8 Standard – 16 Large – 26 Estate – 36	Shrubs – 5 gallon container Min. – Plant material shall conform with American Standard for Nursery Stock, Ansi Z60.1, current addition. Fabric may be omitted under annuals, perennials and groundcovers. Use a variety of shrubs and plant materials that will provide visual interest during all seasons.
SIDE YARDS		
	Internal side yard, not exposed to public view – No plant material is required but mulches are required for soil stability. External side yards on corner lots exposed to public view – Shall be landscaped with turf, and shrubs and trees at the rate of one tree and 10 shrubs per 40 linear feet of side yard.	
REAR YARDS		
	Turf or xeric landscaping is not required. In rear yards the use of natural turf shall be limited to not more than 45% of the area to be landscaped. No maximum restriction shall apply to the use of artificial turf. Rear yards at corner lots exposed to public view shall be landscaped with turf or xeric landscaping.	
NOTE 1: Perennials and ornamental grasses may be substituted for shrubs at 3 one-gallon perennial or ornamental grass species per one five-gallon shrub.		
NOTE 2: Lot sizes: Small 3,700sf – 5,999sf; Standard 6,000sf – 8,999sf; Large 9,000sf – 14,999sf Estate 15,000sf and greater.		

GENERAL NOTES

PURSUANT TO CITY CODE SEC. 146-1719. REQUIREMENTS FOR RESIDENTIAL DEVELOPMENT: THE BUILDER AGREES TO INSTALL FRONT YARD LANDSCAPING ACCORDING TO THE FOLLOWING REQUIREMENTS:

REQUIREMENTS FOR SINGLE-FAMILY DETACHED AND TWO-FAMILY RESIDENCES. ALL NEW SINGLE-FAMILY DETACHED AND TWO-FAMILY RESIDENTIAL DWELLINGS SHALL BE PROVIDED WITH BUILDER INSTALLED FRONT YARD LANDSCAPING (AND SIDE YARD, IF APPLICABLE SEE BELOW) WHICH SHALL BE INSTALLED BEFORE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, IF THE CLOSING OCCURS DURING A GROWING SEASON (APRIL 1-OCTOBER 1) IN THE SAME YEAR. IF THE CLOSING OCCURS OUTSIDE OF THE GROWING SEASON, THE LANDSCAPING SHALL BE INSTALLED DURING THE NEXT GROWING SEASON BY THE BUILDER.

1. IRRIGATION: FRONT YARD LANDSCAPING SHALL INCLUDE AUTOMATIC IRRIGATION. SIDE YARD LANDSCAPING AND IRRIGATION SHALL ALSO BE INSTALLED WHERE THE SIDE YARD FACES A PUBLIC RIGHT-OF-WAY OR THE PUBLIC SPACE.

2. SIDE YARDS: FOR CORNER LOTS, SIDE YARD LANDSCAPING IS REQUIRED IN THE SIDE YARD SETBACK INCLUDING THE AREA BETWEEN A FENCE OR WALL AND BACK OF SIDEWALK (TO BACK OF CURB IN THE ABSENCE OF A SIDEWALK). LANDSCAPING SHALL CONSIST OF TURF GRASS OR EITHER SHRUBS, ANNUALS OR PERENNIALS, AND ORNAMENTAL GRASSES LOCATED IN A PLANT BED AND LANDSCAPED IN ACCORDANCE WITH SEC. 146-1408(B). LIVING MATERIAL COVERAGE AND PLANT QUANTITY REQUIREMENTS FOR SINGLE FAMILY DETACHED UNITS ARE IN TABLES 14.3A OR 14.3B TO THE LEFT.

UDO sections updated as necessary.

Table 14.3B Home Yard Landscaping—Xeric Option
Front, Side, and Rear Yard Landscaping Requirements for Single-Family Detached, Two-Family, and Sin Family Attached Duplex Homes.

Revised per current UDO. Turf option left on sheet for the handful of lots in filing 2 that do have turf allowed. Everything moving forward is the xeric option.

This is from the old code and not consistent with what is currently being done at GVRE. Please Update

	(A) Plant Quality and Type	(B) Requirements
FRONT YARD		
1.	Applicability	Requirements apply to all lot sizes.
2.	Turf	No turf is required.
3.	Request and landscape plan	Submit request in writing to Director of planning accompanied with landscape plan at a minimum scale of one inch equals 10 feet.
4.	Rock and inorganic mulches. (See note 1)	Rock mulch is limited to not more than 50% of the area to be landsca 50% of all rock and other mulch areas shall be covered with living pla material.
5.	Plant materials (See note 1)	All plant materials shall comply with requirements found in Sec. 146- Plant Material Requirements.
6.	Pavers (See note 1)	Brick pavers, asphalt pavers, and natural stone limited to not more tha 40% of the landscaped area.
7.	Features	One of the following features shall be incorporated: a. Wall – 1 ft. to 2 ½ ft. high decorative natural stone, stucco, or approved CMU wall. b. Fence – in accordance with art. 17 Fence. c. Berms – low earth berm 2 ½ ft. tall max. Slopes not to exceed one foot rise for each 4 feet of run. d. Natural boulders – 3 - two feet by three feet min.
8.	1 Shade tree, and either	2 ½ inch caliper
	1 Ornamental tree	2 inch caliper
	Or 1 Evergreen tree	6 foot height
9.	Shrubs: (See notes 2)	Shrubs – 5 gallon container Min. – Plant material shall conform with American Standard for Nursery Stock, Ansi Z60.1, current addition. Fabric may be omitted under annuals, perennials and groundcovers. Use a variety of shrubs and plant materials that will provide visual interest during all seasons.
SIDE YARDS		
	Internal side yards, not exposed to public view – No plant material is required but mulches are required for soil stability. External side yards on corner lots exposed to public view – Shall be landscaped by combining visible side and front yard areas and applying front yard standards.	
REAR YARDS		
	Turf or xeric landscaping is not required. In rear yards the use of turf shall be limited to no more than 45% of the area to be landscaped. Rear yards at corner lots exposed to public view shall be landscaped with turf or xeric landscaping.	
NOTE 1: At corner lots with a side yard visible to public view, front and side yard areas shall be combined for calculation of xeric requirements.		
NOTE 2: Perennials and ornamental grasses may be substituted for shrubs at 3 one-gallon perennial or ornamental grass species per one five-gallon shrub.		

Sheet Title:
FRONT YARD LANDSCAPE
Landscape Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.3

PLANT MATERIALS

THE FOLLOWING LIST IS PROVIDED AS A GUIDE TO VEGETATION. WATER USE GROUPS HAVE BEEN DELINEATED TO ENCOURAGE XERICSCAPING PRINCIPLES OF DESIGN, WHICH RECOMMENDS PLANTING VEGETATION OF SIMILAR WATER REQUIREMENTS TOGETHER. BECAUSE OF AVAILABILITY UNCERTAINTY AT THE TIME OF CONSTRUCTION, ALTERNATE SPECIES MAY BE INCLUDED WITH INSTALLATION OF THE LANDSCAPE. ANY OF THE FOLLOWING SPECIES ARE APPROPRIATE THROUGHOUT GREEN VALLEY Ranch Master plan. ALL LANDSCAPE DESIGN AND MATERIALS SHALL COMPLY WITH THE CITY OF AURORA LANDSCAPE.

we're calling this "Green Valley Master Plan"

XXX RATED SPECIES
(PLANTS THAT NEED 1/2" OF WATER EVERY 2 WEEKS)

DECIDUOUS TREES
HAWTHORNE VARIETIES
BIGTOOTH MAPLE
OAK VARIETIES
BLACK WALNUT
BLACK LOCUST

EVERGREEN TREES
PINON PINE
WHITE PINE
PONDEROSA PINE
AUSTRIAN PINE
BRISTLECONE PINE
LIMBER PINE
SCOTCH PINE
ROCKY MOUNTAIN JUNIPER

ORNAMENTAL TREES
HAWTHORN VARIETIES

EVERGREEN SHRUBS
YUCCA

DECIDUOUS SHRUBS
GAMBEL OAK
CUTLEAF SUMAC
BUFFALOBERRY
PEASHRUB VARIETIES
SPIREA VARIETIES
LEADPLANT
APACHE PLUME
DWARF RABBITBRUSH
SAGE VARIETIES
CURRANT VARIETIES

GROUNDCOVERS/PERENNIALS
RED SWITCH GRASS
THE BLUES LITTLE BLUESTEM GRASS
BIG BLUESTEM GRASS
PUSSYTOES
SULFUR BUCKWHEAT
SNOW-IN-SUMMER
JOE PYEWEED
HUMMINGBIRD FLOWER
PENSTEMON VARIETIES
BLANKETFLOWER
PRAIRIE CLOVER
OBEDIENT PLANT

XX RATED SPECIES
(PLANTS THAT NEED 1/2" OF WATER EVERY 1 WEEK)

DECIDUOUS TREES
WESTERN HACKBERRY
OAK VARIETIES
KENTUCKY COFFEETREE
BUCKEYE
HORSECHESTNUT

EVERGREEN TREES
SCOTCH PINE

ORNAMENTAL TREES
CRABAPPLE VARIETIES
HAWTHORN VARIETIES
PLUM VARIETIES
PEAR VARIETIES
CHERRY VARIETIES
AMUR CHOKECHERRY

EVERGREEN SHRUBS
JUNIPER VARIETIES
SPANISH GOLD BROOM

DECIDUOUS SHRUBS
COTONEASTER VARIETIES
POTENTILLA VARIETIES
BUTTERFLY BUSH
ROSE VARIETIES
BROOM VARIETIES
DOGWOOD VARIETIES
BUCKTHORN
PURPLE LEAF PLUM
CURRANT VARIETIES
VIBURNUM VARIETIES
LILAC VARIETIES
NINEBARK VARIETIES
BEAUTY BUSH
SMOKEBUSH
SNOWBERRY
CORALBERRY

GROUNDCOVERS/PERENNIALS
YARROW VARIETIES
CATMINT
POPPY
LAVENDER
HYSSOP
MAY NIGHT SALVIA
STELLA DE ORO DAYLILY

GROUNDCOVER/PERENNIALS CONT.
BLACK EYED SUSAN
ASTER
LUPINE
LILY OF THE VALLEY

X RATED SPECIES
(PLANTS THAT NEED 1" OF WATER EVERY 1 WEEK)

DECIDUOUS TREES
HONEYLOCUST
GOLDENRAIN TREE
AMUR MAPLE
AUTUMN BLAZE MAPLE
GREEN MOUNTAIN SUGAR MAPLE
SERVICEBERRY VARIETIES
APPLE AND CRABAPPLE VARIETIES
ELM VARIETIES
WESTERN CATALPA
DOGWOOD

ORNAMENTAL TREES
SERVICE BERRY VARIETIES

EVERGREEN SHRUBS
WHITE BUD MUGO PINE

DECIDUOUS SHRUBS
CHOKEBERRY
DOGWOOD VARIETIES
PEE GEE HYDRANGEA
DAPHNE
WILLOW
SPIREA VARIETIES
DWARF ARCTIC WILLOW
BARBERRY VARIETIES
WESTERN SANDCHERRY
CRANBERRY VIBURNUM

GROUNDCOVERS/PERENNIALS
LAMIUM
CORAL BELLS
ONEYSUCKLE
TRUMPET VINE
CLEMATIS
ANEMONE
SHASTA DAISY
SWEET WOODRUFF
PURPLE FLAME MAIDEN GRASS
DWARF FOUNTAIN GRASS
FEATHER REED GRASS
WHITE BOTTLEBRUSH
EVENING PRIMROSE
CONEFLOWER VARIETIES

Z RATED SPECIES
(PLANTS THAT NEED NO WATER)

SHRUBS
AMELANCHIER ALNIFOLIA 'REGENT'
ARCTOSTAPHYLUS UVA URSI
CERCOCARPUS MONTANUS
FALLUGIA PARADOZA
MAHONIA FREMONTII
MAHONIA REPENS
PRUNUS BESSEYI 'PAWNEE BUTTES'
REDLEAF ROSE
RHUS AROMATICA
YUCCA BACCATA

Sheet Title:
PLANT MATERIALS
Landscape Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.3

DETENTION AREA SPECIES

WOODY PLANTS FOR PERIMETER
ROCKY MOUNTAIN MAPLE
RED-OISER DOGWOOD
TWINBERRY
RED-BERRIED ELDER
PEACHLEAF WILLOW

6"-18" WATER DEPTH
SOFT STEM BULRUSH
HARD STEM BULRUSH
ARROWHEAD
ALKALI BULRUSH
SMARTWEED

3"-6" WATER DEPTH
THREE SQUARE BULRUSH
SPIKE RUSH
SWEETFLAG
CREEPING SPIKERUSH
ALKALI BULRUSH
SMALL-FRUIT BULRUSH

0"-3" WATER DEPTH
RICE CUT GRASS
BEAKED SEDGE
NEBRASKA SEDGE
SWITHGRASS
PRAIRIE CORDGRASS
SOFTSTEM BULRUSH
BALTIC RUSH
FOXTAIL BARLEY
MILKWEED
WATER PLANTAIN
SWEETFLAG
WATER SEDGE
TUFTED HAIRGRASS
LEAST SPIKERUSH
CREEPING SPIKERUSH
ALKALI BULRUSH
SMALL-FRUIT BULRUSH
ARROWHEAD
MISSOURI IRIS
SWAMP MILKWEED

WETLAND PERIMETER GRASSES
BLUEJOINT REEDGRASS
TICKLEGRASS
AMERICAN SLOUGHGRASS
REEDGRASS
TUFTED HAIR GRASS
TALL MANNAGRASS
FOWL MANNAGRASS
ALKALI GRASS
ALKALI CORDGRASS
PRAIRIE CORDGRASS
MARSH MILKWEED
WATER SEDGE
BEBB'S SEDGE
DOUGLASS SEDGE
NATIVE SEDGE
PORCUPINE SEDGE
WOOLLY SEDGE
NEBRASKA SEDGE
SHOR BEAK SEDGE
FOX SEDGE
LARGE-LEAVED AVENS
MARSH SUNFLOWER
COW PARSNIP
WESTERN BLUE FLAG
ARCTIC RUSH
COLORADO RUSH
DRUMMOND'S RUSH
MERTENS RUSH
KNOTTED RUSH
POVERTY RUSH
TORREY'S RUSH
THREE-FLOWER RUSH
CARDINAL FLOWER
GREAT BLUE LOBELIA
YELLOW MONKEYFLOWER
PINK MONKEYFLOWER
CLOAKED BULRUSH
GROUNDSEL
BLUE-EYED GRASS
BLUE VERVAIN
SPEEDWELL
BROOKLIME
LUPINE

TREES
THIN LEAF ALDER
NARROWLEAF COTTONWOOD
ROCKY MOUNTAIN JUNIPER
PEACHLEAF WILLOW

SHRUBS
SERVICEBERRY
LEAD PLANT
RABBITBRUSH
COYOTE WILLOW
WILD PLUM
CHOKECHERRY
SMOOTH SUMAC
THREE-LEAF SUMAC
WAX CURRANT
DOGWOOD
RED BERRIED ELDER
WESTERN SNOWBERRY
YUCCA
WOODS ROSE
SILVER BUFFALOBERRY
FRINGED/PASTURE
SAGEBRUSH
BIG SAGEBRUSH
MOUNTAIN MAHOGANY
GAMBEL OAK
NANNYBERRY VIBURNUM
RIVER BIRCH
THINLEAF ALDER
SANDBAR WILLOW

LOWER DETENTION AREAS
MARSH MILKWEED AMERICAN
SLOUGHGRASS
BLUE JOINT REEDGRASS
NORTHERN REEDGRASS
BEBB'S SEDGE
WOOLY SEDGE
INLAND SALTGRASS
TALL MANNAGRASS
FOWL MANNAGRASS
MARSH SUNFLOWER
ROUND-FRUIT RUSH
DRUMMOND'S RUSH
KNOTTED RUSH
ROCKY MOUNTAIN RUSH
THREE-FLOWER RUSH
SWITCHGRASS
COMMON REED
NUTALL'S SUNFLOWER
PRAIRIE CORDGRASS
ARROWWEED
BLUE VERVAIN
TICKLEGRASS
AMERICAN SLOUGHGRASS

RECOMMENDED STREET TREE SPECIES

FALL FIESTA SUGAR MAPLE
~~WESTERN CATALPA~~ Revised
WESTERN HACKBERRY
SEEDLESS KENTUCKY COFFEETREE
IMPERIAL HONEYLOCUST
SKYLINE HONEYLOCUST
SIOUXLAND PLAINS (SEEDLESS) COTTONWOOD
SWAMP WHITE OAK
BUR OAK
CHINKAPIN OAK
TEXAS RED OAK
ENGLISH OAK
SCHUMMARD OAK
PRINCETON ELM
TRIUMPH ELM

Sheet Title:
PLANT MATERIALS
Landscape Standards
Master Plan

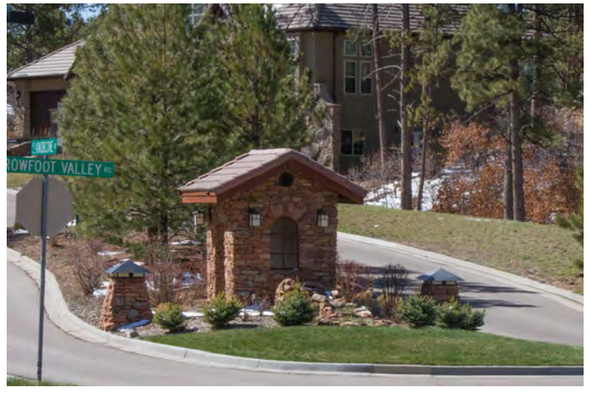
Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11. 4

Entry Monument Landscape Elevation

Entry Monument Landscape Plan View



Typical Entry Monument Landscape Character

GENERAL NOTES

Distinctive landscaped areas shall be provided at entry monuments that visually frame and enhance the entry experience. Landscaping in these areas shall consist of plant specimens having a high degree of visual interest during all seasons. A mixture of shrubs, ornamental grasses, ornamental trees, flowers, and/or ground cover shall be planted around sign bases and at curb returns near site entrances. The use of land forms incorporated into the entry monument design is also encouraged.

PLANTING

The following are some general landscape requirements for the primary entry monument:
1.5 trees and 12 shrubs per 4,000 square feet.

are there any major monuments/entrances/ signs proposed north of 52nd?

Yes. These will be shown on tab 10 page 3. Planting requirements listed above will be consistent

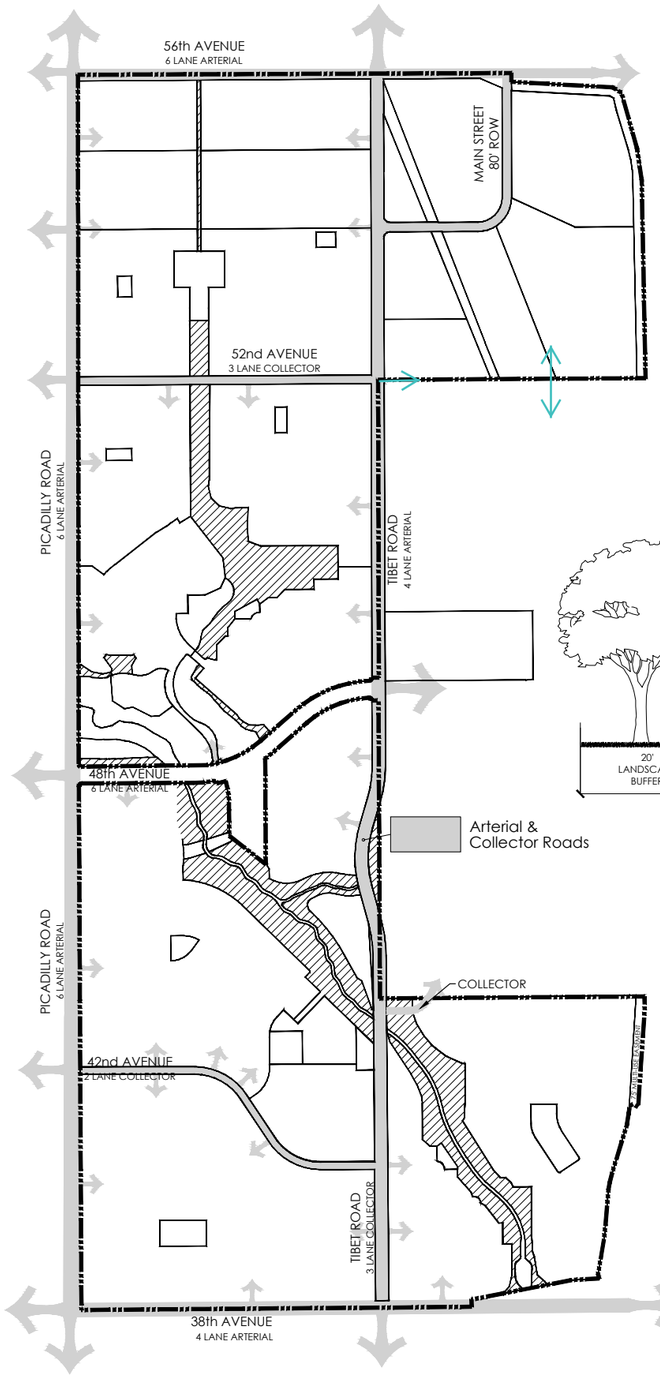
Note: This imagery is not [illegible]posed entry monument landscape in Green Valley.

Sheet Title:
ENTRY MONUMENT LANDSCAPE
Landscape Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.5



GENERAL NOTES:

All tree lawns shall be landscaped with a minimum of one landscape treatment, consisting of irrigated turf, non-living landscape material, and living plant material. The use of native grass is strongly encouraged. All tree lawns will have trees, which will be centered within the tree lawn and spaced 40' on center. Tree species diversity is strongly encouraged.

ARTERIAL ROADWAYS:

All arterial roadways shall have a minimum 20' landscape buffer along its entire length. Street buffer not required when adjacent to 100' min. depth of open space.

COLLECTOR ROADWAYS:

See Arterials

LOCAL ROADWAYS:

Street trees to be provided by builders.

MAIN STREET:

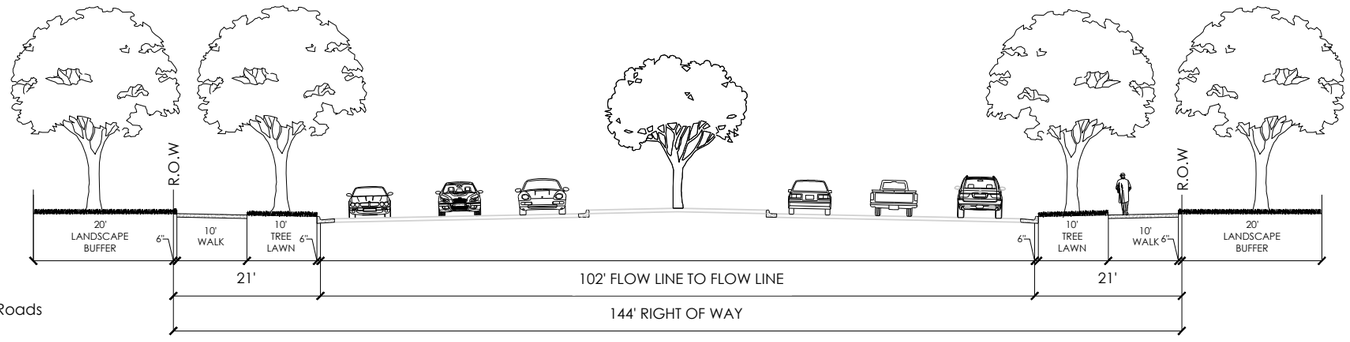
See Main Street Design Standards Tab 10.14.

STREET LANDSCAPE BUFFER STANDARDS:

All landscape buffer adjacent to arterial and collector roads are to be a minimum of 20'. Landscape standards within the street frontage buffers shall be 1 tree + 10 shrubs per 40 LF in addition to the required right-of-way standard of 1 tree per 40' centered in the tree lawn.

ARTERIAL MEDIAN LANDSCAPE STANDARDS:

Landscape standards within arterial medians shall conform to current City of Aurora PROS standards.



SIX LANE ARTERIAL

Typical Arterial & Collector Buffer Landscape

Sheet Title:

STREETSCAPE STANDARDS

Landscape Standards

Master Plan

Project Title:

Green Valley Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

Clubhouse Architectural Style

Lap Pool

Seamless Landscape Transitions

Clubhouse & Pool Patio

Note: This imagery is an illustrative representation of proposed clubhouse amenities in Green Valley.

Amenities shall be determined with future site plans.

Revised

GENERAL NOTES

The clubhouses may contain amenities such as athletic courts, an event lawn, and an outdoor terrace with a pergola and swimming pool. The clubhouse site in the active adult area is oriented towards the storm water mitigation areas and open space dedicated to the site and should take advantages of the benefits they provide. The clubhouse and pool terrace will be oriented to take advantage of any views created by the detention area as well as from the proposed pond.

PLANTING

The clubhouse site should host plant material that creates seamless transitions between the site and the adjacent mitigation areas. Multi-seasonal interest is encouraged to create a landscape which remains aesthetic throughout the entire year. Flowering plants and thorny plants should be avoided near sidewalk and terrace edges.

Sheet Title:

CLUBHOUSES

Landscape Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.7

Open Lawn Area defined by plant groupings

Multi-Purpose Field

Grou reate spaces

revise to: is an illustrative representation... final design shall be determined in a future site plan. TYP

Revised

Note: This illustration is not representative of the proposed layout of the neighborhood park in Green Valley.

GENERAL NOTES

Neighborhood parks may host a diverse set of amenities and spaces which are open to interpretation. Multi-purpose fields will accommodate most sports related activities. Open lawn areas may also be designed for more passive activities. Other amenities such as pool complexes, basketball courts and tot lots should be considered.

PLANTING

The following are some general landscape requirements for the neighborhood parks: **1 tree and 10 shrubs per 4,000 square feet.**

Neighborhood parks should utilize groupings of dense vegetation to enhance the quality of spaces in the park.

Sheet Title:

NEIGHBORHOOD PARKS

Landscape Standards

Master Plan

Project Title:

Green Valley Amendment 2

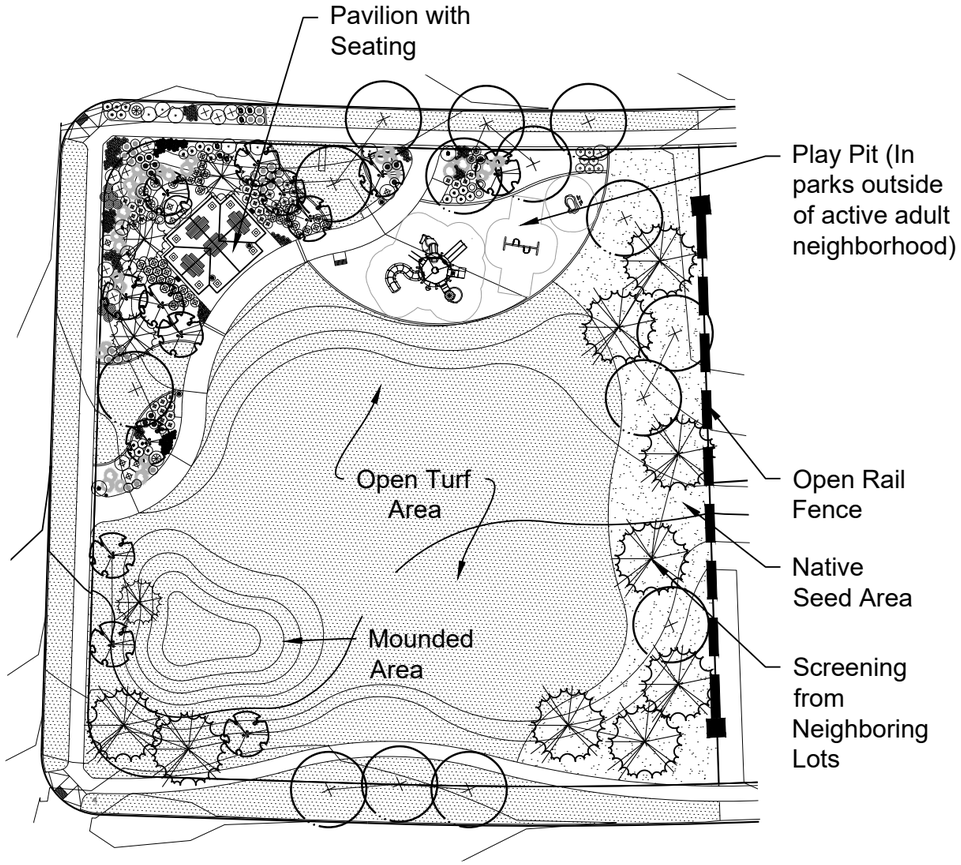
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.8

Open Turf & Native Buffer

Park Amenities



GENERAL NOTES

Pocket parks will accommodate a variety of uses for the surrounding neighborhoods. A pavilion may be located within the park to allow for group gatherings. The pavilion may include benches, barbecue grills, trash cans and other various amenities. A bicycle rack is encouraged to allow for residents to easily reach the park via bike. Play pits may be incorporated when appropriate that are designed for various age groups and abilities. Pocket park site layouts should utilize any views whenever possible.

PLANTING

The following are some general landscape requirements for the pocket park:
1 tree and 10 shrubs per 4,000 square feet.

The park should host an open turf area for active use. Native planting areas and xeric plantings should also be considered to lower water demands. Dense plantings should shape the spaces which contain the play pit and pavilion. Meandering trails that access various parts of the park while allowing for exploration are encouraged.

Utilizing Good Views

Pavilion with Seating

Play Pit

Note: This illustration is not representative of a proposed layout of a pocket park in Green Valley.

Revised

Sheet Title:

POCKET PARKS

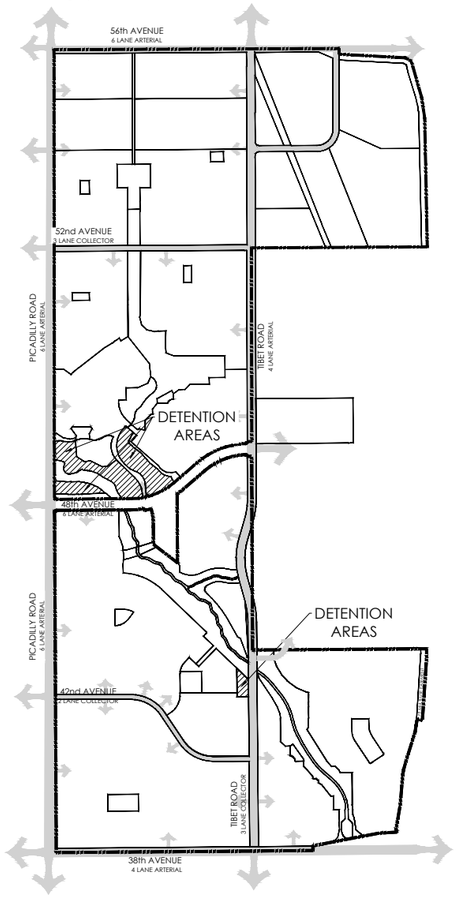
Landscape Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 11.8



Detention Areas

Typical Detention Area Edge Treatment

GENERAL NOTES

The detention and drainage channel areas shall have varying edge types which shall be integrated physically, functionally, and aesthetically into the total landscape design. Pedestrian access will be constructed in the form of meandering trails that provide beneficial views to the ponds and other landscape features providing annual interest. Meandering pond edges and other landscape features such as rock outcroppings and native plantings are encouraged to integrate the detention areas into the surrounding open spaces. Detention ponds will be planted with both dryland and wetland seed mixes to reestablish a native state. Tree and shrub plantings should be scattered throughout the edges of detention areas to create a more diverse habitat for native wildlife. When wet ponds are created, fountains may be considered for visual interest.

PLANTING

The following are some general landscape requirements for the detention areas:

1 tree and 10 shrubs per 4,000 square feet ***(Exact location to be determined at corresponding SP No plants will be located in wet locations).***

Pond Fountain

Typical Detention Planting

Rock Outcroppings

Sheet Title:

DETENTION & DRAINAGE CHANNEL STANDARDS

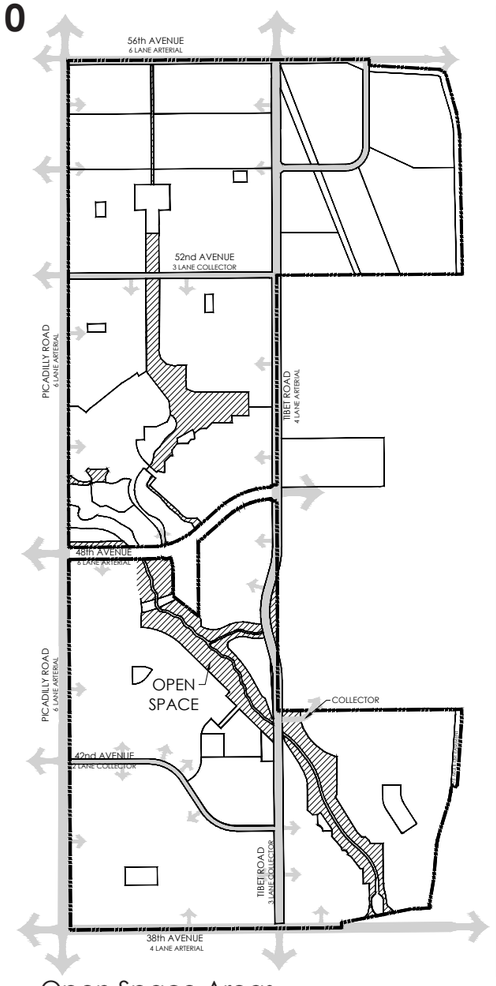
Landscape Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.10



Open Space Areas

Colorado Prairie Buffer

Planted Trails

Scattered Pockets of Planting & Mounding

Trails Near Drainage Features

GENERAL NOTES

Landscape within the open space areas will identify with the native Colorado theme and be utilized to create beneficial spatial relationships. Spaces with different programmatic uses such as active recreation and passive recreation therefore will be distinctly identifiable.

Mounding should be used throughout the site as a useful strategy for this purpose. Mounding established with native trees, and shrubs, when used, should be strategically located to create organic transitions between these spaces.

Large and flat open space areas will be landscaped with Colorado native Prairie plantings for visual interest and to encourage native wildlife. Prairie plantings will host expansive grassland plantings and also groupings of coniferous and deciduous trees to create beneficial vistas into and out of the site.

PLANTING

The following are some general landscape requirements for the open space areas outside of the floodplain.

1 tree and 10 shrubs per 4,000 square feet

Sheet Title:
OPEN SPACE LANDSCAPE
Landscape Standards
Master Plan

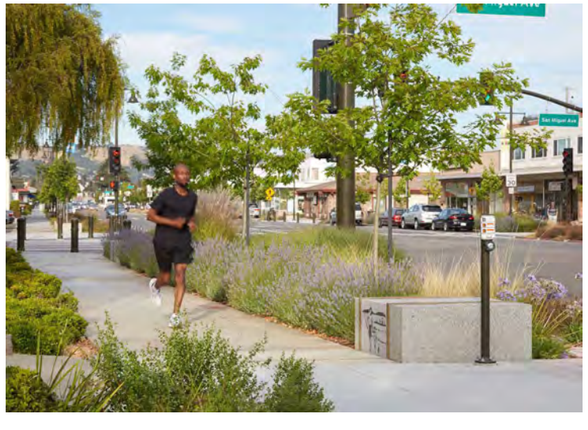
Project Title:
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.11

GENERAL NOTES

The landscape standards will vary depending on the commercial development area. The landscape areas for Main Street District will concentrate on connections between the street frontage, furnishings zone, pedestrian through way and frontage zones, and landscape buffers. The landscape for the central plaza will focus on enhancing the space with raised planter beds and tree grates, while providing shade and a low maintenance plant material. The commercial landscape will tie into the adjacent multi-family or single family residential developments. Pedestrian linkage is also encouraged between commercial and residential, promoting neighborhood friendly connections. All landscape areas will be complementary to the surrounding areas, focusing on the Colorado theme and promoting the use of waterwise plant material.



Sheet Title:

COMMERCIAL LANDSCAPE

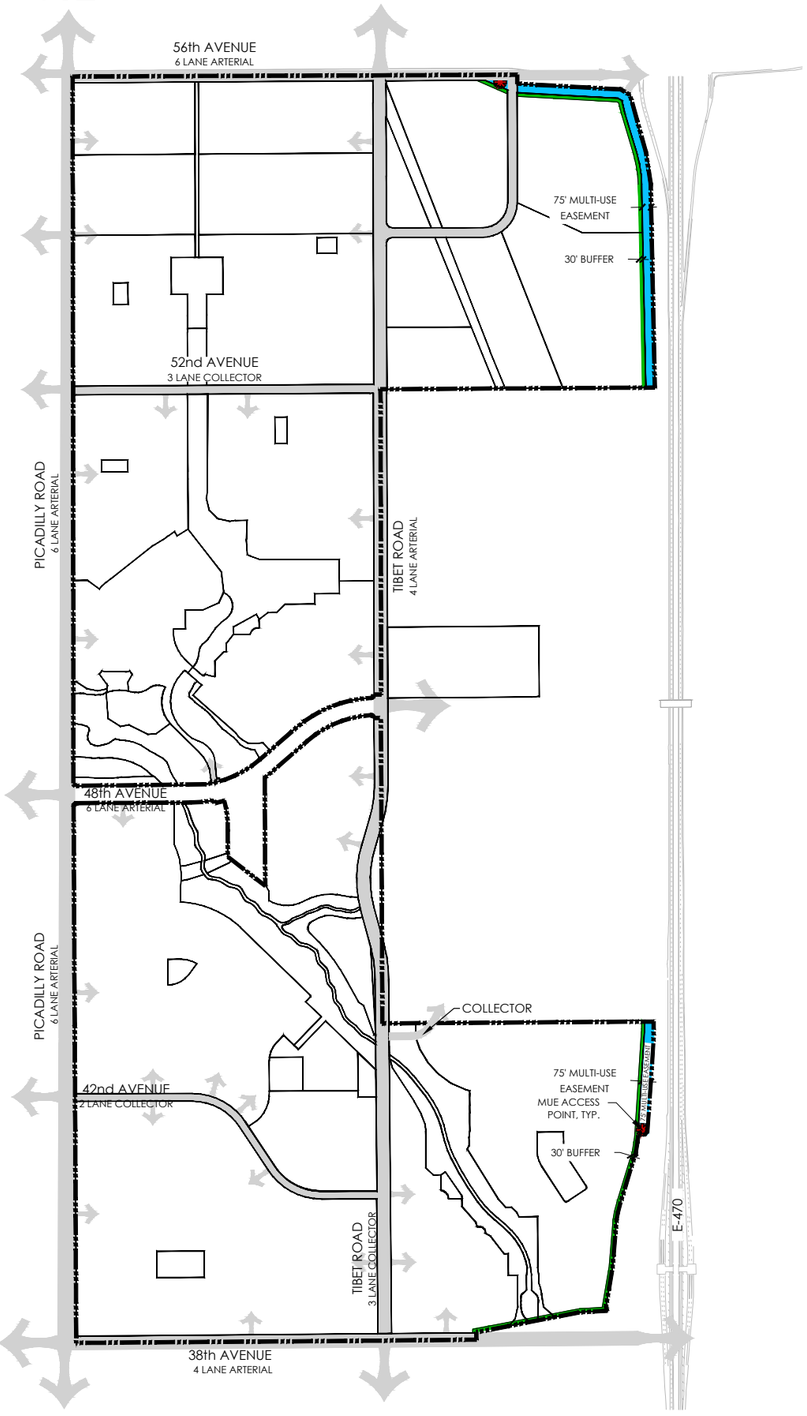
Landscape Standards
Master Plan

Project Title:

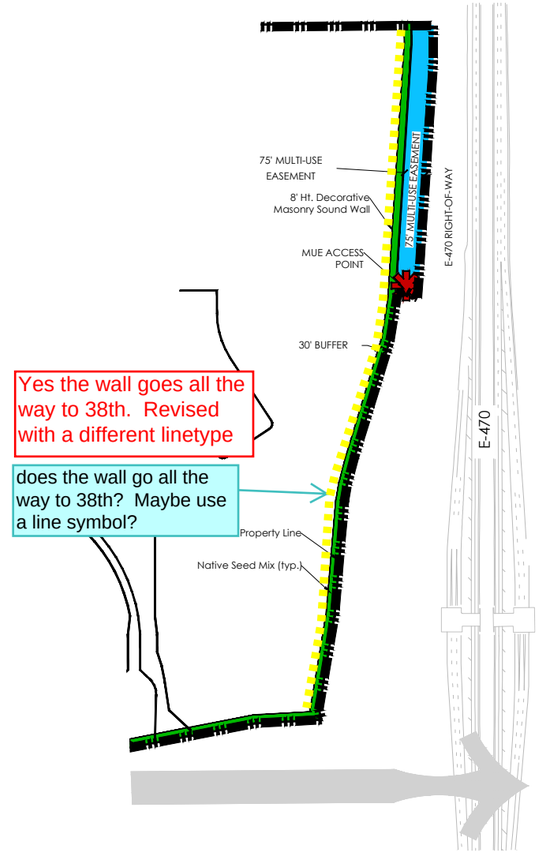
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.12



E-470 Buffer Areas



Typical E-470 Buffer

Decorative Masonry Sound Wall

GENERAL NOTES

Land forms and native plantings indicative of the colorado foothills along with an eight (8) foot tall decorative masonry sound wall that will mitigate the negative effects of the nearby highway will be provided. A seventy-five (75) foot multi-use easement will exist adjacent to E-470. All buffers adjacent to E-470 shall be at least thirty (30) feet in width. Refer to the ALTA.

Access to the future trail within the 75' MUE will be ~~provide at the southern corner of the property via a community trail that connects on the trail system within the development~~. ~~Access can be~~ provided through a gate/wall opening or offset walls.

language revised per new boundary

Sheet Title:

E-470 BUFFER

Landscape Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

January 27, 2022 Tab 11.12

MP ARCHITECTURAL STANDARDS

12

- Form H 12.1
- Single Family - Craftsman 12.2
- Single Family - Classic 12.3
- Single Family - Homestead 12.4
- Single Family - Victorian 12.5
- Carriage House Elevations 12.6
- Carriage House Design Styles 12.7
- Duplex Elevations 12.8 - 12.9
- Bungalow Elevations 12.10 – 12.11
- Multi Family 12.12
- Commercial 12.13

TAB 12.1

12.1 Form H Architectural Design Standards Matrix

Architectural Design Standard	***Brief Description of the Feature***	***Location of the Standards in Application Package***
Residential Design Single Family Detached		
Residential Architectural Styles	Craftsman	Page 12.2
Residential Materials Palette	Siding with Masonry	Page 12.2
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.2
Residential Architectural Styles	Classic	Page 12.3
Residential Materials Palette	Siding with Masonry	Page 12.3
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.3
Residential Architectural Styles	Homestead	Page 12.4
Residential Materials Palette	Siding with Masonry	Page 12.4
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.4
Residential Architectural Styles	Victorian	Page 12.5
Residential Materials Palette	Siding with Masonry	Page 12.5
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.5
Residential Design Carriage House		
Residential Architectural Styles	Contemporary Craftsman	Page 12.6
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.7
Residential Design Duplex		
Residential Architectural Styles	Contemporary Craftsman	Page 12.8-12.9
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.8-12.9
Residential Design Bungalow		
Residential Architectural Styles	Contemporary Craftsman	Page 12.10-12.11
Residential Color Palette	Earth Tone Colors	
Residential Architectural Features	See Menu Items	Page 12.10-12.11
Multi Family Residential Design		
Residential Architectural Styles		Page 12.12
Residential Color Palette		
Residential Architectural Features		Page 12.12
Commercial Design		
Commercial Retail		Page 12.13
Commercial Office		Page 12.14
Institutional		Page 12.15

Sheet Title:

FORM H

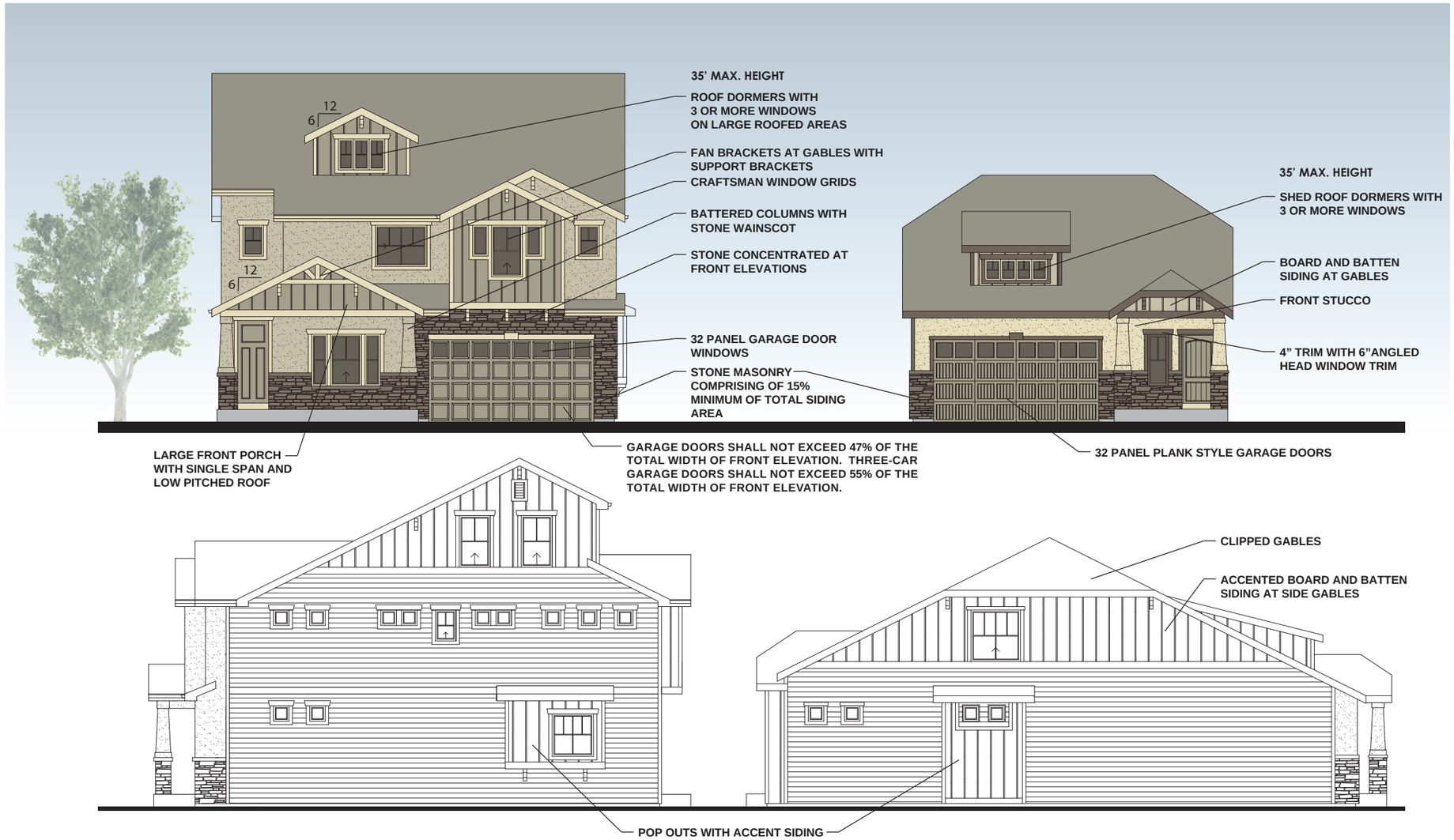
Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.2



Menu of Architectural Features

Architecture will comply with current city building and design standards. Features of this style shall include (7) of the following style criteria:

- Craftsman style window grids on 75% of windows
- Shed or gabled low pitch roof dormers with 3 or more windows
- Plank Style shutters in fronts windows and windows facing open space or streets (2 Aurora points for 2 shuttered windows)
- 32 panel plank style garage doors with windows
- Stone masonry comprising 15% of the sided areas focused on the front elevation
- Front Stucco and stucco accents to total 30% of all masonry (total percentage with stone)
- Board and Batten in gables and pop outs with a separate color than the body color
- Fan style brackets at larger front and rear gables that face streets and opens space supported by small brackets. Small support brackets on all other gables.
- 4" wide trim around windows with 6" head trim and angled shoulders
- Large front porch with single span low pitched roof
- Tapered stone wainscot columns
- Rectangular vents on prominent larger gables
- Clipped Gables
- Low pitched roofs of 6:12 pitch

NOTE:

1. THESE ELEVATIONS ARE CONCEPTUAL IN NATURE TO DEMONSTRATE THE ARCHITECTURAL STYLES. ADDITIONAL MODELS AND DETAILS WILL BE PROVIDED WITH MASTER ARCHITECTURE REVIEW.
2. 15% MASONRY PROVIDED. CALCULATIONS TO BE PROVIDED WITH MASTER ARCHITECTURE REVIEW AT TIME OF BUILDING PERMIT.
3. SITE PLAN SHALL COMPLY WITH ALL APPLICABLE CITY CODES FOR LANDSCAPING, SETBACKS GARAGE ORIENTATION AND NON-REPETITIVE DESIGN.
4. ARCHITECTURAL DESIGN SHALL COMPLY WITH ALL APPLICABLE CITY CODES AND ADOPTED STANDARDS FOR ELEVATION MATERIALS, WINDOWS AND PROMINENCE OF GARAGE DOORS.
5. MAXIMUM GARAGE PERCENTAGE ON THE FRONT FACADE DOES NOT APPLY IF ~~LONG AS THE~~ GARAGES ~~OF THE STREET SIDE HOMES~~ FACE THE MOTOR COURT.

Revised

Sheet Title:

SINGLE FAMILY
CRAFTSMAN DESIGN STYLES

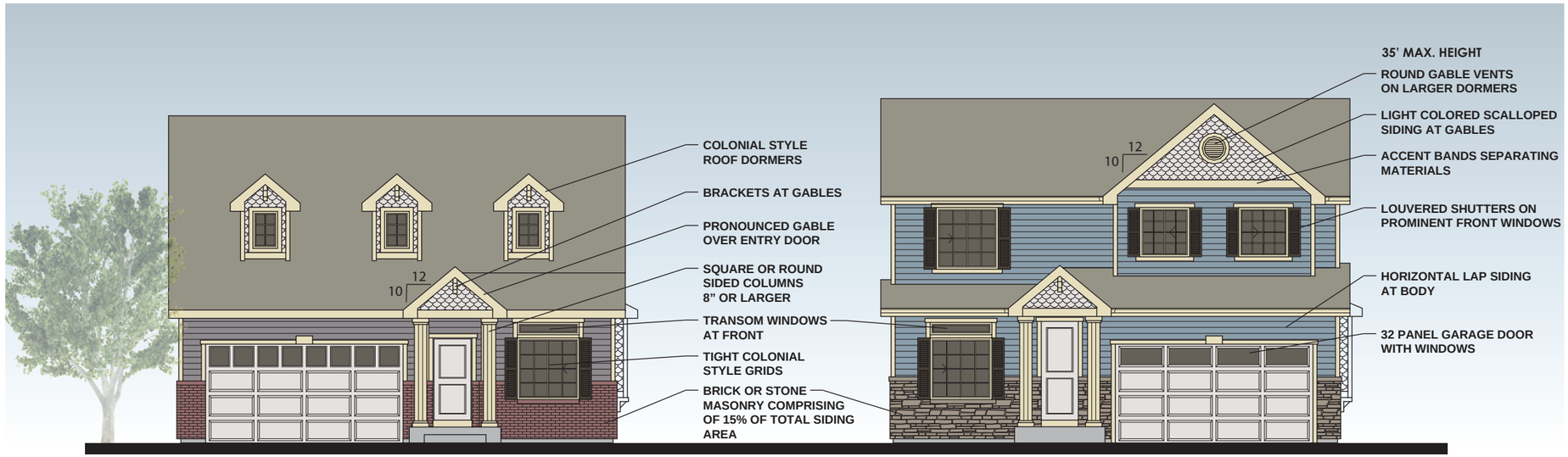
Architectural Standards
Master Plan

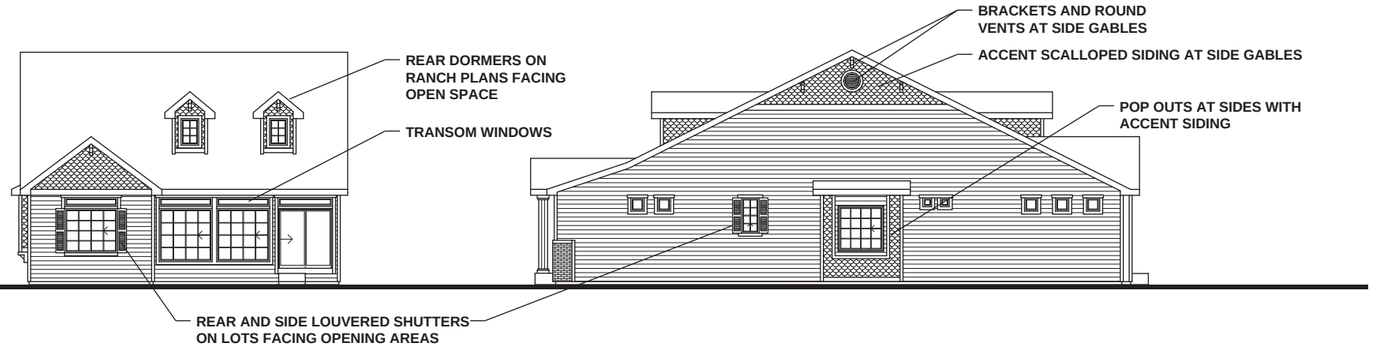
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.3





Menu of Architectural Features

Architecture will comply with current city building and design standards. Features of this style shall include (7) of the following style criteria:

- Classic Style tight window grids on 75% of windows
- Colonial style roof dormers with windows
- Decorative louvered shutters in front windows and windows facing open space or streets
- 32 panel garage doors with windows
- 2 panel entry door
- Brick or Stone masonry comprising 15% of the sided areas focused on the front elevation
- 4" wide trim around windows and doors with 1" shoulders at trim above
- Classical prominent covered entry porch of 50 sf minimum
- 8" diameter minimum square or round sided columns
- Round gable vents on prominent larger gables. Small brackets on gables without vents
- Gables with a separate lighter color than the body color and an accent band separating colors
  - o Scalloped Siding in gables (2 Aurora Points) or
  - o Horizontal siding in gables (no additional Aurora points)
- Medium pitched 10:12 roofs

NOTE:

1. THESE ELEVATIONS ARE CONCEPTUAL IN NATURE TO DEMONSTRATE THE ARCHITECTURAL STYLES. ADDITIONAL MODELS AND DETAILS WILL BE PROVIDED WITH MASTER ARCHITECTURE REVIEW.
2. 15% MASONRY PROVIDED. CALCULATIONS TO BE PROVIDED WITH MASTER ARCHITECTURE REVIEW AT TIME OF BUILDING PERMIT.
3. SITE PLAN SHALL COMPLY WITH ALL APPLICABLE CITY CODES FOR LANDSCAPING, SETBACKS GARAGE ORIENTATION AND NON-REPETITIVE DESIGN.
4. ARCHITECTURAL DESIGN SHALL COMPLY WITH ALL APPLICABLE CITY CODES AND ADOPTED STANDARDS FOR ELEVATION MATERIALS, WINDOWS AND PROMINENCE OF GARAGE DOORS.
5. MAXIMUM GARAGE PERCENTAGE ON THE FRONT FACADE DOES NOT APPLY AS LONG AS THE GARAGES OF THE STREET SIDE HOMES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
CLASSIC DESIGN STYLES

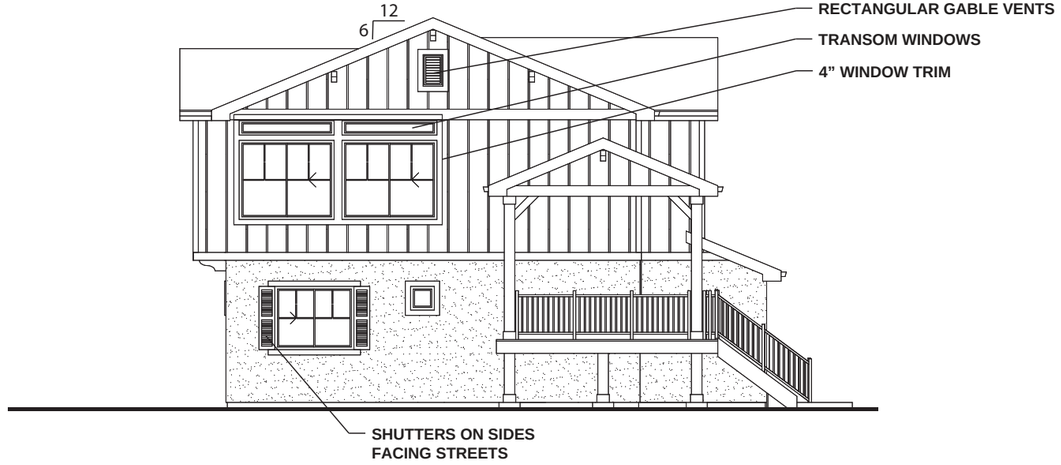
Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.4



Menu of Architectural Features

Architecture will comply with current city building and design standards. Features of this style shall include (7) of the following style criteria:
- Window grids on 75% of windows
- Shed Roof Dormers with windows
- Decorative louvered shutters in fronts windows and windows facing open space or streets
- 32 panel garage doors with windows
- 2 panel entry door
- Stone or Stucco masonry comprising 15% of the sided areas
- Board and Batten siding
- Decorative brackets on all gables
- 4" wide trim around windows and doors
- 8"columns with angled supports
- Rectangular gable vents on prominent larger side gables
- Low pitched roofs of 6:12 pitch

NOTE:
1. THESE ELEVATIONS ARE CONCEPTUAL IN NATURE TO DEMONSTRATE THE ARCHITECTURAL STYLES. ADDITIONAL MODELS AND DETAILS WILL BE PROVIDED WITH MASTER ARCHITECTURE REVIEW.
2. 15% MASONRY PROVIDED. CALCULATIONS TO BE PROVIDED WITH MASTER ARCHITECTURE REVIEW AT TIME OF BUILDING PERMIT.
3. SITE PLAN SHALL COMPLY WITH ALL APPLICABLE CITY CODES FOR LANDSCAPING, SETBACKS GARAGE ORIENTATION AND NON-REPETITIVE DESIGN.
4. ARCHITECTURAL DESIGN SHALL COMPLY WITH ALL APPLICABLE CITY CODES AND ADOPTED STANDARDS FOR ELEVATION MATERIALS, WINDOWS AND PROMINENCE OF GARAGE DOORS.
5. MAXIMUM GARAGE PERCENTAGE ON THE FRONT FACADE DOES NOT APPLY AS LONG AS THE GARAGES OF THE STREET SIDE HOMES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
HOMESTEAD DESIGN STYLES

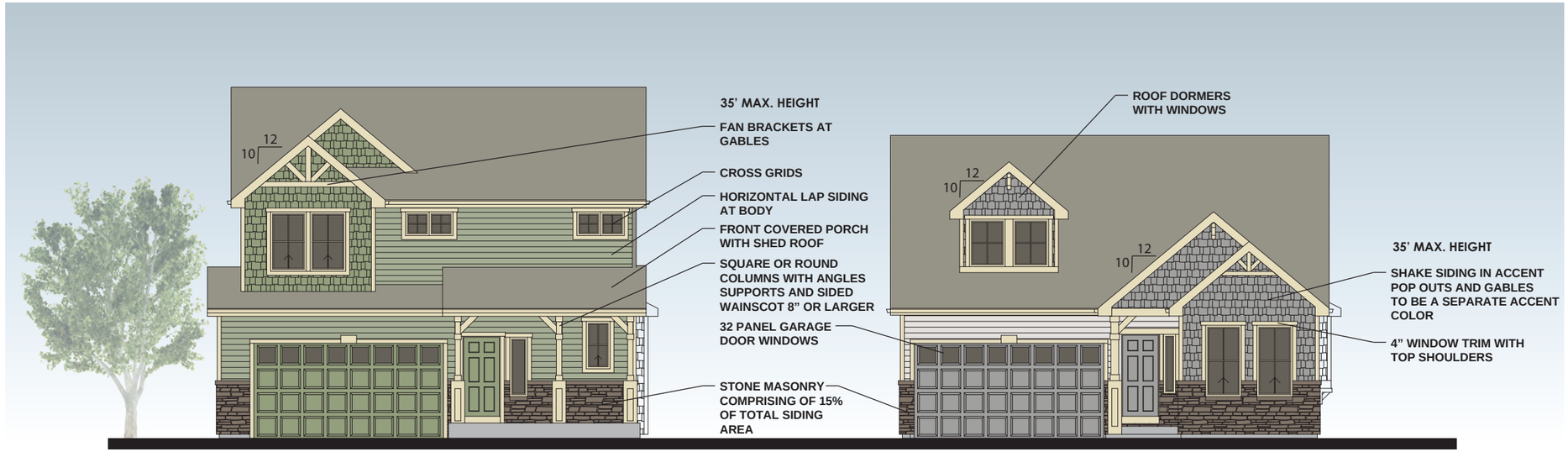
Architectural Standards
Master Plan

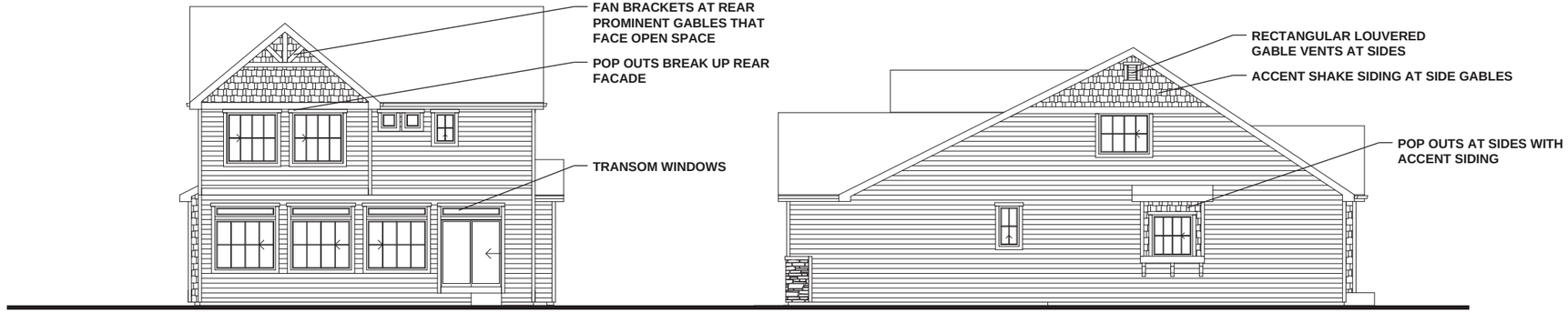
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.5





Menu of Architectural Features

Architecture will comply with current city building and design standards. Features of this style shall include (7) of the following style criteria:
- Cross style window grids on 75% of windows
- Steep pitched roof dormers with windows
- Decorative louvered shutters in fronts windows and windows facing open space or streets
- 32 panel garage doors with windows
- Stone masonry comprising 15% of the sided areas focused on the front elevation
- Shake Siding in gables with a different accent color than the body color
- Fan style brackets in prominent larger front and rear gables that face streets and open space. Decorative brackets on all gables without fan brackets
- 4" wide trim around windows with 1" shoulders at trim above window
- Larger front porch area with lower pitched shed roof above
- 8" round or square columns with sided wainscot and angled brackets
- Rectangular vents on side gables
- Steep pitch roof of 10:12 to 12:12 pitch

NOTE:
1. THESE ELEVATIONS ARE CONCEPTUAL IN NATURE TO DEMONSTRATE THE ARCHITECTURAL STYLES. ADDITIONAL MODELS AND DETAILS WILL BE PROVIDED WITH MASTER ARCHITECTURE REVIEW.
2. 15% MASONRY PROVIDED. CALCULATIONS TO BE PROVIDED WITH MASTER ARCHITECTURE REVIEW AT TIME OF BUILDING PERMIT.
3. SITE PLAN SHALL COMPLY WITH ALL APPLICABLE CITY CODES FOR LANDSCAPING, SETBACKS GARAGE ORIENTATION AND NON-REPETITIVE DESIGN.
4. ARCHITECTURAL DESIGN SHALL COMPLY WITH ALL APPLICABLE CITY CODES AND ADOPTED STANDARDS FOR ELEVATION MATERIALS, WINDOWS AND PROMINENCE OF GARAGE DOORS.
5. MAXIMUM GARAGE PERCENTAGE ON THE FRONT FACADE DOES NOT APPLY AS LONG AS THE GARAGES OF THE STREET SIDE HOMES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
VICTORIAN DESIGN STYLES

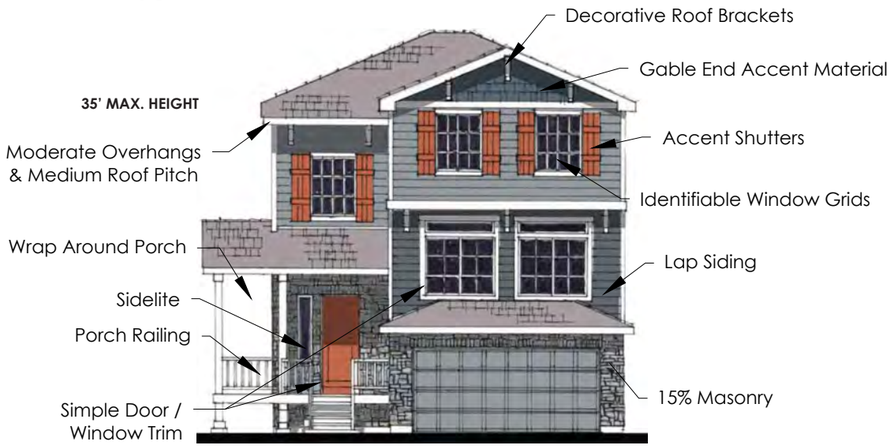
Architectural Standards
Master Plan

Project Title:

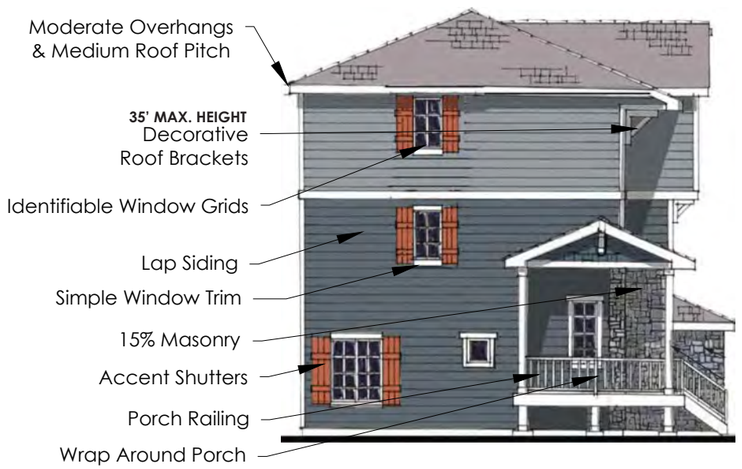
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.6



3 STORY FRONT ELEVATION B
CARRIAGE HOUSE

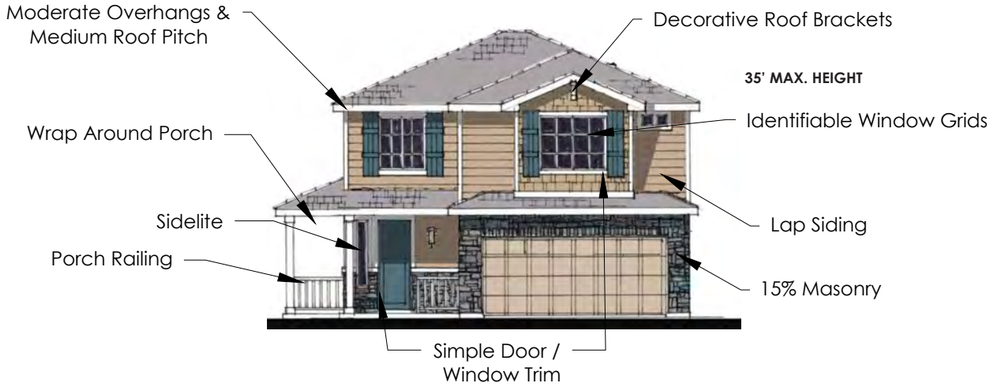


3 STORY SIDE ON STREET ELEVATION B
CARRIAGE HOUSE

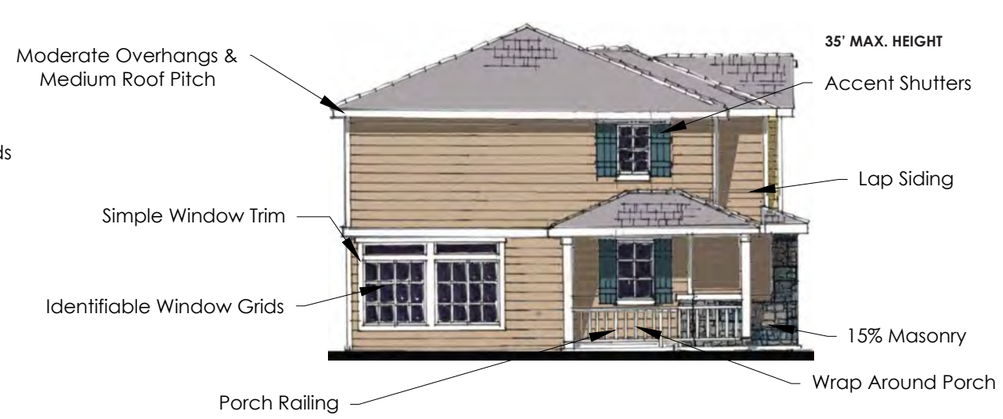
CARRIAGE HOUSE

THE CARRIAGE HOUSE STYLE IS INTENDED TO COMPLIMENT THE SURROUNDING ARCHITECTURE OF GREEN VALLEY RANCH. THE STYLE IS CHARACTERIZED BY HORIZONTAL LAP SIDING, GABLE END ACCENTS, EXPOSED RAFTERS AND BEAMS, COVERED PORCHES, AND ARTICULATED WINDOW ACCENTS. MASONRY MUST BE INCORPORATED TO ACCENTUATE THE FRONT FACADE. THE HIP ROOF FORMS ARE BROKEN UP WITH GABLE ACCENTS THAT INCLUDE DECORATIVE ROOF BRACKETS AND ARE TREATED WITH MATERIAL DIFFERENT FROM THE MAIN BODY OF THE HOUSE TO ADD CHARACTER TO THE FACADE. COVERED PORCHES ARE INTEGRATED INTO THE FRONT FACADE TO ACCENTUATE THE ENTRY. WRAP AROUND PORCHES ARE PROVIDED ON HOMES ADJACENT TO THE STREET TO PROVIDE AN ARTICULATED SIDE ON STREET ELEVATION. THE WINDOWS INCLUDE IDENTIFIABLE WINDOW GRIDS AND SHUTTERS. EACH HOME INCLUDES ONE SIDE ELEVATION THAT IS A PRIVACY SIDE. THIS ELEVATION IS SIMPLE WITH FEW WINDOWS IN ORDER TO PROVIDE PRIVACY FROM THE ADJACENT NEIGHBOR'S YARD.

THE COLORS ARE PRIMARILY EARTH TONED WITH ACCENT COLORS TO EMPHASIZE THE UPPER STORY AND ARCHITECTURAL FEATURES.



2 STORY FRONT ELEVATION B
CARRIAGE HOUSE



2 STORY SIDE ON STREET ELEVATION B
CARRIAGE HOUSE

NOTE:
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2. 15% MASONRY PROVIDED. CALCULATIONS TO BE PROVIDED WITH MASTER ARCHITECTURE REVIEW AT TIME OF BUILDING PERMIT.
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5. MAXIMUM GARAGE PERCENTAGE ON THE FRONT FACADE DOES NOT APPLY AS LONG AS THE GARAGES OF THE STREET SIDE HOMES FACE THE MOTOR COURT.

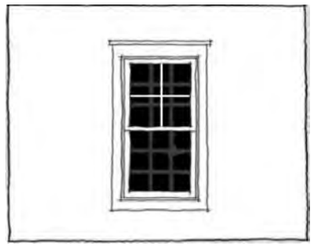
Sheet Title:
CARRIAGE HOUSE ELEVATIONS
Architectural Standards
Master Plan

Project Title:
Green Valley Amendment 2
Aurora, Colorado

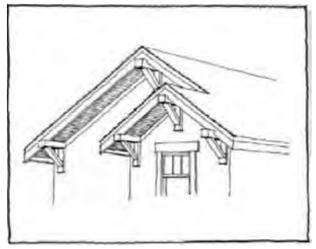
GREEN VALLEY RANCH

TAB 12.7

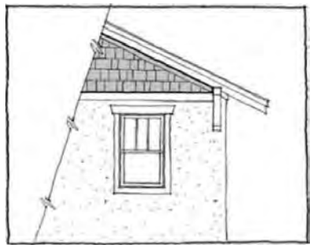
1. Moderate Roof Overhangs & Medium Roof Pitches



2. Window Grids

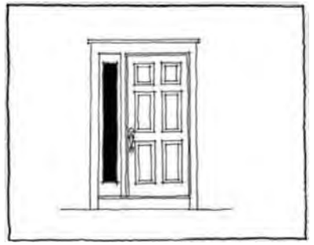


3.Decorative Brackets

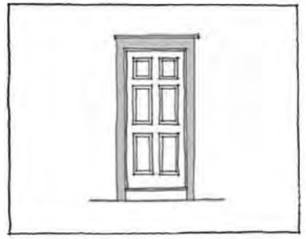


4. Gable End Accent Material

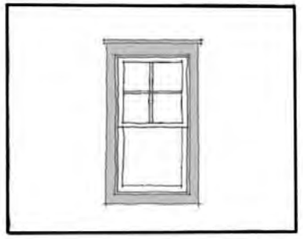
5. Accent Shutters



6. Sidelites

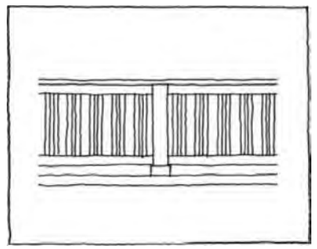


7. Simple Door Trim



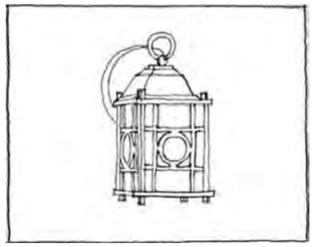
8. Simple Window Trim

9. Square Porch Columns

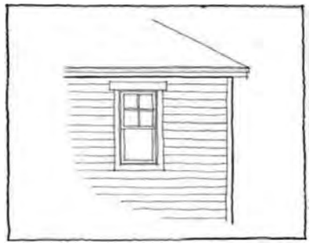


10. Porch Railing

11. Wrap Around Porch



12. Contemporary Light Fixture



13. Lap Siding

Menu of Architectural Features

Overall Design: The gabled roof massing will be based on the characteristics of the Contemporary Craftsman style seen in detached homes. Exterior materials will be siding and masonry. Architecture will comply with current city building and design standards. Features of this style shall include (10) of the following style criteria:

Design Features

1. Moderate main roof overhangs: 12" measured horizontally.
2. Identifiable window grids.
3. Gable ends with decorative brackets.
4. Gable end accent material.
5. Accent shutters.
6. Sidelite at entry door.
7. Simple exterior door trim.
8. Simple exterior window trim.
9. Square porch columns.
10. Pickets at porch railing.
11. Wrap around porch.
12. Accurate exterior light fixtures.
13. Lap Siding with corner trim.
14. Masonry shall comply with Section 146-1302(G)1.

Sheet Title:

CARRIAGE HOUSE DESIGN STYLES

Architectural Standards
Master Plan

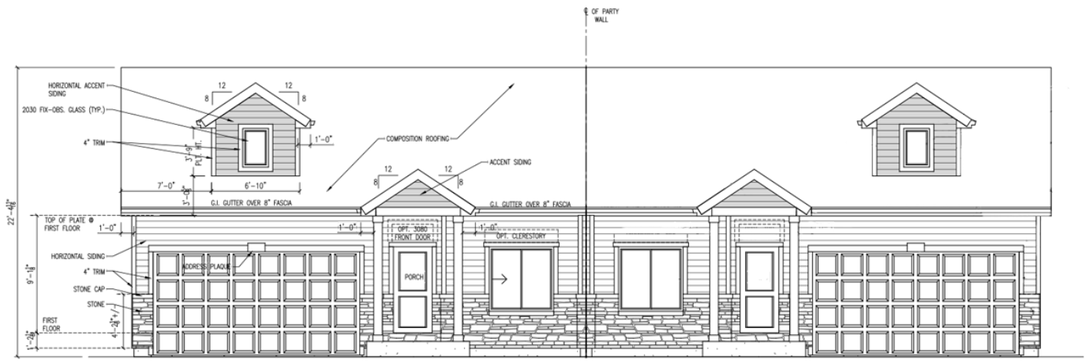
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

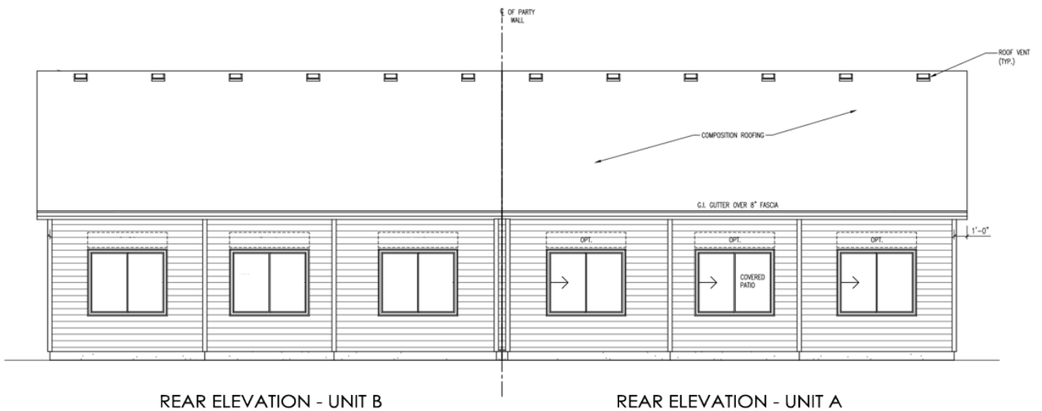
TAB 12.8

MODEL 1901 - ELEVATION



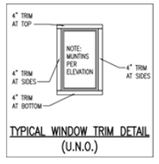
FRONT ELEVATION - UNIT A

FRONT ELEVATION - UNIT B



REAR ELEVATION - UNIT B

REAR ELEVATION - UNIT A



TYPICAL WINDOW TRIM DETAIL (U.N.O.)

NOTE:
J-CHANNEL WINDOWS & DOORS TYP. AT SIDES AND REAR U.N.O.

NOTE: SHADED AREAS INDICATE ACCENT COLORS 8" BAND AND TRIM TO BE A SEPERATE 3RD COLOR

NOTE:
*REFER TO ROOF PLAN FOR DOWNSPOUT LOCATIONS
*CONTINUOUS SOFFIT VENTS AT TRUSS OR RAFTER BAYS ADJACENT TO LIVING SPACE
*DOWNSPOUTS TO HAVE 45° ADJ. EXTENDERS TYP.

NOTE:
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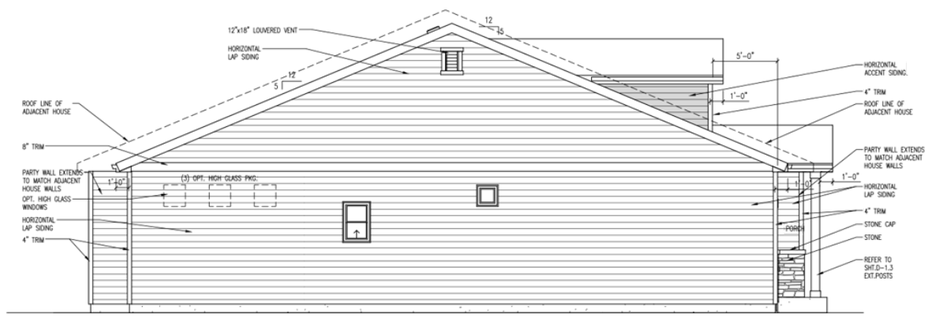
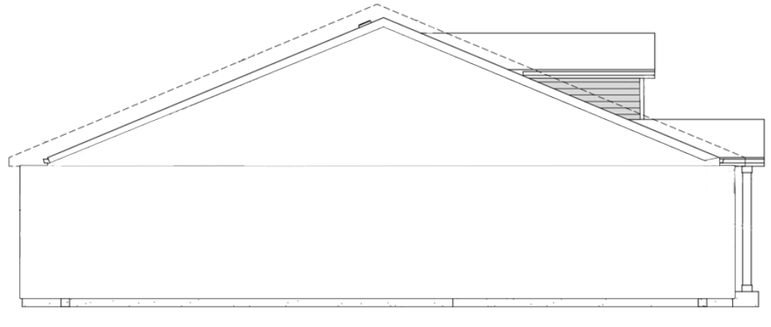
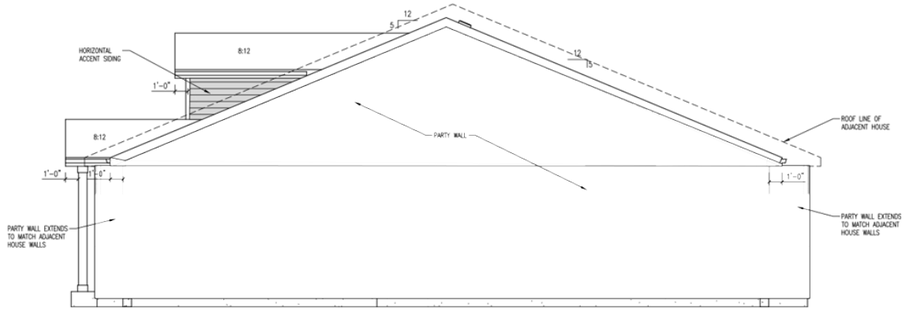


SIDE ELEVATION - UNIT A

SIDE ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT A

Sheet Title:

DUPLEX ELEVATIONS

Architectural Standards
Master Plan

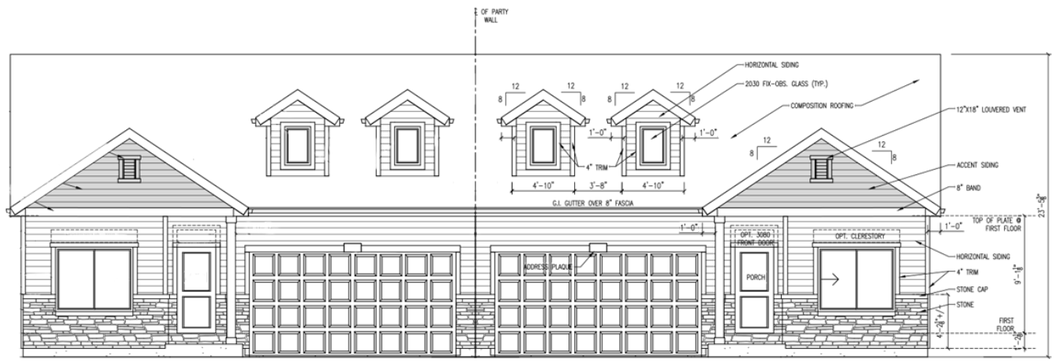
Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

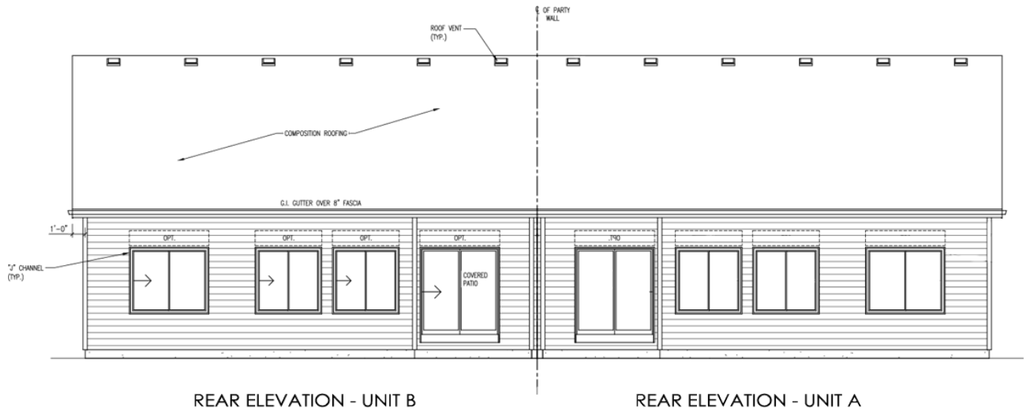
TAB 12.9

MODEL 1902 - ELEVATION



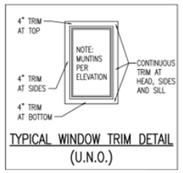
FRONT ELEVATION - UNIT A

FRONT ELEVATION - UNIT B



REAR ELEVATION - UNIT B

REAR ELEVATION - UNIT A



TYPICAL WINDOW TRIM DETAIL (U.N.O.)

NOTE:
J-CHANNEL WINDOWS & DOORS TYP. AT SIDES AND REAR U.N.O.

NOTE: SHADED AREAS INDICATE ACCENT COLORS 8" BAND AND TRIM TO BE A SEPERATE 3RD COLOR

NOTE:
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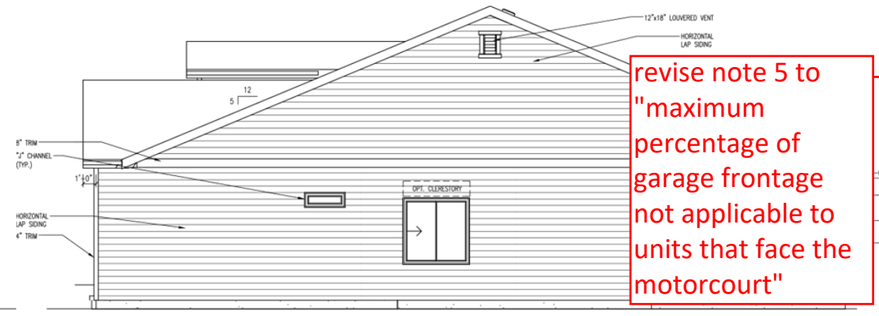
*CONTINUOUS SOFFIT VENTS AT TRUSS OR RAFTER BAYS ADJACENT TO LIVING SPACE
*DOWNSPOUTS TO HAVE 48" ADJ. EXTENDERS TYP.

SIDE ELEVATION - UNIT A



SIDE ELEVATION - UNIT B

revise note 5 to "maximum percentage of garage frontage not applicable to units that face the motorcourt"

NOTE:

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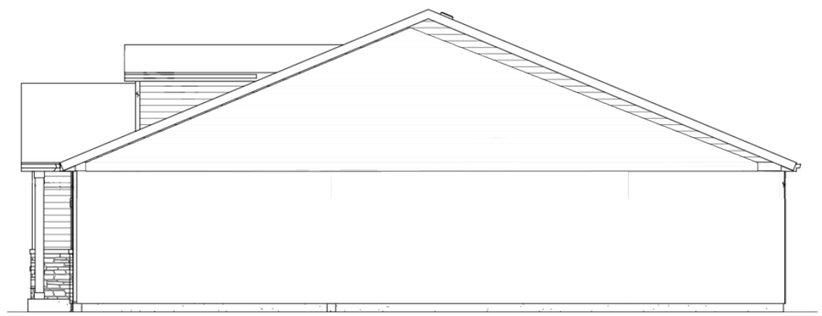
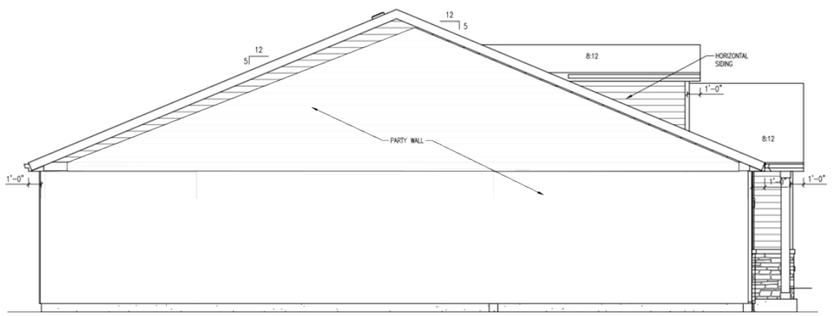
revise



PARTY WALL ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT A

Sheet Title:

DUPLEX ELEVATIONS

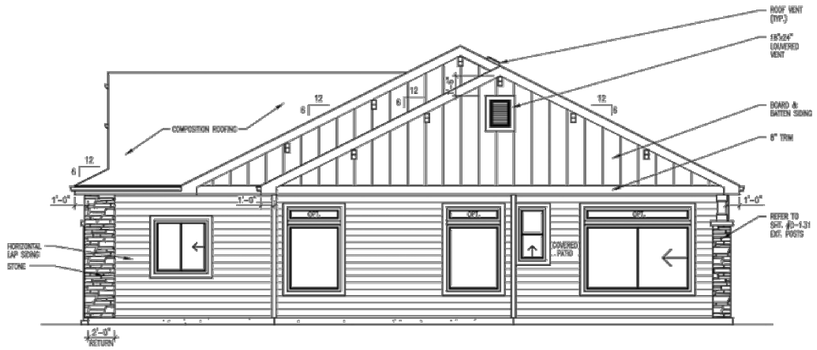
Architectural Standards
Master Plan

Project Title:

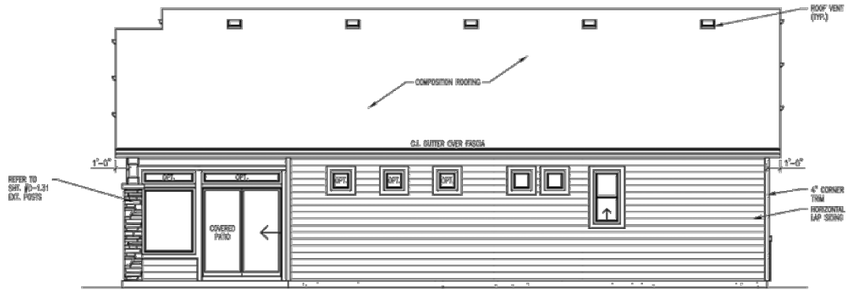
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.10



RIGHT SIDE ELEVATION



REAR ELEVATION

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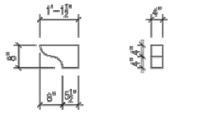
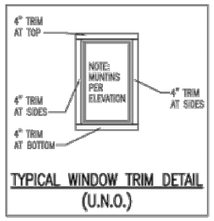
Revised



CORBEL DETAIL



TYPICAL WINDOW TRIM DETAIL (U.N.O.)

NOTE:
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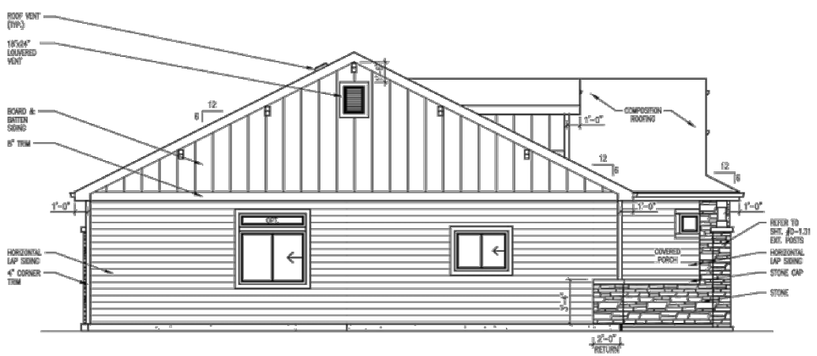
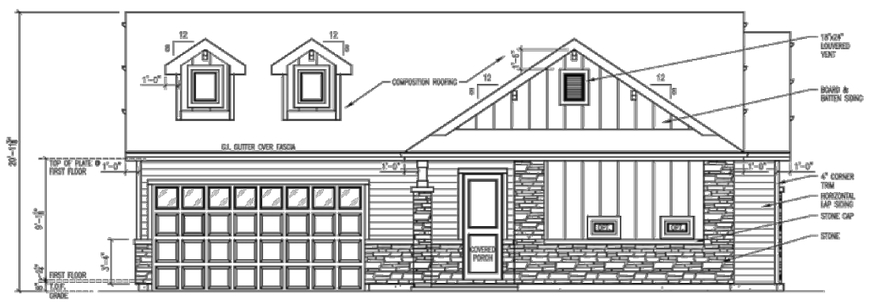


LEFT SIDE ELEVATION



FRONT ELEVATION

Model 401 Elevation A

REAR UNIT

Sheet Title:

BUNGALOW ELEVATIONS

Architectural Standards
Master Plan

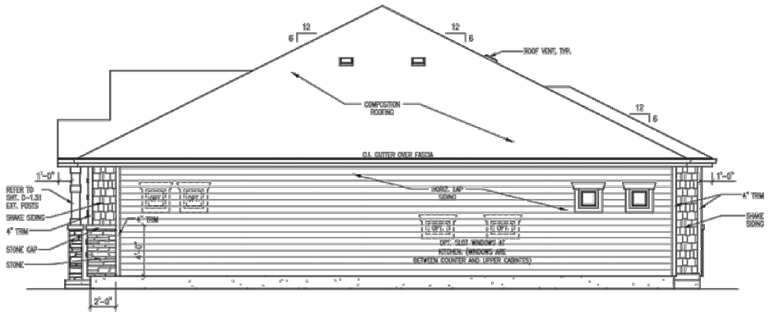
Project Title:

Green Valley Amendment 2
Aurora, Colorado

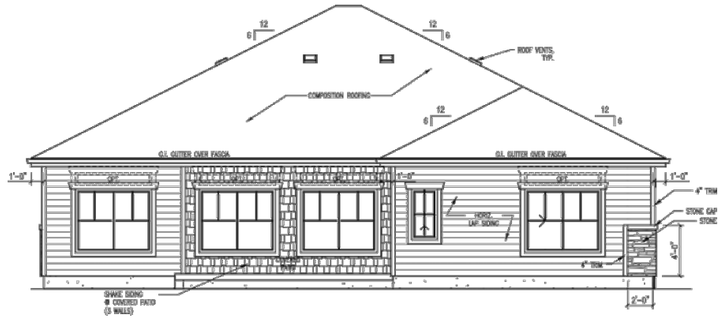
GREEN VALLEY RANCH

January 27, 2022 Tab 12.10

TAB 12.11



RIGHT SIDE ELEVATION



REAR ELEVATION

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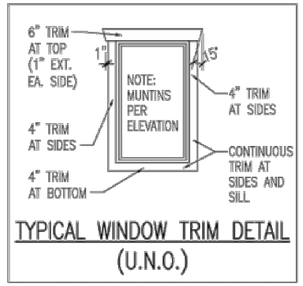
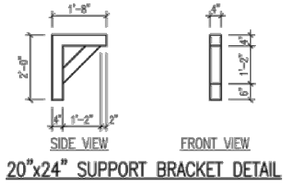


TYPICAL WINDOW TRIM DETAIL (U.N.O.)



20"x24" SUPPORT BRACKET DETAIL

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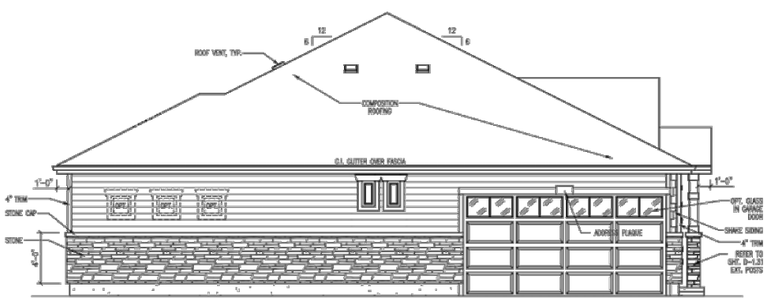
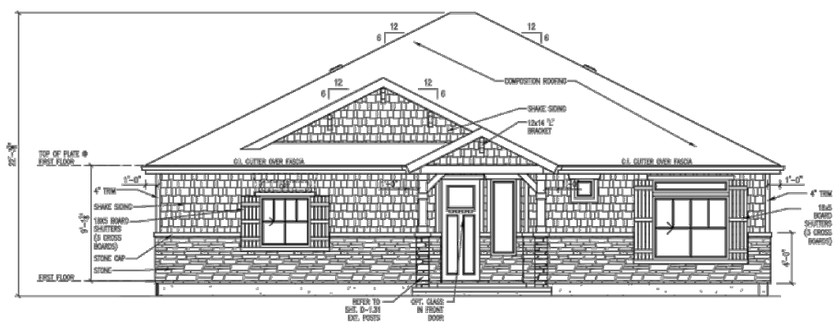
Revised per UDO



LEFT SIDE ELEVATION



FRONT ELEVATION

Model 402 Elevation A

REAR UNIT

Sheet Title:

BUNGALOW ELEVATIONS

Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

GENERAL NOTES

Multi Family architecture should be complementary to the overall Colorado theme of Green Valley Ranch East. Depending on its location within the project, multifamily architecture could be used as a transitional zone between two different products or to buffer adjacent uses. Building facades can vary depending on the community location, from traditional to urban townhomes.

See example. Include intent, form, materials, color.... the things that will create the character.
Include for all possible housing and/or use types

Language revised to follow Fullenwider example better

Sheet Title:

MULTI FAMILY

Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

GENERAL NOTES

The commercial architecture should be complementary to the overall Colorado theme of Green Valley Ranch East. Commercial buildings should also encourage the indoor outdoor lifestyle by incorporating outdoor patio spaces, roll up doors, or street facing windows. W[Language revised to follow example better]gs may be clustered to create centralized gathering spaces and shared use areas. This may include seating areas, employee lunch zones or depending on the building use, small plazas with firepits and creative urban seating. The building style, location, and business type should take in consideration the ability to create a positive pedestrian experience with activated streets, sidewalks, and seating spaces. This especially should be considered when planning for the Main Street district.

COMMERCIAL/RETAIL ARCHITECTURE

DESIGN INTENT

Retail architecture should exhibit bold, clean and simple expression with commitment to environmental sustainability through the use of conscious material and products. Angular, soaring canopies and awnings that visually defy gravity are strongly recommended. Signage must be integrated into the architecture and must share the same design intent.

The notion of layering planes and the undulation of volumes to scale the building massing is recommended, especially in large retail structures.

ROOF AND BUILDING FORM

Roofs shall consist of bold lines.

Shall employ a variety of textured surfaces, projections, window alignments, recesses, overhangs and reveals. Flat walls shall not continue longer than a 30 foot span without one of the following listed above.

In instances where a tower is used, all 4 sides must contain architectural elements with a clear parapet line.

MATERIALS

Building materials should be based on the overall theme of High Point and similar in nature to adjacent uses. The use of stucco, brick and masonry is encouraged.

In instances where a single facade spans more than 30 feet in length a difference in recessing, a tower, color, texture or material must be provided.

COLOR

Building colors within the commercial area should reflect the nature of the materials on the building. They should be indicative of the natural materials used and bright where appropriate for the festive nature of retail atmosphere.

Commercial

Retail

Retail

Sheet Title:

COMMERCIAL RETAIL

Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

GENERAL NOTES

Business parks and office buildings should be complementary to the overall Colorado theme of Green Valley Ranch East and surrounding developments. This architecture type could be used to transition from the main street into light industrial or residential areas. Pedestrian circulation and corridors should be provided. Along with an open space program for visitors and employees.

see example. discuss fenestration, forms, materials, etc... for Mixed Use, office, etc...

Language revised to follow example better

Sheet Title:

COMMERCIAL OFFICE

Architectural Standards
Master Plan

Project Title:

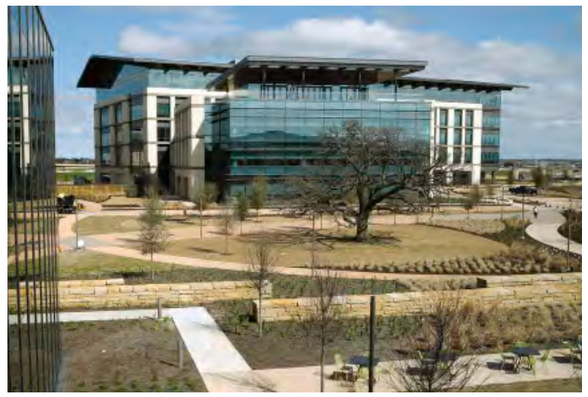
Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

GENERAL NOTES

Medical and institutional architecture should be influenced by its surroundings including existing develo[illegible]. The large mass buildings should take advantage of the views [illegible] campuses should be oriented into an interior plaza or courtyard to provide outdoor space for visitors and employees.

Language revised to follow example better



Sheet Title:

INSTITUTIONAL

Architectural Standards
Master Plan

Project Title:

Green Valley Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

Comments: 03/24/2022
By: Kyle Morris (BHI)
1. Update accesses to match current site plan.
2. Provide additional detail on development of background traffic. Provide relevant sheets from referenced TISs in the appendix.
3. Several recommended signals along Tibet St will not meet minimum spacing of 660' as currently proposed. Ideally there will only be one signal along Tibet between 48th and 56th.
4. Provide site trip distribution to/from the east on 56th.
4. Provide trip generation rates.
5. See comments throughout the report.

Revised TIS addresses these comments

GREEN VALLEY

TRAFFIC II

Prepared for:

Oakwood Homes
4908 Tower Rd.
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FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

FHU Reference No. 121372-01

Original Report: December 2021
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TABLE OF CONTENTS

Page

I. INTRODUCTION 1

II. EXISTING CONDITIONS 4

II.A. Roadways 4

II.B. Traffic Volumes and Operations 5

III. PROPOSED CONDITIONS 7

III.A. Trip Generation 7

III.B. Site Trip Distribution and Site-Generated Traffic Assignment 8

IV. FUTURE CONDITIONS 10

IV.A. Background Traffic Conditions 10

IV.B. Total Future Traffic 16

V. EVALUATION 20

V.A. Level of Service 20

V.B. Traffic Control Devices 24

V.C. Queuing 24

VI. CONCLUSIONS AND RECOMMENDATIONS 30

VI.A. Short Range Future 30

VI.B. Long Range Future 31

Appendices

Appendix A. Traffic Counts

Appendix B. Existing Conditions LOS

Appendix C. Short Range Future Background Traffic LOS

Appendix D. Long Range Future Background Traffic LOS

Appendix E. Short Range Future Total Traffic LOS

Appendix F. Long Range Future Total Traffic LOS

List of Figures

Page

Figure 1. Vicinity Map 2
Figure 2. Site Plan Concept 3
Figure 3. Existing Traffic Conditions 6
Figure 4. Site Trip Distribution and Traffic Assignment 9
Figure 5. Short Range Future Background Traffic Volumes 12
Figure 6. Short Range Future Background Traffic Conditions 13
Figure 7. Long Range Future Background Traffic Volumes 14
Figure 8. Long Range Future Background Traffic Conditions 15
Figure 9. Short Range Future Total Traffic Volumes 18
Figure 10. Long Range Total Traffic Volumes 19
Figure 11. Short Range Future Total Lane Geometry and Level of Service 21
Figure 12. Long Range Total Lane Geometry and Level of Service 23

List of Tables

Page

Table 1. Trip Generation 7
Table 2. Signal Warrant Results 17
Table 3. Queue Results at Future Signalized Intersections 25

I. INTRODUCTION

Green Valley MP Amendment 2 is a mixed-use development, consisting of active adult residential, multifamily residential, office/commercial uses, and retail space. The approximate 286.7-acre site, currently vacant, is generally located east of Picadilly Road, north of the future 48th Avenue, west of E-470, and south of 56th Avenue. At build-out, the proposed development would consist of approximately 650 senior housing units, 364 units of multifamily housing, 744,000 square feet of retail space, and 1,710,000 square feet of office space. **Figure 1** illustrates the location of the site and the adjacent roadway network. **Figure 2** depicts the current site plan concept.

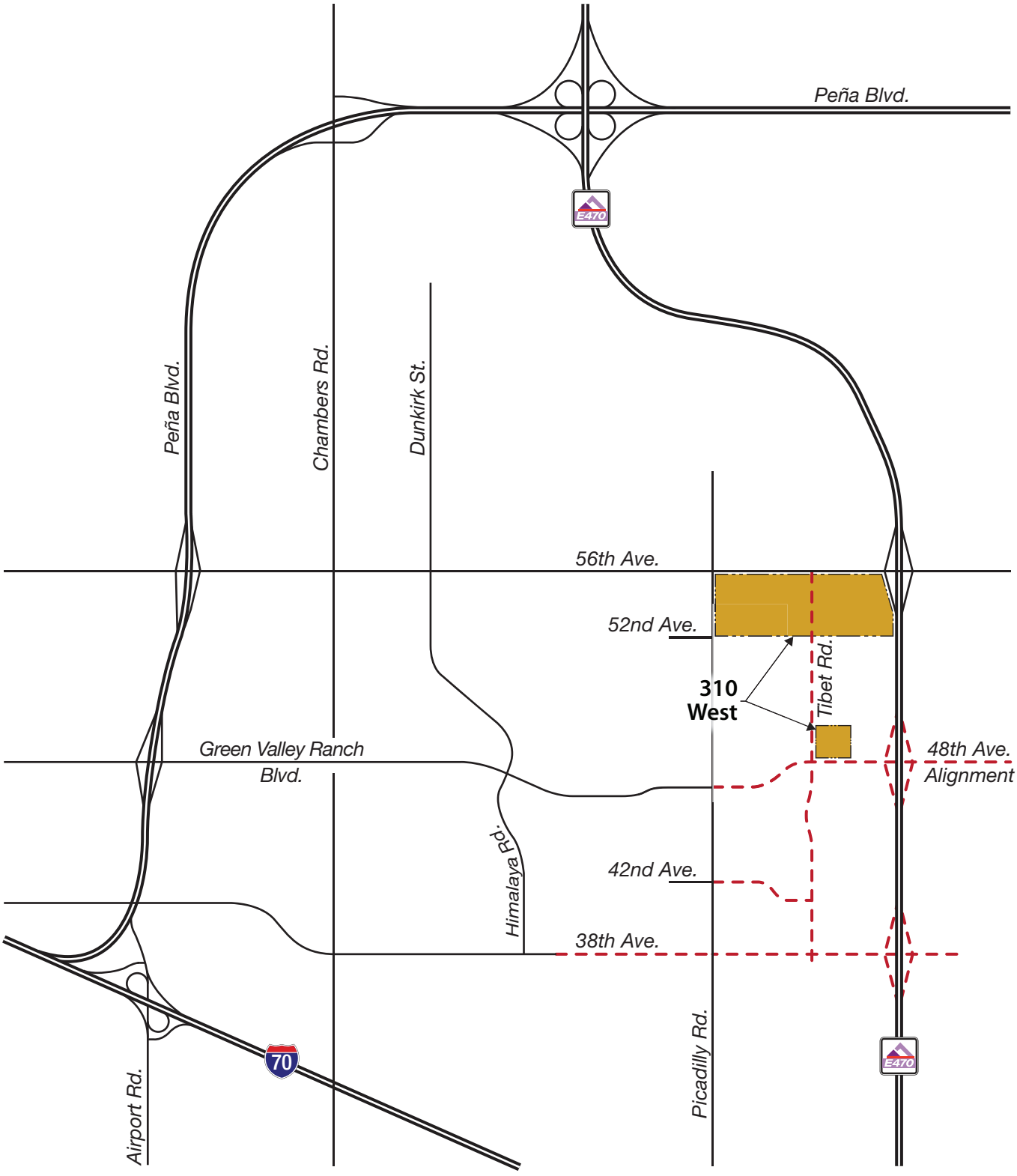
The main northern site would have vehicular access via 10 roadway connections:

- Two full-movement accesses onto 52nd Avenue
- One ¾ movement access onto Picadilly Road (at 54th Avenue)
- One Right-In/Right-Out (RIRO) access onto Picadilly (at Maxwell Place)
- Two full-movement accesses onto 56th Avenue
- One RIRO access onto 56th Avenue
- Three full-movement accesses onto Tibet Road

The southern parcel (Brandenburg) would have two full-movement accesses, one onto Tibet Street aligning with the Filing 5 access and one onto 48th Avenue (shared with Windler), as well as a RIRO access onto 48th Avenue.

The purpose of this traffic study is to identify the potential impacts specific to the Green Valley MP Amendment 2 development and any resultant required roadway or traffic control improvements. Two future planning horizons were evaluated:

- **Short Range Future.** The year 2025 was analyzed for the site impacts of an "opening day" scenario.
- **Long Range Future.** A long range (year 2040) planning horizon was evaluated for the site. This planning horizon is based on the City of Aurora's 2018 Northeast Area Transportation Study (NEATS) and on previous traffic engineering efforts for Green Valley Ranch East.



NORTH

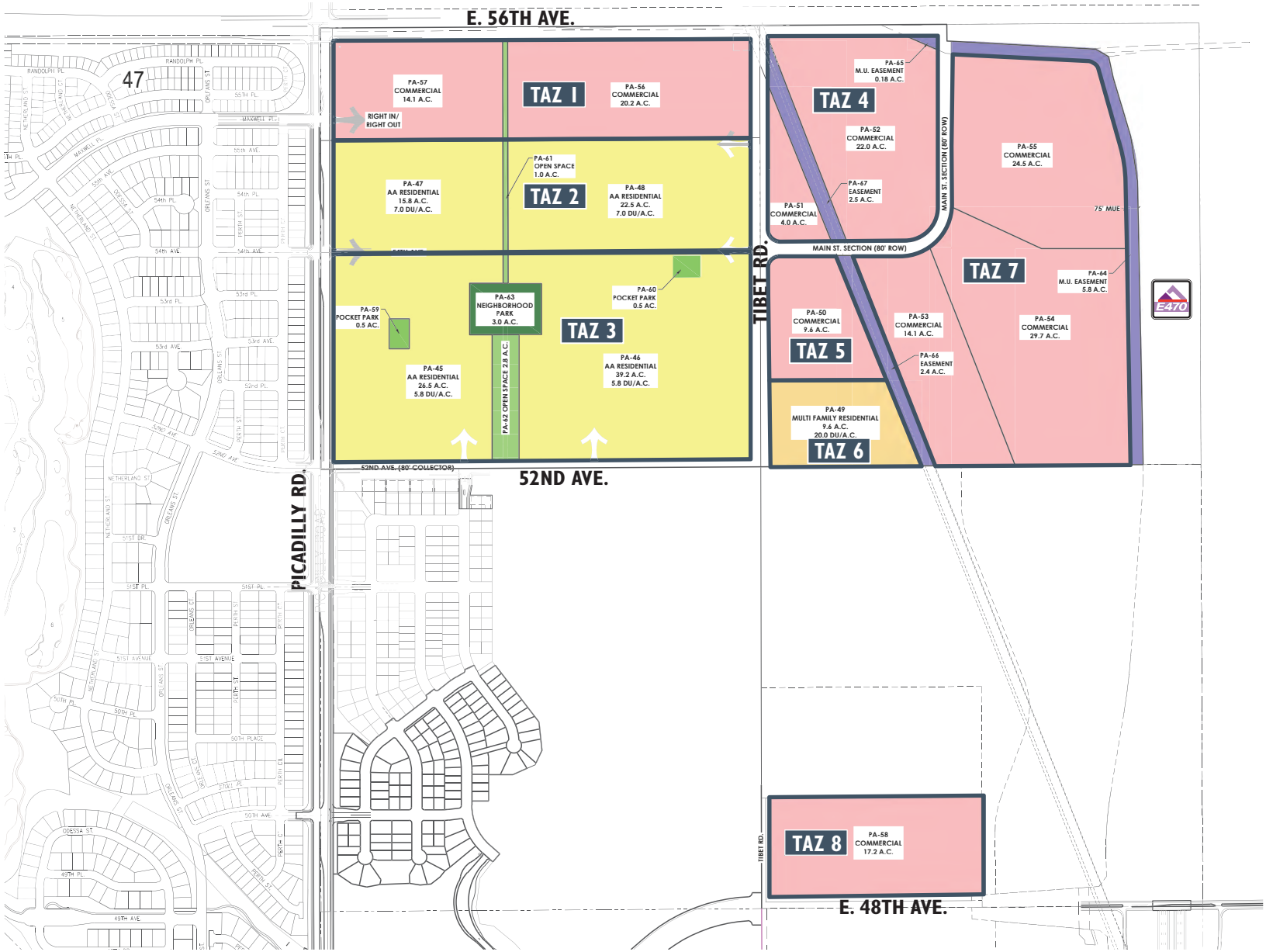
FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 1

Vicinity Map

GVR 310 West TIS - DEC_21 21-372 12/14/21



NORTH

FIGURE 2
Site Plan

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II. EXISTING CONDITIONS

II.A. Roadways

The primary roadways in the vicinity of the site include:

- **Picadilly Road.** This north-south roadway extends along the west side of the site. The roadway consists of a basic two-lane cross section with a striped center median area to provide left-turn lanes at intersections. The posted speed limit is 40 miles per hour (MPH). NEATS identifies Picadilly Road as a future six-lane arterial.
- **Green Valley Ranch Boulevard (48th Avenue).** This east-west arterial roadway extends west from Picadilly Road into the City and County of Denver. East of Picadilly Road, the roadway is planned to be extended as 48th Avenue. NEATS shows 48th Avenue as a six-lane arterial with an interchange at E-470. The posted speed limit is 35 MPH. The intersection of Green Valley Ranch Boulevard and Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach.
- **56th Avenue.** This roadway extends from Brighton Boulevard to the west to Imboden Road to the east. It changes from a four-lane divided major arterial to a two-lane roadway at its intersection with Picadilly Road. It provides east and west left turn lanes at its intersection with Picadilly Road, as well as an eastbound right turn lane. The roadway has a posted speed limit of 45 MPH in the study area. 56th Avenue is planned to be a six-lane arterial in the long term.
- **50th Avenue.** This two-lane local street extends west from Picadilly Road, serving existing residential uses. The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. There is no posted speed limit at 50th Avenue. The Green Valley Ranch East Filing 5 Active Adult development anticipates a site access aligning opposite 50th Avenue. This intersection would be converted to ¾-movement with this development.
- **51st Place.** This two-lane local street extends west from Picadilly Road, serving existing residential uses and a Denver Public School (Florida Pitt Waller PreK-8). The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. School zone signing and school speed limit signs are posted. The Green Valley Ranch East Filing 5 site plan concept shows a site access aligning opposite 51st Place. This intersection would be converted to ¾-movement with this development.
- **52nd Avenue.** This existing two-lane local street extends west from Picadilly Road, serving existing residential uses and the above-mentioned school site. The intersection at Picadilly Road is currently unsignalized, with STOP sign control on the eastbound approach. School zone signing and school speed limit signs are posted. A proposed collector extension of 52nd Avenue east from Picadilly Road will form the southern boundary of the Green Valley MP Amendment 2 site.
- **54th Avenue.** This existing two-lane local street extends west from Picadilly Road, serving existing residential uses. It is stop controlled at its intersection with Picadilly. While there is no posted speed limit, for the purpose of this study, the speed limit is assumed to be 25 MPH. The Green Valley MP Amendment 2 development proposes extending the intersection to add an east leg, which would provide access to the site.
- **Maxwell Place.** This existing two-lane collector extends west from Picadilly Road, serving existing residential homes. The posted speed limit is 30 MPH, and it is stop controlled at its intersection with Picadilly. The Green Valley MP Amendment 2 development proposes adding an east leg at the existing T intersection with Picadilly to provide RIRO access to the site.
- **Tibet Road.** This future roadway is planned to be constructed as a part of Green Valley Ranch East. Tibet Road will extend through the anticipated Green Valley MP Amendment 2 development up to 56th Avenue. NEATS identifies Tibet Road as a four-lane minor arterial.

II.B. Traffic Volumes and Operations

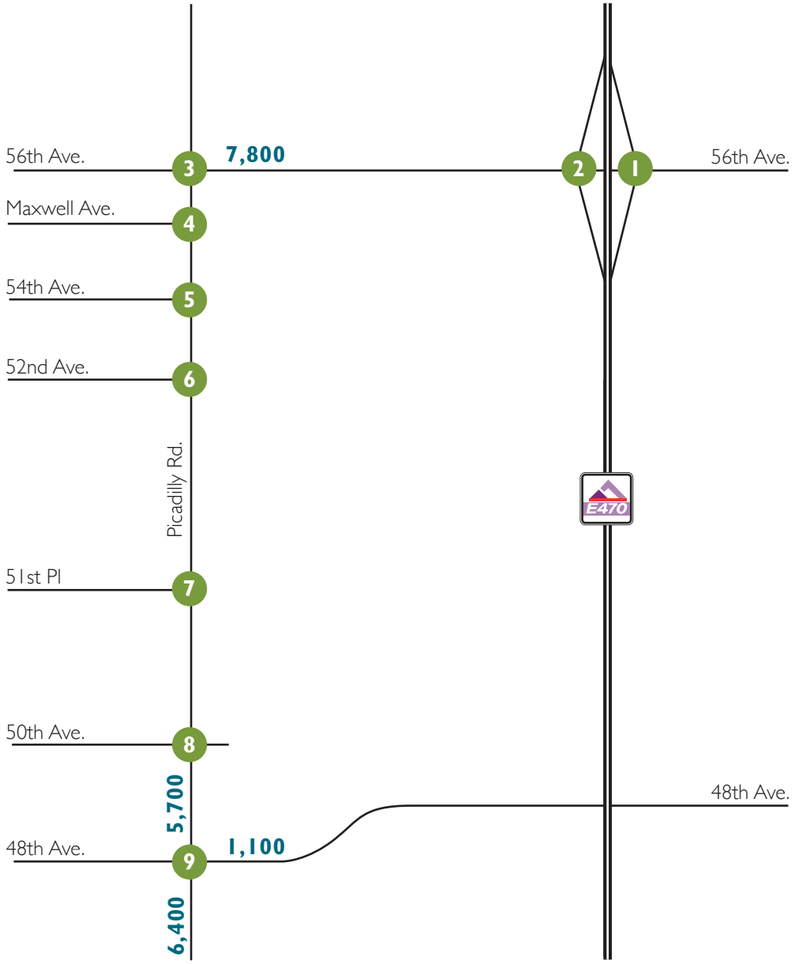
A 72-hour automated traffic count was recently conducted on 56th Avenue adjacent to the anticipated site. AM and PM peak hour turning movements counts were recently conducted at the following intersections:

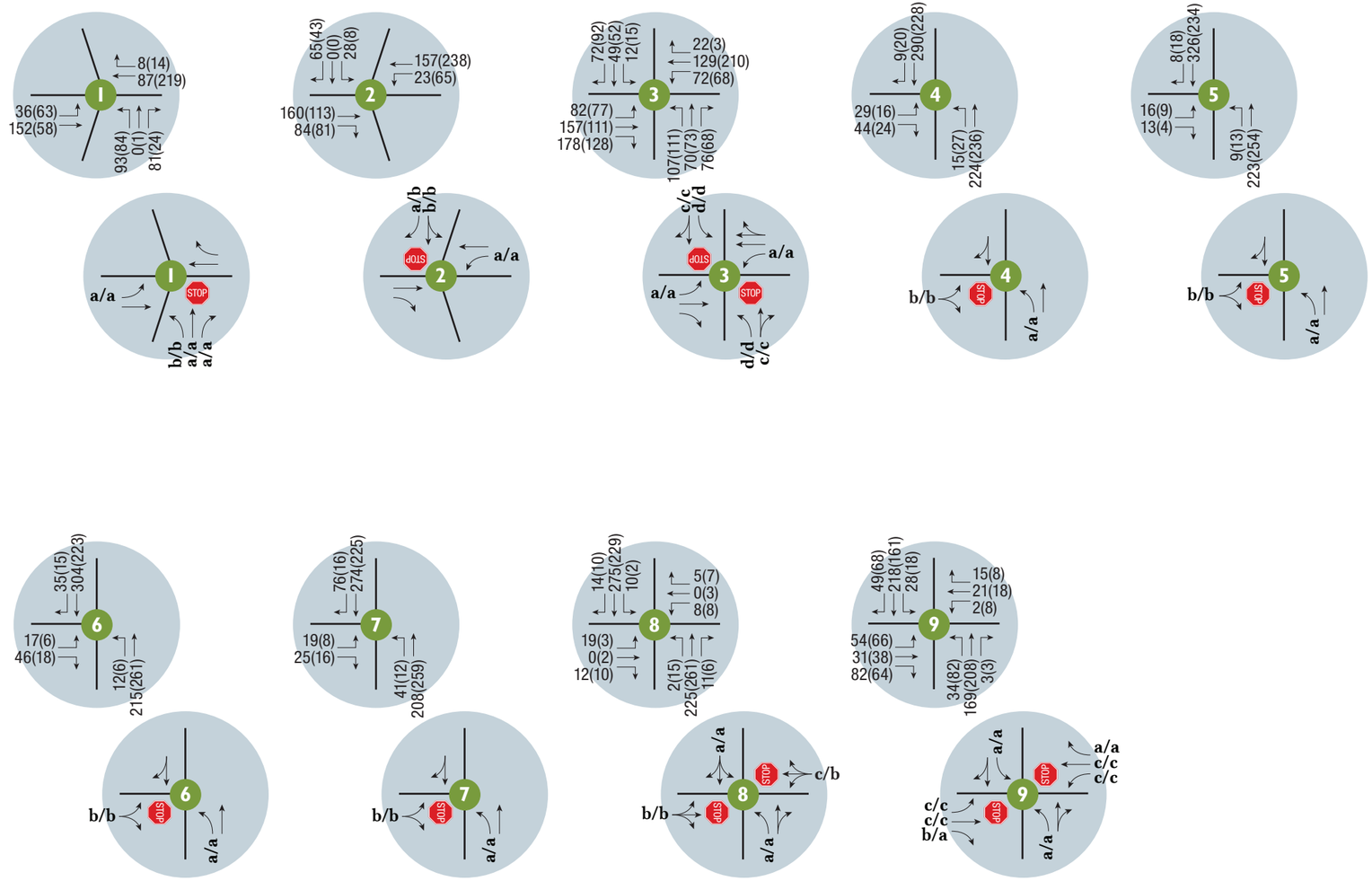
- 56th Avenue with E-470 NB Ramps
- 56th Avenue with E-470 SB Ramps
- 56th Avenue with Picadilly Road
- Picadilly Road with Maxwell Place
- Picadilly Road with 54th Avenue
- Picadilly Road with 52nd Avenue
- Picadilly Road with 51st Place
- Picadilly Road with 50th Avenue

Available weekday AM and PM peak hour turning movement counts at the intersection of Picadilly Road with Green Valley Ranch Boulevard/48th Avenue were extracted from the *Green Valley Ranch East Filing 6 Traffic Impact Study* (FHU, May 2021). **Appendix A** contains the traffic count data.

Figure 3 depicts the existing traffic volumes. As shown, 56th Avenue currently serves approximately 7,800 vehicles per day (VPD) adjacent to the site. These current volumes are well below the Level of Service (LOS) C daily threshold established in the 2018 NEATS study for two-lane roadways. Daily traffic volumes along 48th Avenue are estimated to be about 1,100 VPD just east of Picadilly Road.

LOS is a qualitative measure of traffic operational conditions, based on roadway capacity and motorist delay. The 2010 *Highway Capacity Manual* defines six levels of service, ranging from A to F, with LOS A representing the best possible operating conditions and LOS F representing over-capacity, or congested conditions. In developed areas, LOS D is typically considered to be acceptable for peak hour traffic operations. **Figure 3** depicts the existing intersection geometrics, traffic control, and intersection LOS results, and **Appendix B** contains SYNCHRO LOS worksheets. As indicated, existing traffic operations at the study area intersections are acceptable, at LOS C or better, during the peak times analyzed.





LEGEND

XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes
X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
STOP	=	Stop Sign
	=	Traffic Signal

NORTH

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NOTE: Drawing Not to Scale

FIGURE 3
Existing Traffic Conditions

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III. PROPOSED CONDITIONS

III.A. Trip Generation

The standard resource for estimating travel demand is *Trip Generation, 10th Edition*, Institute of Transportation Engineers (ITE), 2017. The development would consist of about 650 active adult homes, 364 multifamily homes, about 1,710,000 square feet of office space, and approximately 744,000 square feet of retail space. This analysis used the regression equations per dwelling unit and per thousand square feet for the corresponding ITE code. As **Table 1** indicates, the proposed development is expected to generate a total of 56,061 vehicle trips per day and about 2,960 to 5,446 trips during the AM and PM peak hours,

Provide regression equations for each ITE code.

Provide corresponding PA numbers in this table.

Included in revised report

TAZ	Land Use	ITE Code	Unit	Quantity	Daily	AM Peak			PM Peak		
						In	Out	Total	In	Out	Total
3	Senior Housing - Detached	251	DU	154	823	19	38	57	41	27	68
	Senior Housing - Detached	251	DU	227	1,158	25	52	77	56	36	92
TAZ 3 Total					1,981	44	90	134	97	63	160
2	Senior Housing - Detached	251	DU	111	617	15	30	45	32	21	53
	Senior Housing - Detached	251	DU	158	842	19	39	58	42	27	69
TAZ 2 Total					1,459	34	69	103	74	48	122
6	Multi-Family (Mid-Rise)	221	DU	192	1,045	17	48	65	51	32	83
5	General Office	710	KSF	209	2,170	193	31	224	37	193	230
4	General Office	710	KSF	87	929	94	15	109	16	84	100
	General Office	710	KSF	479	4,851	410	67	477	81	424	505
TAZ 4 Total					5,780	504	82	586	97	508	605
7	Shopping Center	820	KSF	154	8,048	142	87	229	359	388	747
	Shopping Center	820	KSF	323	13,356	195	119	314	622	674	1,296
	Shopping Center	820	KSF	267	11,718	177	109	286	540	584	1,124
TAZ 7 Total					33,122	514	315	829	1,521	1,646	3,167
1	General Office	710	KSF	440	4,466	379	62	441	75	391	466
	General Office	710	KSF	307	3,151	272	44	316	53	278	331
TAZ 1 Total					7,617	651	106	757	128	669	797
8	General Office	710	KSF	187	1,951	175	28	203	33	174	207
	Multi-Family (Mid-Rise)	221	DU	172	936	15	44	59	46	29	75
TAZ 8 Total					2,887	190	72	262	79	203	282
Grand Total					56,061	2,147	813	2,960	2,084	3,362	5,446

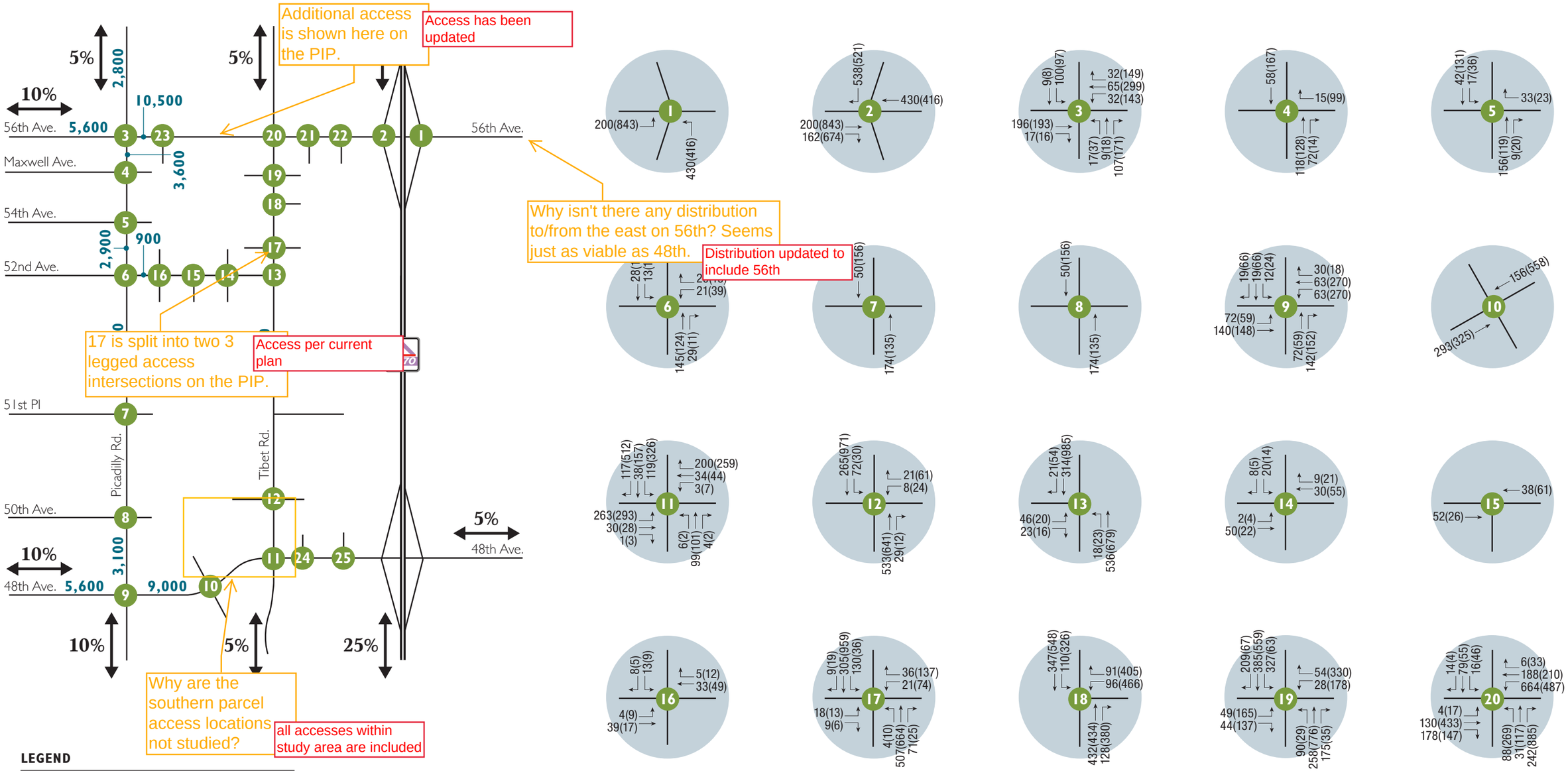
III.B. Site Trip Distribution and Site-Generated Traffic Assignment

For the Short Range Future scenario, it is expected that the Green Valley Ranch East Filing 5 development will include construction (partial cross-sections) of the roadways immediately adjacent to the Green Valley MP Amendment 2 site, including 48th Avenue, Tibet Road, and 52nd Avenue. It is estimated that the existing two-lane cross-section on Picadilly Road would remain sufficient in the near term for purposes of this study.

The trip generation estimates from **Table 1** were assigned to the adjacent roadway system based on existing travel patterns, travel demand modeling information, and engineering judgment. The following distribution percentages were used to assign the site generated trips to the roadway network:

- 5 percent oriented to/from the north on Picadilly Road
- 10 percent oriented to/from the west on 56th Avenue
- 25 percent oriented to/from the north on E-470
- 30 percent oriented to/from the south on E-470
- 5 percent oriented to/from the east on 48th Avenue
- 5 percent oriented to/from the south on Tibet Road
- 10 percent oriented to/from the south on Picadilly Road
- 10 percent oriented to/from the west on 48th Avenue

Figure 4 shows the site trip distribution and resultant traffic assignment. As indicated, Picadilly Road would carry between 2,800 and 3,100 VPD of site traffic, 56th Avenue would carry about 10,500 VPD east of Picadilly Road, and 48th Avenue would carry between 5,600 VPD west of Picadilly and 9,000 VPD east of Picadilly Road in site-generated traffic.


Additional access is shown here on the PIP.
Access has been updated
Why isn't there any distribution to/from the east on 56th? Seems just as viable as 48th.
Distribution updated to include 56th
17 is split into two 3 legged access intersections on the PIP.
Access per current plan
Why are the southern parcel access locations not studied?
all accesses within study area are included
56th Ave.
Maxwell Ave.
54th Ave.
52nd Ave.
51st Pl
50th Ave.
48th Ave.
Picadilly Rd.
Tibet Rd.
5%
10%
25%
10,500
5,600
2,800
3,600
2,900
900
3,100
9,000
LEGEND
XXX(XXX) = AM(PM) Peak Hour Traffic Volumes
XXXX = Daily Traffic Volumes
XX% = Site Trip Distribution
NOTE: Drawing Not to Scale
NORTH
FIGURE 4
Site Generated Traffic and Distribution
GVR 310 West TIS - DEC_21 21-372 12/15/21

IV. FUTURE CONDITIONS

IV.A. Background Traffic Conditions

Traffic volume projections were developed from the 2018 NEATS model to produce the Short Range Future background projections shown on **Figure 5**. An annual growth rate of 3.5 percent was assumed for the E-470 ramps, and a growth rate of 5 percent per year was assumed for the remainder of the study area roadways. Ongoing and future development within Green Valley Ranch were also incorporated based on the previous traffic engineering studies listed below.

The Short Range background peak hour volumes were used as the basis for intersection LOS analyses, the results of which are summarized on **Figure 6**. **Appendix C** contains the LOS worksheets. The analyses assume the intersection at Picadilly Road/56th Avenue would be signalized within the near term horizon. Otherwise, all intersections and accesses would remain at acceptable operational levels under unsignalized traffic control.

Provide near term horizon signal warrants for intersection of Picadilly & 56th.

see Appendix G

For the Long Range Future scenario (year 2040), th
on the following:

- Previous traffic studies for Green Valley Ranch East, including:
  - *Green Valley Ranch East Transportation Analysis* (FHU, July 2018) per the Final Development Plan (FDP).
  - *CSP 1 Traffic Impact Study* (FHU, May 2020).
  - *CSP 2 Traffic Impact Study* (FHU, May 2020).
  - *CSP 3 Traffic Impact Study* (FHU, May 2020),
  - *Filing 5 Active Adult Traffic Impact Study* (FHU, May 2020).
- Background growth based on the 2018 NEATS Refresh project, including anticipated development in the surrounding area, as follows:
  - The Aurora Highlands, 3,500 acres east of E-470, and The Aurora Highlands 310, located at Picadilly Road and 56th Avenue.
  - Porteos, estimated to generate approximately 120,000 trips per day when built out, based on the Denver Regional Council of Governments (DRCOG) model (this master plan's traffic impact study shows more given a maximum buildout scenario).
  - Windler and Cardon, two future development properties that straddle E-470.
  - Avelon, located in the northeast quadrant of 56th Avenue and Picadilly Road. A mix of residential and commercial uses is planned for this site.
  - Painted Prairie, 1,628 acres of future mixed-use development located in the northwest quadrant of 56th Avenue and Picadilly Road.

The Long Range background peak hour volumes were used as the basis for intersection LOS analyses, the results of which are summarized on **Figure 8**. **Appe**
assume the following improvements by 2040:

Provide more detail on how these referenced studies were used to develop the background volumes. Provide relevant sheets from referenced studies in the appendix.

Appendix H contains additional detail on background derivation and excerpts from previous reports

- Dual left-turn lanes would be required on all
  Picadilly Road, as well as the westbound and
  Road with 52nd Avenue.
- The intersections of Picadilly Road with 52nd Avenue, Picadilly Road with 48th Av
  with Filing 5 Access (Rome Street), 48th Avenue with Tibet Road, and Tibet Roa
  are all anticipated to meet signal warrants by the Long Term (2040) Background

Provide signal warrants for all intersections listed here except for intersections of two arterials.

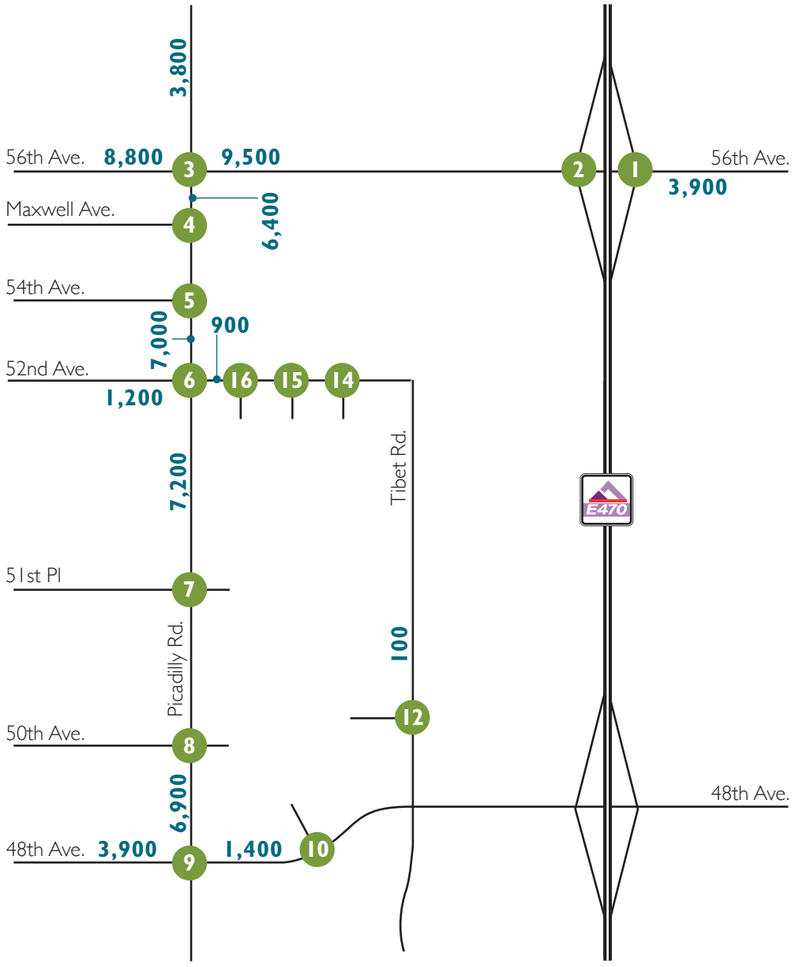
Signal warrants included for all new signals

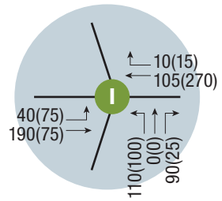
conditions should be periodically monitored to determine the timing of traffic control improvements.

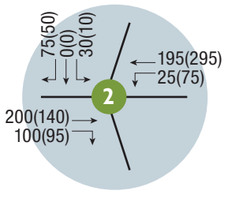
- Traffic projections along 48th Avenue are below the NEATS threshold for LOS C for six-lane major arterials in the Long Range scenarios.
- The projected volumes on Picadilly Road adjacent to the site are well below the LOS C threshold for six-lane arterials in the Long Range Background scenario.
- The projected volumes on Green Valley Ranch Boulevard/48th Avenue adjacent to the site are also within the LOS C threshold for a six-lane arterial cross-section per the NEATS in the Long Range Background scenario.
- The projected volumes on Tibet Road would be well below NEATS criteria for four-lane minor arterial in the Long Range Future.

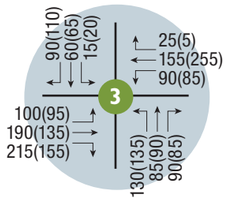
The peak hour traffic volumes at unsignalized intersections along Picadilly Road are projected to be well below signal warrant thresholds. Restriction to ¾-movement would maintain acceptable traffic operations at these intersections. Inbound left-turns from Picadilly Road would be at LOS A or B during peak times.

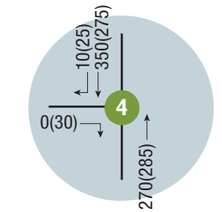
All unsignalized movements along 52nd Avenue as well as Tibet Road would operate at LOS D or better. Intersections anticipated to be signalized by the 2040 Background scenario, as listed previously, would operate at LOS D or better for all peak periods.

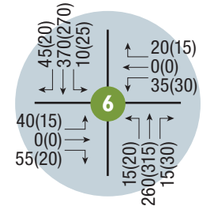


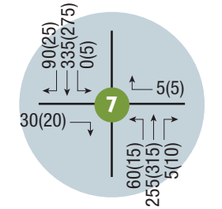


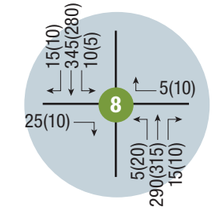


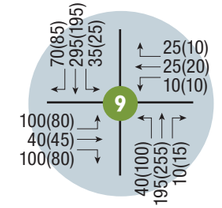


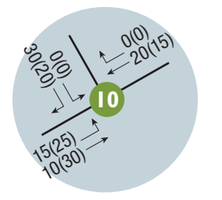


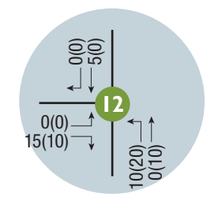


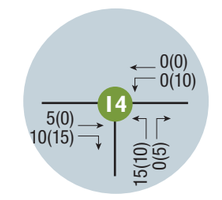


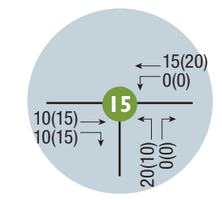


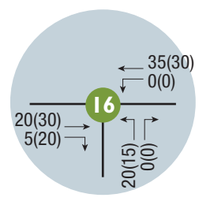












LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

FELSBURG HOLT & ULLEVIG

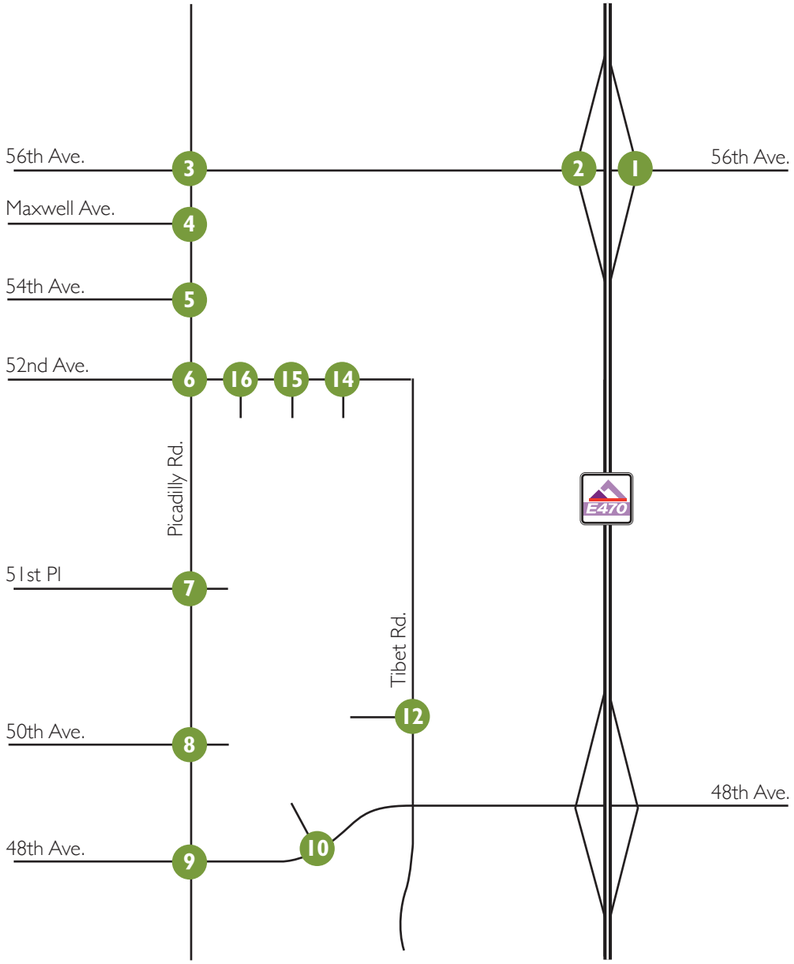
NOTE: Drawing Not to Scale

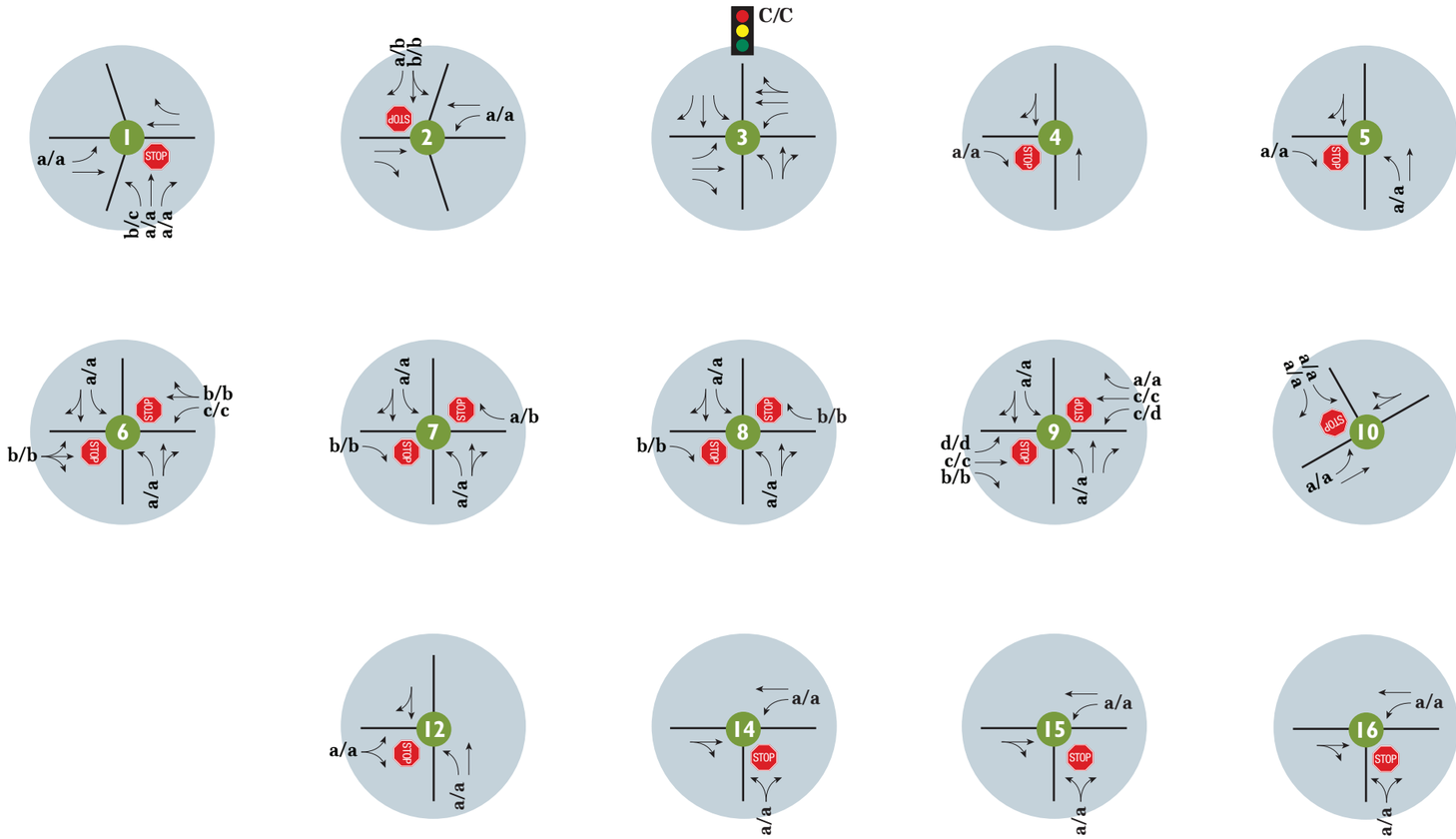
NORTH

FIGURE 5

Short Term (2025) Background Traffic Volumes

GVR 310 West TIS - DEC_21 21-372 12/14/21





LEGEND

X/X = AM/PM Peak Hour Signalized Intersection Level of Service

x/x = AM/PM Peak Hour Unsignalized Intersection Level of Service

STOP = Stop Sign

= Traffic Signal

FELSBURG HOLT & ULLEVIG

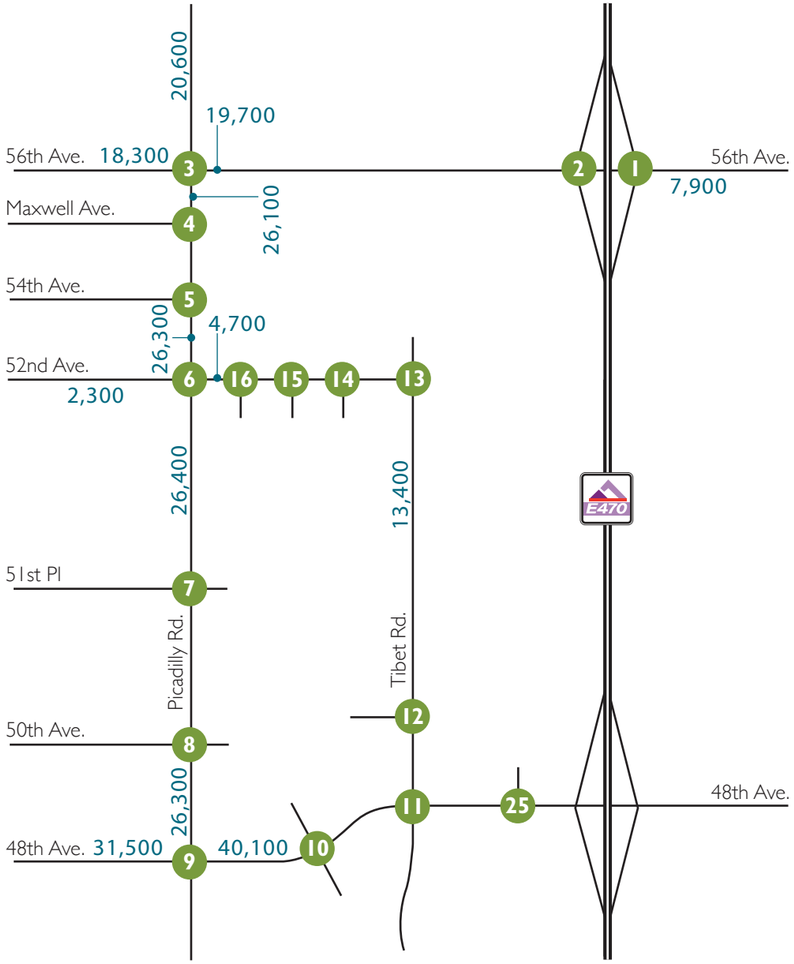
NOTE: Drawing Not to Scale

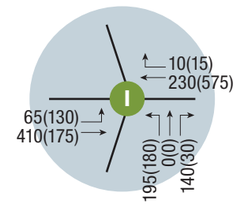
NORTH

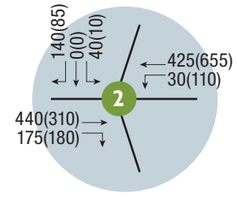
FIGURE 6

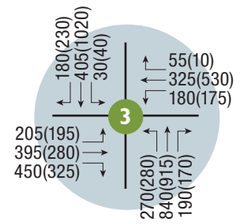
Short Term (2025) Background Lane Geometry and Level of Service

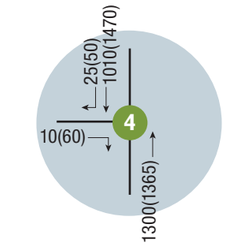
GVR 310 West TIS - DEC_21 21-372 12/14/21

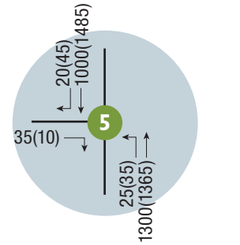


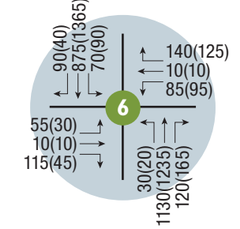


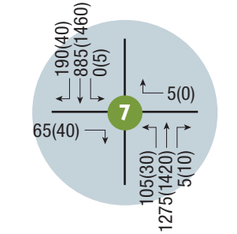


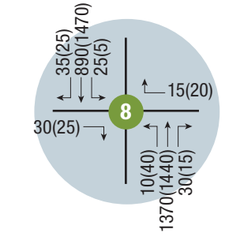


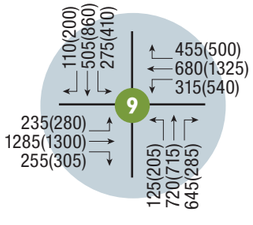


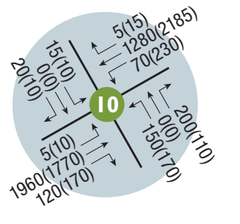


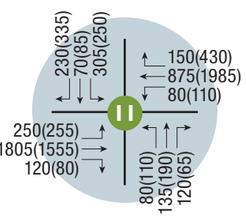


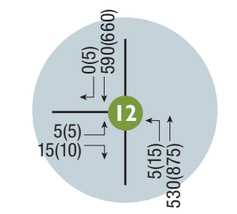


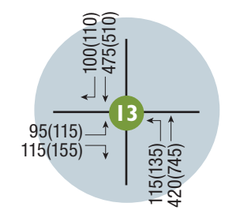


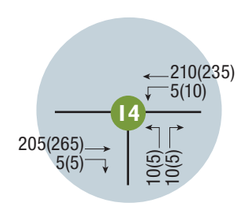


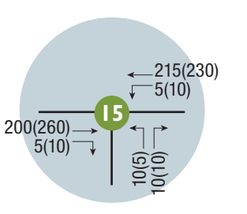


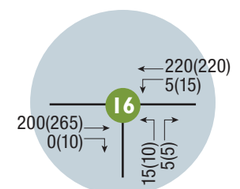


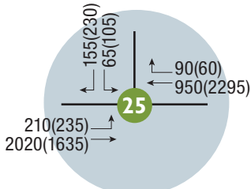












LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

FELSBURG HOLT & ULLEVIG

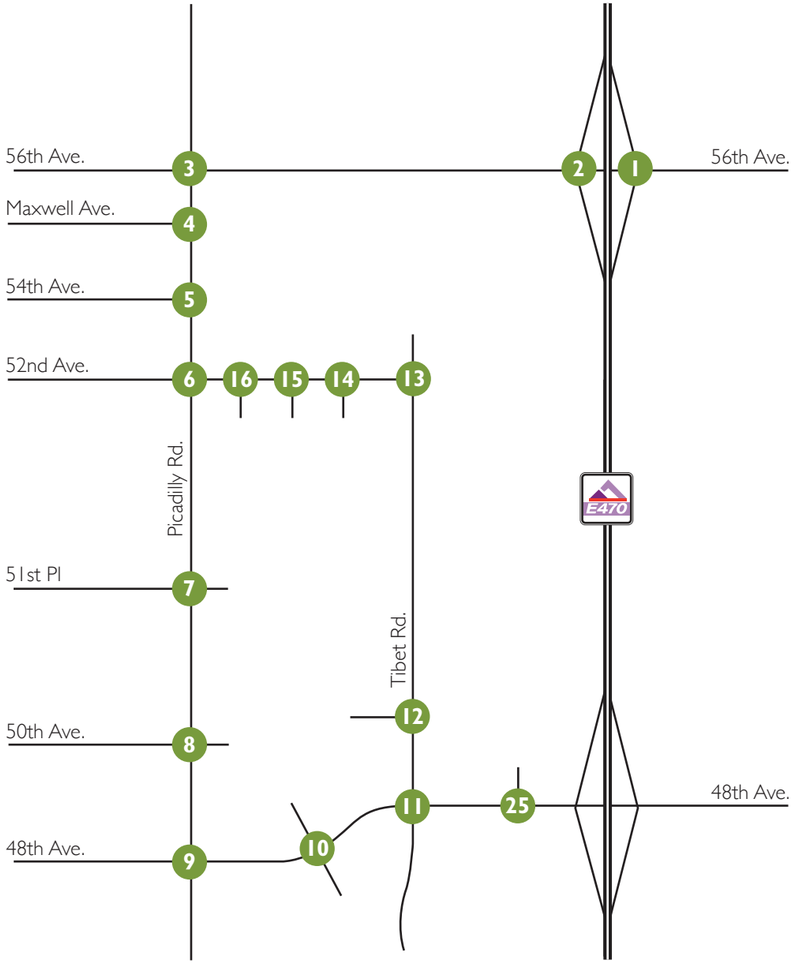
NOTE: Drawing Not to Scale

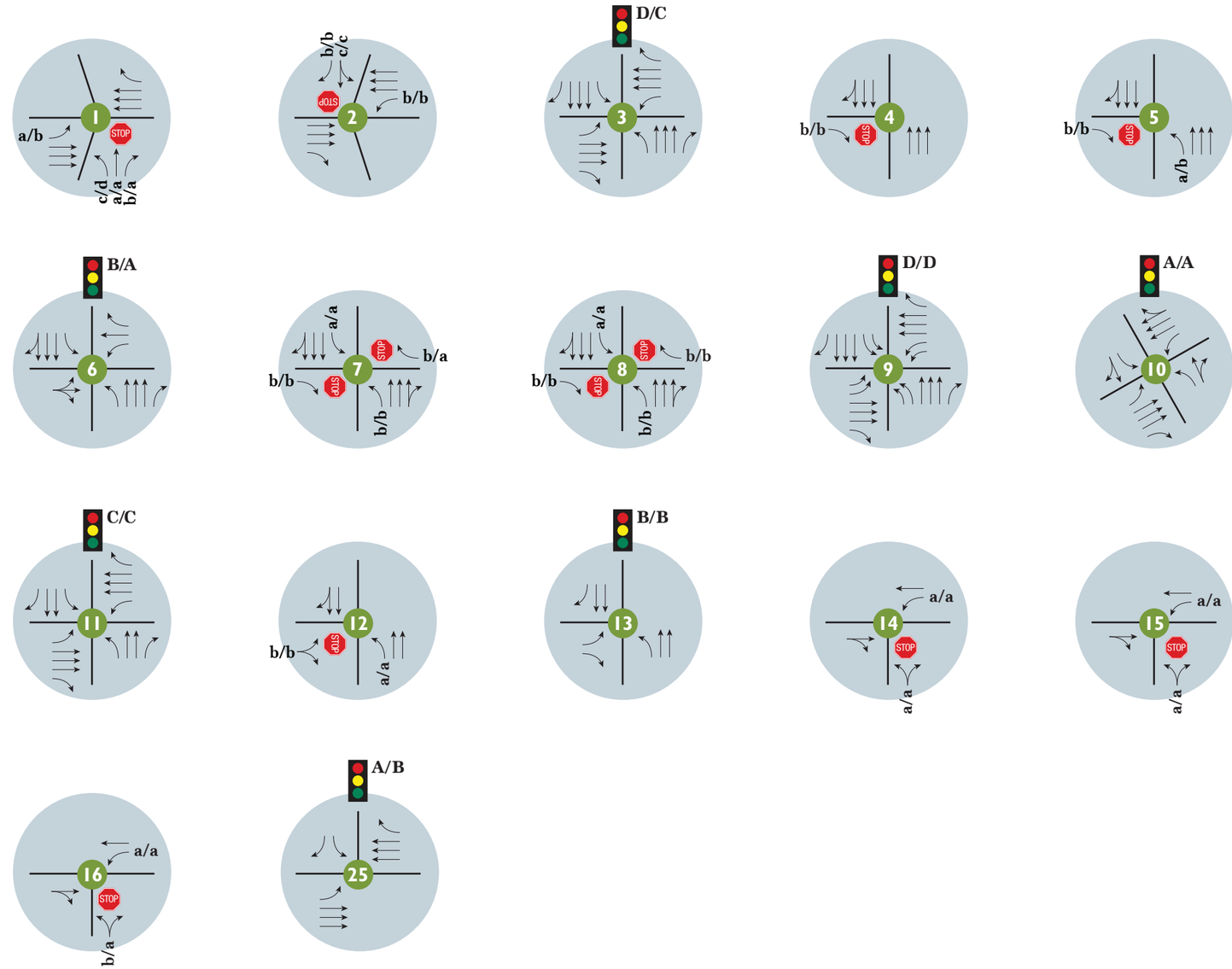
NORTH

FIGURE 7

Long Term (2040) Background Traffic Volumes

GVR 310 West TIS - DEC_21 21-372 12/15/21





LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
STOP	=	Stop Sign
	=	Traffic Signal

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

NORTH

FIGURE 8

Long Term (2040) Background Lane Geometry and Level of Service

GVR 310 West TIS - DEC_21 21-372 12/14/21

IV.B. Total Future Traffic

Short Range Future

The site-generated traffic volumes (**Figure 4**) were added to the background volumes shown on **Figure 5** to produce the Short Range Future total traffic volumes illustrated on **Figure 9**.

The Short-Range Future total traffic volumes were used to estimate the lane geometry and traffic control required. Note that the approaches to Picadilly Road at 50th Avenue, 51st Place, and 54th Avenue are shown as ¾-movement, as is currently proposed. The intersection of Picadilly Road with Maxwell Place is anticipated to be a RIRO access.

Long Range Future

The site-generated traffic volumes (**Figure 5**) were added to the year 2040 background traffic volumes (**Figure 7**) to produce the Long Range Future total traffic volumes illustrated on **Figure 10**. By 2040, Picadilly Road would experience total volumes ranging between 23,400 and 29,700 VPD. Total daily traffic volumes along Green Valley Ranch Boulevard west of Picadilly Road are projected to be about 38,100 VPD. To the east, traffic volumes on 48th Avenue would increase to about 49,100 VPD. Tibet Road would carry up to 30,800 VPD in total traffic volumes.

The total scenarios include the following improvements:

- Dual left turn lanes are warranted at the following intersection approaches by the Long Range (2040) Total scenario:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & E-470 NB Ramps	✔		✔	
56th Avenue & Retail Access		✔	✔	
56th Avenue & Tibet Road		✔		
56th Avenue & Picadilly Road		✔	✔	
Picadilly Road & 52nd Avenue		✔		✔
Picadilly Road & 48th Avenue	✔	✔	✔	✔
48th Avenue & Tibet Road	✔			✔
Tibet Road & Retail Access		✔		

- The projected volumes on Tibet Road would remain within NEATS four-lane minor arterial criteria in the Long Range Total scenario.
- Traffic projections along 48th and 56th Avenues are consistent with the NEATS threshold for LOS C for six-lane major arterials in the Long Range scenarios.
- The projected volumes on Picadilly Road adjacent to the site are consistent with a six-lane arterial cross-section, at LOS C per the NEATS threshold for the Long Range Total scenario.
- The projected volumes on Green Valley Ranch Boulevard/48th Avenue adjacent to the site are consistent with a six-lane arterial cross-section, at LOS C per the NEATS threshold for the Long Range 2040 scenario.

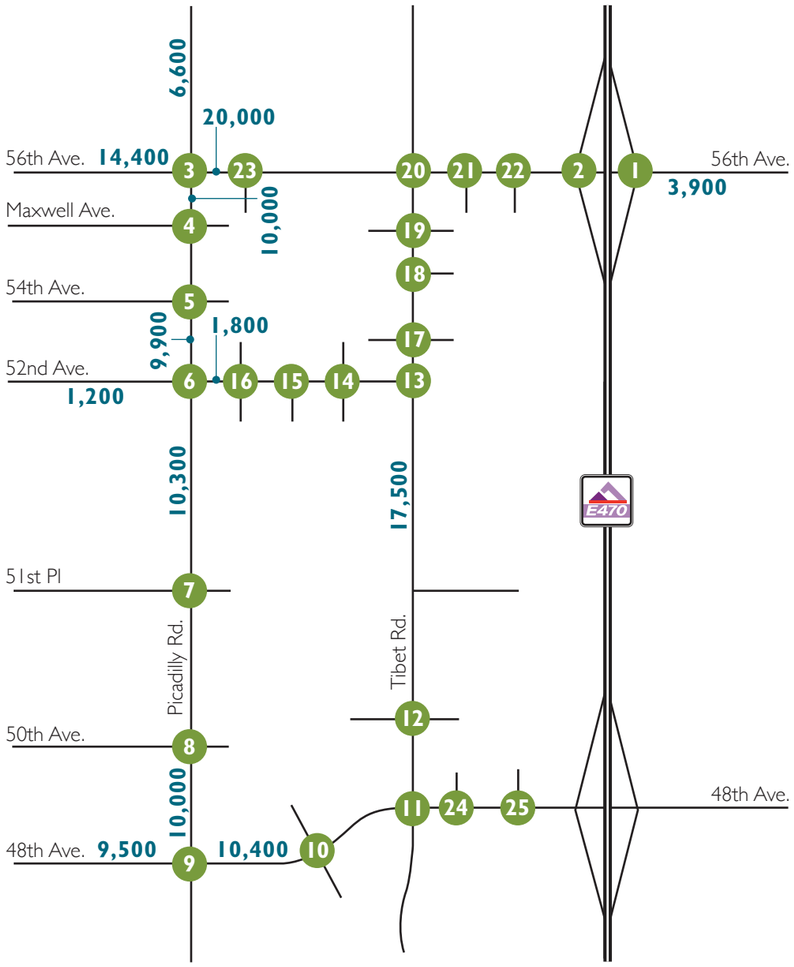
Table 2 outlines intersections anticipated to meet signal warrants and the respective timeframe.

Table 2. Signal Warrant Results

Intersection	Short Term Background	Long Term Background	Short Term Total	Long Term Total
56th Avenue & E-470 NB Ramps			✔	✔
56th Avenue & E-470 SB Ramps			✔	✔
56th Avenue & Full Retail Access			✔	✔
56th Avenue & Tibet Road			✔	✔
56th Avenue & Commercial Access				✔
56th Avenue & Picadilly Road	✔	✔	✔	✔
Picadilly Road & 52nd Avenue		✔	✔	✔
Picadilly Road & 48th Avenue/Green Valley Ranch Boulevard		✔	✔	✔
48th Avenue & Filing 5 Access		✔		✔
48th Avenue & Tibet Road		✔	✔	✔
Tibet Road & 52nd Avenue		✔	✔	✔
Tibet Road & South Site Access			✔	✔
Tibet Road & Retail Access			✔	✔
Tibet Road & North Site Access			✔	✔
48th Avenue & Eastern Site Access		✔		✔

Provide signal warrants in appendix.

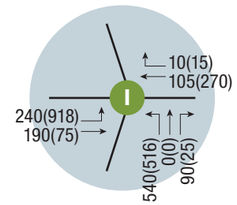
Signal warrants included in Appendix G

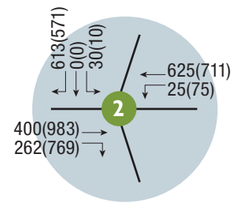


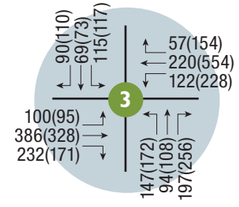
LEGEND

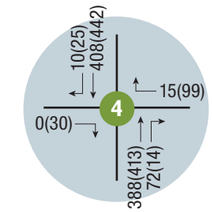
XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

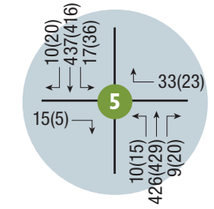
XXXX = Daily Traffic Volumes

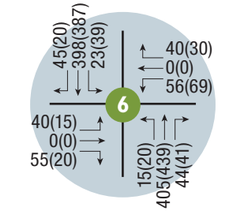


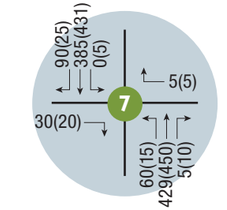


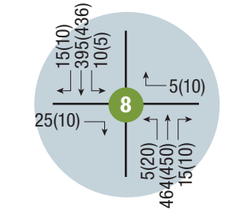


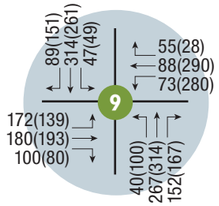


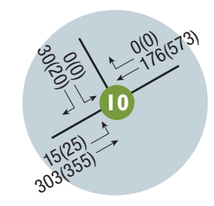


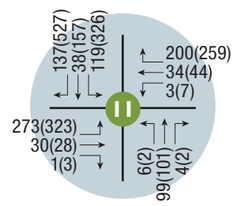


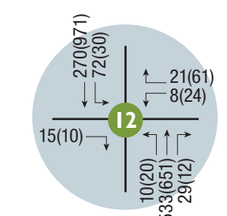


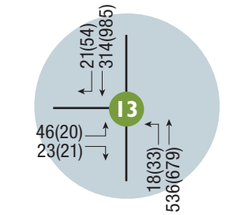


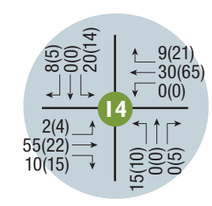


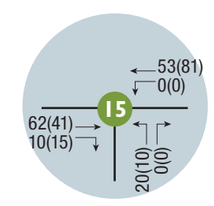


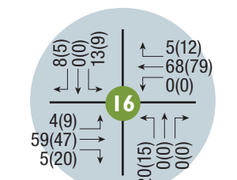


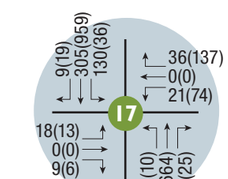


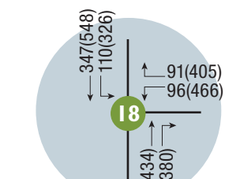


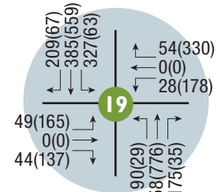


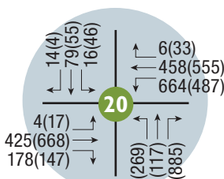


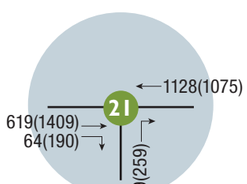


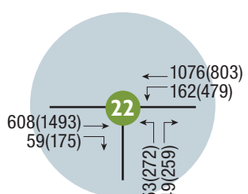


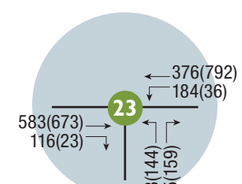


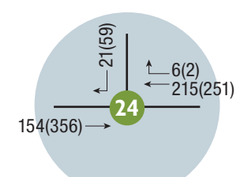


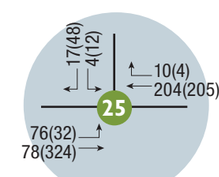












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NOTE: Drawing Not to Scale

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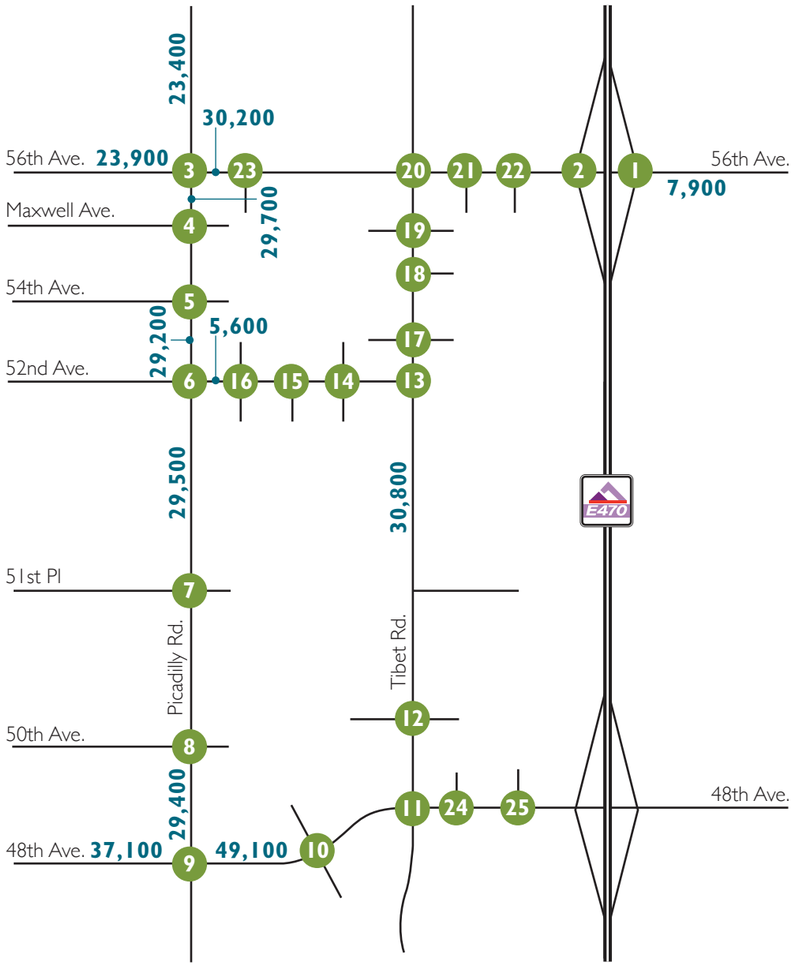
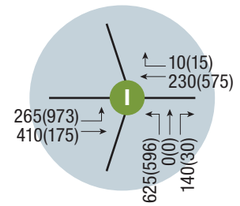
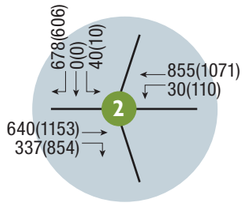
FIGURE 9

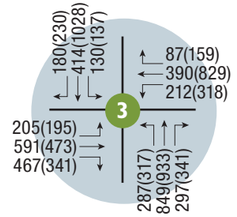
Short Term (2025) Total Traffic Volumes

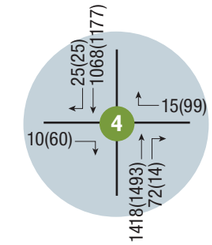
GVR 310 West TIS - DEC_21 21-372 12/15/21

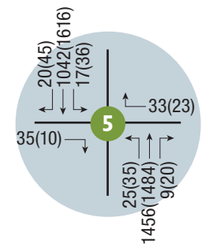


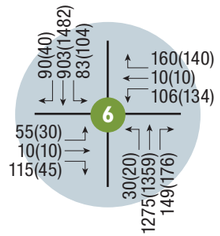


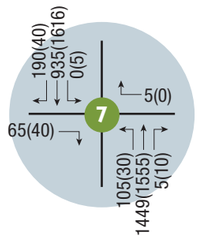


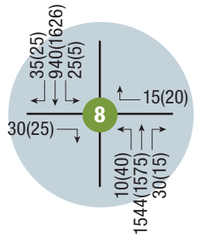


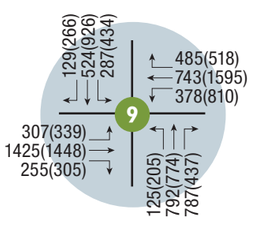


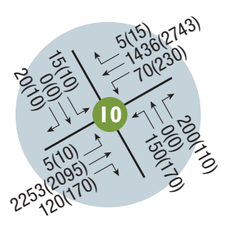


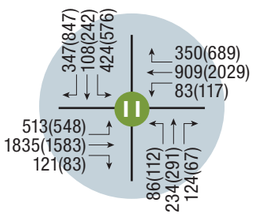


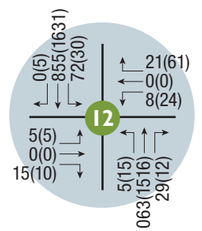


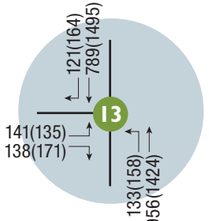


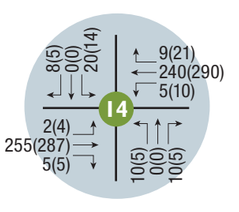


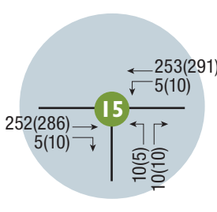


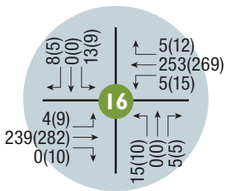


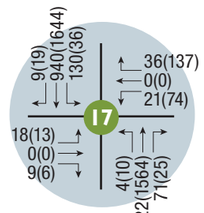


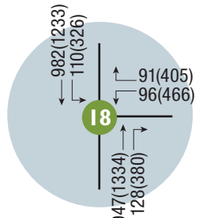


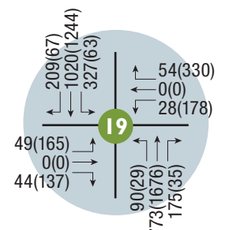


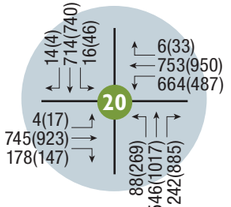


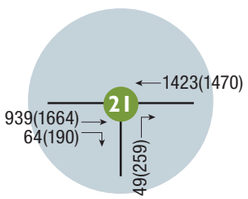


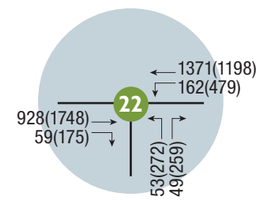


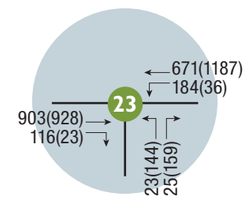


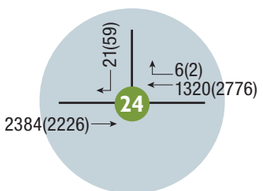


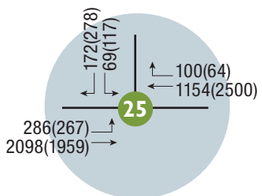












LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

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NOTE: Drawing Not to Scale

NORTH

FIGURE 10

Long Term (2040) Total Traffic Volumes

GVR 310 West TIS - DEC_21 21-372 12/15/21

V. EVALUATION

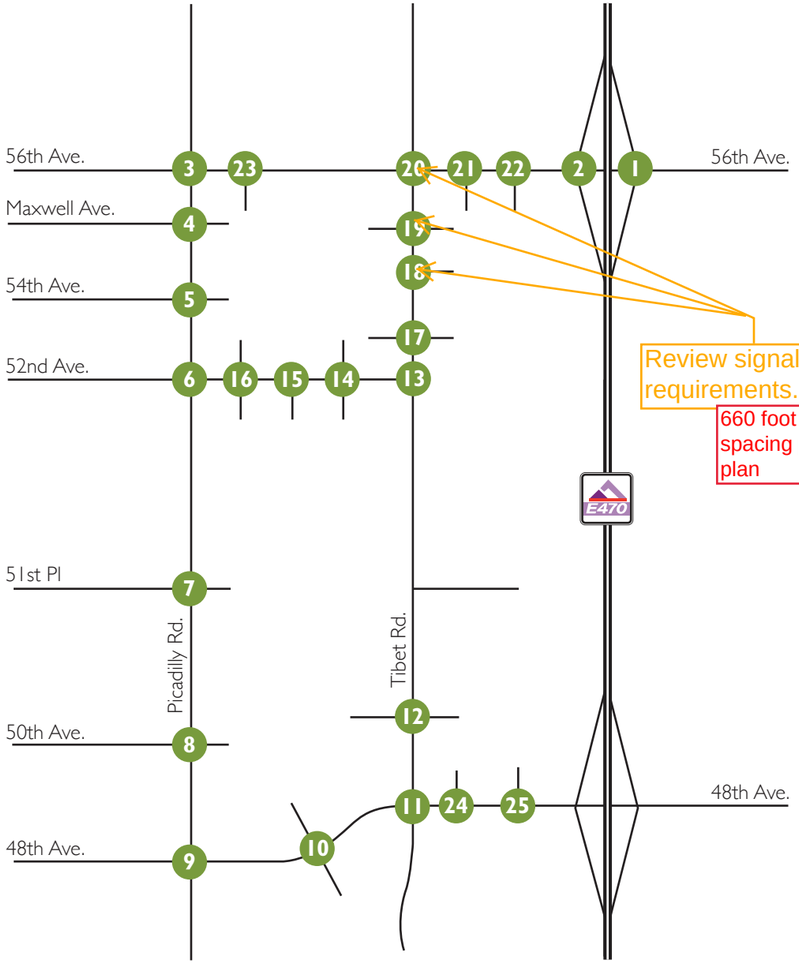
V.A. Level of Service

Short Range Future

The peak hour traffic volumes (**Figure 5**), intersection geometrics, and traffic control (**Figure 6**) were used as the basis for LOS analyses, the results of which are summarized on **Figure 11**. **Appendix E** contains the Short Range Future total traffic LOS worksheets. The analyses assume the following improvements:

- Site accesses would need a STOP sign exiting the site and, where outlined, signalized when warranted.
- 50th Avenue, 51st Place, and 54th Avenue would be restricted to ¾-movement on both Denver and Aurora sides at Picadilly Road.
- Maxwell Place would be restricted to RIRO movement on both the Denver and Aurora sides at Picadilly Road.
- 52nd Avenue should be constructed as a three-lane collector with left-turn lanes at the site accesses to accommodate near-term traffic volume projections.
- Eastbound right turn lanes should be provided at all site accesses along 56th Avenue.
- A northbound right turn lane should be provided at the intersection of Tibet Road with the Retail Access.
- Tibet Road should be constructed to four-lane minor arterial standards adjacent to the site.
- Picadilly Road, 48th Avenue, and 56th Avenue would ultimately be six-lane arterials; sufficient right-of-way should be preserved to accommodate the future widening of these roads.

Figure 11 summarizes the LOS results. As indicated, unsignalized traffic operations within the study area would remain acceptable, at LOS D or better. All signalized intersections are anticipated to operate at LOS D or better for all peak periods.

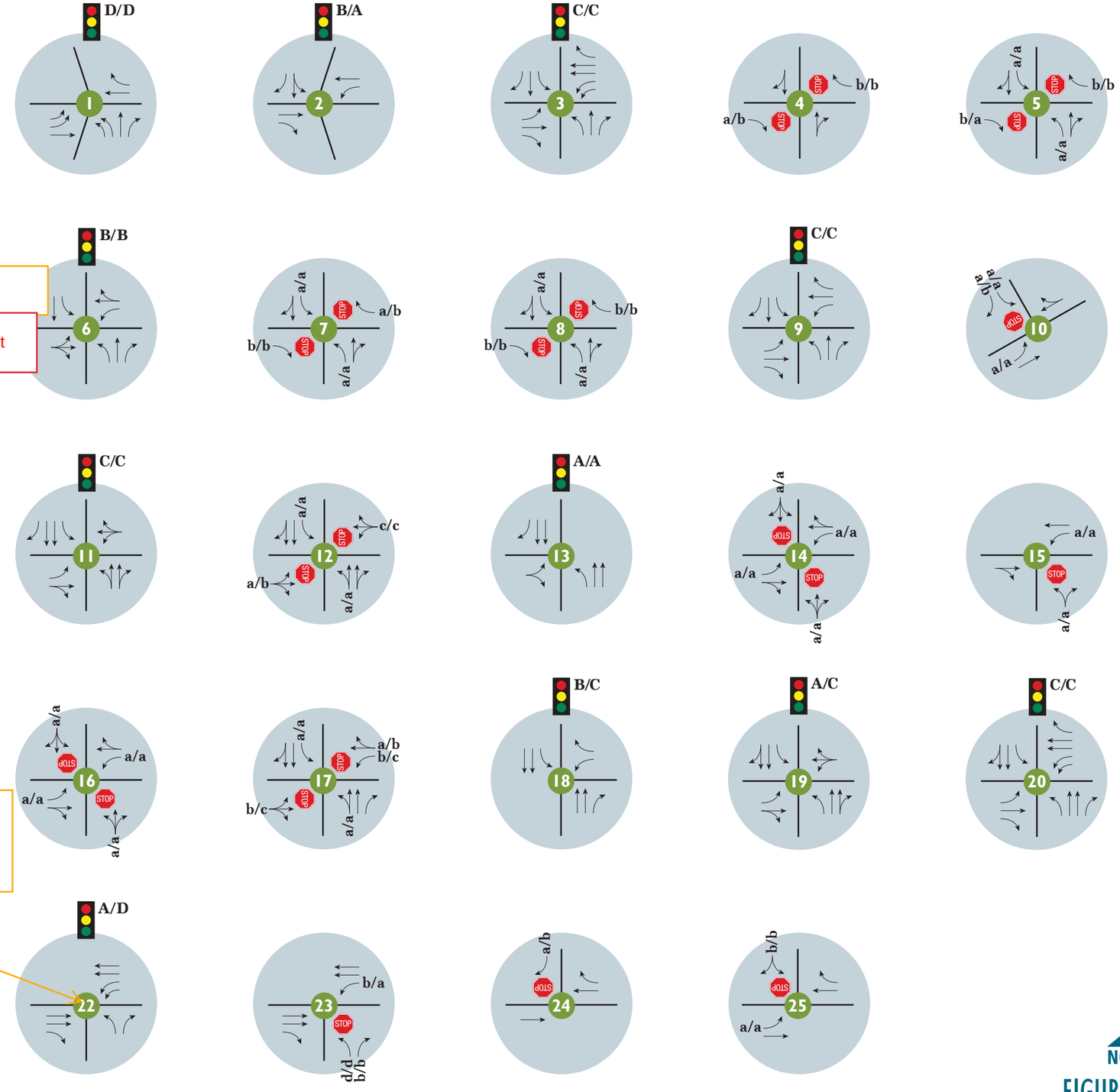


Review signal spacing requirements.

660 foot access spacing per current plan

Additional consideration/comment should be given to spacing and queuing overlap between signalized intersections 22 and 2 as well.

Access spacing updated to current plan



LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
STOP	=	Stop Sign
	=	Traffic Signal

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NOTE: Drawing Not to Scale

NORTH

FIGURE 11

Short Term (2025)
Total Lane Geometry and Level of Service

GVR 310 West TIS - DEC_21 21-372 12/15/21

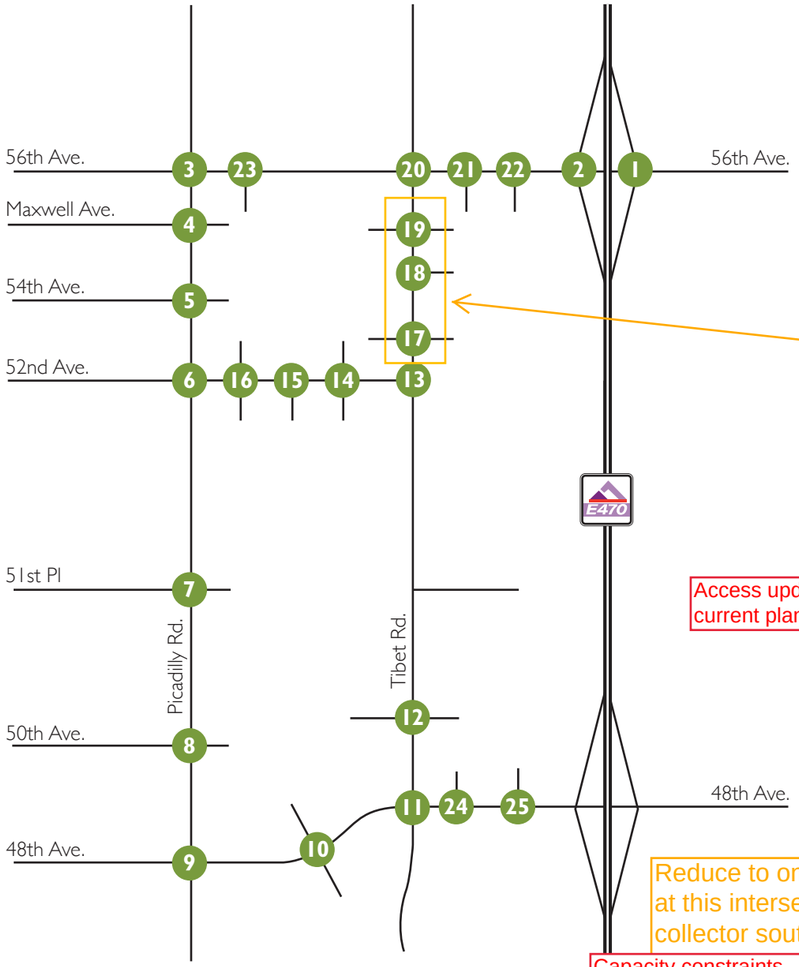
Long Range Future

The peak hour traffic volumes (**Figure 11**), intersection geometrics, and traffic control (**Figure 12**) were used as the basis for the Long Range Future total traffic LOS analyses, the results of which are summarized on **Figure 12. Appendix F** contains LOS worksheets. As shown, the majority of traffic operations are projected to remain acceptable, at LOS D or better, at the signalized intersections with the exception of the intersections of Tibet Road with 48th Avenue and Picadilly Road with 48th Avenue, which are anticipated to operate at LOS E in the PM peak hour.

The unsignalized ¾-movement and RIRO intersections along Picadilly Road would continue to operate at LOS A or B during peak times. The proposed site accesses on 52nd Avenue would all operate at acceptable levels (LOS D or better) under STOP sign control. The site accesses serving the northern site along Tibet Road are all anticipated to warrant signalization by the Long Range (2040) Total scenario and are projected to operate at LOS B or better for all peak periods. All unsignalized movements are anticipated to operate at LOS D or better with the exception of the eastbound movement at the intersection of Tibet Street with the Filing 5 Access anticipated to operate at LOS F in the PM peak hour, as well as the westbound left turn movement anticipated to operate at LOS F during both the AM and PM peak hours.

The analyses assume the following improvements:

- 48th and 56th Avenues would be completed as six-lane arterials.
- Picadilly Road would be completed as a six-lane arterial.
- 52nd Avenue would be constructed as a three-lane roadway with a center left turn lane. It is anticipated that the classification of 52nd Avenue would remain collector, allowing residential driveway connections.
- Tibet Road is proposed to be built out to a four-lane cross section.
- All internal site roadways would be constructed as two-lane, local streets.
- Where outlined, site accesses and intersections should be signalized when warranted.

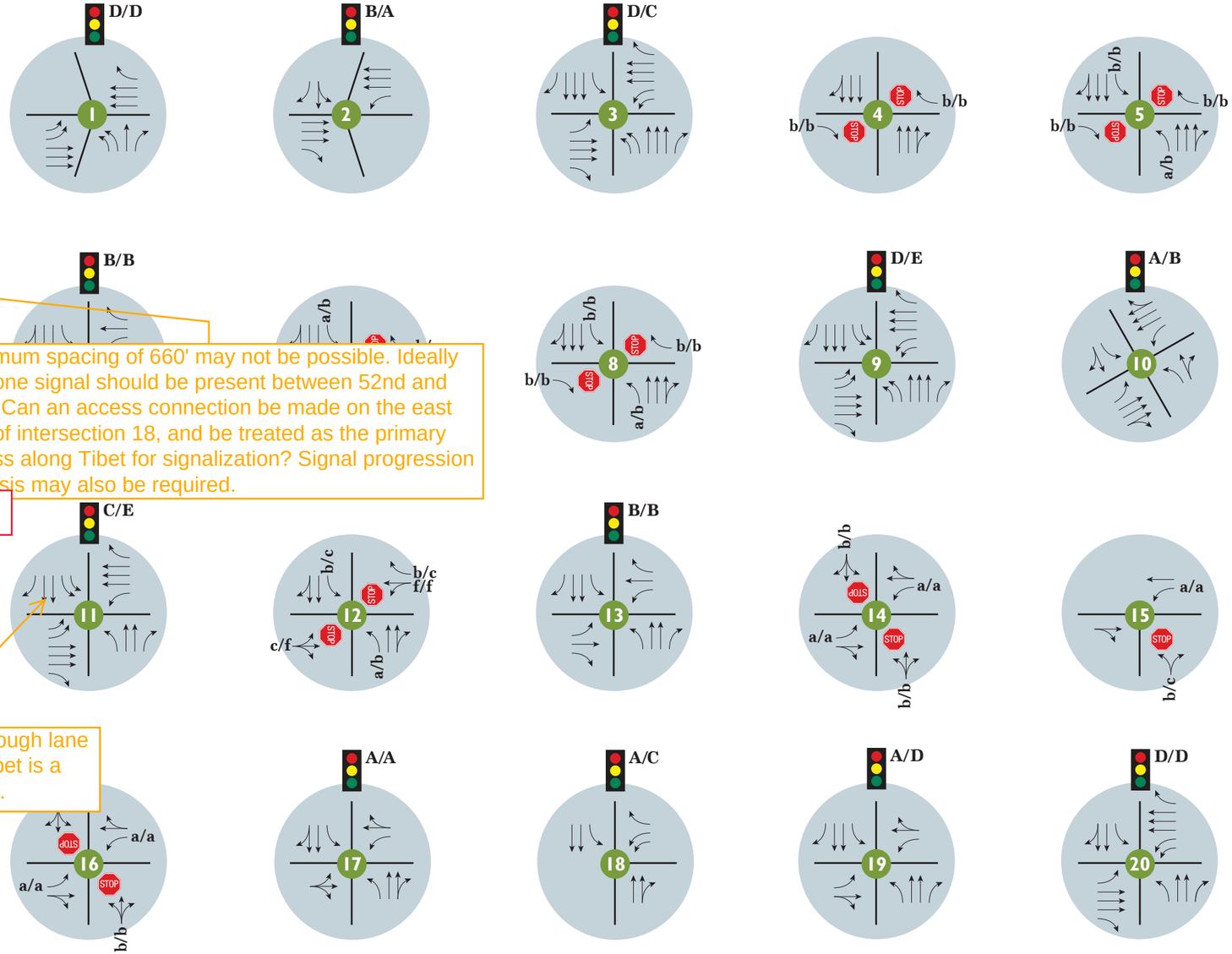


Minimum spacing of 660' may not be possible. Ideally only one signal should be present between 52nd and 56th. Can an access connection be made on the east side of intersection 18, and be treated as the primary access along Tibet for signalization? Signal progression analysis may also be required.

Access updated to current plan

Reduce to one SB through lane at this intersection. Tibet is a collector south of 48th.

Capacity constraints require second southbound through lane to be dropped on south side of intersection



LEGEND

- **X/X** = AM/PM Peak Hour Signalized Intersection Level of Service
- **x/x** = AM/PM Peak Hour Unsignalized Intersection Level of Service
- STOP = Stop Sign
- = Traffic Signal

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NOTE: Drawing Not to Scale

NORTH

FIGURE 12

Long Term (2040) Total Lane Geometry and Level of Service

GVR 310 West TIS - DEC_21 21-372 12/15/21

V.B. Traffic Control Devices

As previously identified, the majority of site accesses are projected to function at acceptable levels with unsignalized traffic control in the Short Range Future. The intersections of 56th Avenue with the Full Retail Access, Tibet Road with Retail Access, Tibet Road with North Site Access, Tibet Road with South Site Access, and 48th Avenue with Eastern Site Access should be signalized when warranted. Traffic conditions should be periodically monitored to determine the timing of traffic control improvements.

Each site access not anticipated to meet signalization warrants would need a STOP sign exiting the site. Traffic control within the Green Valley MP Amendment 2 site would be unsignalized.

By 2040 the following intersections are anticipated to meet signalization warrants

- 56th Avenue with E-470 NB Ramps
- 56th Avenue with E-470 SB Ramps
- 56th Avenue with Retail Access
- 56th Avenue with Tibet Street
- 56th Avenue with Commercial Access
- 56th Avenue with Picadilly Road
- Picadilly Road with 52nd Avenue
- Picadilly Road with 48th Avenue/Green Valley Ranch Boulevard
- 48th Avenue with Filing 5 Access
- 48th Avenue with Tibet Street
- Tibet Street with 52nd Avenue
- Tibet Street with South Site Access
- Tibet Street with Retail Access
- Tibet Street with North Site Access
- 48th Avenue with Eastern Site Access

Provide signal warrants in the appendix for any intersections in this list that were not warranted in the 2025 scenario.

See Appendix G in revised report

Traffic conditions should be periodically monitored to determine the timing of traffic control improvements.

The intersections at 50th Avenue/Picadilly Road, 51st Place/Picadilly Road, and 54th Avenue/Picadilly Road would remain unsignalized and would be restricted to ¾-movement for the side-street approaches. The intersections of Maxwell Place/Picadilly Road and 48th Avenue/RIRO would be restricted to RIRO movements. Traffic operations at these intersections would be acceptable through the Long Range Future, with all movements at LOS B or better.

V.C. Queuing

The Long Range Future LOS analyses include the 95th percentile maximum probable queue lengths for turning movements at the signalized intersections impacted by this site, as summarized in **Table 3**. As indicated, the storage lengths required by the Colorado Department of Transportation (CDOT) criteria would generally be adequate to accommodate the projected queues. Those movements where the projected queues would exceed the CDOT storage are indicated in bold, and future improvements should account for these potential queue lengths. Queueing at the stop-controlled site access entry points is expected to be negligible due to the minimal projected entering volumes. Internal queuing of vehicles is not anticipated to affect traffic operations.

Show intersection numbers in this column.

Round storage length recommendations to 25' increments.(typ)

See updated table in revised report

Provide 50' minimum storage (typ.)

Table 3. Queue Results at Future Intersections

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
56th Avenue & E-470 NB Ramps	EB Left*	225 (**600**)	490	600
	EB Through	150 (75)	Continuous	Continuous
	WB Through	50 (225)	Continuous	Continuous
	WB Right	25 (25)	30	30
	NB Left	400 (400)	630	630
	NB Through	0 (0)	Continuous	Continuous
	NB Right	**200** (50)	140	200
56th Avenue & E-470 SB Ramps	EB Through	250 (400)	Continuous	Continuous
	EB Right	0 (0)	860	860
	WB Left	25 (50)	110	110
	WB Through	300 (25)	Continuous	Continuous
	SB Left	75 (25)	Continuous	Continuous
		)	Continuous	Continuous
			680	680
56th Avenue & Full Retail Access		)	Continuous	Continuous
			180	180
	WB Left*		240	275
	WB Through	25 (25)	Continuous	Continuous
	NB Left*	50 (**200**)	140	200
	NB Right	100 (425)	Continuous	Continuous
56th Avenue & Tibet Road	EB Left	25 (25)	30	30
	EB Through	350 (425)	Continuous	Continuous
	EB Right	**250** (**200**)	180	250
	WB Left*	**425** (**375**)	340	425
	WB Through	25 (400)	Continuous	Continuous
	WB Right	0 (**50**)	40	50
	NB Left	100 (250)	270	270
	NB Through	350 (475)	Continuous	Continuous
	NB Right	0 (0)	890	890
	SB Left	25 (**75**)	50	75
	SB Through	425 (525)	Continuous	Continuous
	SB Right	425 (525)	Continuous	Continuous

Why is there such a large discrepancy between calculated queue and recommended storage at the E-470 ramps (typ.)

Storage requirements have been updated

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
56th Avenue & Commercial Access	EB Through	175 (125)	Continuous	Continuous
	EB Right	75 (25)	120	120
	WB Left	75 (25)	190	190
	WB Through	25 (25)	Continuous	Continuous
	NB Left	50 (225)	Continuous	Continuous
	NB Right	50 (**250**)	160	250
56th Avenue & Picadilly Road	EB Left	**225** (**250**)	210	250
	EB Through	250 (225)	Continuous	Continuous
	EB Right	**675** (400)	470	675
	WB Left*	125 (**250**)	160	250
	WB Through	175 (375)	Continuous	Continuous
	WB Right	100 (**200**)	160	200
	NB Left*	125 (**225**)	160	225
	NB Through	375 (50)	Continuous	Continuous
	NB Right	350 (50)	350	350
	SB Left	100 (125)	140	140
	SB Through	125 (325)	Continuous	Continuous
	SB Right	125 (200)	230	230
Picadilly Road & 52nd Avenue	EB Left	**100** (50)	60	100
	EB Through	225 (100)	Continuous	Continuous
	EB Right	**225** (100)	120	225
	WB Left	**150** (**200**)	70	200
	WB Through	25 (25)	Continuous	Continuous
	WB Right	**200** (**200**)	160	200
	NB Left	25 (25)	30	30
	NB Through	275 (275)	Continuous	Continuous
	NB Right	75 (100)	180	180
	SB Left*	50 (50)	60	60
	SB Through	25 (25)	Continuous	Continuous
	SB Right	25 (50)	Continuous	Continuous

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
Picadilly Road & 48th Avenue/Green Valley Ranch Boulevard	EB Left*	**250** (**275**)	170	275
	EB Through	550 (750)	Continuous	Continuous
	EB Right	250 (**325**)	310	325
	WB Left*	250 (**600**)	410	600
	WB Through	150 (575)	Continuous	Continuous
	WB Right	0 (0)	520	520
	NB Left*	100 (**200**)	110	200
	NB Through	325 (400)	Continuous	Continuous
	NB Right	0 (0)	790	790
	SB Left*	**275** (**400**)	220	400
	SB Through	200 (400)	Continuous	Continuous
	SB Right	125 (**300**)	270	300
48th Avenue & Filing 5 Access (Rome Street)	EB Left	0 (25)	30	30
	EB Through	25 (475)	Continuous	Continuous
	EB Right	25 (525)	Continuous	Continuous
	WB Left	25 (**375**)	230	375
	WB Through	200 (450)	Continuous	Continuous
	WB Right	225 (500)	Continuous	Continuous
	NB Left	**250** (125)	170	250
	NB Through	300 (175)	Continuous	Continuous
	NB Right	300 (175)	Continuous	Continuous
	SB Left	25 (25)	30	30
	SB Through	50 (25)	Continuous	Continuous
	SB Right	50 (25)	Continuous	Continuous
48th Avenue & Tibet Road	EB Left*	**375** (**500**)	280	500
	EB Through	525 (450)	Continuous	Continuous
	EB Right	75 (50)	130	130
	WB Left	75 (**125**)	120	125
	WB Through	100 (1075)	Continuous	Continuous
	WB Right	0 (0)	350	350
	NB Left	**125** (**150**)	120	150
	NB Through	175 (225)	Continuous	Continuous
	NB Right	**200** (100)	130	200
	SB Left*	**325** (**575**)	290	575
	SB Through	75 (175)	Continuous	Continuous
	SB Right	0 (0)	850	850

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
Tibet Road & 52nd Avenue	EB Left	**300** (**325**)	150	325
	EB Through	400 (475)	Continuous	Continuous
	EB Right	50 (125)	160	160
	WB Left	125 (125)	Continuous	Continuous
	WB Through	25 (275)	Continuous	Continuous
	WB Right	**200** (**250**)	170	250
	NB Left	50 (50)	Continuous	Continuous
	NB Through	50 (50)	Continuous	Continuous
	NB Right	50 (50)	Continuous	Continuous
	SB Left	50 (**125**)	80	125
	SB Through	75 (225)	Continuous	Continuous
	SB Right	75 (225)	Continuous	Continuous
Tibet Road & South Site Access	EB Left	0 (25)	30	30
	EB Through	25 (300)	Continuous	Continuous
	EB Right	25 (300)	Continuous	Continuous
	WB Left	25 (25)	130	130
	WB Through	25 (50)	Continuous	Continuous
	WB Right	25 (50)	Continuous	Continuous
	NB Left	75 (125)	240	240
	NB Through	150 (725)	Continuous	Continuous
	SB Left	25 (100)	Continuous	Continuous
	SB Through	25 (150)	Continuous	Continuous
Tibet Road & Retail Access	WB Left*	25 (225)	330	330
	WB Right	25 (25)	Continuous	Continuous
	NB Through	75 (**175**)	170	175
	SB Left	75 (200)	Continuous	Continuous
	SB Through	75 (200)	Continuous	Continuous
Tibet Road & North Site Access	EB Left	50 (**200**)	180	200
	EB Through	100 (525)	Continuous	Continuous
	EB Right	100 (525)	Continuous	Continuous
	WB Left	50 (25)	90	90
	WB Through	25 (925)	Continuous	Continuous
	WB Right	25 (25)	180	180
	NB Left	100 (50)	330	330
	NB Through	50 (525)	Continuous	Continuous
	SB Left	25 (50)	210	210
	SB Through	225 (**600**)	290	375

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
48th Avenue & Eastern Site Access	EB Left	100 (**375**)	290	375
	EB Through	25 (25)	Continuous	Continuous
	WB Through	225 (775)	Continuous	Continuous
	WB Right	50 (50)	100	100
	SB Left	100 (**200**)	120	200
	SB Right	475 (650)	Continuous	Continuous
*Dual Turn Lanes				

Review storage recommendation for overlap with adjacent proposed accesses/ intersections.

Storage requirements have been revisited

Sight Distance

To enable motorists to make saf vided at the proposed site accesses to City of Aurora S other plantings within adjacent tree-lawns could impact sight distance; therefore, placement of landscaping or plantings should remain outside the appropriate sight distance for outbound motorists. For the 50 MPH arterial design speed on Picadilly Road, 515 feet (looking left) and 625 feet (looking right) are required, per City of Aurora criteria.

Florida Pitt Waller School

Due to the proximity of the existing school at Picadilly Road/51st Place, school zone signing may be required to alert motorists of the potential for school children. As this is an Active Adult and retail/commercial development located in a different school district, school-aged children are not anticipated to cross Picadilly Road between the site and the school. It is generally atypical for school districts to designate walk routes across major arterials, but the signal at 52nd Avenue could provide a suitable pedestrian crossing if students do need to walk from this development. Therefore, coordination with Denver Public Schools on potential safety improvements is suggested.

VI. CONCLUSIONS AND RECOMMENDATIONS

The approximate 286.7-acre Green Valley MP Amendment 2 site would consist of approximately 650 senior housing units, 364 units of multi-family housing, 744,000 square feet of retail space, and 1,710,000 square feet of office space. Site vehicular access to the north portion of the site would be via 10 accesses: two on Picadilly Road (at 54th Avenue and Maxwell Place), three on Tibet Road, two on 52nd Avenue, and three on 56th Avenue. The southern site would have two full-movement accesses, one onto Tibet Street aligning with the Filing 5 access and one onto 48th Avenue, as well as a Right-In/Right-Out (RIRO) access onto 48th Avenue.

The proposed development would generate approximately 56,061 on a daily basis with 2,960 during the AM peak hour and about 5,446 trips during the PM peak hour. The potential impacts of the site-generated traffic were evaluated under both Short Range Future (2025) and Long Range Future (2040) scenarios. The following summarizes the findings and recommendations of this analysis.

VI.A. Short Range Future

The following improvements would be required of the 2025 background condition, regardless of the Green Valley MP Amendment 2 development:

- The intersection of 56th Avenue with Picadilly Road is anticipated to meet signal warrants. Traffic conditions should be periodically monitored to determine the timing of traffic control improvements.
- 48th Avenue should be built out to a 3-lane cross-section with sufficient reserve to build out the ultimate six-lane cross-section.
- Sufficient right-of-way should be reserved on Picadilly Road to build out to the ultimate six-lane cross-section.
- Tibet Road should be built to a minimum three-lane cross-section. This roadway is identified as a four-lane minor arterial in NEATS; therefore, sufficient right-of-way should be preserved to implement this ultimate configuration as well.

The following initial improvements are a requirement of the Green Valley MP Amendment 2 development:

- Construct all internal site roadways as two-lane, local streets.
- Site accesses would need a STOP sign exiting the site and signalized when warranted at the following locations:
    - 56th Avenue & Retail Access
    - Tibet Road & South Site Access
    - Tibet Road & Retail Access
    - Tibet Road & North Site Access
- The interchange ramps at 56th Avenue should be signalized when warranted.
- 50th Avenue, 51st Place, and 54th Avenue would be restricted to ¾-movement on both sides of Picadilly Road. Coordination with Denver will be needed.
- Maxwell Place would be restricted to RIRO movement on both the Denver and Aurora sides at Picadilly Road.
- The intersection of 48th Avenue with RIRO should be restricted to RIRO movement.
- Construct 52nd Avenue to collector standards with left-turn lanes at the site accesses (right-turn lanes are not anticipated). Sufficient right-of-way should be preserved for the ultimate cross-section to be constructed in the future.
- Construct Tibet Road as a four-lane collector with left-turn lanes at the site accesses.

- Eastbound right turn lane should be provided at all site accesses along 56th Avenue.
- A northbound right turn lane should be provided at the intersection of Tibet Road with the Retail Access.
- A southbound left turn lane and westbound right turn lane should be provided at the intersection of Tibet Road with Filing 5 Access.
- Preserve sufficient right-of-way to allow the ultimate six-lane cross section on Picadilly Road to be constructed in the future.
- Preserve sufficient right-of-way to allow the ultimate six-lane cross section on 48th Avenue to be constructed in the future.
- Roadside trees or other plantings that could impact sight distance are recommended to remain outside the sight distance requirements for outbound motorists at each proposed site access.

VI.B. Long Range Future

The following improvements would be required for the 2040 background conditions, regardless of the development:

- Dual left-turn lanes are required on all approaches at the intersection of 48th Avenue with Picadilly Road.
- Exclusive right-turn lanes would be needed on all approaches at the intersections of 56th Avenue with E-470 NB Ramps, 56th Avenue with E-470 SB ramps, 56th Avenue with Picadilly Road, 48th Avenue with Picadilly Road, 48th Avenue with Tibet Road, and Tibet Road with 52nd Avenue.
- The northbound and westbound approaches should provide exclusive left turn lanes at the intersection of Picadilly Road with 52nd Avenue. An eastbound right turn lane should be provided at the intersection of 48th Avenue with the Filing 5 Access.
- An eastbound left turn lane and westbound right turn lane should be provided at the intersection of 48th Avenue with Eastern Site Access.
- Traffic conditions should be periodically monitored at the following intersections to determine the timing of traffic control improvements:
    - 56th Avenue with Picadilly Road
    - Picadilly Road with 52nd Avenue
    - Picadilly Road with 48th Avenue
    - 48th Avenue with Filing 5 Access
    - 48th Avenue with Tibet Road
    - Tibet Road with 52nd Avenue
    - 48th Avenue with Eastern Access
- Construct Picadilly Road as a six-lane arterial adjacent to the site.
- Tibet Road should be constructed as a four-lane arterial.
- 52nd Avenue would be constructed as a three-lane roadway with a center left turn lane.
- 48th Avenue and Green Valley Ranch Boulevard should be built out to a six-lane arterial.
- Coordinate with Denver Public Schools to ensure appropriate school zone signing adjacent to the site.

The following additional improvements are a requirement of the Green Valley MP Amendment 2 development:

- The intersection of 56th Avenue with the Commercial Access should be monitored for signalization when warranted.
- Construct a southbound left turn lane at the intersection of 48th Avenue with Eastern Site Access.

APPENDIX A. TRAFFIC COUNTS

All Traffic Data Services

www.alltrafficdata.net

Date Start: 12-Oct-21
Site Code: 9
Station ID: 9
56TH AVE E.O. PICADILLY RD

Start Time	12-Oct-21 Tue	EB	WB							Total
12:00 AM		26	32							58
01:00		33	44							77
02:00		31	21							52
03:00		72	46							118
04:00		225	46							271
05:00		288	82							370
06:00		**347**	131							478
07:00		307	186							**493**
08:00		200	205							405
09:00		199	202							401
10:00		190	211							401
11:00		215	**267**							482
12:00 PM		**254**	241							495
01:00		244	235							479
02:00		217	332							549
03:00		214	**351**							**565**
04:00		232	324							556
05:00		208	286							494
06:00		139	181							320
07:00		83	140							223
08:00		78	84							162
09:00		46	68							114
10:00		36	91							127
11:00		12	56							68
Total		3896	3862							7758
Percent		50.2%	49.8%							
AM Peak	-	06:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	347	267	-	-	-	-	-	-	493
PM Peak	-	12:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	254	351	-	-	-	-	-	-	565

All Traffic Data Services

www.alltrafficdata.net

Date Start: 12-Oct-21
Site Code: 9
Station ID: 9
56TH AVE E.O. PICADILLY RD

Start Time	13-Oct-21 Wed	EB	WB							Total
12:00 AM		16	40							56
01:00		24	26							50
02:00		28	21							49
03:00		65	31							96
04:00		220	37							257
05:00		277	79							356
06:00		**320**	127							447
07:00		289	194							**483**
08:00		202	216							418
09:00		199	204							403
10:00		185	209							394
11:00		211	**261**							472
12:00 PM		**250**	236							486
01:00		240	238							478
02:00		213	336							549
03:00		209	**350**							**559**
04:00		225	319							544
05:00		199	280							479
06:00		138	186							324
07:00		87	134							221
08:00		79	85							164
09:00		46	82							128
10:00		44	114							158
11:00		20	65							85
Total		3786	3870							7656
Percent		49.5%	50.5%							
AM Peak	-	06:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	320	261	-	-	-	-	-	-	483
PM Peak	-	12:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	250	350	-	-	-	-	-	-	559

All Traffic Data Services

www.alltrafficdata.net

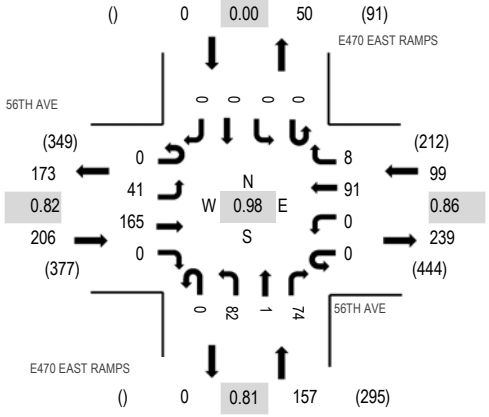
Date Start: 12-Oct-21
Site Code: 9
Station ID: 9
56TH AVE E.O. PICADILLY RD

Start Time	14-Oct-21 Thu	EB	WB							Total
12:00 AM		18	34							52
01:00		16	19							35
02:00		25	16							41
03:00		78	25							103
04:00		203	34							237
05:00		282	88							370
06:00		**380**	178							**558**
07:00		279	**231**							510
08:00		228	215							443
09:00		192	181							373
10:00		208	218							426
11:00		216	208							424
12:00 PM		**257**	262							519
01:00		249	300							549
02:00		219	394							613
03:00		216	**407**							**623**
04:00		217	329							546
05:00		193	310							503
06:00		129	184							313
07:00		110	120							230
08:00		76	102							178
09:00		57	118							175
10:00		45	99							144
11:00		21	76							97
Total		3914	4148							8062
Percent		48.5%	51.5%							
AM Peak	-	06:00	07:00	-	-	-	-	-	-	06:00
Vol.	-	380	231	-	-	-	-	-	-	558
PM Peak	-	12:00	15:00	-	-	-	-	-	-	15:00
Vol.	-	257	407	-	-	-	-	-	-	623
Grand Total		11596	11880							23476
Percent		49.4%	50.6%							
ADT		ADT 7,825		AADT 7,825						

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

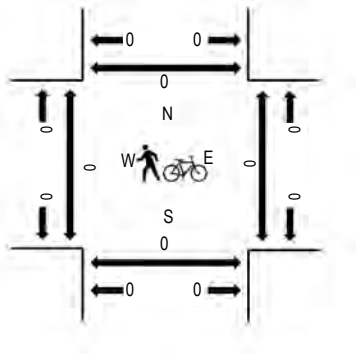
Location: 1 E470 EAST RAMPS & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



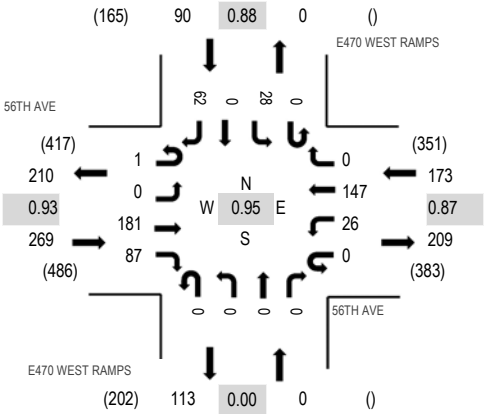
Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				E470 EAST RAMPS Northbound				E470 EAST RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	11	52	0	0	0	25	1	0	13	1	15	0	0	0	0	118	462	0	0	0	0
7:15 AM	0	11	37	0	0	0	28	2	0	21	0	13	0	0	0	0	112	448	0	0	0	0
7:30 AM	0	5	33	0	0	0	22	1	0	28	0	25	0	0	0	0	114	449	0	0	0	0
7:45 AM	0	14	43	0	0	0	16	4	0	20	0	21	0	0	0	0	118	437	0	0	0	0
8:00 AM	0	7	33	0	0	0	25	2	0	20	0	17	0	0	0	0	104	422	0	0	1	0
8:15 AM	0	9	39	0	0	0	23	1	0	23	0	18	0	0	0	0	113		0	0	0	0
8:30 AM	0	6	38	0	0	0	27	2	0	16	0	13	0	0	0	0	102		0	0	0	0
8:45 AM	0	7	32	0	0	0	26	7	0	16	0	15	0	0	0	0	103		0	0	0	0
Count Total	0	70	307	0	0	0	192	20	0	157	1	137	0	0	0	0	884		0	0	1	0
Peak Hour	0	41	165	0	0	0	91	8	0	82	1	74	0	0	0	0	462		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

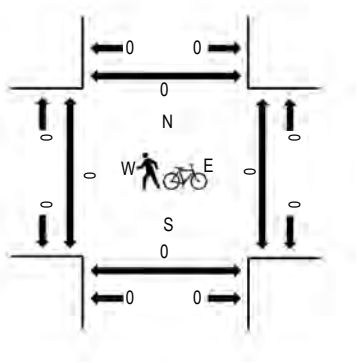
Location: 2 E470 WEST RAMPS & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



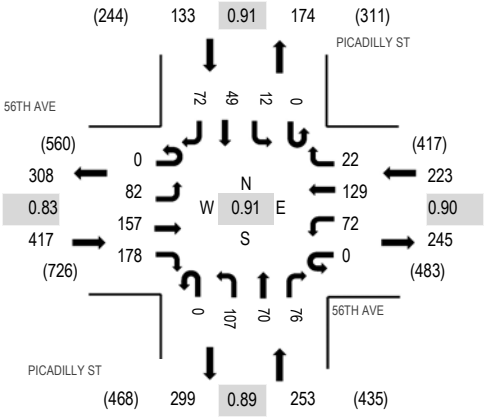
Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				E470 WEST RAMPS Northbound				E470 WEST RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	0	56	13	0	5	35	0	0	0	0	0	0	5	0	18	132	532	0	0	0	0
7:15 AM	0	0	46	26	0	9	43	0	0	0	0	0	0	4	0	12	140	525	0	0	0	0
7:30 AM	0	0	34	29	0	6	40	0	0	0	0	0	0	7	0	18	134	510	0	0	0	0
7:45 AM	1	0	45	19	0	6	29	0	0	0	0	0	0	12	0	14	126	488	0	0	0	0
8:00 AM	0	0	34	19	0	5	43	0	0	0	0	0	0	5	0	19	125	470	0	0	1	0
8:15 AM	0	0	45	17	0	6	41	0	0	0	0	0	0	4	0	12	125		0	0	0	0
8:30 AM	0	0	33	16	1	3	36	0	0	0	0	0	0	10	0	13	112		0	0	0	0
8:45 AM	0	0	38	15	0	8	35	0	0	0	0	0	0	4	0	8	108		0	0	0	0
Count Total	1	0	331	154	1	48	302	0	0	0	0	0	0	51	0	114	1,002		0	0	1	0
Peak Hour	1	0	181	87	0	26	147	0	0	0	0	0	0	28	0	62	532		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

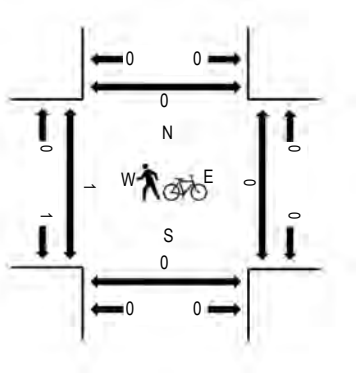
Location: 3 PICADILLY ST & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	22	49	26	0	19	26	4	0	14	10	20	0	2	4	19	215	955	0	0	0	0
7:15 AM	0	17	41	20	0	17	30	4	0	18	19	22	0	2	12	19	221	1,021	0	0	0	0
7:30 AM	0	20	32	38	0	22	33	7	0	26	20	25	0	6	10	23	262	1,026	0	0	0	0
7:45 AM	0	15	44	50	0	19	26	3	0	23	20	23	0	2	15	17	257	945	1	0	0	0
8:00 AM	0	26	38	62	0	15	37	7	0	28	15	13	0	2	16	22	281	867	0	0	0	0
8:15 AM	0	21	43	28	0	16	33	5	0	30	15	15	0	2	8	10	226		0	0	0	0
8:30 AM	1	18	32	16	0	12	33	5	0	13	10	16	0	1	5	19	181		1	0	0	2
8:45 AM	0	13	37	17	0	12	28	4	0	15	11	14	0	2	9	17	179		0	0	0	0
Count Total	1	152	316	257	0	132	246	39	0	167	120	148	0	19	79	146	1,822		2	0	0	2
Peak Hour	0	82	157	178	0	72	129	22	0	107	70	76	0	12	49	72	1,026		1	0	0	0

ALL TRAFFIC DATA SERVICES
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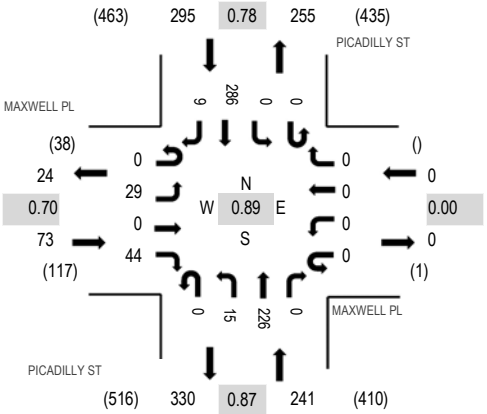
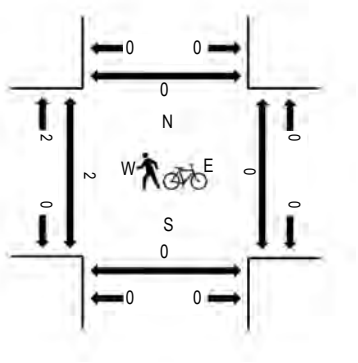
Location: 4 PICADILLY ST & MAXWELL PL AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	MAXWELL PL Eastbound				MAXWELL PL Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	5	0	6	0	0	0	0	0	3	41	0	0	0	47	0	102	534	0	0	0	0
7:15 AM	0	7	1	10	0	0	0	0	0	2	48	0	0	0	48	1	117	604	0	0	0	0
7:30 AM	0	6	0	8	0	0	0	0	0	1	64	0	0	0	63	4	146	609	1	0	0	0
7:45 AM	0	6	0	11	0	0	0	0	0	7	62	0	0	0	80	3	169	545	0	0	0	0
8:00 AM	0	10	0	17	0	0	0	0	0	2	49	0	0	0	93	1	172	456	1	0	0	0
8:15 AM	0	7	0	8	0	0	0	0	0	5	51	0	0	0	50	1	122		0	0	0	0
8:30 AM	0	5	0	5	0	0	0	0	0	3	34	0	0	0	31	4	82		2	0	0	0
8:45 AM	0	3	0	2	0	0	0	0	0	1	37	0	0	0	37	0	80		0	0	0	0
Count Total	0	49	1	67	0	0	0	0	0	24	386	0	0	0	449	14	990		4	0	0	0
Peak Hour	0	29	0	44	0	0	0	0	0	15	226	0	0	0	286	9	609		2	0	0	0

ALL TRAFFIC DATA SERVICES

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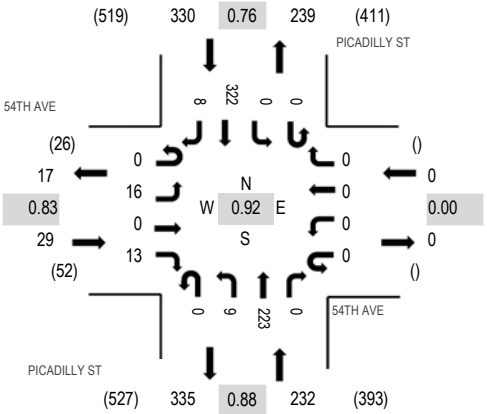
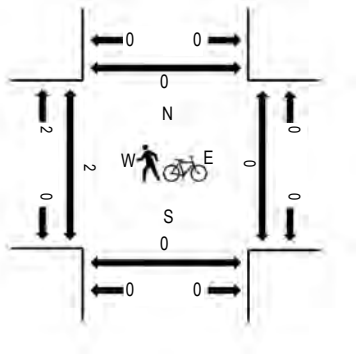
Location: 5 PICADILLY ST & 54TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	54TH AVE Eastbound				54TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	3	0	4	0	0	0	0	0	2	41	0	0	0	52	3	105	526	0	0	0	0
7:15 AM	0	5	0	4	0	0	0	0	0	0	48	0	0	0	59	2	118	582	0	0	0	0
7:30 AM	0	7	0	3	0	0	0	0	0	3	58	0	0	0	70	1	142	591	1	0	0	0
7:45 AM	0	4	0	3	0	0	0	0	0	0	66	0	0	0	86	2	161	522	0	0	0	0
8:00 AM	0	1	0	2	0	0	0	0	0	3	46	0	0	0	104	5	161	438	1	0	0	0
8:15 AM	0	4	0	5	0	0	0	0	0	3	53	0	0	0	62	0	127		0	0	0	0
8:30 AM	0	3	0	0	0	0	0	0	0	1	34	0	1	0	33	1	73		1	0	0	0
8:45 AM	0	2	0	2	0	0	0	0	0	0	35	0	0	0	38	0	77		0	0	0	0
Count Total	0	29	0	23	0	0	0	0	0	12	381	0	1	0	504	14	964		3	0	0	0
Peak Hour	0	16	0	13	0	0	0	0	0	9	223	0	0	0	322	8	591		2	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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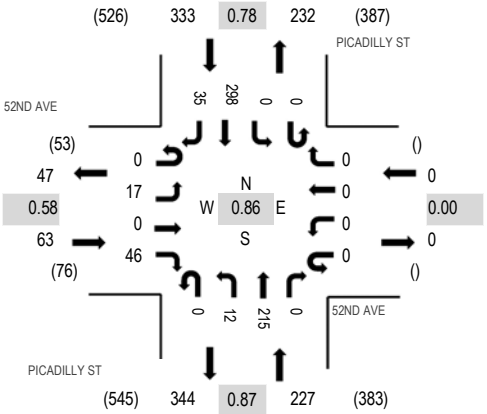
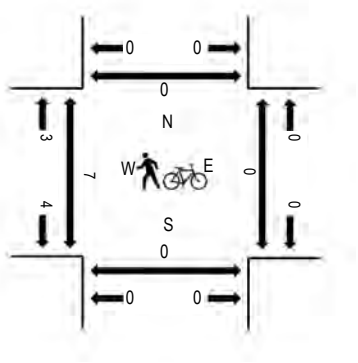
Location: 6 PICADILLY ST & 52ND AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	52ND AVE Eastbound				52ND AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	3	0	0	0	0	0	0	41	0	0	0	53	1	99	508	0	0	0	0
7:15 AM	0	1	0	1	0	0	0	0	0	2	44	0	0	0	64	0	112	591	0	0	0	0
7:30 AM	0	1	0	4	0	0	0	0	0	1	59	0	0	0	67	3	135	623	2	0	0	0
7:45 AM	0	3	0	4	0	0	0	0	0	2	63	0	0	0	85	5	162	561	1	0	0	0
8:00 AM	0	7	0	20	0	0	0	0	0	5	43	0	0	0	84	23	182	477	0	0	0	0
8:15 AM	0	6	0	18	0	0	0	0	0	4	50	0	0	0	62	4	144		4	0	0	0
8:30 AM	0	0	0	4	0	0	0	0	0	2	33	0	0	0	34	0	73		1	0	0	0
8:45 AM	0	2	0	1	0	0	0	0	0	1	33	0	0	0	41	0	78		0	0	0	0
Count Total	0	21	0	55	0	0	0	0	0	17	366	0	0	0	490	36	985		8	0	0	0
Peak Hour	0	17	0	46	0	0	0	0	0	12	215	0	0	0	298	35	623		7	0	0	0

ALL TRAFFIC DATA SERVICES
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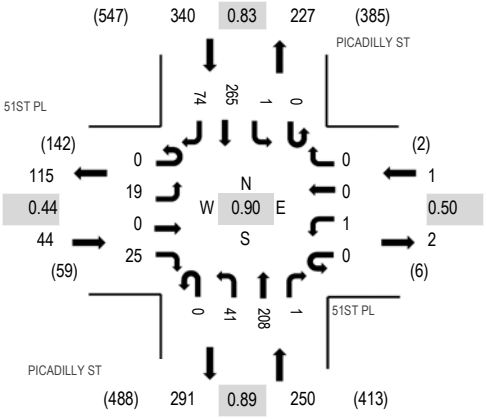
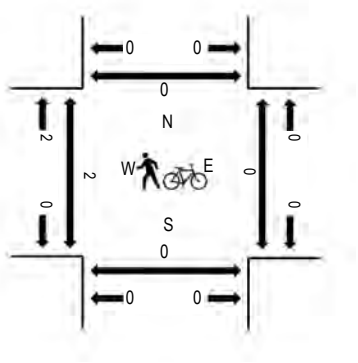
Location: 7 PICADILLY ST & 51ST PL AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	51ST PL Eastbound				51ST PL Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	0	2	0	0	0	0	0	4	41	0	0	0	56	4	108	532	0	0	0	0
7:15 AM	0	3	0	1	0	0	0	0	0	7	43	0	0	0	58	7	119	600	1	0	0	0
7:30 AM	0	1	0	2	0	0	0	0	0	12	59	0	0	0	59	12	145	635	1	0	0	0
7:45 AM	0	1	0	3	0	0	0	0	0	5	63	1	0	1	64	22	160	569	1	0	0	0
8:00 AM	0	5	0	6	0	0	0	0	0	16	47	0	0	0	71	31	176	489	0	0	0	0
8:15 AM	0	12	0	14	0	1	0	0	0	8	39	0	0	0	71	9	154		0	0	0	0
8:30 AM	0	2	0	3	0	0	0	0	0	1	34	0	0	3	34	2	79		1	0	0	0
8:45 AM	0	1	0	2	0	0	0	1	0	0	32	1	0	0	41	2	80		0	0	0	0
Count Total	0	26	0	33	0	1	0	1	0	53	358	2	0	4	454	89	1,021		4	0	0	0
Peak Hour	0	19	0	25	0	1	0	0	0	41	208	1	0	1	265	74	635		2	0	0	0

ALL TRAFFIC DATA SERVICES
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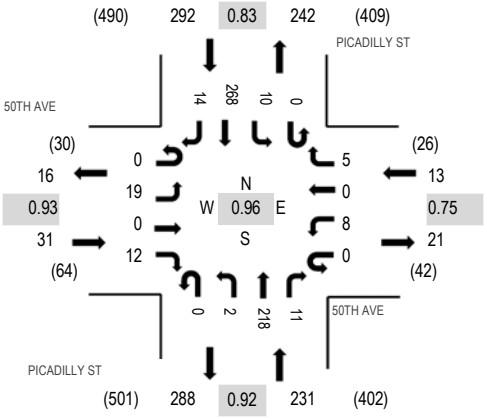
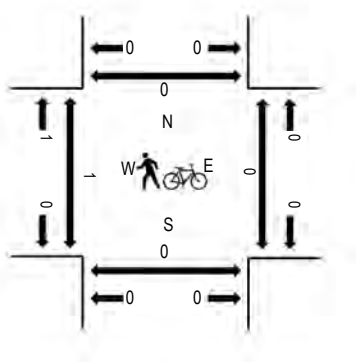
Location: 8 PICADILLY ST & 50TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	50TH AVE Eastbound				50TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	2	0	4	0	0	0	1	0	0	43	2	0	2	54	2	110	513	0	0	0	0
7:15 AM	0	4	0	6	0	1	0	0	0	2	49	0	0	0	58	2	122	551	2	0	0	0
7:30 AM	0	6	0	3	0	3	0	0	0	0	63	2	0	1	53	3	134	567	0	0	0	0
7:45 AM	0	8	0	2	0	1	0	2	0	0	60	5	0	5	62	2	147	527	1	0	0	0
8:00 AM	0	3	0	5	0	2	0	2	0	2	54	2	0	1	73	4	148	469	0	0	0	0
8:15 AM	0	2	0	2	0	2	0	1	0	0	41	2	0	3	80	5	138		0	0	0	0
8:30 AM	0	4	1	7	0	3	2	1	0	3	30	6	0	5	32	0	94		1	0	0	0
8:45 AM	0	1	2	2	0	4	1	0	0	2	32	2	0	1	42	0	89		0	0	0	0
Count Total	0	30	3	31	0	16	3	7	0	9	372	21	0	18	454	18	982		4	0	0	0
Peak Hour	0	19	0	12	0	8	0	5	0	2	218	11	0	10	268	14	567		1	0	0	0

ALL TRAFFIC DATA SERVICES
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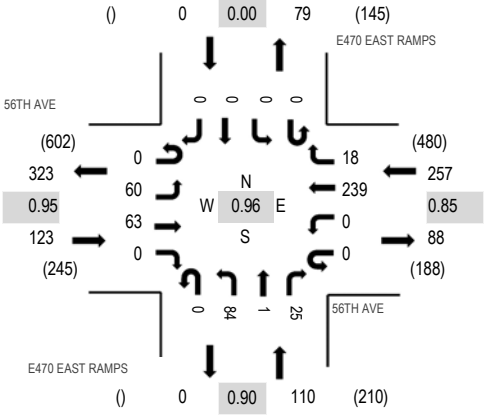
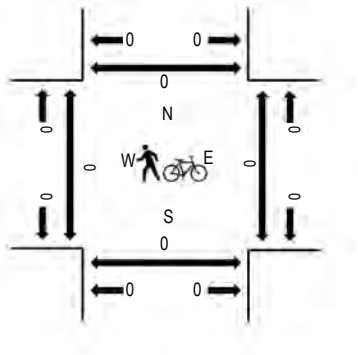
Location: 1 E470 EAST RAMPS & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				E470 EAST RAMPS Northbound				E470 EAST RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	8	25	0	0	0	53	5	0	14	1	2	0	0	0	0	108	473	0	0	0	0
4:15 PM	0	10	23	0	0	0	62	7	0	18	0	7	0	0	0	0	127	478	0	0	0	0
4:30 PM	0	15	11	0	0	0	56	3	0	17	0	10	0	0	0	0	112	478	0	0	0	0
4:45 PM	0	12	21	0	0	0	54	7	0	25	0	7	0	0	0	0	126	490	0	0	0	0
5:00 PM	0	13	10	0	0	0	56	3	0	21	1	9	0	0	0	0	113	462	0	0	0	0
5:15 PM	0	11	19	0	0	0	71	5	0	18	0	3	0	0	0	0	127		0	0	0	0
5:30 PM	0	24	13	0	0	0	58	3	0	20	0	6	0	0	0	0	124		0	0	0	0
5:45 PM	0	14	16	0	0	0	34	3	0	25	0	6	0	0	0	0	98		0	0	0	0
Count Total	0	107	138	0	0	0	444	36	0	158	2	50	0	0	0	0	935		0	0	0	0
Peak Hour	0	60	63	0	0	0	239	18	0	84	1	25	0	0	0	0	490		0	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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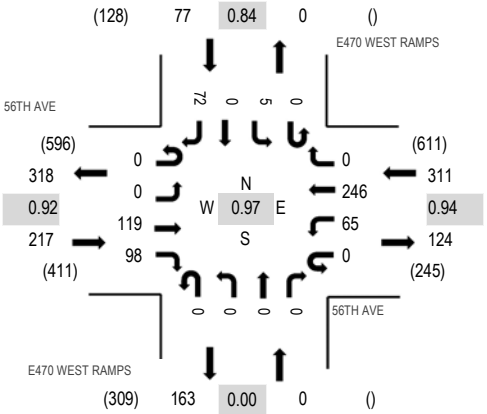
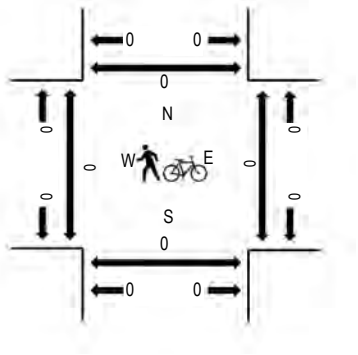
Location: 2 E470 WEST RAMPS & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				E470 WEST RAMPS Northbound				E470 WEST RAMPS Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	0	33	26	0	15	58	0	0	0	0	0	0	1	0	21	154	605	0	0	0	0
4:15 PM	0	0	30	24	0	23	60	0	0	0	0	0	0	1	0	18	156	582	0	0	0	0
4:30 PM	0	0	25	22	0	13	62	0	0	0	0	0	0	3	0	20	145	572	0	0	0	0
4:45 PM	0	0	31	26	0	14	66	0	0	0	0	0	0	0	0	13	150	578	0	0	0	0
5:00 PM	0	0	20	23	0	15	66	0	0	0	0	0	0	2	0	5	131	545	0	0	0	0
5:15 PM	0	0	30	17	0	15	72	0	0	0	0	0	0	2	0	10	146		0	0	0	0
5:30 PM	0	0	32	23	0	23	56	0	0	0	0	0	0	3	0	14	151		0	0	0	0
5:45 PM	0	0	31	18	0	12	41	0	0	0	0	0	0	1	0	14	117		0	0	0	0
Count Total	0	0	232	179	0	130	481	0	0	0	0	0	0	13	0	115	1,150		0	0	0	0
Peak Hour	0	0	119	98	0	65	246	0	0	0	0	0	0	5	0	72	605		0	0	0	0

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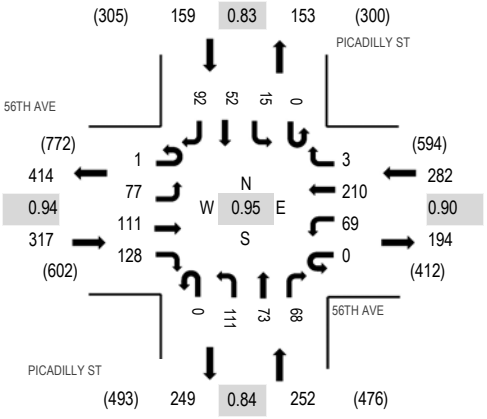
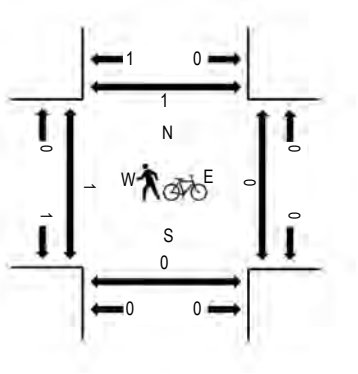
Location: 3 PICADILLY ST & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	16	41	27	0	21	43	7	0	25	15	15	0	2	13	15	240	967	0	0	0	0
4:15 PM	0	21	33	16	0	29	42	8	0	22	13	15	0	7	14	15	235	973	0	0	0	0
4:30 PM	0	9	25	29	0	27	53	3	0	14	18	24	0	0	13	28	243	985	0	1	0	0
4:45 PM	0	17	27	24	0	24	53	2	0	26	18	19	0	10	7	22	249	1,007	0	0	0	0
5:00 PM	0	20	32	32	0	14	54	1	0	27	20	13	0	2	12	19	246	1,010	1	0	0	1
5:15 PM	0	21	23	32	0	21	67	1	0	23	10	16	0	5	13	15	247		0	0	0	0
5:30 PM	1	17	31	26	0	21	46	0	0	38	18	19	0	2	18	28	265		0	0	0	0
5:45 PM	0	19	25	38	0	13	43	1	0	23	25	20	0	6	9	30	252		0	0	0	0
Count Total	1	140	237	224	0	170	401	23	0	198	137	141	0	34	99	172	1,977		1	1	0	1
Peak Hour	1	77	111	128	0	69	210	3	0	111	73	68	0	15	52	92	1,010		1	0	0	1

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(303) 216-2439
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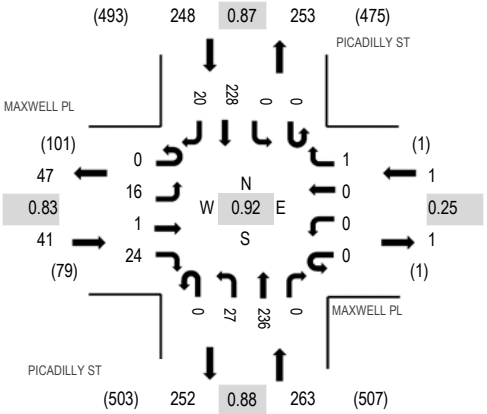
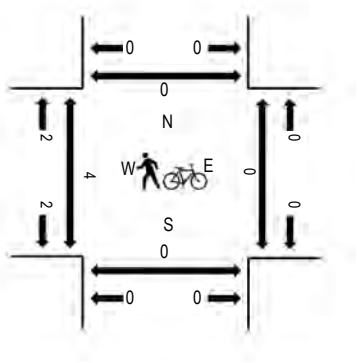
Location: 4 PICADILLY ST & MAXWELL PL PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	MAXWELL PL Eastbound				MAXWELL PL Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	0	5	0	0	0	0	0	11	52	0	0	0	56	5	132	527	0	0	0	0
4:15 PM	0	3	0	5	0	0	0	0	0	9	47	0	0	0	55	2	121	523	0	0	0	0
4:30 PM	0	2	0	8	0	0	0	0	0	6	53	0	0	0	65	7	141	533	1	0	0	0
4:45 PM	0	7	0	5	0	0	0	0	0	11	55	0	0	0	52	3	133	542	0	0	0	0
5:00 PM	0	3	0	4	0	0	0	0	0	7	57	0	0	0	53	4	128	553	0	0	0	0
5:15 PM	0	3	0	8	0	0	0	0	0	7	47	0	0	0	59	7	131		0	0	0	0
5:30 PM	0	8	0	5	0	0	0	0	0	6	69	0	0	0	60	2	150		2	0	0	0
5:45 PM	0	2	1	7	0	0	0	1	0	7	63	0	0	0	56	7	144		1	0	0	0
Count Total	0	31	1	47	0	0	0	1	0	64	443	0	0	0	456	37	1,080		4	0	0	0
Peak Hour	0	16	1	24	0	0	0	1	0	27	236	0	0	0	228	20	553		3	0	0	0

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(303) 216-2439
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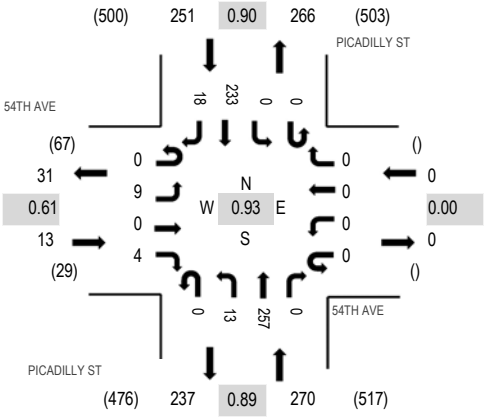
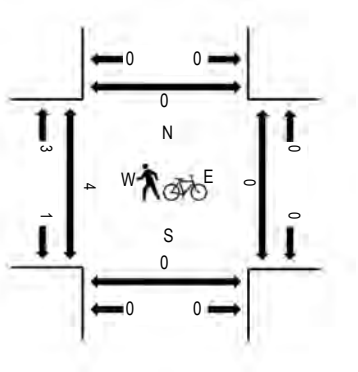
Location: 5 PICADILLY ST & 54TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	54TH AVE Eastbound				54TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	0	1	0	0	0	0	0	4	58	0	0	0	51	7	124	512	0	0	0	0
4:15 PM	0	0	0	3	0	0	0	0	0	7	53	0	0	0	60	2	125	512	1	0	0	0
4:30 PM	0	1	0	1	0	0	0	0	0	3	57	0	0	0	64	6	132	510	0	0	0	0
4:45 PM	0	6	0	1	0	0	0	0	0	6	59	0	0	0	58	1	131	521	0	0	0	0
5:00 PM	0	2	0	0	0	0	0	0	0	1	66	0	0	0	49	6	124	534	0	0	0	0
5:15 PM	0	3	0	1	0	0	0	0	0	2	50	0	0	0	64	3	123		1	0	0	0
5:30 PM	0	3	0	1	0	0	0	0	0	5	71	0	0	0	60	3	143		1	0	0	0
5:45 PM	0	1	0	2	0	0	0	0	0	5	70	0	0	0	60	6	144		1	0	0	0
Count Total	0	19	0	10	0	0	0	0	0	33	484	0	0	0	466	34	1,046		4	0	0	0
Peak Hour	0	9	0	4	0	0	0	0	0	13	257	0	0	0	233	18	534		3	0	0	0

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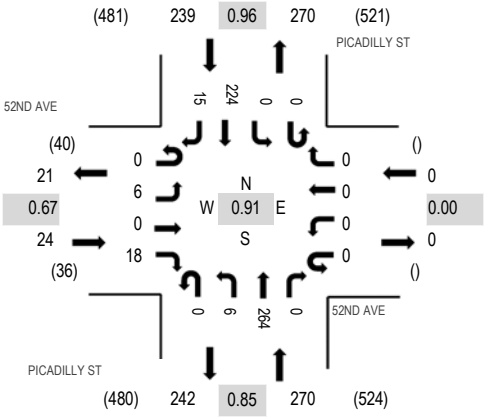
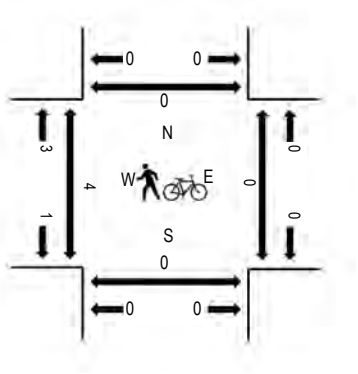
Location: 6 PICADILLY ST & 52ND AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	52ND AVE Eastbound				52ND AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	1	0	0	0	0	0	0	0	2	64	0	0	0	55	1	123	508	0	0	0	0
4:15 PM	0	1	0	4	0	0	0	0	0	2	58	0	0	0	60	3	128	505	1	0	0	0
4:30 PM	0	3	0	1	0	0	0	0	0	4	59	0	0	0	58	2	127	504	0	0	0	0
4:45 PM	0	2	0	0	0	0	0	0	0	2	63	0	0	0	60	3	130	523	0	0	0	0
5:00 PM	0	1	0	6	0	0	0	0	0	0	63	0	0	0	47	3	120	533	0	0	0	0
5:15 PM	0	2	0	7	0	0	0	0	0	1	51	0	0	0	60	6	127		1	0	0	0
5:30 PM	0	2	0	4	0	0	0	0	0	3	76	0	0	0	57	4	146		1	0	0	0
5:45 PM	0	1	0	1	0	0	0	0	0	2	74	0	0	0	60	2	140		1	0	0	0
Count Total	0	13	0	23	0	0	0	0	0	16	508	0	0	0	457	24	1,041		4	0	0	0
Peak Hour	0	6	0	18	0	0	0	0	0	6	264	0	0	0	224	15	533		3	0	0	0

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(303) 216-2439
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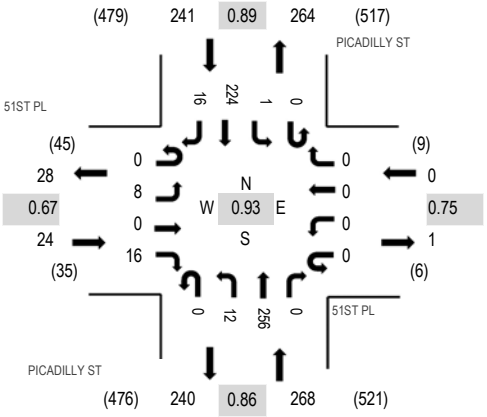
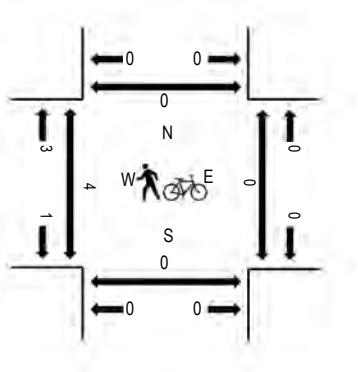
Location: 7 PICADILLY ST & 51ST PL PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



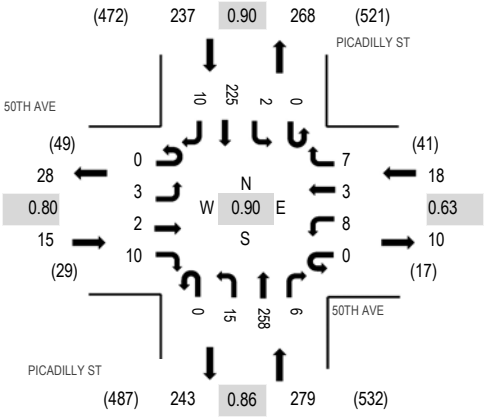
Traffic Counts

Interval Start Time	51ST PL Eastbound				51ST PL Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	0	3	0	3	0	0	0	1	61	0	0	0	54	1	125	511	0	0	0	0
4:15 PM	0	1	0	2	0	2	0	1	0	0	58	0	0	0	60	4	128	505	0	0	0	0
4:30 PM	0	1	0	1	0	2	1	0	0	1	63	0	0	1	54	6	130	504	1	0	0	0
4:45 PM	0	1	0	0	0	0	0	0	0	0	65	4	0	0	55	3	128	517	0	0	0	0
5:00 PM	0	1	0	2	0	0	0	0	0	2	60	0	0	1	48	5	119	533	1	0	0	0
5:15 PM	0	3	0	2	0	0	0	0	0	3	51	0	0	0	64	4	127		0	0	0	0
5:30 PM	0	3	0	6	0	0	0	0	0	2	72	0	0	0	59	1	143		1	0	0	0
5:45 PM	0	1	0	6	0	0	0	0	0	5	73	0	0	0	53	6	144		1	0	0	0
Count Total	0	13	0	22	0	7	1	1	0	14	503	4	0	2	447	30	1,044		4	0	0	0
Peak Hour	0	8	0	16	0	0	0	0	0	12	256	0	0	1	224	16	533		3	0	0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

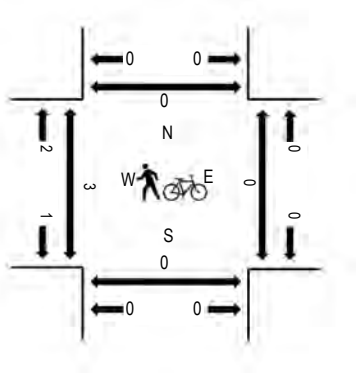
Location: 8 PICADILLY ST & 50TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	50TH AVE Eastbound				50TH AVE Westbound				PICADILLY ST Northbound				PICADILLY ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	2	1	3	0	2	1	2	0	2	57	0	0	0	58	1	129	525	0	0	0	0
4:15 PM	0	0	0	1	0	1	0	1	0	2	59	2	0	2	58	2	128	514	1	0	0	0
4:30 PM	0	1	1	3	0	4	2	4	0	3	56	0	0	0	57	2	133	519	1	0	0	0
4:45 PM	0	1	0	1	0	5	0	1	0	3	69	0	0	1	51	3	135	538	0	0	0	0
5:00 PM	0	1	1	2	0	3	0	3	0	3	57	0	0	0	47	1	118	549	0	0	0	0
5:15 PM	0	1	1	3	0	1	1	1	0	4	55	1	0	1	61	3	133		0	0	0	0
5:30 PM	0	1	0	4	0	2	0	1	0	5	70	3	0	1	60	5	152		1	0	0	0
5:45 PM	0	0	0	1	0	2	2	2	0	3	76	2	0	0	57	1	146		1	0	0	0
Count Total	0	7	4	18	0	20	6	15	0	25	499	8	0	5	449	18	1,074		4	0	0	0
Peak Hour	0	3	2	10	0	8	3	7	0	15	258	6	0	2	225	10	549		2	0	0	0

APPENDIX B. EXISTING CONDITIONS LOS

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	152	0	0	87	8	93	0	81	0	0	0
Future Vol, veh/h	36	152	0	0	87	8	93	0	81	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	86	86	86	81	81	81	90	90	90
Heavy Vehicles, %	15	15	15	34	34	34	10	10	10	2	2	2
Mvmt Flow	44	185	0	0	101	9	115	0	100	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	110	0	-	-	-	0	379	383	185
Stage 1	-	-	-	-	-	-	273	273	-
Stage 2	-	-	-	-	-	-	106	110	-
Critical Hdwy	4.25	-	-	-	-	-	6.5	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	5.5	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.5	5.6	-
Follow-up Hdwy	2.335	-	-	-	-	-	3.59	4.09	3.39
Pot Cap-1 Maneuver	1403	-	0	0	-	-	607	538	837
Stage 1	-	-	0	0	-	-	755	670	-
Stage 2	-	-	0	0	-	-	899	789	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1403	-	-	-	-	-	588	0	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	588	0	-
Stage 1	-	-	-	-	-	-	732	0	-
Stage 2	-	-	-	-	-	-	899	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.5	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	588	-	837	1403	-	-	-
HCM Lane V/C Ratio	0.195	-	0.119	0.031	-	-	-
HCM Control Delay (s)	12.6	0	9.9	7.6	-	-	-
HCM Lane LOS	B	A	A	A	-	-	-
HCM 95th %tile Q(veh)	0.7	-	0.4	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	0	160	84	23	157	0	0	0	0	28	0	65
Future Vol, veh/h	1	0	160	84	23	157	0	0	0	0	28	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	87	87	87	90	90	90	88	88	88
Heavy Vehicles, %	12	12	12	12	22	22	22	2	2	2	13	13	13
Mvmt Flow	1	0	172	90	26	180	0	0	0	0	32	0	74

Major/Minor	Major1				Major2						Minor2		
Conflicting Flow All	-	-	0	0	172	0	0				404	406	180
Stage 1	-	-	-	-	-	-	-				232	232	-
Stage 2	-	-	-	-	-	-	-				172	174	-
Critical Hdwy	-	-	-	-	4.32	-	-				6.53	6.63	6.33
Critical Hdwy Stg 1	-	-	-	-	-	-	-				5.53	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-				5.53	5.63	-
Follow-up Hdwy	-	-	-	-	2.398	-	-				3.617	4.117	3.417
Pot Cap-1 Maneuver	-	0	-	-	1293	-	0				582	518	835
Stage 1	-	0	-	-	-	-	0				781	693	-
Stage 2	-	0	-	-	-	-	0				832	735	-
Platoon blocked, %			-	-		-							
Mov Cap-1 Maneuver	-	-	-	-	1293	-	-				570	0	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	-				570	0	-
Stage 1	-	-	-	-	-	-	-				781	0	-
Stage 2	-	-	-	-	-	-	-				815	0	-

Approach	EB	WB	SB
HCM Control Delay, s		1	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1293	-	570	835
HCM Lane V/C Ratio	-	-	0.02	-	0.056	0.088
HCM Control Delay (s)	-	-	7.8	-	11.7	9.7
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.2	0.3

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	157	178	72	129	22	107	70	76	12	49	72
Future Vol, veh/h	82	157	178	72	129	22	107	70	76	12	49	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	325	-	0	150	-	-	200	-	-	175	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	90	90	90	89	89	89	91	91	91
Heavy Vehicles, %	9	9	9	15	15	15	8	8	8	9	9	9
Mvmt Flow	99	189	214	80	143	24	120	79	85	13	54	79

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	403	0	0	646	714	189	891	916	84
Stage 1	-	-	-	-	-	-	387	387	-	315	315	-
Stage 2	-	-	-	-	-	-	259	327	-	576	601	-
Critical Hdwy	4.235	-	-	4.325	-	-	7.42	6.62	6.32	7.435	6.635	7.035
Critical Hdwy Stg 1	-	-	-	-	-	-	6.22	5.62	-	6.635	5.635	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.62	5.62	-	6.235	5.635	-
Follow-up Hdwy	2.2855	-	-	2.3425	-	-	3.576	4.076	3.376	3.5855	4.0855	3.3855
Pot Cap-1 Maneuver	1364	-	-	1077	-	-	360	346	835	241	262	938
Stage 1	-	-	-	-	-	-	621	596	-	655	640	-
Stage 2	-	-	-	-	-	-	709	634	-	487	474	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1364	-	-	1077	-	-	241	297	835	154	225	938
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	297	-	154	225	-
Stage 1	-	-	-	-	-	-	576	552	-	607	593	-
Stage 2	-	-	-	-	-	-	546	587	-	348	439	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	2.8	24.5	19
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	241	447	1364	-	-	1077	-	-	154	411
HCM Lane V/C Ratio	0.499	0.367	0.072	-	-	0.074	-	-	0.086	0.324
HCM Control Delay (s)	33.9	17.6	7.8	-	-	8.6	-	-	30.6	17.9
HCM Lane LOS	D	C	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	2.6	1.7	0.2	-	-	0.2	-	-	0.3	1.4

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	44	15	224	290	9
Future Vol, veh/h	29	44	15	224	290	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	70	87	87	78	78
Heavy Vehicles, %	0	0	9	9	9	9
Mvmt Flow	41	63	17	257	372	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	669	378	384	0	-	0
Stage 1	378	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	426	673	1137	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	763	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	420	673	1137	-	-	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	763	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1137	-	543	-	-
HCM Lane V/C Ratio	0.015	-	0.192	-	-
HCM Control Delay (s)	8.2	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	13	9	223	326	8
Future Vol, veh/h	16	13	9	223	326	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	88	88	76	76
Heavy Vehicles, %	3	3	10	10	8	8
Mvmt Flow	19	16	10	253	429	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	708	435	440	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	273	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.2	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.29	-	-	-
Pot Cap-1 Maneuver	400	619	1079	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	396	619	1079	-	-	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1079	-	472	-	-
HCM Lane V/C Ratio	0.009	-	0.074	-	-
HCM Control Delay (s)	8.4	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	46	12	215	304	35
Future Vol, veh/h	17	46	12	215	304	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	87	87	78	78
Heavy Vehicles, %	0	0	10	10	8	8
Mvmt Flow	29	79	14	247	390	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	688	413	435	0	-	0
Stage 1	413	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.2	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.29	-	-	-
Pot Cap-1 Maneuver	415	643	1083	-	-	-
Stage 1	672	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	410	643	1083	-	-	-
Mov Cap-2 Maneuver	410	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1083	-	558	-	-
HCM Lane V/C Ratio	0.013	-	0.195	-	-
HCM Control Delay (s)	8.4	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	25	41	208	274	76
Future Vol, veh/h	19	25	41	208	274	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	44	44	89	89	83	83
Heavy Vehicles, %	0	0	9	9	7	7
Mvmt Flow	43	57	46	234	330	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	702	376	422	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	326	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	407	675	1101	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	390	675	1101	-	-	-
Mov Cap-2 Maneuver	390	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	736	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1101	-	513	-	-
HCM Lane V/C Ratio	0.042	-	0.195	-	-
HCM Control Delay (s)	8.4	-	13.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	12	8	0	5	2	225	11	10	275	14
Future Vol, veh/h	19	0	12	8	0	5	2	225	11	10	275	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	-	-	-	-	-	125	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	75	75	75	92	92	92	83	83	83
Heavy Vehicles, %	3	3	3	31	31	31	10	10	10	8	8	8
Mvmt Flow	20	0	13	11	0	7	2	245	12	12	331	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	623	625	340	625	627	251	348	0	0	257	0	0
Stage 1	364	364	-	255	255	-	-	-	-	-	-	-
Stage 2	259	261	-	370	372	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.41	6.81	6.51	4.2	-	-	4.18	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.41	5.81	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.41	5.81	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.779	4.279	3.579	2.29	-	-	2.272	-	-
Pot Cap-1 Maneuver	397	400	700	359	364	722	1168	-	-	1274	-	-
Stage 1	653	622	-	690	646	-	-	-	-	-	-	-
Stage 2	744	690	-	595	571	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	389	394	700	349	359	722	1168	-	-	1274	-	-
Mov Cap-2 Maneuver	389	394	-	349	359	-	-	-	-	-	-	-
Stage 1	652	615	-	689	645	-	-	-	-	-	-	-
Stage 2	736	689	-	577	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	13.4	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1168	-	-	470	349	722	1274	-	-
HCM Lane V/C Ratio	0.002	-	-	0.071	0.031	0.009	0.009	-	-
HCM Control Delay (s)	8.1	-	-	13.2	15.6	10	7.9	0	-
HCM Lane LOS	A	-	-	B	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	31	82	2	21	15	34	169	3	28	218	49
Future Vol, veh/h	54	31	82	2	21	15	34	169	3	28	218	49
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	150	-	200	280	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	60	34	91	2	23	17	38	188	3	31	242	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	617	598	269	660	624	190	296	0	0	191	0	0
Stage 1	331	331	-	266	266	-	-	-	-	-	-	-
Stage 2	286	267	-	394	358	-	-	-	-	-	-	-
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	402	416	770	376	402	852	1265	-	-	1383	-	-
Stage 1	682	645	-	739	689	-	-	-	-	-	-	-
Stage 2	721	688	-	631	628	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	361	395	770	297	381	852	1265	-	-	1383	-	-
Mov Cap-2 Maneuver	361	395	-	297	381	-	-	-	-	-	-	-
Stage 1	662	631	-	717	668	-	-	-	-	-	-	-
Stage 2	662	667	-	514	614	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	12.9	1.3	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1265	-	-	361	395	770	297	381	852	1383	-	-
HCM Lane V/C Ratio	0.03	-	-	0.166	0.087	0.118	0.007	0.061	0.02	0.022	-	-
HCM Control Delay (s)	7.9	-	-	17	15	10.3	17.2	15.1	9.3	7.7	-	-
HCM Lane LOS	A	-	-	C	C	B	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.3	0.4	0	0.2	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	58	0	0	219	14	84	1	24	0	0	0
Future Vol, veh/h	63	58	0	0	219	14	84	1	24	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	85	85	85	90	90	90	90	90	90
Heavy Vehicles, %	7	7	7	2	2	2	8	8	8	2	2	2
Mvmt Flow	66	61	0	0	258	16	93	1	27	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	274	0	-	-	-	0	459	467	61
Stage 1	-	-	-	-	-	-	193	193	-
Stage 2	-	-	-	-	-	-	266	274	-
Critical Hdwy	4.17	-	-	-	-	-	6.48	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	5.48	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.48	5.58	-
Follow-up Hdwy	2.263	-	-	-	-	-	3.572	4.072	3.372
Pot Cap-1 Maneuver	1261	-	0	0	-	-	549	485	988
Stage 1	-	-	0	0	-	-	826	730	-
Stage 2	-	-	0	0	-	-	765	672	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1261	-	-	-	-	-	520	0	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	520	0	-
Stage 1	-	-	-	-	-	-	783	0	-
Stage 2	-	-	-	-	-	-	765	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.2	0	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	520	-	988	1261	-	-	-
HCM Lane V/C Ratio	0.179	-	0.027	0.053	-	-	-
HCM Control Delay (s)	13.4	-	8.7	8	-	-	-
HCM Lane LOS	B	-	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	0.2	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	113	81	65	238	0	0	0	0	8	0	43
Future Vol, veh/h	0	113	81	65	238	0	0	0	0	8	0	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	94	94	94	90	90	90	84	84	84
Heavy Vehicles, %	6	6	6	4	4	4	2	2	2	23	23	23
Mvmt Flow	0	123	88	69	253	0	0	0	0	10	0	51

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	123	0	0			514	514	253
Stage 1	-	-	-	-	-	-			391	391	-
Stage 2	-	-	-	-	-	-			123	123	-
Critical Hdwy	-	-	-	4.14	-	-			6.63	6.73	6.43
Critical Hdwy Stg 1	-	-	-	-	-	-			5.63	5.73	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.63	5.73	-
Follow-up Hdwy	-	-	-	2.236	-	-			3.707	4.207	3.507
Pot Cap-1 Maneuver	0	-	-	1452	-	0			485	435	737
Stage 1	0	-	-	-	-	0			640	572	-
Stage 2	0	-	-	-	-	0			853	755	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1452	-	-			462	0	737
Mov Cap-2 Maneuver	-	-	-	-	-	-			462	0	-
Stage 1	-	-	-	-	-	-			640	0	-
Stage 2	-	-	-	-	-	-			812	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.6	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1452	-	462	737
HCM Lane V/C Ratio	-	-	0.048	-	0.021	0.069
HCM Control Delay (s)	-	-	7.6	-	13	10.2
HCM Lane LOS	-	-	A	-	B	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.1	0.2

Intersection	
Int Delay, s/veh	10

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	1	77	111	128	68	210	3	111	73	68	15	52	92
Future Vol, veh/h	1	77	111	128	68	210	3	111	73	68	15	52	92
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	325	-	0	150	-	-	200	-	-	175	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	90	90	90	84	84	84	83	83	83
Heavy Vehicles, %	4	4	4	4	6	6	6	4	4	4	4	4	4
Mvmt Flow	1	82	118	136	76	233	3	132	87	81	18	63	111

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	237	236	0	0	254	0	0	582	672	118	821	807	118
Stage 1	-	-	-	-	-	-	-	282	284	-	387	387	-
Stage 2	-	-	-	-	-	-	-	300	388	-	434	420	-
Critical Hdwy	6.96	4.16	-	-	4.19	-	-	7.36	6.56	6.26	7.36	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.16	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.56	5.56	-	6.16	5.56	-
Follow-up Hdwy	3.138	2.238	-	-	2.257	-	-	3.538	4.038	3.338	3.538	4.038	3.338
Pot Cap-1 Maneuver	803	1317	-	-	1284	-	-	407	373	927	277	311	906
Stage 1	-	-	-	-	-	-	-	719	671	-	604	605	-
Stage 2	-	-	-	-	-	-	-	680	604	-	595	584	-
Platoon blocked, %			-	-		-	-						
Mov Cap-1 Maneuver	1303	1303	-	-	1284	-	-	269	329	927	184	274	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	269	329	-	184	274	-
Stage 1	-	-	-	-	-	-	-	673	628	-	565	569	-
Stage 2	-	-	-	-	-	-	-	500	568	-	438	547	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	1.9	22.8	17.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	269	478	1303	-	-	1284	-	-	184	494
HCM Lane V/C Ratio	0.491	0.351	0.064	-	-	0.059	-	-	0.098	0.351
HCM Control Delay (s)	30.6	16.6	8	-	-	8	-	-	26.7	16.2
HCM Lane LOS	D	C	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	2.5	1.6	0.2	-	-	0.2	-	-	0.3	1.6

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	24	27	236	228	20
Future Vol, veh/h	16	24	27	236	228	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	88	88	87	87
Heavy Vehicles, %	2	2	4	4	7	7
Mvmt Flow	19	29	31	268	262	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	604	274	285	0	-	0
Stage 1	274	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.14	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.236	-	-	-
Pot Cap-1 Maneuver	461	765	1266	-	-	-
Stage 1	772	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	450	765	1266	-	-	-
Mov Cap-2 Maneuver	450	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	728	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1266	-	598	-	-
HCM Lane V/C Ratio	0.024	-	0.081	-	-
HCM Control Delay (s)	7.9	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	4	13	254	234	18
Future Vol, veh/h	9	4	13	254	234	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	61	61	89	89	90	90
Heavy Vehicles, %	0	0	4	4	7	7
Mvmt Flow	15	7	15	285	260	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	585	270	280	0	-	0
Stage 1	270	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	477	774	1271	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	471	774	1271	-	-	-
Mov Cap-2 Maneuver	471	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1271	-	536	-	-
HCM Lane V/C Ratio	0.011	-	0.04	-	-
HCM Control Delay (s)	7.9	-	12	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	18	6	261	223	15
Future Vol, veh/h	6	18	6	261	223	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	85	85	96	96
Heavy Vehicles, %	0	0	4	4	7	7
Mvmt Flow	9	27	7	307	232	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	561	240	248	0	-	0
Stage 1	240	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	492	804	1306	-	-	-
Stage 1	805	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	804	1306	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1306	-	693	-	-
HCM Lane V/C Ratio	0.005	-	0.052	-	-
HCM Control Delay (s)	7.8	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	16	12	259	225	16
Future Vol, veh/h	8	16	12	259	225	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	86	86	89	89
Heavy Vehicles, %	0	0	4	4	7	7
Mvmt Flow	12	24	14	301	253	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	591	262	271	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	329	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	473	782	1281	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	468	782	1281	-	-	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	734	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1281	-	639	-	-
HCM Lane V/C Ratio	0.011	-	0.056	-	-
HCM Control Delay (s)	7.8	-	11	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	2	10	8	3	7	15	261	6	2	229	10
Future Vol, veh/h	3	2	10	8	3	7	15	261	6	2	229	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	-	-	-	-	-	125	100	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	63	63	63	86	86	86	90	90	90
Heavy Vehicles, %	0	0	0	6	6	6	4	4	4	7	7	7
Mvmt Flow	4	3	13	13	5	11	17	303	7	2	254	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	613	608	260	613	610	307	265	0	0	310	0	0
Stage 1	264	264	-	341	341	-	-	-	-	-	-	-
Stage 2	349	344	-	272	269	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.16	6.56	6.26	4.14	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.16	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.554	4.054	3.354	2.236	-	-	2.263	-	-
Pot Cap-1 Maneuver	408	413	784	399	404	724	1287	-	-	1223	-	-
Stage 1	746	694	-	666	632	-	-	-	-	-	-	-
Stage 2	671	640	-	725	679	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	393	407	784	386	398	724	1287	-	-	1223	-	-
Mov Cap-2 Maneuver	393	407	-	386	398	-	-	-	-	-	-	-
Stage 1	736	693	-	657	624	-	-	-	-	-	-	-
Stage 2	647	632	-	709	678	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.3	12.9	0.4	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1287	-	-	593	389	724	1223	-	-
HCM Lane V/C Ratio	0.014	-	-	0.032	0.045	0.015	0.002	-	-
HCM Control Delay (s)	7.8	-	-	11.3	14.7	10.1	7.9	0	-
HCM Lane LOS	A	-	-	B	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	38	64	8	18	8	82	208	3	18	161	68
Future Vol, veh/h	66	38	64	8	18	8	82	208	3	18	161	68
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	150	-	200	280	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	73	42	71	9	20	9	91	231	3	20	179	76

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	686	673	217	729	710	233	255	0	0	234	0	0
Stage 1	257	257	-	415	415	-	-	-	-	-	-	-
Stage 2	429	416	-	314	295	-	-	-	-	-	-	-
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	362	377	823	338	359	806	1310	-	-	1333	-	-
Stage 1	748	695	-	615	592	-	-	-	-	-	-	-
Stage 2	604	592	-	697	669	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	320	346	823	262	329	806	1310	-	-	1333	-	-
Mov Cap-2 Maneuver	320	346	-	262	329	-	-	-	-	-	-	-
Stage 1	696	685	-	573	551	-	-	-	-	-	-	-
Stage 2	536	551	-	589	659	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	15.5	2.2	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1310	-	-	320	346	823	262	329	806	1333	-	-
HCM Lane V/C Ratio	0.07	-	-	0.229	0.122	0.086	0.034	0.061	0.011	0.015	-	-
HCM Control Delay (s)	8	-	-	19.6	16.8	9.8	19.2	16.6	9.5	7.7	-	-
HCM Lane LOS	A	-	-	C	C	A	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	0.4	0.3	0.1	0.2	0	0	-	-

APPENDIX C. SHORT RANGE FUTURE BACKGROUND TRAFFIC LOS

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	190	0	0	105	10	110	0	90	0	0	0
Future Vol, veh/h	40	190	0	0	105	10	110	0	90	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	211	0	0	117	11	122	0	100	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	128	0	-	-	-	0	422	427	211
Stage 1	-	-	-	-	-	-	299	299	-
Stage 2	-	-	-	-	-	-	123	128	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1458	-	0	0	-	-	588	520	829
Stage 1	-	-	0	0	-	-	752	666	-
Stage 2	-	-	0	0	-	-	902	790	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1458	-	-	-	-	-	570	0	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	570	0	-
Stage 1	-	-	-	-	-	-	729	0	-
Stage 2	-	-	-	-	-	-	902	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	570	-	829	1458	-	-	-
HCM Lane V/C Ratio	0.214	-	0.121	0.03	-	-	-
HCM Control Delay (s)	13	0	9.9	7.5	-	-	-
HCM Lane LOS	B	A	A	A	-	-	-
HCM 95th %tile Q(veh)	0.8	-	0.4	0.1	-	-	-

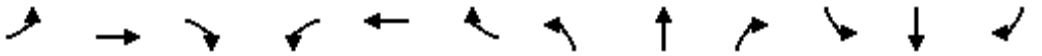
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	200	100	25	195	0	0	0	0	30	0	75
Future Vol, veh/h	0	200	100	25	195	0	0	0	0	30	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	222	111	28	217	0	0	0	0	33	0	83

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	222	0	0			495	495	217
Stage 1	-	-	-	-	-	-			273	273	-
Stage 2	-	-	-	-	-	-			222	222	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1347	-	0			534	476	823
Stage 1	0	-	-	-	-	0			773	684	-
Stage 2	0	-	-	-	-	0			815	720	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1347	-	-			523	0	823
Mov Cap-2 Maneuver	-	-	-	-	-	-			523	0	-
Stage 1	-	-	-	-	-	-			773	0	-
Stage 2	-	-	-	-	-	-			798	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.9	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1347	-	523	823
HCM Lane V/C Ratio	-	-	0.021	-	0.064	0.101
HCM Control Delay (s)	-	-	7.7	-	12.4	9.9
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.2	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	190	215	90	155	25	130	85	90	15	60	90
Future Volume (veh/h)	100	190	215	90	155	25	130	85	90	15	60	90
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	111	211	239	100	172	28	144	94	100	17	67	100
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	882	1226	1138	707	2010	322	242	113	120	123	172	210
Arrive On Green	0.04	0.66	0.66	0.04	0.66	0.66	0.06	0.14	0.14	0.02	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	3068	491	1781	829	882	1781	1870	1585
Grp Volume(v), veh/h	111	211	239	100	98	102	144	0	194	17	67	100
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1782	1781	0	1712	1781	1870	1585
Q Serve(g_s), s	2.4	5.3	6.0	2.2	2.4	2.5	7.5	0.0	13.3	1.0	4.0	7.0
Cycle Q Clear(g_c), s	2.4	5.3	6.0	2.2	2.4	2.5	7.5	0.0	13.3	1.0	4.0	7.0
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.52	1.00		1.00
Lane Grp Cap(c), veh/h	882	1226	1138	707	1164	1168	242	0	233	123	172	210
V/C Ratio(X)	0.13	0.17	0.21	0.14	0.08	0.09	0.60	0.00	0.83	0.14	0.39	0.48
Avail Cap(c_a), veh/h	921	1226	1138	747	1164	1168	242	0	635	202	694	652
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.9	8.0	5.6	6.0	7.6	7.6	45.9	0.0	50.5	48.3	51.3	48.2
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.1	0.1	0.1	3.9	0.0	7.5	0.5	1.4	1.7
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(95%),veh/ln	1.4	3.6	3.2	1.3	1.6	1.6	1.2	0.0	10.1	0.8	3.5	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.0	8.3	6.0	6.1	7.7	7.7	49.8	0.0	58.0	48.8	52.8	49.9
LnGrp LOS	A	A	A	A	A	A	D	A	E	D	D	D
Approach Vol, veh/h		561			300			338			184	
Approach Delay, s/veh		6.9			7.2			54.5			50.8	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	20.8	9.3	83.2	12.0	15.5	9.4	83.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	44.5	7.5	42.5	7.5	44.5	7.5	42.5
Max Q Clear Time (g_c+I1), s	3.0	15.3	4.2	8.0	9.5	9.0	4.4	4.5
Green Ext Time (p_c), s	0.0	1.1	0.1	1.9	0.0	0.6	0.1	1.0

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	270	350	10
Future Vol, veh/h	0	0	0	270	350	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	300	389	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	395	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	*790	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*790	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	10	270	395	10
Future Vol, veh/h	0	15	10	270	395	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	11	300	439	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	445	450	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	754	1131	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	1	-	-	-
Mov Cap-1 Maneuver	-	754	1131	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1131	-	754	-	-
HCM Lane V/C Ratio	0.01	-	0.022	-	-
HCM Control Delay (s)	8.2	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

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	40	0	55	35	0	20	15	260	15	10	370	45
Future Vol, veh/h	40	0	55	35	0	20	15	260	15	10	370	45
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	-	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	0	61	39	0	22	17	289	17	11	411	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	801	798	436	821	815	298	461	0	0	306	0	0
Stage 1	458	458	-	332	332	-	-	-	-	-	-	-
Stage 2	343	340	-	489	483	-	-	-	-	-	-	-
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	329	329	752	316	318	741	1112	-	-	1255	-	-
Stage 1	685	610	-	681	644	-	-	-	-	-	-	-
Stage 2	672	639	-	651	589	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	313	321	752	285	311	741	1112	-	-	1255	-	-
Mov Cap-2 Maneuver	313	321	-	285	311	-	-	-	-	-	-	-
Stage 1	674	604	-	671	634	-	-	-	-	-	-	-
Stage 2	642	629	-	592	584	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	16.1	0.4	0.2
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1112	-	-	473	285	741	1255	-	-
HCM Lane V/C Ratio	0.015	-	-	0.223	0.136	0.03	0.009	-	-
HCM Control Delay (s)	8.3	-	-	14.8	19.6	10	7.9	-	-
HCM Lane LOS	A	-	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	5	60	255	5	0	335	90
Future Vol, veh/h	0	0	30	0	0	5	60	255	5	0	335	90
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	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	33	0	0	6	67	283	6	0	372	100

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	422	-	-	286	472	0	0	289	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	632	0	0	753	1090	-	-	1273	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	632	-	-	753	1090	-	-	1273	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	9.8	1.6	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	632	753	1273	-	-
HCM Lane V/C Ratio	0.061	-	-	0.053	0.007	-	-	-
HCM Control Delay (s)	8.5	-	-	11	9.8	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	25	0	0	5	5	290	15	10	345	15
Future Vol, veh/h	0	0	25	0	0	5	5	290	15	10	345	15
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	-	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	6	6	322	17	11	383	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	392	-	-	331	400	0	0	339	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	657	0	0	711	1159	-	-	1220	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	657	-	-	711	1159	-	-	1220	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.1	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1159	-	-	657	711	1220	-	-
HCM Lane V/C Ratio	0.005	-	-	0.042	0.008	0.009	-	-
HCM Control Delay (s)	8.1	-	-	10.7	10.1	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	40	100	10	25	25	40	195	10	35	295	70
Future Vol, veh/h	100	40	100	10	25	25	40	195	10	35	295	70
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	100	-	100	200	-	200	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	44	111	11	28	28	44	217	11	39	328	78

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	784	761	367	828	789	217	406	0	0	228	0	0
Stage 1	445	445	-	305	305	-	-	-	-	-	-	-
Stage 2	339	316	-	523	484	-	-	-	-	-	-	-
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	311	335	678	290	323	823	1153	-	-	1340	-	-
Stage 1	592	575	-	705	662	-	-	-	-	-	-	-
Stage 2	676	655	-	537	552	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	265	313	678	205	302	823	1153	-	-	1340	-	-
Mov Cap-2 Maneuver	265	313	-	205	302	-	-	-	-	-	-	-
Stage 1	570	558	-	678	637	-	-	-	-	-	-	-
Stage 2	601	630	-	401	536	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.5	15.4	1.3	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1153	-	-	265	313	678	205	302	823	1340	-	-
HCM Lane V/C Ratio	0.039	-	-	0.419	0.142	0.164	0.054	0.092	0.034	0.029	-	-
HCM Control Delay (s)	8.2	-	-	28.1	18.4	11.3	23.6	18.1	9.5	7.8	-	-
HCM Lane LOS	A	-	-	D	C	B	C	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2	0.5	0.6	0.2	0.3	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	10	20	0	0	30
Future Vol, veh/h	15	10	20	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	11	22	0	0	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	67	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	45	-
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	1593	-	-	-	938	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	928	1055
Mov Cap-2 Maneuver	-	-	-	-	928	-
Stage 1	-	-	-	-	990	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	SB
HCM Control Delay, s	4.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1593	-	-	-	-	1055
HCM Lane V/C Ratio	0.01	-	-	-	-	0.032
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	10	0	5	0
Future Vol, veh/h	0	15	10	0	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	11	0	6	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	28	6	6	0	-	0
Stage 1	6	-	-	-	-	-
Stage 2	22	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	987	1077	1615	-	-	-
Stage 1	1017	-	-	-	-	-
Stage 2	1001	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	980	1077	1615	-	-	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1001	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1615	-	1077	-	-
HCM Lane V/C Ratio	0.007	-	0.015	-	-
HCM Control Delay (s)	7.2	-	8.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	10	0	0	15	0
Future Vol, veh/h	5	10	0	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	11	0	0	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	17	0	13	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	1	-
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	-	-	1600	-	1006	1069
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1600	-	1006	1069
Mov Cap-2 Maneuver	-	-	-	-	1006	-
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1022	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1600	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	10	0	15	20	0
Future Vol, veh/h	10	10	0	15	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	11	0	17	22	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	34	17
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	17	-
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	-	-	1593	-	979	1062
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	979	1062
Mov Cap-2 Maneuver	-	-	-	-	979	-
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1006	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	979	-	-	1593	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	5	0	35	20	0
Future Vol, veh/h	20	5	0	35	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	6	0	39	22	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	64	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	39	-
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	-	-	1585	-	942	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	942	1051
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	983	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	942	-	-	1585	-
HCM Lane V/C Ratio	0.024	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	75	0	0	270	15	100	0	25	0	0	0
Future Vol, veh/h	75	75	0	0	270	15	100	0	25	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	83	0	0	300	17	111	0	28	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	317	0	-	-	-	0	558	566	83
Stage 1	-	-	-	-	-	-	249	249	-
Stage 2	-	-	-	-	-	-	309	317	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1243	-	0	0	-	-	491	434	976
Stage 1	-	-	0	0	-	-	792	701	-
Stage 2	-	-	0	0	-	-	745	654	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1243	-	-	-	-	-	458	0	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	458	0	-
Stage 1	-	-	-	-	-	-	739	0	-
Stage 2	-	-	-	-	-	-	745	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.1	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	458	-	976	1243	-	-	-
HCM Lane V/C Ratio	0.243	-	0.028	0.067	-	-	-
HCM Control Delay (s)	15.4	0	8.8	8.1	-	-	-
HCM Lane LOS	C	A	A	A	-	-	-
HCM 95th %tile Q(veh)	0.9	-	0.1	0.2	-	-	-

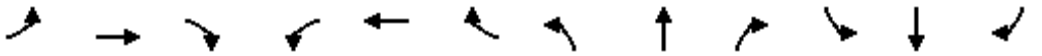
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑						↲	↱
Traffic Vol, veh/h	0	140	95	75	295	0	0	0	0	10	0	50
Future Vol, veh/h	0	140	95	75	295	0	0	0	0	10	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	156	106	83	328	0	0	0	0	11	0	56

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	156	0	0			650	650	328
Stage 1	-	-	-	-	-	-			494	494	-
Stage 2	-	-	-	-	-	-			156	156	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	1424	-	0			434	388	713
Stage 1	0	-	-	-	-	0			613	546	-
Stage 2	0	-	-	-	-	0			872	769	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1424	-	-			409	0	713
Mov Cap-2 Maneuver	-	-	-	-	-	-			409	0	-
Stage 1	-	-	-	-	-	-			613	0	-
Stage 2	-	-	-	-	-	-			821	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.6	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1424	-	409	713
HCM Lane V/C Ratio	-	-	0.059	-	0.027	0.078
HCM Control Delay (s)	-	-	7.7	-	14	10.5
HCM Lane LOS	-	-	A	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.1	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	135	155	85	255	5	135	90	85	20	65	110
Future Volume (veh/h)	95	135	155	85	255	5	135	90	85	20	65	110
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	106	150	172	94	283	6	150	100	94	22	72	122
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	776	1168	1135	757	2219	47	292	146	137	168	176	214
Arrive On Green	0.04	0.62	0.62	0.04	0.62	0.62	0.09	0.16	0.16	0.02	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	3558	75	1781	887	834	1781	1870	1585
Grp Volume(v), veh/h	106	150	172	94	141	148	150	0	194	22	72	122
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	1857	1781	0	1720	1781	1870	1585
Q Serve(g_s), s	2.6	3.9	4.2	2.2	3.9	3.9	8.8	0.0	12.7	1.3	4.4	8.7
Cycle Q Clear(g_c), s	2.6	3.9	4.2	2.2	3.9	3.9	8.8	0.0	12.7	1.3	4.4	8.7
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.48	1.00		1.00
Lane Grp Cap(c), veh/h	776	1168	1135	757	1108	1158	292	0	283	168	176	214
V/C Ratio(X)	0.14	0.13	0.15	0.12	0.13	0.13	0.51	0.00	0.69	0.13	0.41	0.57
Avail Cap(c_a), veh/h	979	1168	1135	901	1108	1158	448	0	624	270	491	480
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	9.2	5.4	7.2	9.2	9.2	41.9	0.0	47.2	47.6	51.2	48.7
Incr Delay (d2), s/veh	0.1	0.2	0.3	0.1	0.2	0.2	1.4	0.0	3.0	0.4	1.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	2.8	2.2	1.4	2.6	2.7	7.0	0.0	9.5	1.1	3.8	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.3	9.4	5.7	7.3	9.5	9.5	43.3	0.0	50.2	47.9	52.7	51.0
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	D	D
Approach Vol, veh/h		428			383			344			216	
Approach Delay, s/veh		7.4			8.9			47.2			51.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	24.2	9.3	79.4	15.5	15.8	9.4	79.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	43.5	14.5	34.5	21.5	31.5	18.5	30.5
Max Q Clear Time (g_c+I1), s	3.3	14.7	4.2	6.2	10.8	10.7	4.6	5.9
Green Ext Time (p_c), s	0.0	1.1	0.1	1.3	0.3	0.7	0.2	1.4

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	0	285	275	25
Future Vol, veh/h	0	30	0	285	275	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	0	317	306	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	320	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	841	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	841	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	841	-	-
HCM Lane V/C Ratio	-	0.04	-	-
HCM Control Delay (s)	-	9.5	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	15	310	285	20
Future Vol, veh/h	0	5	15	310	285	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	6	17	344	317	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	328	339	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	4.12	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	0	846	1253	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	1	-	-	-
Mov Cap-1 Maneuver	-	846	1253	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1253	-	846	-	-
HCM Lane V/C Ratio	0.013	-	0.007	-	-
HCM Control Delay (s)	7.9	-	9.3	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑			↑			↑	
Traffic Vol, veh/h	15	0	20	30	0	15	20	315	30	25	270	20
Future Vol, veh/h	15	0	20	30	0	15	20	315	30	25	270	20
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	-	-	-	200	-	-	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	22	33	0	17	22	350	33	28	300	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	786	794	311	789	789	367	322	0	0	383	0	0
Stage 1	367	367	-	411	411	-	-	-	-	-	-	-
Stage 2	419	427	-	378	378	-	-	-	-	-	-	-
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	327	324	853	324	327	678	1269	-	-	1175	-	-
Stage 1	739	661	-	618	595	-	-	-	-	-	-	-
Stage 2	612	585	-	727	651	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	309	311	853	306	313	678	1269	-	-	1175	-	-
Mov Cap-2 Maneuver	309	311	-	306	313	-	-	-	-	-	-	-
Stage 1	726	645	-	607	585	-	-	-	-	-	-	-
Stage 2	587	575	-	691	635	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	15.6	0.4	0.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1269	-	-	486	306	678	1175	-	-
HCM Lane V/C Ratio	0.018	-	-	0.08	0.109	0.025	0.024	-	-
HCM Control Delay (s)	7.9	-	-	13.1	18.2	10.4	8.1	-	-
HCM Lane LOS	A	-	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	20	0	0	5	15	315	10	5	275	25
Future Vol, veh/h	0	0	20	0	0	5	15	315	10	5	275	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	-	-	0	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	22	0	0	6	17	350	11	6	306	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	320	-	-	356	334	0	0	361	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	721	0	0	688	1225	-	-	1198	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	721	-	-	688	1225	-	-	1198	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.3	0.4	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1225	-	-	721	688	1198	-	-
HCM Lane V/C Ratio	0.014	-	-	0.031	0.008	0.005	-	-
HCM Control Delay (s)	8	-	-	10.2	10.3	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	10	20	315	10	5	280	10
Future Vol, veh/h	0	0	10	0	0	10	20	315	10	5	280	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	-	-	0	-	-	-	100	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	11	22	350	11	6	311	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	317	-	-	356	322	0	0	361	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	724	0	0	688	1238	-	-	1198	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	724	-	-	688	1238	-	-	1198	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.3	0.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1238	-	-	724	688	1198	-	-
HCM Lane V/C Ratio	0.018	-	-	0.015	0.016	0.005	-	-
HCM Control Delay (s)	8	-	-	10.1	10.3	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	45	80	10	20	10	100	255	15	25	195	85
Future Vol, veh/h	80	45	80	10	20	10	100	255	15	25	195	85
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	100	-	100	200	-	200	200	-	200	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	89	50	89	11	22	11	111	283	17	28	217	94

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	850	842	264	895	872	283	311	0	0	300	0	0
Stage 1	320	320	-	505	505	-	-	-	-	-	-	-
Stage 2	530	522	-	390	367	-	-	-	-	-	-	-
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	280	301	775	261	289	756	1249	-	-	1261	-	-
Stage 1	692	652	-	549	540	-	-	-	-	-	-	-
Stage 2	533	531	-	634	622	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	236	268	775	182	257	756	1249	-	-	1261	-	-
Mov Cap-2 Maneuver	236	268	-	182	257	-	-	-	-	-	-	-
Stage 1	630	638	-	500	492	-	-	-	-	-	-	-
Stage 2	457	484	-	506	608	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.1	19.1	2.2	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1249	-	-	236	268	775	182	257	756	1261	-	-
HCM Lane V/C Ratio	0.089	-	-	0.377	0.187	0.115	0.061	0.086	0.015	0.022	-	-
HCM Control Delay (s)	8.2	-	-	29.2	21.5	10.2	26.1	20.3	9.8	7.9	-	-
HCM Lane LOS	A	-	-	D	C	B	D	C	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.7	0.7	0.4	0.2	0.3	0	0.1	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	30	15	0	0	20
Future Vol, veh/h	25	30	15	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	33	17	0	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	17	0	-	0	106	17
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	89	-
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	1600	-	-	-	892	1062
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1600	-	-	-	877	1062
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	934	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1600	-	-	-	-	1062
HCM Lane V/C Ratio	0.017	-	-	-	-	0.021
HCM Control Delay (s)	7.3	-	-	-	0	8.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	20	10	0	0
Future Vol, veh/h	0	10	20	10	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	22	11	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	56	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	55	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	952	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	939	1084	1622	-	-	-
Mov Cap-2 Maneuver	939	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	968	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.4	4.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1084	-	-
HCM Lane V/C Ratio	0.014	-	0.01	-	-
HCM Control Delay (s)	7.2	-	8.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	15	10	0	10	5
Future Vol, veh/h	0	15	10	0	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	11	0	11	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	17	0	31	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	22	-
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	-	-	1600	-	983	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1600	-	976	1073
Mov Cap-2 Maneuver	-	-	-	-	976	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	994	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1600	-
HCM Lane V/C Ratio	0.017	-	-	0.007	-
HCM Control Delay (s)	8.6	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	15	0	20	10	0
Future Vol, veh/h	15	15	0	20	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	17	0	22	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	34	0	48	26
Stage 1	-	-	-	-	26	-
Stage 2	-	-	-	-	22	-
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	-	-	1578	-	962	1050
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1578	-	962	1050
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	962	-	-	1578	-
HCM Lane V/C Ratio	0.012	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	30	0	15	0
Future Vol, veh/h	30	20	30	0	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	22	33	0	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	110	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	66	-
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	-	-	1550	-	887	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	957	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	868	1026
Mov Cap-2 Maneuver	-	-	-	-	868	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	937	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	868	-	-	1550	-
HCM Lane V/C Ratio	0.019	-	-	0.022	-
HCM Control Delay (s)	9.2	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

APPENDIX D. LONG RANGE FUTURE BACKGROUND TRAFFIC LOS

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	65	410	0	0	230	10	195	0	140	0	0	0
Future Vol, veh/h	65	410	0	0	230	10	195	0	140	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	456	0	0	256	11	217	0	156	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	267	0	-	-	-	0	702	867	228
Stage 1	-	-	-	-	-	-	600	600	-
Stage 2	-	-	-	-	-	-	102	267	-
Critical Hdwy	5.34	-	-	-	-	-	5.74	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	6.64	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.04	5.54	-
Follow-up Hdwy	3.12	-	-	-	-	-	3.82	4.02	3.92
Pot Cap-1 Maneuver	870	-	0	0	-	-	436	289	660
Stage 1	-	-	0	0	-	-	421	488	-
Stage 2	-	-	0	0	-	-	838	687	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	870	-	-	-	-	-	400	0	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	400	0	-
Stage 1	-	-	-	-	-	-	386	0	-
Stage 2	-	-	-	-	-	-	838	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.3	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	400	-	660	870	-	-	-
HCM Lane V/C Ratio	0.542	-	0.236	0.083	-	-	-
HCM Control Delay (s)	24.1	0	12.1	9.5	-	-	-
HCM Lane LOS	C	A	B	A	-	-	-
HCM 95th %tile Q(veh)	3.1	-	0.9	0.3	-	-	-

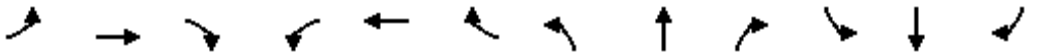
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	440	175	30	425	0	0	0	0	40	0	140
Future Vol, veh/h	0	440	175	30	425	0	0	0	0	40	0	140
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	489	194	33	472	0	0	0	0	44	0	156

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	489	0	0			734	1027	236
Stage 1	-	-	-	-	-	-			538	538	-
Stage 2	-	-	-	-	-	-			196	489	-
Critical Hdwy	-	-	-	5.34	-	-			5.74	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	5.54	-
Follow-up Hdwy	-	-	-	3.12	-	-			3.82	4.02	3.92
Pot Cap-1 Maneuver	0	-	-	685	-	0			421	233	652
Stage 1	0	-	-	-	-	0			459	521	-
Stage 2	0	-	-	-	-	0			751	548	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	685	-	-			401	0	652
Mov Cap-2 Maneuver	-	-	-	-	-	-			401	0	-
Stage 1	-	-	-	-	-	-			459	0	-
Stage 2	-	-	-	-	-	-			715	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.7	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	685	-	401	652
HCM Lane V/C Ratio	-	-	0.049	-	0.111	0.239
HCM Control Delay (s)	-	-	10.5	-	15.1	12.2
HCM Lane LOS	-	-	B	-	C	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.4	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	395	450	180	325	55	270	840	190	30	405	180
Future Volume (veh/h)	205	395	450	180	325	55	270	840	190	30	405	180
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	228	439	500	200	361	61	300	933	211	33	450	200
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	1042	497	328	973	346	548	2610	980	281	2193	872
Arrive On Green	0.12	0.20	0.20	0.11	0.19	0.19	0.04	0.17	0.17	0.03	0.43	0.43
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	228	439	500	200	361	61	300	933	211	33	450	200
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	12.1	9.0	24.5	10.7	7.4	3.8	10.3	19.4	10.9	1.2	6.6	7.8
Cycle Q Clear(g_c), s	12.1	9.0	24.5	10.7	7.4	3.8	10.3	19.4	10.9	1.2	6.6	7.8
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	399	1042	497	328	973	346	548	2610	980	281	2193	872
V/C Ratio(X)	0.57	0.42	1.01	0.61	0.37	0.18	0.55	0.36	0.22	0.12	0.21	0.23
Avail Cap(c_a), veh/h	489	1042	497	382	973	346	894	2610	980	343	2193	872
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	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	33.0	41.6	41.2	33.7	42.3	38.1	15.9	32.4	18.4	18.4	21.4	13.9
Incr Delay (d2), s/veh	1.3	0.3	41.8	2.2	0.2	0.2	0.9	0.4	0.5	0.2	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	6.7	27.1	8.2	5.5	2.6	8.2	13.8	7.8	0.9	4.7	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	41.8	83.0	35.8	42.5	38.4	16.7	32.8	18.9	18.6	21.6	14.5
LnGrp LOS	C	D	F	D	D	D	B	C	B	B	C	B
Approach Vol, veh/h		1167			622			1444			683	
Approach Delay, s/veh		58.0			40.0			27.5			19.4	
Approach LOS		E			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	65.8	17.3	29.0	17.6	56.0	18.9	27.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	53.5	16.5	24.5	36.5	24.5	20.5	20.5
Max Q Clear Time (g_c+I1), s	3.2	21.4	12.7	26.5	12.3	9.8	14.1	9.4
Green Ext Time (p_c), s	0.0	8.0	0.2	0.0	0.8	3.1	0.3	1.8

Intersection Summary	
HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	0	1300	1010	25
Future Vol, veh/h	0	10	0	1300	1010	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	0	1444	1122	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	575	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*690	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*690	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	690	-	-
HCM Lane V/C Ratio	-	0.016	-	-
HCM Control Delay (s)	-	10.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	25	1300	1000	20
Future Vol, veh/h	0	35	25	1300	1000	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	39	28	1444	1111	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	567	1133	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	*696	817	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	1	-	-	-
Mov Cap-1 Maneuver	-	*696	817	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	817	-	696	-	-
HCM Lane V/C Ratio	0.034	-	0.056	-	-
HCM Control Delay (s)	9.6	-	10.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	10	115	85	10	140	30	1130	120	70	875	90
Future Volume (veh/h)	55	10	115	85	10	140	30	1130	120	70	875	90
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	61	11	128	94	11	156	33	1256	133	78	972	100
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	97	25	147	293	465	455	50	3065	1043	312	2875	295
Arrive On Green	0.15	0.15	0.15	0.06	0.25	0.25	0.03	0.60	0.60	0.08	1.00	1.00
Sat Flow, veh/h	378	160	957	1781	1870	1585	1781	5106	1585	1781	4705	483
Grp Volume(v), veh/h	200	0	0	94	11	156	33	1256	133	78	703	369
Grp Sat Flow(s),veh/h/ln	1496	0	0	1781	1870	1585	1781	1702	1585	1781	1702	1783
Q Serve(g_s), s	12.8	0.0	0.0	5.2	0.5	9.3	2.2	15.6	3.8	2.0	0.0	0.0
Cycle Q Clear(g_c), s	15.6	0.0	0.0	5.2	0.5	9.3	2.2	15.6	3.8	2.0	0.0	0.0
Prop In Lane	0.30		0.64	1.00		1.00	1.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	269	0	0	293	465	455	50	3065	1043	312	2080	1090
V/C Ratio(X)	0.74	0.00	0.00	0.32	0.02	0.34	0.67	0.41	0.13	0.25	0.34	0.34
Avail Cap(c_a), veh/h	379	0	0	375	694	649	111	3065	1043	503	2080	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	0.0	37.8	34.1	33.8	57.8	12.7	7.7	9.1	0.0	0.0
Incr Delay (d2), s/veh	4.9	0.0	0.0	0.6	0.0	0.4	14.3	0.4	0.3	0.4	0.4	0.8
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(95%),veh/ln	10.3	0.0	0.0	4.2	0.4	6.6	2.1	9.9	2.4	1.3	0.2	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.3	0.0	0.0	38.4	34.1	34.3	72.1	13.1	7.9	9.5	0.4	0.8
LnGrp LOS	D	A	A	D	C	C	E	B	A	A	A	A
Approach Vol, veh/h		200			261			1422			1150	
Approach Delay, s/veh		54.3			35.7			14.0			1.2	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	76.5	11.4	22.9	7.8	77.8		34.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.5	44.5	12.5	27.5	7.5	54.5		44.5				
Max Q Clear Time (g_c+I1), s	4.0	17.6	7.2	17.6	4.2	2.0		11.3				
Green Ext Time (p_c), s	0.1	11.3	0.1	0.8	0.0	9.5		0.6				

Intersection Summary	
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	65	0	0	5	105	1275	5	0	885	190
Future Vol, veh/h	0	0	65	0	0	5	105	1275	5	0	885	190
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	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	72	0	0	6	117	1417	6	0	983	211

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	597	-	-	712	1194	0	0	1423	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*712	0	0	*624	693	-	-	*784	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*712	-	-	*624	693	-	-	*784	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.8	0.9	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	693	-	-	712	624	* 784	-	-
HCM Lane V/C Ratio	0.168	-	-	0.101	0.009	-	-	-
HCM Control Delay (s)	11.2	-	-	10.6	10.8	0	-	-
HCM Lane LOS	B	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	0.3	0	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

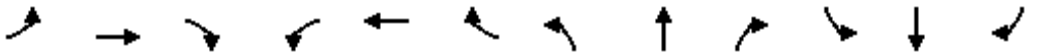
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	15	10	1370	30	25	890	35
Future Vol, veh/h	0	0	30	0	0	15	10	1370	30	25	890	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	33	0	0	17	11	1522	33	28	989	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	514	-	-	778	1028	0	0	1555	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*718	0	0	*610	843	-	-	711	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*718	-	-	*610	843	-	-	711	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	11.1	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	843	-	-	718	610	711	-	-
HCM Lane V/C Ratio	0.013	-	-	0.046	0.027	0.039	-	-
HCM Control Delay (s)	9.3	-	-	10.3	11.1	10.3	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1285	255	315	680	455	125	720	645	275	505	110
Future Volume (veh/h)	235	1285	255	315	680	455	125	720	645	275	505	110
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	261	1428	283	350	756	506	139	800	0	306	561	122
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	2357	821	421	2494	926	195	872		331	1073	484
Arrive On Green	0.09	0.46	0.46	0.20	0.82	0.82	0.06	0.17	0.00	0.10	0.21	0.21
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	261	1428	283	350	756	506	139	800	0	306	561	122
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	8.9	25.1	12.6	11.7	4.4	12.3	4.7	18.5	0.0	10.5	11.7	7.0
Cycle Q Clear(g_c), s	8.9	25.1	12.6	11.7	4.4	12.3	4.7	18.5	0.0	10.5	11.7	7.0
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	328	2357	821	421	2494	926	195	872		331	1073	484
V/C Ratio(X)	0.80	0.61	0.34	0.83	0.30	0.55	0.71	0.92		0.92	0.52	0.25
Avail Cap(c_a), veh/h	533	2357	821	734	2494	926	274	872		331	1073	484
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	24.1	17.0	46.6	6.1	4.7	55.7	48.9	0.0	53.8	42.0	31.4
Incr Delay (d2), s/veh	4.4	1.2	1.1	3.9	0.3	2.1	5.0	14.4	0.0	30.7	0.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.2	15.3	8.3	8.2	2.5	5.0	3.9	13.7	0.0	9.9	8.5	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	25.3	18.1	50.6	6.3	6.8	60.7	63.3	0.0	84.5	42.5	31.7
LnGrp LOS	E	C	B	D	A	A	E	E		F	D	C
Approach Vol, veh/h		1972			1612			939	A		989	
Approach Delay, s/veh		28.5			16.1			62.9			54.2	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	25.0	19.1	59.9	11.3	29.7	15.9	63.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	20.5	25.5	44.5	9.5	22.5	18.5	51.5
Max Q Clear Time (g_c+I1), s	12.5	20.5	13.7	27.1	6.7	13.7	10.9	14.3
Green Ext Time (p_c), s	0.0	0.0	1.0	10.4	0.1	2.6	0.5	8.5

Intersection Summary	
HCM 6th Ctrl Delay	35.4
HCM 6th LOS	D

Notes

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	1960	120	70	1280	5	150	0	200	15	0	20
Future Volume (veh/h)	5	1960	120	70	1280	5	150	0	200	15	0	20
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	6	2178	133	78	1422	6	167	0	222	17	0	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	281	3185	1238	228	3673	15	280	0	249	54	0	48
Arrive On Green	1.00	1.00	1.00	0.04	0.70	0.70	0.16	0.00	0.16	0.03	0.00	0.03
Sat Flow, veh/h	375	5106	1585	1781	5248	22	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	6	2178	133	78	922	506	167	0	222	17	0	22
Grp Sat Flow(s),veh/h/ln	375	1702	1585	1781	1702	1866	1781	0	1585	1781	0	1585
Q Serve(g_s), s	0.1	0.0	0.0	1.8	13.4	13.4	10.5	0.0	16.5	1.1	0.0	1.6
Cycle Q Clear(g_c), s	4.4	0.0	0.0	1.8	13.4	13.4	10.5	0.0	16.5	1.1	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	3185	1238	228	2383	1306	280	0	249	54	0	48
V/C Ratio(X)	0.02	0.68	0.11	0.34	0.39	0.39	0.60	0.00	0.89	0.31	0.00	0.46
Avail Cap(c_a), veh/h	281	3185	1238	270	2383	1306	304	0	271	245	0	218
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.40	0.40	0.40	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.1	0.0	0.0	6.5	7.4	7.4	47.0	0.0	49.6	57.0	0.0	57.2
Incr Delay (d2), s/veh	0.1	0.5	0.1	0.9	0.5	0.9	2.7	0.0	27.2	3.3	0.0	6.7
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(95%),veh/ln	0.0	0.3	0.0	1.2	8.2	9.0	8.5	0.0	13.1	1.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	0.5	0.1	7.4	7.9	8.3	49.8	0.0	76.7	60.2	0.0	63.9
LnGrp LOS	A	A	A	A	A	A	D	A	E	E	A	E
Approach Vol, veh/h		2317			1506			389			39	
Approach Delay, s/veh		0.5			8.0			65.1			62.3	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	2	3	4	6	8
Phs Duration (G+Y+Rc), s	23.4	9.1	79.4	8.1	88.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	7.5	57.5	16.5	69.5
Max Q Clear Time (g_c+I1), s	18.5	3.8	6.4	3.6	15.4
Green Ext Time (p_c), s	0.4	0.0	32.4	0.1	14.6

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	1805	120	80	875	150	80	135	120	305	70	230
Future Volume (veh/h)	250	1805	120	80	875	150	80	135	120	305	70	230
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	278	2006	133	89	972	167	89	150	133	339	78	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	458	2687	926	174	2390	1030	268	358	225	451	800	514
Arrive On Green	0.10	0.53	0.53	0.08	0.94	0.94	0.06	0.10	0.10	0.18	0.23	0.23
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	278	2006	133	89	972	167	89	150	133	339	78	256
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	9.2	36.8	4.6	3.1	2.4	0.7	5.3	4.8	9.4	19.8	2.1	15.6
Cycle Q Clear(g_c), s	9.2	36.8	4.6	3.1	2.4	0.7	5.3	4.8	9.4	19.8	2.1	15.6
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	458	2687	926	174	2390	1030	268	358	225	451	800	514
V/C Ratio(X)	0.61	0.75	0.14	0.51	0.41	0.16	0.33	0.42	0.59	0.75	0.10	0.50
Avail Cap(c_a), veh/h	630	2687	926	227	2390	1030	277	518	296	461	962	586
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.5	22.2	11.3	21.1	2.1	0.9	44.7	50.7	48.2	36.6	36.8	32.7
Incr Delay (d2), s/veh	1.3	1.9	0.3	2.2	0.5	0.3	0.7	0.8	2.5	6.6	0.1	0.7
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(95%),veh/ln	6.8	21.0	3.0	2.4	1.3	0.5	4.3	3.9	7.0	14.4	1.7	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	24.1	11.7	23.3	2.6	1.2	45.4	51.4	50.7	43.3	36.9	33.4
LnGrp LOS	B	C	B	C	A	A	D	D	D	D	D	C
Approach Vol, veh/h		2417			1228			372			673	
Approach Delay, s/veh		22.3			3.9			49.7			38.8	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.3	16.6	9.4	67.6	11.4	31.5	16.4	60.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	17.5	8.5	53.5	7.5	32.5	23.5	38.5
Max Q Clear Time (g_c+I1), s	11.8	11.4	5.1	38.8	7.3	17.6	11.2	4.4
Green Ext Time (p_c), s	0.1	0.7	0.1	11.8	0.0	1.2	0.7	9.1

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.2

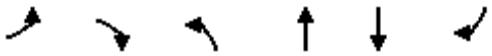
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	15	5	530	590	0
Future Vol, veh/h	5	15	5	530	590	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	17	6	589	656	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	963	328	656	0	-	0
Stage 1	656	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	*464	*841	*1258	-	-	-
Stage 1	*793	-	-	-	-	-
Stage 2	*719	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*462	*841	*1258	-	-	-
Mov Cap-2 Maneuver	*462	-	-	-	-	-
Stage 1	*789	-	-	-	-	-
Stage 2	*719	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	* 1258	-	698	-	-
HCM Lane V/C Ratio	0.004	-	0.032	-	-
HCM Control Delay (s)	7.9	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	115	115	420	475	100
Future Volume (veh/h)	95	115	115	420	475	100
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	106	128	128	467	528	111
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	177	230	687	2902	2590	1313
Arrive On Green	0.10	0.10	0.05	0.82	0.73	0.73
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	106	128	128	467	528	111
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	6.1	8.0	1.7	3.0	5.1	1.4
Cycle Q Clear(g_c), s	6.1	8.0	1.7	3.0	5.1	1.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	177	230	687	2902	2590	1313
V/C Ratio(X)	0.60	0.56	0.19	0.16	0.20	0.08
Avail Cap(c_a), veh/h	408	435	1097	2902	2590	1313
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	1.00
Uniform Delay (d), s/veh	46.2	42.6	2.7	2.1	4.6	1.7
Incr Delay (d2), s/veh	3.2	2.1	0.1	0.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	11.6	0.9	1.3	3.0	7.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.4	44.7	2.9	2.2	4.8	1.8
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	234			595	639	
Approach Delay, s/veh	46.8			2.3	4.3	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		91.9		15.1	9.4	82.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		48.5		24.5	29.5	26.5
Max Q Clear Time (g_c+I1), s		5.0		10.0	3.7	7.1
Green Ext Time (p_c), s		3.5		0.6	0.3	3.8

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	205	5	5	210	10	10
Future Vol, veh/h	205	5	5	210	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	228	6	6	233	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	234	0	360	117
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1441	-	612	*1023
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1441	-	610	*1023
Mov Cap-2 Maneuver	-	-	-	-	610	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	764	-	-	1441	-
HCM Lane V/C Ratio	0.029	-	-	0.004	-
HCM Control Delay (s)	9.9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	200	5	5	215	10	10
Future Vol, veh/h	200	5	5	215	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	6	6	239	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	228	0	357	114
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	132	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1449	-	615	*1023
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1449	-	613	*1023
Mov Cap-2 Maneuver	-	-	-	-	613	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	876	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	767	-	-	1449	-
HCM Lane V/C Ratio	0.029	-	-	0.004	-
HCM Control Delay (s)	9.8	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.6

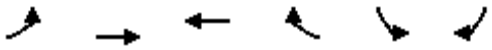
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	200	0	5	220	15	5
Future Vol, veh/h	200	0	5	220	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	0	6	244	17	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	222	0	356	111
Stage 1	-	-	-	-	222	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1456	-	616	*1023
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %	-	-	1	-		1
Mov Cap-1 Maneuver	-	-	1456	-	614	*1023
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	682	-	-	1456	-
HCM Lane V/C Ratio	0.033	-	-	0.004	-
HCM Control Delay (s)	10.5	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	210	2020	950	90	65	155
Future Volume (veh/h)	210	2020	950	90	65	155
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	233	2244	1056	100	72	172
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	468	4075	3583	1314	226	201
Arrive On Green	0.12	1.00	0.70	0.70	0.13	0.13
Sat Flow, veh/h	1781	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	233	2244	1056	100	72	172
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1781	1585
Q Serve(g_s), s	4.4	0.0	9.3	1.4	4.4	12.8
Cycle Q Clear(g_c), s	4.4	0.0	9.3	1.4	4.4	12.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	468	4075	3583	1314	226	201
V/C Ratio(X)	0.50	0.55	0.29	0.08	0.32	0.85
Avail Cap(c_a), veh/h	727	4075	3583	1314	349	310
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.2	0.0	6.7	1.9	47.7	51.3
Incr Delay (d2), s/veh	0.5	0.3	0.2	0.1	0.8	13.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	0.2	5.8	1.4	3.6	17.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.6	0.3	6.9	2.0	48.5	64.5
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h		2477	1156		244	
Approach Delay, s/veh		0.7	6.5		59.7	
Approach LOS		A	A		E	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			100.3		19.7	11.5	88.7
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			87.5		23.5	24.5	58.5
Max Q Clear Time (g_c+I1), s			2.0		14.8	6.4	11.3
Green Ext Time (p_c), s			42.7		0.5	0.6	10.4

Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	175	0	0	575	15	180	0	30	0	0	0
Future Vol, veh/h	130	175	0	0	575	15	180	0	30	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	125	-	-	-	-	450	200	-	200	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	144	194	0	0	639	17	200	0	33	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	656	0	-	-	-	0	738	1138	97
Stage 1	-	-	-	-	-	-	482	482	-
Stage 2	-	-	-	-	-	-	256	656	-
Critical Hdwy	5.34	-	-	-	-	-	5.74	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	6.64	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.04	5.54	-
Follow-up Hdwy	3.12	-	-	-	-	-	3.82	4.02	3.92
Pot Cap-1 Maneuver	572	-	0	0	-	-	419	200	798
Stage 1	-	-	0	0	-	-	495	552	-
Stage 2	-	-	0	0	-	-	700	460	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	572	-	-	-	-	-	313	0	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	313	0	-
Stage 1	-	-	-	-	-	-	370	0	-
Stage 2	-	-	-	-	-	-	700	0	-

Approach	EB	WB	NB
HCM Control Delay, s	5.7	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	313	-	798	572	-	-	-
HCM Lane V/C Ratio	0.639	-	0.042	0.253	-	-	-
HCM Control Delay (s)	34.8	0	9.7	13.4	-	-	-
HCM Lane LOS	D	A	A	B	-	-	-
HCM 95th %tile Q(veh)	4.1	-	0.1	1	-	-	-

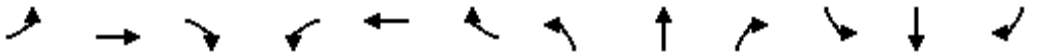
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	310	180	110	655	0	0	0	0	10	0	85
Future Vol, veh/h	0	310	180	110	655	0	0	0	0	10	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	Yield
Storage Length	-	-	550	150	-	-	-	-	-	-	-	175
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	344	200	122	728	0	0	0	0	11	0	94

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	344	0	0			1110	1316	364
Stage 1	-	-	-	-	-	-			972	972	-
Stage 2	-	-	-	-	-	-			138	344	-
Critical Hdwy	-	-	-	5.34	-	-			5.74	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-			6.64	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			6.04	5.54	-
Follow-up Hdwy	-	-	-	3.12	-	-			3.82	4.02	3.92
Pot Cap-1 Maneuver	0	-	-	801	-	0			273	156	540
Stage 1	0	-	-	-	-	0			251	329	-
Stage 2	0	-	-	-	-	0			804	635	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	801	-	-			232	0	540
Mov Cap-2 Maneuver	-	-	-	-	-	-			232	0	-
Stage 1	-	-	-	-	-	-			251	0	-
Stage 2	-	-	-	-	-	-			682	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.5	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	801	-	232	540
HCM Lane V/C Ratio	-	-	0.153	-	0.048	0.175
HCM Control Delay (s)	-	-	10.3	-	21.3	13.1
HCM Lane LOS	-	-	B	-	C	B
HCM 95th %tile Q(veh)	-	-	0.5	-	0.1	0.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	280	325	175	530	10	280	915	170	40	1020	230
Future Volume (veh/h)	195	280	325	175	530	10	280	915	170	40	1020	230
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	217	311	361	194	589	11	311	1017	189	44	1133	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	1106	524	369	1048	376	361	2548	953	266	2129	841
Arrive On Green	0.11	0.22	0.22	0.10	0.21	0.21	0.04	0.16	0.16	0.03	0.42	0.42
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	217	311	361	194	589	11	311	1017	189	44	1133	256
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.3	6.1	23.7	10.2	12.4	0.6	10.9	21.4	9.9	1.7	20.0	10.8
Cycle Q Clear(g_c), s	11.3	6.1	23.7	10.2	12.4	0.6	10.9	21.4	9.9	1.7	20.0	10.8
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	346	1106	524	369	1048	376	361	2548	953	266	2129	841
V/C Ratio(X)	0.63	0.28	0.69	0.53	0.56	0.03	0.86	0.40	0.20	0.17	0.53	0.30
Avail Cap(c_a), veh/h	447	1128	531	417	1048	376	566	2548	953	320	2129	841
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	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	32.6	39.2	34.8	32.4	42.8	35.1	23.6	34.0	19.2	19.3	26.2	15.8
Incr Delay (d2), s/veh	1.9	0.1	3.7	1.2	0.7	0.0	8.1	0.5	0.5	0.3	1.0	0.9
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(95%),veh/ln	8.5	4.5	14.3	7.8	8.9	0.4	9.6	15.0	7.1	1.3	12.6	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	39.4	38.5	33.6	43.5	35.2	31.6	34.5	19.7	19.6	27.2	16.7
LnGrp LOS	C	D	D	C	D	D	C	C	B	B	C	B
Approach Vol, veh/h		889			794			1517			1433	
Approach Delay, s/veh		37.8			41.0			32.1			25.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	64.4	16.8	30.5	18.2	54.5	18.2	29.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	52.5	15.5	26.5	27.5	32.5	20.5	21.5
Max Q Clear Time (g_c+I1), s	3.7	23.4	12.2	25.7	12.9	22.0	13.3	14.4
Green Ext Time (p_c), s	0.0	8.6	0.2	0.3	0.8	5.9	0.3	2.1

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	60	0	1365	1010	25
Future Vol, veh/h	0	60	0	1365	1010	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	67	0	1517	1122	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	575	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	*690	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*690	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	690	-	-
HCM Lane V/C Ratio	-	0.097	-	-
HCM Control Delay (s)	-	10.8	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

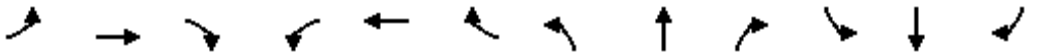
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	35	1365	1485	45
Future Vol, veh/h	0	10	35	1365	1485	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	125	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	39	1517	1650	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	850	1700	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	5.34	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	3.12	-	-	-
Pot Cap-1 Maneuver	0	*567	*713	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	1	-	-	-
Mov Cap-1 Maneuver	-	*567	*713	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	* 713	-	567	-	-
HCM Lane V/C Ratio	0.055	-	0.02	-	-
HCM Control Delay (s)	10.3	-	11.5	-	-
HCM Lane LOS	B	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	45	95	10	125	20	1235	165	90	1365	40
Future Volume (veh/h)	30	10	45	95	10	125	20	1235	165	90	1365	40
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	33	11	50	106	11	139	22	1372	183	100	1517	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	23	64	283	347	358	39	3379	1158	310	3469	101
Arrive On Green	0.08	0.08	0.08	0.07	0.19	0.19	0.02	0.66	0.66	0.08	1.00	1.00
Sat Flow, veh/h	416	292	805	1781	1870	1585	1781	5106	1585	1781	5100	148
Grp Volume(v), veh/h	94	0	0	106	11	139	22	1372	183	100	1013	548
Grp Sat Flow(s),veh/h/ln	1513	0	0	1781	1870	1585	1781	1702	1585	1781	1702	1844
Q Serve(g_s), s	5.4	0.0	0.0	6.3	0.6	8.9	1.5	14.9	4.2	2.2	0.0	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	6.3	0.6	8.9	1.5	14.9	4.2	2.2	0.0	0.0
Prop In Lane	0.35		0.53	1.00		1.00	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	161	0	0	283	347	358	39	3379	1158	310	2315	1254
V/C Ratio(X)	0.59	0.00	0.00	0.37	0.03	0.39	0.57	0.41	0.16	0.32	0.44	0.44
Avail Cap(c_a), veh/h	283	0	0	436	662	625	111	3379	1158	543	2315	1254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.1	0.0	0.0	44.5	40.0	39.4	58.1	9.4	4.9	6.7	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	0.8	0.0	0.7	12.6	0.4	0.3	0.6	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	0.0	0.0	5.2	0.5	6.4	1.4	9.2	2.4	1.4	0.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.4	0.0	0.0	45.3	40.1	40.1	70.7	9.8	5.2	7.3	0.6	1.1
LnGrp LOS	E	A	A	D	D	D	E	A	A	A	A	A
Approach Vol, veh/h		94			256			1577			1661	
Approach Delay, s/veh		57.4			42.3			10.1			1.2	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	83.9	12.8	14.0	7.1	86.1		26.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	20.5	43.5	18.5	19.5	7.5	56.5		42.5				
Max Q Clear Time (g_c+I1), s	4.2	16.9	8.3	9.2	3.5	2.0		10.9				
Green Ext Time (p_c), s	0.2	12.7	0.2	0.3	0.0	17.1		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Notes

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	0	30	1420	10	5	1460	40
Future Vol, veh/h	0	0	40	0	0	0	30	1420	10	5	1460	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	-	-	0	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	44	0	0	0	33	1578	11	6	1622	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	833	-	-	795	1666	0	0	1589	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*580	0	0	*580	716	-	-	*729	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*580	-	-	*580	716	-	-	*729	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	0	0.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	716	-	-	580	-	* 729	-	-
HCM Lane V/C Ratio	0.047	-	-	0.077	-	0.008	-	-
HCM Control Delay (s)	10.3	-	-	11.7	0	10	-	-
HCM Lane LOS	B	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

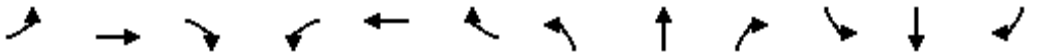
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	25	0	0	20	40	1440	15	5	1470	25
Future Vol, veh/h	0	0	25	0	0	20	40	1440	15	5	1470	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	22	44	1600	17	6	1633	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	831	-	-	809	1661	0	0	1617	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*588	0	0	*588	684	-	-	735	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*588	-	-	*588	684	-	-	735	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	11.4	0.3	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	684	-	-	588	588	735	-	-
HCM Lane V/C Ratio	0.065	-	-	0.047	0.038	0.008	-	-
HCM Control Delay (s)	10.6	-	-	11.4	11.4	9.9	-	-
HCM Lane LOS	B	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.1	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	1300	305	540	1325	500	205	715	285	410	860	200
Future Volume (veh/h)	280	1300	305	540	1325	500	205	715	285	410	860	200
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	311	1444	339	600	1472	556	228	794	0	456	956	222
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	376	1774	680	619	2133	893	283	907		504	1233	555
Arrive On Green	0.11	0.35	0.35	0.12	0.28	0.28	0.08	0.18	0.00	0.15	0.24	0.24
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	311	1444	339	600	1472	556	228	794	0	456	956	222
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.6	30.9	18.6	20.7	30.9	29.7	7.8	18.2	0.0	15.6	21.0	12.7
Cycle Q Clear(g_c), s	10.6	30.9	18.6	20.7	30.9	29.7	7.8	18.2	0.0	15.6	21.0	12.7
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	376	1774	680	619	2133	893	283	907		504	1233	555
V/C Ratio(X)	0.83	0.81	0.50	0.97	0.69	0.62	0.81	0.88		0.90	0.78	0.40
Avail Cap(c_a), veh/h	504	1774	680	619	2133	893	302	957		504	1255	562
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	35.6	24.9	52.5	36.3	22.2	54.1	48.0	0.0	50.4	42.5	29.4
Incr Delay (d2), s/veh	8.3	4.2	2.6	22.7	1.3	2.3	13.9	8.8	0.0	19.8	3.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.6	19.2	11.8	15.8	18.6	16.9	7.0	13.0	0.0	12.6	13.9	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	39.9	27.5	75.2	37.6	24.4	68.1	56.9	0.0	70.2	45.5	29.9
LnGrp LOS	E	D	C	E	D	C	E	E		E	D	C
Approach Vol, veh/h		2094			2628			1022	A		1634	
Approach Delay, s/veh		40.9			43.4			59.4			50.3	
Approach LOS		D			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	25.8	26.0	46.2	14.3	33.5	17.6	54.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	17.5	22.5	21.5	40.5	10.5	29.5	17.5	44.5
Max Q Clear Time (g_c+I1), s	17.6	20.2	22.7	32.9	9.8	23.0	12.6	32.9
Green Ext Time (p_c), s	0.0	1.1	0.0	5.7	0.1	3.6	0.5	8.6

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1770	170	230	2185	15	170	0	110	10	0	10
Future Volume (veh/h)	10	1770	170	230	2185	15	170	0	110	10	0	10
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	11	1967	189	256	2428	17	189	0	122	11	0	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	3246	1205	322	3878	27	222	0	198	39	0	34
Arrive On Green	1.00	1.00	1.00	0.07	0.74	0.74	0.12	0.00	0.12	0.02	0.00	0.02
Sat Flow, veh/h	139	5106	1585	1781	5231	37	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	11	1967	189	256	1579	866	189	0	122	11	0	11
Grp Sat Flow(s),veh/h/ln	139	1702	1585	1781	1702	1864	1781	0	1585	1781	0	1585
Q Serve(g_s), s	2.0	0.0	0.0	5.6	26.9	26.9	12.5	0.0	8.8	0.7	0.0	0.8
Cycle Q Clear(g_c), s	16.3	0.0	0.0	5.6	26.9	26.9	12.5	0.0	8.8	0.7	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	3246	1205	322	2523	1382	222	0	198	39	0	34
V/C Ratio(X)	0.08	0.61	0.16	0.79	0.63	0.63	0.85	0.00	0.62	0.29	0.00	0.32
Avail Cap(c_a), veh/h	132	3246	1205	461	2523	1382	275	0	244	260	0	231
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.50	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.5	0.0	0.0	10.0	7.5	7.5	51.4	0.0	49.8	57.8	0.0	57.8
Incr Delay (d2), s/veh	0.6	0.4	0.1	6.1	1.2	2.2	18.6	0.0	3.1	4.0	0.0	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(95%),veh/ln	0.1	0.2	0.1	4.4	13.8	15.3	11.0	0.0	6.6	0.7	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.2	0.4	0.1	16.1	8.7	9.7	70.0	0.0	52.9	61.8	0.0	63.1
LnGrp LOS	A	A	A	B	A	A	E	A	D	E	A	E
Approach Vol, veh/h		2167			2701			311			22	
Approach Delay, s/veh		0.4			9.7			63.3			62.4	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	2	3	4	6	8
Phs Duration (G+Y+Rc), s	19.5	12.7	80.8	7.1	93.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.5	17.5	48.5	17.5	70.5
Max Q Clear Time (g_c+I1), s	14.5	7.6	18.3	2.8	28.9
Green Ext Time (p_c), s	0.5	0.5	21.0	0.0	30.1

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	255	1555	80	110	1985	430	110	190	65	250	85	335
Future Volume (veh/h)	255	1555	80	110	1985	430	110	190	65	250	85	335
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	283	1728	89	122	2206	478	122	211	72	278	94	372
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	2708	953	236	2370	914	387	548	328	378	696	499
Arrive On Green	0.12	0.53	0.53	0.11	0.93	0.93	0.07	0.15	0.15	0.11	0.20	0.20
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	283	1728	89	122	2206	478	122	211	72	278	94	372
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.8	28.8	2.8	4.3	27.3	5.2	6.8	6.4	4.5	13.5	2.6	23.5
Cycle Q Clear(g_c), s	11.8	28.8	2.8	4.3	27.3	5.2	6.8	6.4	4.5	13.5	2.6	23.5
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	314	2708	953	236	2370	914	387	548	328	378	696	499
V/C Ratio(X)	0.90	0.64	0.09	0.52	0.93	0.52	0.32	0.39	0.22	0.73	0.14	0.75
Avail Cap(c_a), veh/h	391	2708	953	312	2370	914	387	548	328	378	696	499
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	20.0	10.1	17.1	3.3	1.6	38.7	45.6	39.5	38.2	39.9	36.8
Incr Delay (d2), s/veh	20.6	1.2	0.2	1.0	4.8	1.2	0.5	0.4	0.3	7.3	0.1	6.0
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(95%),veh/ln	15.3	17.0	1.9	3.0	4.5	1.9	5.5	5.2	3.2	3.4	2.1	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	21.2	10.3	18.1	8.0	2.7	39.1	46.1	39.9	45.4	39.9	42.8
LnGrp LOS	D	C	B	B	A	A	D	D	D	D	D	D
Approach Vol, veh/h		2100			2806			405			744	
Approach Delay, s/veh		24.7			7.6			42.9			43.4	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	23.0	10.8	68.2	13.0	28.0	18.8	60.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	18.5	11.5	58.5	8.5	23.5	19.5	50.5
Max Q Clear Time (g_c+I1), s	15.5	8.4	6.3	30.8	8.8	25.5	13.8	29.3
Green Ext Time (p_c), s	0.0	1.1	0.1	16.4	0.0	0.0	0.4	17.9

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.2

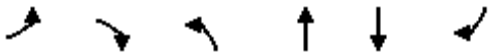
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	10	15	875	660	5
Future Vol, veh/h	5	10	15	875	660	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	11	17	972	733	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1256	370	739	0	-	0
Stage 1	736	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	*288	*815	*1219	-	-	-
Stage 1	*769	-	-	-	-	-
Stage 2	*561	-	-	-	-	-
Platoon blocked, %	1	1	1	-	-	-
Mov Cap-1 Maneuver	*284	*815	*1219	-	-	-
Mov Cap-2 Maneuver	*284	-	-	-	-	-
Stage 1	*758	-	-	-	-	-
Stage 2	*561	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	* 1219	-	502	-	-
HCM Lane V/C Ratio	0.014	-	0.033	-	-
HCM Control Delay (s)	8	-	12.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	155	135	745	510	110
Future Volume (veh/h)	115	155	135	745	510	110
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	172	150	828	567	122
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	221	262	699	2846	2565	1341
Arrive On Green	0.12	0.12	0.04	0.80	0.72	0.72
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	128	172	150	828	567	122
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	8.1	12.2	2.4	7.3	6.3	1.5
Cycle Q Clear(g_c), s	8.1	12.2	2.4	7.3	6.3	1.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	221	262	699	2846	2565	1341
V/C Ratio(X)	0.58	0.66	0.21	0.29	0.22	0.09
Avail Cap(c_a), veh/h	379	402	1063	2846	2565	1341
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	1.00
Uniform Delay (d), s/veh	49.6	46.9	3.5	3.1	5.5	1.5
Incr Delay (d2), s/veh	2.4	2.8	0.2	0.3	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	16.1	1.4	3.8	4.0	8.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.0	49.6	3.7	3.4	5.7	1.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	300			978	689	
Approach Delay, s/veh	50.6			3.4	5.0	
Approach LOS	D			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		100.6		19.4	9.5	91.1
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		25.5	29.5	22.5
Max Q Clear Time (g_c+I1), s		9.3		14.2	4.4	8.3
Green Ext Time (p_c), s		6.9		0.7	0.4	3.7

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	265	5	10	235	5	5
Future Vol, veh/h	265	5	10	235	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	6	11	261	6	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	450	150
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1410	-	679	*997
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1410	-	673	*997
Mov Cap-2 Maneuver	-	-	-	-	673	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	852	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	804	-	-	1410	-
HCM Lane V/C Ratio	0.014	-	-	0.008	-
HCM Control Delay (s)	9.5	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	10	10	230	5	10
Future Vol, veh/h	260	10	10	230	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	289	11	11	256	6	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	300	0	445	150
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	150	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1410	-	683	*997
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	862	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1410	-	678	*997
Mov Cap-2 Maneuver	-	-	-	-	678	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	855	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	862	-	-	1410	-
HCM Lane V/C Ratio	0.019	-	-	0.008	-
HCM Control Delay (s)	9.3	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

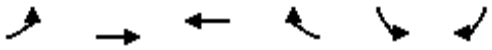
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	265	10	15	220	10	5
Future Vol, veh/h	265	10	15	220	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	11	17	244	11	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	305	0	456	153
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	156	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	1403	-	672	*997
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	856	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1403	-	664	*997
Mov Cap-2 Maneuver	-	-	-	-	664	-
Stage 1	-	-	-	-	872	-
Stage 2	-	-	-	-	846	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	747	-	-	1403	-
HCM Lane V/C Ratio	0.022	-	-	0.012	-
HCM Control Delay (s)	9.9	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	235	1635	2295	60	105	230
Future Volume (veh/h)	235	1635	2295	60	105	230
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	261	1817	2550	67	117	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	287	3800	3025	1226	322	287
Arrive On Green	0.23	1.00	0.59	0.59	0.18	0.18
Sat Flow, veh/h	1781	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	261	1817	2550	67	117	256
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1781	1585
Q Serve(g_s), s	11.3	0.0	48.8	1.2	6.9	18.9
Cycle Q Clear(g_c), s	11.3	0.0	48.8	1.2	6.9	18.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	287	3800	3025	1226	322	287
V/C Ratio(X)	0.91	0.48	0.84	0.05	0.36	0.89
Avail Cap(c_a), veh/h	388	3800	3025	1226	423	376
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	19.9	3.2	43.1	48.0
Incr Delay (d2), s/veh	16.1	0.3	3.1	0.1	0.7	18.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.7	0.2	26.2	1.4	5.6	23.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	48.0	0.3	23.0	3.3	43.8	66.8
LnGrp LOS	D	A	C	A	D	E
Approach Vol, veh/h		2078	2617		373	
Approach Delay, s/veh		6.3	22.5		59.6	
Approach LOS		A	C		E	

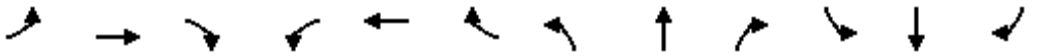
Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	93.8	26.2	18.2	75.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	82.5	28.5	20.5	57.5
Max Q Clear Time (g_c+I1), s	2.0	20.9	13.3	50.8
Green Ext Time (p_c), s	26.9	0.8	0.4	6.3

Intersection Summary	
HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

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

APPENDIX E. SHORT RANGE FUTURE TOTAL TRAFFIC LOS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	190	0	0	105	10	540	0	90	0	0	0
Future Volume (veh/h)	240	190	0	0	105	10	540	0	90	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	267	211	0	0	117	11	600	0	100			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	336	1345	0	0	1093	926	711	385	326			
Arrive On Green	0.16	1.00	0.00	0.00	0.58	0.58	0.21	0.00	0.21			
Sat Flow, veh/h	3456	1870	0	0	1870	1585	3456	1870	1585			
Grp Volume(v), veh/h	267	211	0	0	117	11	600	0	100			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1870	1585	1728	1870	1585			
Q Serve(g_s), s	8.9	0.0	0.0	0.0	3.3	0.3	20.0	0.0	6.4			
Cycle Q Clear(g_c), s	8.9	0.0	0.0	0.0	3.3	0.3	20.0	0.0	6.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	336	1345	0	0	1093	926	711	385	326			
V/C Ratio(X)	0.79	0.16	0.00	0.00	0.11	0.01	0.84	0.00	0.31			
Avail Cap(c_a), veh/h	763	1345	0	0	1093	926	1425	772	654			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.83	0.83	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	49.1	0.0	0.0	0.0	11.1	10.4	45.8	0.0	40.4			
Incr Delay (d2), s/veh	3.6	0.2	0.0	0.0	0.2	0.0	2.8	0.0	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	6.6	0.1	0.0	0.0	2.4	0.2	13.7	0.0	4.6			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	0.2	0.0	0.0	11.2	10.5	48.6	0.0	40.9			
LnGrp LOS	D	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		478			128			700				
Approach Delay, s/veh		29.5			11.2			47.5				
Approach LOS		C			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		29.2		90.8			16.2	74.6				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		49.5		61.5			26.5	30.5				
Max Q Clear Time (g_c+I1), s		22.0		2.0			10.9	5.3				
Green Ext Time (p_c), s		2.7		1.2			0.8	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			37.4									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	400	262	25	625	0	0	0	0	30	0	613
Future Volume (veh/h)	0	400	262	25	625	0	0	0	0	30	0	613
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	444	0	28	694	0				33	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1561		894	1678	0				50	0	
Arrive On Green	0.00	1.00	0.00	0.01	0.30	0.00				0.03	0.00	0.00
Sat Flow, veh/h	0	1870	1585	1781	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	444	0	28	694	0				33	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1781	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.2	35.7	0.0				2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	35.7	0.0				2.2	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1561		894	1678	0				50	0	
V/C Ratio(X)	0.00	0.28		0.03	0.41	0.00				0.67	0.00	
Avail Cap(c_a), veh/h	0	1561		960	1678	0				794	0	
HCM Platoon Ratio	1.00	2.00	2.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.97	0.00	0.69	0.69	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	1.0	16.9	0.0				57.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.5	0.0				14.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.3	0.0	0.0	23.3	0.0				2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.4	0.0	1.0	17.4	0.0				72.1	0.0	0.0
LnGrp LOS	A	A		A	B	A				E	A	
Approach Vol, veh/h		444	A		722						33	A
Approach Delay, s/veh		0.4			16.8						72.1	
Approach LOS		A			B						E	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		7.5	104.6		7.8		112.2					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		7.5	45.5		53.5		57.5					
Max Q Clear Time (g_c+I1), s		2.2	2.0		4.2		37.7					
Green Ext Time (p_c), s		0.0	2.7		0.2		4.3					

Intersection Summary	
HCM 6th Ctrl Delay	12.3
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	386	232	122	220	57	147	94	197	115	69	90
Future Volume (veh/h)	100	386	232	122	220	57	147	94	197	115	69	90
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	111	429	258	136	244	63	163	104	219	128	77	100
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	726	1062	1051	195	2069	1045	342	278	324	306	244	274
Arrive On Green	0.04	0.57	0.57	0.06	0.58	0.58	0.16	0.25	0.25	0.08	0.13	0.13
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	111	429	258	136	244	63	163	104	219	128	77	100
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.1	15.4	7.9	4.6	3.7	1.7	9.3	5.5	15.1	7.4	4.5	6.7
Cycle Q Clear(g_c), s	3.1	15.4	7.9	4.6	3.7	1.7	9.3	5.5	15.1	7.4	4.5	6.7
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	726	1062	1051	195	2069	1045	342	278	324	306	244	274
V/C Ratio(X)	0.15	0.40	0.25	0.70	0.12	0.06	0.48	0.37	0.68	0.42	0.32	0.37
Avail Cap(c_a), veh/h	777	1062	1051	389	2069	1045	403	366	400	339	304	324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	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	9.7	14.5	8.1	55.6	11.2	7.2	36.9	40.5	38.8	40.6	47.3	43.8
Incr Delay (d2), s/veh	0.1	1.1	0.6	4.5	0.1	0.1	1.0	0.8	3.3	0.9	0.7	0.8
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(95%),veh/ln	2.0	10.5	4.5	3.8	2.5	1.0	6.9	4.5	9.1	5.9	3.8	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.8	15.7	8.7	60.1	11.4	7.4	37.9	41.4	42.1	41.5	48.0	44.7
LnGrp LOS	A	B	A	E	B	A	D	D	D	D	D	D
Approach Vol, veh/h		798			443			486			305	
Approach Delay, s/veh		12.6			25.8			40.5			44.2	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	22.3	11.3	72.7	15.9	20.2	9.5	74.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	23.5	13.5	53.5	15.5	19.5	8.5	58.5
Max Q Clear Time (g_c+I1), s	9.4	17.1	6.6	17.4	11.3	8.7	5.1	5.7
Green Ext Time (p_c), s	0.1	0.7	0.2	3.5	0.1	0.4	0.1	1.7

Intersection Summary	
HCM 6th Ctrl Delay	26.9
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	15	0	388	72	0	408	10
Future Vol, veh/h	0	0	0	0	0	15	0	388	72	0	408	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	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	17	0	431	80	0	453	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	459	-	-	471	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*737	0	0	727	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %			1			1		-	-		-	-
Mov Cap-1 Maneuver	-	-	*737	-	-	727	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.1	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	727	-	-
HCM Lane V/C Ratio	-	-	-	0.023	-	-
HCM Control Delay (s)	-	-	0	10.1	-	-
HCM Lane LOS	-	-	A	B	-	-
HCM 95th %tile Q(veh)	-	-	-	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	15	0	0	33	10	426	9	17	437	10
Future Vol, veh/h	0	0	15	0	0	33	10	426	9	17	437	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	-	-	0	-	-	0	125	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	17	0	0	37	11	473	10	19	486	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	492	-	-	478	497	0	0	483	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	*721	0	0	732	*1079	-	-	1096	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*721	-	-	732	*1079	-	-	1096	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.2	0.2	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1079	-	-	721	732	1096	-	-
HCM Lane V/C Ratio	0.01	-	-	0.023	0.05	0.017	-	-
HCM Control Delay (s)	8.4	-	-	10.1	10.2	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	55	56	0	40	15	405	44	23	398	45
Future Volume (veh/h)	40	0	55	56	0	40	15	405	44	23	398	45
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	44	0	61	62	0	44	17	450	49	26	442	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	9	77	245	0	264	572	1419	1202	673	1419	1202
Arrive On Green	0.09	0.00	0.09	0.04	0.00	0.17	0.76	0.76	0.76	0.25	0.25	0.25
Sat Flow, veh/h	532	102	879	1781	0	1585	905	1870	1585	899	1870	1585
Grp Volume(v), veh/h	105	0	0	62	0	44	17	450	49	26	442	50
Grp Sat Flow(s),veh/h/ln	1514	0	0	1781	0	1585	905	1870	1585	899	1870	1585
Q Serve(g_s), s	6.6	0.0	0.0	3.7	0.0	2.9	1.0	9.2	0.9	2.7	23.1	2.9
Cycle Q Clear(g_c), s	8.1	0.0	0.0	3.7	0.0	2.9	24.1	9.2	0.9	11.9	23.1	2.9
Prop In Lane	0.42		0.58	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	175	0	0	245	0	264	572	1419	1202	673	1419	1202
V/C Ratio(X)	0.60	0.00	0.00	0.25	0.00	0.17	0.03	0.32	0.04	0.04	0.31	0.04
Avail Cap(c_a), veh/h	373	0	0	327	0	548	572	1419	1202	673	1419	1202
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	0.0	0.0	45.4	0.0	42.9	11.5	4.6	3.6	18.9	19.5	11.9
Incr Delay (d2), s/veh	3.3	0.0	0.0	0.5	0.0	0.3	0.1	0.6	0.1	0.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.9	0.0	0.0	3.0	0.0	2.1	0.4	5.9	0.5	1.2	17.4	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.9	0.0	0.0	45.9	0.0	43.2	11.6	5.2	3.7	19.0	20.1	12.0
LnGrp LOS	E	A	A	D	A	D	B	A	A	B	C	B
Approach Vol, veh/h		105			106			516			518	
Approach Delay, s/veh		56.9			44.8			5.3			19.3	
Approach LOS		E			D			A			B	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		95.5	9.5	15.0		95.5		24.5				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		69.5	10.5	26.5		69.5		41.5				
Max Q Clear Time (g_c+I1), s		26.1	5.7	10.1		25.1		4.9				
Green Ext Time (p_c), s		3.5	0.0	0.4		3.5		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	5	60	429	5	0	385	90
Future Vol, veh/h	0	0	30	0	0	5	60	429	5	0	385	90
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	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	33	0	0	6	67	477	6	0	428	100

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	478	-	-	480	528	0	0	483	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	718	0	0	737	1034	-	-	1099	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	718	-	-	737	1034	-	-	1099	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.9	1.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1034	-	-	718	737	1099	-	-
HCM Lane V/C Ratio	0.064	-	-	0.046	0.008	-	-	-
HCM Control Delay (s)	8.7	-	-	10.3	9.9	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0	0	-	-

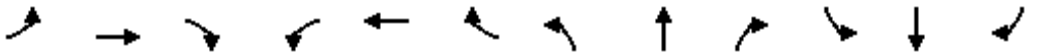
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	25	0	0	5	5	464	15	10	395	15
Future Vol, veh/h	0	0	25	0	0	5	5	464	15	10	395	15
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	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	6	6	516	17	11	439	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	448	-	-	525	456	0	0	533	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	751	0	0	691	1123	-	-	1038	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	751	-	-	691	1123	-	-	1038	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.3	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1123	-	-	751	691	1038	-	-
HCM Lane V/C Ratio	0.005	-	-	0.037	0.008	0.011	-	-
HCM Control Delay (s)	8.2	-	-	10	10.3	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	180	100	73	88	55	40	267	152	47	314	89
Future Volume (veh/h)	172	180	100	73	88	55	40	267	152	47	314	89
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	191	200	111	81	98	61	44	297	169	52	349	99
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	248	261	188	135	169	631	1175	1083	638	1180	1182
Arrive On Green	0.12	0.13	0.13	0.05	0.07	0.07	0.03	0.63	0.63	0.03	0.63	0.63
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	191	200	111	81	98	61	44	297	169	52	349	99
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.5	12.5	7.5	5.0	6.2	4.3	1.0	8.4	4.5	1.2	10.2	2.0
Cycle Q Clear(g_c), s	11.5	12.5	7.5	5.0	6.2	4.3	1.0	8.4	4.5	1.2	10.2	2.0
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	291	248	261	188	135	169	631	1175	1083	638	1180	1182
V/C Ratio(X)	0.66	0.81	0.43	0.43	0.73	0.36	0.07	0.25	0.16	0.08	0.30	0.08
Avail Cap(c_a), veh/h	420	553	520	232	351	352	701	1175	1083	689	1180	1182
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	42.9	50.5	45.0	48.0	54.5	49.8	7.5	9.8	6.7	7.3	10.1	4.1
Incr Delay (d2), s/veh	2.5	6.1	1.1	1.6	7.2	1.3	0.0	0.5	0.3	0.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.9	10.3	5.5	4.1	5.7	3.2	0.7	6.1	2.7	0.8	7.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	56.6	46.1	49.6	61.7	51.1	7.6	10.4	7.1	7.4	10.7	4.3
LnGrp LOS	D	E	D	D	E	D	A	B	A	A	B	A
Approach Vol, veh/h		502			240			510			500	
Approach Delay, s/veh		50.0			54.9			9.0			9.1	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	79.9	11.1	20.4	8.3	80.2	18.3	13.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	49.5	9.5	35.5	8.5	48.5	22.5	22.5
Max Q Clear Time (g_c+I1), s	3.2	10.4	7.0	14.5	3.0	12.2	13.5	8.2
Green Ext Time (p_c), s	0.0	2.3	0.0	1.4	0.0	2.4	0.3	0.5

Intersection Summary	
HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

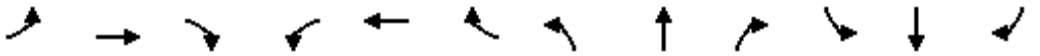
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	303	176	0	0	30
Future Vol, veh/h	15	303	176	0	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	337	196	0	0	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	196	0	-	0	567	196
Stage 1	-	-	-	-	196	-
Stage 2	-	-	-	-	371	-
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	1377	-	-	-	538	845
Stage 1	-	-	-	-	837	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1377	-	-	-	532	845
Mov Cap-2 Maneuver	-	-	-	-	532	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	758	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1377	-	-	-	-	845
HCM Lane V/C Ratio	0.012	-	-	-	-	0.039
HCM Control Delay (s)	7.6	-	-	-	0	9.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	30	1	3	34	200	6	99	4	119	38	137
Future Volume (veh/h)	273	30	1	3	34	200	6	99	4	119	38	137
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	303	33	1	3	38	222	7	110	4	132	42	152
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	426	683	21	31	46	254	114	1750	64	738	1943	1112
Arrive On Green	0.16	0.38	0.38	0.19	0.19	0.19	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1781	1806	55	5	248	1369	148	3202	116	1279	3554	1585
Grp Volume(v), veh/h	303	0	34	263	0	0	63	0	58	132	42	152
Grp Sat Flow(s),veh/h/ln	1781	0	1861	1622	0	0	1785	0	1681	1279	1777	1585
Q Serve(g_s), s	15.8	0.0	1.4	2.7	0.0	0.0	0.0	0.0	1.9	6.5	0.7	3.8
Cycle Q Clear(g_c), s	15.8	0.0	1.4	18.9	0.0	0.0	1.9	0.0	1.9	8.4	0.7	3.8
Prop In Lane	1.00		0.03	0.01		0.84	0.11		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	426	0	704	332	0	0	1009	0	919	738	1943	1112
V/C Ratio(X)	0.71	0.00	0.05	0.79	0.00	0.00	0.06	0.00	0.06	0.18	0.02	0.14
Avail Cap(c_a), veh/h	661	0	1155	510	0	0	1009	0	919	738	1943	1112
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	23.6	47.5	0.0	0.0	12.8	0.0	12.8	14.7	12.5	5.9
Incr Delay (d2), s/veh	2.2	0.0	0.0	4.8	0.0	0.0	0.1	0.0	0.1	0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.4	0.0	1.1	12.7	0.0	0.0	1.5	0.0	1.4	3.6	0.5	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	0.0	23.6	52.3	0.0	0.0	12.9	0.0	12.9	15.3	12.5	6.2
LnGrp LOS	C	A	C	D	A	A	B	A	B	B	B	A
Approach Vol, veh/h		337			263			121			326	
Approach Delay, s/veh		31.2			52.3			12.9			10.7	
Approach LOS		C			D			B			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		70.1		49.9		70.1	23.1	26.8				
Change Period (Y+Rc), s		4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		36.5		74.5		36.5	34.5	35.5				
Max Q Clear Time (g_c+I1), s		3.9		3.4		10.4	17.8	20.9				
Green Ext Time (p_c), s		0.7		0.2		1.2	0.8	1.4				

Intersection Summary												
HCM 6th Ctrl Delay			28.0									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	1.1

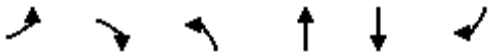
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	15	8	0	2	10	533	29	72	270	0
Future Vol, veh/h	0	0	15	8	0	2	10	533	29	72	270	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	17	9	0	2	11	592	32	80	300	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	778	1106	150	940	1090	312	300	0	0	624	0	0
Stage 1	460	460	-	630	630	-	-	-	-	-	-	-
Stage 2	318	646	-	310	460	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	392	252	*971	291	258	684	*1453	-	-	953	-	-
Stage 1	734	681	-	436	473	-	-	-	-	-	-	-
Stage 2	668	465	-	917	681	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	362	228	*971	265	234	684	*1453	-	-	953	-	-
Mov Cap-2 Maneuver	362	228	-	265	234	-	-	-	-	-	-	-
Stage 1	725	624	-	431	467	-	-	-	-	-	-	-
Stage 2	658	459	-	825	624	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	17.4	0.1	1.9
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1453	-	-	971	302	953	-	-
HCM Lane V/C Ratio	0.008	-	-	0.017	0.037	0.084	-	-
HCM Control Delay (s)	7.5	0	-	8.8	17.4	9.1	-	-
HCM Lane LOS	A	A	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	23	18	536	314	21
Future Volume (veh/h)	46	23	18	536	314	21
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	26	20	596	349	23
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	65	33	936	3080	3080	1374
Arrive On Green	0.06	0.06	0.87	0.87	1.00	1.00
Sat Flow, veh/h	1119	571	1010	3647	3647	1585
Grp Volume(v), veh/h	78	0	20	596	349	23
Grp Sat Flow(s),veh/h/ln	1712	0	1010	1777	1777	1585
Q Serve(g_s), s	5.4	0.0	0.3	3.2	0.0	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.3	3.2	0.0	0.0
Prop In Lane	0.65	0.33	1.00			1.00
Lane Grp Cap(c), veh/h	100	0	936	3080	3080	1374
V/C Ratio(X)	0.78	0.00	0.02	0.19	0.11	0.02
Avail Cap(c_a), veh/h	449	0	936	3080	3080	1374
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	0.0	1.1	1.3	0.0	0.0
Incr Delay (d2), s/veh	12.3	0.0	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	0.0	0.1	1.1	0.1	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.0	0.0	1.1	1.4	0.1	0.0
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	78			616	372	
Approach Delay, s/veh	68.0			1.4	0.1	
Approach LOS	E			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		108.5		11.5		108.5
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		79.5		31.5		79.5
Max Q Clear Time (g_c+I1), s		5.2		7.4		2.0
Green Ext Time (p_c), s		4.9		0.2		2.7

Intersection Summary	
HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

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	2	55	10	0	30	9	15	0	0	20	0	8
Future Vol, veh/h	2	55	10	0	30	9	15	0	0	20	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	61	11	0	33	10	17	0	0	22	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	43	0	0	72	0	0	114	114	67	109	114	38
Stage 1	-	-	-	-	-	-	71	71	-	38	38	-
Stage 2	-	-	-	-	-	-	43	43	-	71	76	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1566	-	-	1539	-	-	893	796	1023	900	796	1034
Stage 1	-	-	-	-	-	-	961	847	-	977	863	-
Stage 2	-	-	-	-	-	-	971	859	-	961	843	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1566	-	-	1539	-	-	884	795	1023	899	795	1034
Mov Cap-2 Maneuver	-	-	-	-	-	-	884	795	-	899	795	-
Stage 1	-	-	-	-	-	-	960	846	-	976	863	-
Stage 2	-	-	-	-	-	-	963	859	-	960	842	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	9.2	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	884	1566	-	-	1539	-	-	934
HCM Lane V/C Ratio	0.019	0.001	-	-	-	-	-	0.033
HCM Control Delay (s)	9.2	7.3	-	-	0	-	-	9
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	10	0	53	20	0
Future Vol, veh/h	62	10	0	53	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	11	0	59	22	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	80	0	134	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	59	-
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	-	-	1528	-	882	1013
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1528	-	882	1013
Mov Cap-2 Maneuver	-	-	-	-	882	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	964	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	882	-	-	1528	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	9.2	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	59	5	0	68	5	20	0	0	13	0	8
Future Vol, veh/h	4	59	5	0	68	5	20	0	0	13	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	66	6	0	76	6	22	0	0	14	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	72	0	0	161	159	69	156	159	79
Stage 1	-	-	-	-	-	-	77	77	-	79	79	-
Stage 2	-	-	-	-	-	-	84	82	-	77	80	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1539	-	-	831	750	1021	837	750	981
Stage 1	-	-	-	-	-	-	954	842	-	930	829	-
Stage 2	-	-	-	-	-	-	924	827	-	954	839	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1515	-	-	1539	-	-	822	748	1021	836	748	981
Mov Cap-2 Maneuver	-	-	-	-	-	-	822	748	-	836	748	-
Stage 1	-	-	-	-	-	-	952	840	-	927	829	-
Stage 2	-	-	-	-	-	-	916	827	-	952	837	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	9.5	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	822	1515	-	-	1539	-	-	886
HCM Lane V/C Ratio	0.027	0.003	-	-	-	-	-	0.026
HCM Control Delay (s)	9.5	7.4	-	-	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	0	9	21	0	36	4	507	71	130	305	9
Future Vol, veh/h	18	0	9	21	0	36	4	507	71	130	305	9
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	-	-	-	100	-	-	-	-	100	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	10	23	0	40	4	563	79	144	339	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	922	1282	175	1029	1208	282	349	0	0	642	0	0
Stage 1	632	632	-	571	571	-	-	-	-	-	-	-
Stage 2	290	650	-	458	637	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	*608	291	*971	478	333	*893	1402	-	-	1188	-	-
Stage 1	*566	561	-	784	700	-	-	-	-	-	-	-
Stage 2	*842	637	-	735	558	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	1	-	-	1	-	-
Mov Cap-1 Maneuver	*526	254	*971	428	291	*893	1402	-	-	1188	-	-
Mov Cap-2 Maneuver	*526	254	-	428	291	-	-	-	-	-	-	-
Stage 1	*564	493	-	781	697	-	-	-	-	-	-	-
Stage 2	*801	634	-	640	490	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	10.9	0.1	2.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1402	-	-	621	428	893	1188	-	-
HCM Lane V/C Ratio	0.003	-	-	0.048	0.055	0.045	0.122	-	-
HCM Control Delay (s)	7.6	0	-	11.1	13.9	9.2	8.4	-	-
HCM Lane LOS	A	A	-	B	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.1	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	96	91	432	128	110	347
Future Volume (veh/h)	96	91	432	128	110	347
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	107	101	480	142	122	386
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	150	133	2710	1342	745	2989
Arrive On Green	0.08	0.08	1.00	1.00	0.03	0.56
Sat Flow, veh/h	1781	1585	3647	1585	1781	3647
Grp Volume(v), veh/h	107	101	480	142	122	386
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1781	1777
Q Serve(g_s), s	7.0	7.5	0.0	0.0	1.6	6.1
Cycle Q Clear(g_c), s	7.0	7.5	0.0	0.0	1.6	6.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	150	133	2710	1342	745	2989
V/C Ratio(X)	0.72	0.76	0.18	0.11	0.16	0.13
Avail Cap(c_a), veh/h	512	456	2710	1342	1006	2989
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.97	0.97
Uniform Delay (d), s/veh	53.6	53.8	0.0	0.0	2.1	5.5
Incr Delay (d2), s/veh	6.2	8.5	0.1	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.1	5.9	0.1	0.1	0.8	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.8	62.3	0.1	0.2	2.2	5.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	208		622			508
Approach Delay, s/veh	61.0		0.1			4.8
Approach LOS	E		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.4	96.0			105.4	14.6
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	22.5	49.5			76.5	34.5
Max Q Clear Time (g_c+I1), s	3.6	2.0			8.1	9.5
Green Ext Time (p_c), s	0.3	4.2			2.9	0.6

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	44	28	0	54	90	258	175	327	385	209
Future Volume (veh/h)	49	0	44	28	0	54	90	258	175	327	385	209
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	54	0	49	31	0	60	100	287	194	363	428	232
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	0	239	72	9	77	627	1315	864	817	1556	835
Arrive On Green	0.04	0.00	0.15	0.08	0.00	0.08	0.07	1.00	1.00	0.16	1.00	1.00
Sat Flow, veh/h	1781	0	1585	410	112	1011	1781	2055	1349	1781	2233	1199
Grp Volume(v), veh/h	54	0	49	91	0	0	100	247	234	363	340	320
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1533	0	0	1781	1777	1627	1781	1777	1655
Q Serve(g_s), s	3.3	0.0	3.3	5.1	0.0	0.0	2.3	0.0	0.0	8.5	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	3.3	6.9	0.0	0.0	2.3	0.0	0.0	8.5	0.0	0.0
Prop In Lane	1.00		1.00	0.34		0.66	1.00		0.83	1.00		0.72
Lane Grp Cap(c), veh/h	224	0	239	157	0	0	627	1137	1042	817	1238	1153
V/C Ratio(X)	0.24	0.00	0.21	0.58	0.00	0.00	0.16	0.22	0.22	0.44	0.27	0.28
Avail Cap(c_a), veh/h	285	0	456	311	0	0	741	1137	1042	1217	1238	1153
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.67	1.67	1.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.98	0.98	0.98	0.71	0.71	0.71
Uniform Delay (d), s/veh	46.9	0.0	44.7	54.3	0.0	0.0	6.3	0.0	0.0	4.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.4	3.3	0.0	0.0	0.1	0.4	0.5	0.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	0.0	2.4	5.1	0.0	0.0	1.5	0.2	0.3	4.1	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.4	0.0	45.1	57.7	0.0	0.0	6.4	0.4	0.5	4.6	0.4	0.4
LnGrp LOS	D	A	D	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		103			91			581			1023	
Approach Delay, s/veh		46.3			57.7			1.5			1.9	
Approach LOS		D			E			A			A	

Timer - Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.1	81.3		22.6	9.3	88.1	8.9	13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	38.5	33.5		34.5	12.5	59.5	8.5	21.5
Max Q Clear Time (g_c+I1), s	10.5	2.0		5.3	4.3	2.0	5.3	8.9
Green Ext Time (p_c), s	1.1	3.2		0.2	0.1	4.9	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	425	178	664	458	6	88	31	242	16	79	14
Future Volume (veh/h)	4	425	178	664	458	6	88	31	242	16	79	14
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	4	472	198	738	509	7	98	34	0	18	88	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	444	792	767	812	2321	1035	302	814		240	396	70
Arrive On Green	0.01	0.42	0.42	0.39	1.00	1.00	0.06	0.23	0.00	0.13	0.13	0.13
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	1781	3554	1585	1375	3016	535
Grp Volume(v), veh/h	4	472	198	738	509	7	98	34	0	18	51	53
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1781	1777	1585	1375	1777	1774
Q Serve(g_s), s	0.2	23.4	8.8	24.2	0.0	0.0	5.5	0.9	0.0	1.4	3.1	3.2
Cycle Q Clear(g_c), s	0.2	23.4	8.8	24.2	0.0	0.0	5.5	0.9	0.0	1.4	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.30
Lane Grp Cap(c), veh/h	444	792	767	812	2321	1035	302	814		240	233	233
V/C Ratio(X)	0.01	0.60	0.26	0.91	0.22	0.01	0.32	0.04		0.07	0.22	0.23
Avail Cap(c_a), veh/h	546	792	767	994	2321	1035	306	814		240	233	233
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	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	0.98	0.98	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	26.7	18.3	35.3	0.0	0.0	39.9	36.0	0.0	45.9	46.6	46.7
Incr Delay (d2), s/veh	0.0	3.3	0.8	10.5	0.2	0.0	0.6	0.1	0.0	0.6	2.1	2.3
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(95%),veh/ln	0.1	16.0	6.1	15.2	0.1	0.0	4.5	0.7	0.0	0.9	2.7	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	30.0	19.1	45.8	0.2	0.0	40.5	36.1	0.0	46.5	48.8	48.9
LnGrp LOS	B	C	B	D	A	A	D	D		D	D	D
Approach Vol, veh/h		674			1254			132	A		122	
Approach Delay, s/veh		26.7			27.0			39.4			48.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.0	32.7	55.3	11.7	20.3	5.1	82.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	27.5	34.5	44.5	7.5	15.5	7.5	71.5
Max Q Clear Time (g_c+I1), s	2.9	26.2	25.4	7.5	5.2	2.2	2.0
Green Ext Time (p_c), s	0.1	2.0	3.2	0.0	0.3	0.0	4.0

Intersection Summary	
HCM 6th Ctrl Delay	28.9
HCM 6th LOS	C

Notes

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

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	619	64	0	1128	0	49
Future Vol, veh/h	619	64	0	1128	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	688	71	0	1253	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	344
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*848
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*848
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	848	-	-	-
HCM Lane V/C Ratio	0.064	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	608	59	162	1076	53	49
Future Volume (veh/h)	608	59	162	1076	53	49
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	676	66	180	1196	59	54
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2723	1296	242	3106	91	81
Arrive On Green	1.00	1.00	0.14	1.00	0.05	0.05
Sat Flow, veh/h	3647	1585	3456	3647	1781	1585
Grp Volume(v), veh/h	676	66	180	1196	59	54
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1777	1781	1585
Q Serve(g_s), s	0.0	0.0	6.0	0.0	3.9	4.0
Cycle Q Clear(g_c), s	0.0	0.0	6.0	0.0	3.9	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2723	1296	242	3106	91	81
V/C Ratio(X)	0.25	0.05	0.74	0.39	0.65	0.67
Avail Cap(c_a), veh/h	2723	1296	590	3106	364	324
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.47	0.47	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	50.5	0.0	55.9	55.9
Incr Delay (d2), s/veh	0.2	0.1	2.1	0.2	7.5	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	4.3	0.1	3.5	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.2	0.1	52.7	0.2	63.4	65.0
LnGrp LOS	A	A	D	A	E	E
Approach Vol, veh/h	742			1376	113	
Approach Delay, s/veh	0.2			7.0	64.2	
Approach LOS	A			A	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		10.6	12.9	96.5		109.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		24.5	20.5	61.5		86.5
Max Q Clear Time (g_c+I1), s		6.0	8.0	2.0		2.0
Green Ext Time (p_c), s		0.3	0.4	5.0		13.0

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	583	116	184	376	23	25
Future Vol, veh/h	583	116	184	376	23	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	648	129	204	418	26	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	777	0	1265	324
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	835	-	205	672
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	655	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	835	-	155	672
Mov Cap-2 Maneuver	-	-	-	-	155	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	155	672	-	-	835	-
HCM Lane V/C Ratio	0.165	0.041	-	-	0.245	-
HCM Control Delay (s)	32.8	10.6	-	-	10.7	-
HCM Lane LOS	D	B	-	-	B	-
HCM 95th %tile Q(veh)	0.6	0.1	-	-	1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	154	215	6	0	21
Future Vol, veh/h	0	154	215	6	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	171	239	7	0	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	239
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	800
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	800
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	800
HCM Lane V/C Ratio	-	-	-	0.029
HCM Control Delay (s)	-	-	-	9.6
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

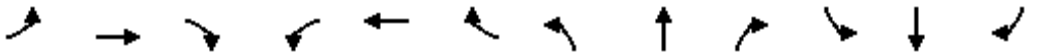
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	78	204	10	4	17
Future Vol, veh/h	76	78	204	10	4	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	87	227	11	4	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	238	0	-	0	482	227
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	255	-
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	1329	-	-	-	556	812
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1329	-	-	-	521	812
Mov Cap-2 Maneuver	-	-	-	-	521	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	802	-

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1329	-	-	-	734
HCM Lane V/C Ratio	0.064	-	-	-	0.032
HCM Control Delay (s)	7.9	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	918	75	0	0	270	15	516	0	25	0	0	0
Future Volume (veh/h)	918	75	0	0	270	15	516	0	25	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	1020	83	0	0	300	17	573	0	28			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1097	1375	0	0	712	603	655	355	301			
Arrive On Green	0.53	1.00	0.00	0.00	0.38	0.38	0.19	0.00	0.19			
Sat Flow, veh/h	3456	1870	0	0	1870	1585	3456	1870	1585			
Grp Volume(v), veh/h	1020	83	0	0	300	17	573	0	28			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1870	1585	1728	1870	1585			
Q Serve(g_s), s	32.8	0.0	0.0	0.0	14.2	0.8	19.3	0.0	1.7			
Cycle Q Clear(g_c), s	32.8	0.0	0.0	0.0	14.2	0.8	19.3	0.0	1.7			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1097	1375	0	0	712	603	655	355	301			
V/C Ratio(X)	0.93	0.06	0.00	0.00	0.42	0.03	0.87	0.00	0.09			
Avail Cap(c_a), veh/h	1339	1375	0	0	712	603	821	444	376			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.32	0.32	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	27.0	0.0	0.0	0.0	27.4	23.3	47.2	0.0	40.1			
Incr Delay (d2), s/veh	3.9	0.0	0.0	0.0	1.8	0.1	8.7	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	13.4	0.0	0.0	0.0	10.6	0.6	14.0	0.0	1.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.8	0.0	0.0	0.0	29.3	23.4	56.0	0.0	40.2			
LnGrp LOS	C	A	A	A	C	C	E	A	D			
Approach Vol, veh/h		1103			317			601				
Approach Delay, s/veh		28.5			28.9			55.2				
Approach LOS		C			C			E				

Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		27.3		92.7			42.6	50.2				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		28.5		82.5			46.5	31.5				
Max Q Clear Time (g_c+I1), s		21.3		2.0			34.8	16.2				
Green Ext Time (p_c), s		1.4		0.4			3.3	1.4				

Intersection Summary												
HCM 6th Ctrl Delay			36.5									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	983	769	75	711	0	0	0	0	10	0	571
Future Volume (veh/h)	0	983	769	75	711	0	0	0	0	10	0	571
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1092	0	83	790	0				11	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1706		468	1706	0				23	0	
Arrive On Green	0.00	0.91	0.00	0.91	0.91	0.00				0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	516	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	1092	0	83	790	0				11	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	516	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	14.8	0.0	4.8	7.7	0.0				0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	14.8	0.0	19.6	7.7	0.0				0.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1706		468	1706	0				23	0	
V/C Ratio(X)	0.00	0.64		0.18	0.46	0.00				0.48	0.00	
Avail Cap(c_a), veh/h	0	1706		468	1706	0				482	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.40	0.00	0.65	0.65	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	1.1	0.0	3.2	0.8	0.0				58.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.5	0.6	0.0				15.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.6	0.0	0.7	0.5	0.0				0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.9	0.0	3.7	1.4	0.0				73.8	0.0	0.0
LnGrp LOS	A	A		A	A	A				E	A	
Approach Vol, veh/h		1092	A		873						11	A
Approach Delay, s/veh		1.9			1.6						73.8	
Approach LOS		A			A						E	

Timer - Assigned Phs		4		6		8
Phs Duration (G+Y+Rc), s		114.0		6.0		114.0
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		78.5		32.5		78.5
Max Q Clear Time (g_c+I1), s		16.8		2.7		21.6
Green Ext Time (p_c), s		12.0		0.0		7.7

Intersection Summary		
HCM 6th Ctrl Delay	2.1	
HCM 6th LOS	A	

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	328	171	228	554	154	172	108	256	117	73	110
Future Volume (veh/h)	95	328	171	228	554	154	172	108	256	117	73	110
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	106	364	190	253	616	171	191	120	284	130	81	122
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	452	938	963	320	1952	993	381	335	430	324	280	308
Arrive On Green	0.04	0.50	0.50	0.09	0.55	0.55	0.18	0.30	0.30	0.08	0.15	0.15
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	106	364	190	253	616	171	191	120	284	130	81	122
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.4	14.5	6.4	8.6	11.3	5.4	10.6	6.0	19.1	7.3	4.6	8.1
Cycle Q Clear(g_c), s	3.4	14.5	6.4	8.6	11.3	5.4	10.6	6.0	19.1	7.3	4.6	8.1
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	452	938	963	320	1952	993	381	335	430	324	280	308
V/C Ratio(X)	0.23	0.39	0.20	0.79	0.32	0.17	0.50	0.36	0.66	0.40	0.29	0.40
Avail Cap(c_a), veh/h	499	938	963	533	1952	993	436	366	457	372	304	328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	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	13.3	18.5	10.5	53.3	14.8	9.4	33.6	36.6	33.1	38.7	45.3	42.2
Incr Delay (d2), s/veh	0.3	1.2	0.5	4.4	0.4	0.4	1.0	0.6	3.2	0.8	0.6	0.8
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(95%),veh/ln	2.4	10.3	3.9	6.9	7.8	3.2	7.6	4.8	10.5	5.8	3.9	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.6	19.7	11.0	57.7	15.2	9.8	34.6	37.3	36.3	39.5	45.9	43.0
LnGrp LOS	B	B	B	E	B	A	C	D	D	D	D	D
Approach Vol, veh/h		660			1040			595			333	
Approach Delay, s/veh		16.2			24.6			36.0			42.3	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	26.0	15.6	64.6	17.3	22.5	9.8	70.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	23.5	18.5	47.5	16.5	19.5	8.5	57.5
Max Q Clear Time (g_c+I1), s	9.3	21.1	10.6	16.5	12.6	10.1	5.4	13.3
Green Ext Time (p_c), s	0.1	0.4	0.5	2.7	0.2	0.5	0.1	4.9

Intersection Summary	
HCM 6th Ctrl Delay	27.3
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	99	0	413	14	0	442	25
Future Vol, veh/h	0	0	30	0	0	99	0	413	14	0	442	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	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	33	0	0	110	0	459	16	0	491	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	505	-	-	467	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*711	0	0	*737	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %			1			1		-	-		-	-
Mov Cap-1 Maneuver	-	-	*711	-	-	*737	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	10.7	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	711	737	-	-
HCM Lane V/C Ratio	-	-	0.047	0.149	-	-
HCM Control Delay (s)	-	-	10.3	10.7	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

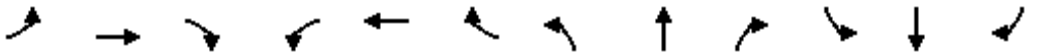
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	5	0	0	23	15	429	20	36	416	20
Future Vol, veh/h	0	0	5	0	0	23	15	429	20	36	416	20
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	125	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	6	0	0	26	17	477	22	40	462	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	473	-	-	488	484	0	0	499	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	739	0	0	719	1095	-	-	1075	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	739	-	-	719	1095	-	-	1075	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10.2	0.3	0.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1095	-	-	739	719	1075	-	-
HCM Lane V/C Ratio	0.015	-	-	0.008	0.036	0.037	-	-
HCM Control Delay (s)	8.3	-	-	9.9	10.2	8.5	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	0	20	69	0	30	20	439	41	39	387	20
Future Volume (veh/h)	15	0	20	69	0	30	20	439	41	39	387	20
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	17	0	22	77	0	33	22	488	46	43	430	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	3	33	99	0	209	713	1354	1235	662	1373	1164
Arrive On Green	0.04	0.00	0.04	0.06	0.00	0.13	0.02	0.72	0.72	0.03	0.73	0.73
Sat Flow, veh/h	571	88	853	1781	0	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	39	0	0	77	0	33	22	488	46	43	430	22
Grp Sat Flow(s),veh/h/ln	1512	0	0	1781	0	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.5	0.0	0.0	5.1	0.0	2.2	0.4	11.7	0.8	0.7	9.5	0.4
Cycle Q Clear(g_c), s	3.0	0.0	0.0	5.1	0.0	2.2	0.4	11.7	0.8	0.7	9.5	0.4
Prop In Lane	0.44		0.56	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	0	0	99	0	209	713	1354	1235	662	1373	1164
V/C Ratio(X)	0.38	0.00	0.00	0.78	0.00	0.16	0.03	0.36	0.04	0.06	0.31	0.02
Avail Cap(c_a), veh/h	286	0	0	230	0	522	786	1354	1235	717	1373	1164
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	0.0	0.0	55.9	0.0	46.2	4.2	6.2	3.0	4.3	5.5	4.3
Incr Delay (d2), s/veh	2.4	0.0	0.0	12.4	0.0	0.3	0.0	0.7	0.1	0.0	0.6	0.0
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(95%),veh/ln	2.2	0.0	0.0	4.8	0.0	1.6	0.2	7.9	0.4	0.4	6.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.2	0.0	0.0	68.3	0.0	46.5	4.2	6.9	3.1	4.3	6.1	4.3
LnGrp LOS	E	A	A	E	A	D	A	A	A	A	A	A
Approach Vol, veh/h		39			110			556			495	
Approach Delay, s/veh		59.2			61.8			6.5			5.9	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	91.4	11.2	9.2	7.1	92.6		20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	7.5	59.5	15.5	19.5	7.5	59.5		39.5				
Max Q Clear Time (g_c+I1), s	2.7	13.7	7.1	5.0	2.4	11.5		4.2				
Green Ext Time (p_c), s	0.0	3.7	0.1	0.1	0.0	3.1		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	13.0
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	20	0	0	5	15	450	10	5	431	25
Future Vol, veh/h	0	0	20	0	0	5	15	450	10	5	431	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	-	-	0	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	22	0	0	6	17	500	11	6	479	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	493	-	-	506	507	0	0	511	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	720	0	0	*711	1067	-	-	*1064	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	720	-	-	*711	1067	-	-	*1064	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.1	0.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1067	-	-	720	711	* 1064	-	-
HCM Lane V/C Ratio	0.016	-	-	0.031	0.008	0.005	-	-
HCM Control Delay (s)	8.4	-	-	10.2	10.1	8.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

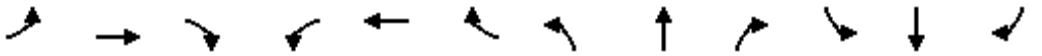
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	10	20	450	10	5	436	10
Future Vol, veh/h	0	0	10	0	0	10	20	450	10	5	436	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	11	22	500	11	6	484	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	490	-	-	506	495	0	0	511	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.22	-	-	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.318	-	-	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	0	0	*721	0	0	716	*1079	-	-	1068	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*721	-	-	716	*1079	-	-	1068	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.1	0.4	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1079	-	-	721	716	1068	-	-
HCM Lane V/C Ratio	0.021	-	-	0.015	0.016	0.005	-	-
HCM Control Delay (s)	8.4	-	-	10.1	10.1	8.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	193	80	280	290	28	100	314	167	49	261	151
Future Volume (veh/h)	139	193	80	280	290	28	100	314	167	49	261	151
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	154	214	89	311	322	31	111	349	186	54	290	168
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	271	259	293	380	394	389	525	960	1072	471	939	941
Arrive On Green	0.09	0.14	0.14	0.16	0.21	0.21	0.05	0.51	0.51	0.03	0.50	0.50
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	154	214	89	311	322	31	111	349	186	54	290	168
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.7	13.4	5.8	17.3	19.7	1.8	3.6	13.4	5.2	1.7	11.0	5.8
Cycle Q Clear(g_c), s	8.7	13.4	5.8	17.3	19.7	1.8	3.6	13.4	5.2	1.7	11.0	5.8
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	259	293	380	394	389	525	960	1072	471	939	941
V/C Ratio(X)	0.57	0.82	0.30	0.82	0.82	0.08	0.21	0.36	0.17	0.11	0.31	0.18
Avail Cap(c_a), veh/h	397	507	502	424	553	524	555	960	1072	520	939	941
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	39.5	50.3	42.3	35.0	45.2	34.9	13.6	17.5	7.1	13.9	17.6	11.1
Incr Delay (d2), s/veh	1.9	6.5	0.6	10.9	6.5	0.1	0.2	1.1	0.4	0.1	0.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	10.9	4.2	13.3	14.9	1.3	2.5	9.8	3.1	1.2	8.4	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	56.8	42.8	45.9	51.7	34.9	13.8	18.5	7.5	14.0	18.5	11.5
LnGrp LOS	D	E	D	D	D	C	B	B	A	B	B	B
Approach Vol, veh/h		457			664			646			512	
Approach Delay, s/veh		48.9			48.2			14.5			15.7	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	66.1	24.1	21.1	10.0	64.7	15.5	29.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	39.5	22.5	32.5	7.5	39.5	19.5	35.5
Max Q Clear Time (g_c+I1), s	3.7	15.4	19.3	15.4	5.6	13.0	10.7	21.7
Green Ext Time (p_c), s	0.0	2.6	0.3	1.3	0.0	2.2	0.2	1.6

Intersection Summary	
HCM 6th Ctrl Delay	31.5
HCM 6th LOS	C

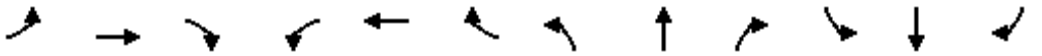
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	355	573	0	0	20
Future Vol, veh/h	25	355	573	0	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	394	637	0	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	637	0	-	0	1087	637
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	450	-
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	947	-	-	-	215	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	702	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	947	-	-	-	208	477
Mov Cap-2 Maneuver	-	-	-	-	208	-
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	702	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	947	-	-	-	-	477
HCM Lane V/C Ratio	0.029	-	-	-	-	0.047
HCM Control Delay (s)	8.9	-	-	-	0	12.9
HCM Lane LOS	A	-	-	-	A	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	323	28	3	7	44	259	2	101	2	326	157	527
Future Volume (veh/h)	323	28	3	7	44	259	2	101	2	326	157	527
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	359	31	3	8	49	288	2	112	2	362	174	586
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	439	724	70	34	56	299	36	1042	18	691	1755	1057
Arrive On Green	0.17	0.43	0.43	0.22	0.22	0.22	0.30	0.30	0.30	0.16	0.49	0.49
Sat Flow, veh/h	1781	1679	162	15	253	1354	15	3460	61	1781	3554	1585
Grp Volume(v), veh/h	359	0	34	345	0	0	61	0	55	362	174	586
Grp Sat Flow(s),veh/h/ln	1781	0	1841	1621	0	0	1845	0	1691	1781	1777	1585
Q Serve(g_s), s	17.9	0.0	1.3	9.0	0.0	0.0	0.0	0.0	2.8	16.1	3.1	23.5
Cycle Q Clear(g_c), s	17.9	0.0	1.3	25.3	0.0	0.0	2.8	0.0	2.8	16.1	3.1	23.5
Prop In Lane	1.00		0.09	0.02		0.83	0.03		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	439	0	794	389	0	0	587	0	509	691	1755	1057
V/C Ratio(X)	0.82	0.00	0.04	0.89	0.00	0.00	0.10	0.00	0.11	0.52	0.10	0.55
Avail Cap(c_a), veh/h	599	0	959	389	0	0	587	0	509	749	1755	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	19.8	46.2	0.0	0.0	30.3	0.0	30.3	21.1	16.2	10.6
Incr Delay (d2), s/veh	6.3	0.0	0.0	21.2	0.0	0.0	0.4	0.0	0.4	0.6	0.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.0	0.0	1.0	18.2	0.0	0.0	2.4	0.0	2.2	11.0	2.4	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.3	0.0	19.8	67.4	0.0	0.0	30.6	0.0	30.7	21.7	16.3	12.7
LnGrp LOS	C	A	B	E	A	A	C	A	C	C	B	B
Approach Vol, veh/h		393			345			116			1122	
Approach Delay, s/veh		32.2			67.4			30.7			16.1	
Approach LOS		C			E			C			B	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	23.1	40.6		56.2		63.8	25.2	31.0				
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.5	21.5		62.5		48.5	31.5	26.5				
Max Q Clear Time (g_c+I1), s	18.1	4.8		3.3		25.5	19.9	27.3				
Green Ext Time (p_c), s	0.5	0.5		0.2		3.5	0.9	0.0				

Intersection Summary			
HCM 6th Ctrl Delay		29.1	
HCM 6th LOS		C	

Intersection	
Int Delay, s/veh	0.7

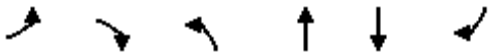
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	24	0	6	20	651	12	30	971	0
Future Vol, veh/h	0	0	10	24	0	6	20	651	12	30	971	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	27	0	7	22	723	13	33	1079	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1551	1925	540	1380	1919	368	1079	0	0	736	0	0
Stage 1	1145	1145	-	774	774	-	-	-	-	-	-	-
Stage 2	406	780	-	606	1145	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	204	101	*685	*318	102	629	*1024	-	-	865	-	-
Stage 1	592	530	-	*357	406	-	-	-	-	-	-	-
Stage 2	593	404	-	*645	530	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	190	94	*685	*295	95	629	*1024	-	-	865	-	-
Mov Cap-2 Maneuver	190	94	-	*295	95	-	-	-	-	-	-	-
Stage 1	571	510	-	*344	391	-	-	-	-	-	-	-
Stage 2	566	389	-	*611	510	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	17.1	0.3	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1024	-	-	685	330	865	-	-
HCM Lane V/C Ratio	0.022	-	-	0.016	0.101	0.039	-	-
HCM Control Delay (s)	8.6	0.1	-	10.3	17.1	9.3	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.3	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	21	33	679	985	54
Future Volume (veh/h)	20	21	33	679	985	54
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	23	37	754	1094	60
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	28	29	514	3164	2926	1305
Arrive On Green	0.03	0.03	0.03	0.89	1.00	1.00
Sat Flow, veh/h	803	840	1781	3647	3647	1585
Grp Volume(v), veh/h	46	0	37	754	1094	60
Grp Sat Flow(s),veh/h/ln	1679	0	1781	1777	1777	1585
Q Serve(g_s), s	3.3	0.0	0.3	3.5	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	0.3	3.5	0.0	0.0
Prop In Lane	0.48	0.50	1.00			1.00
Lane Grp Cap(c), veh/h	58	0	514	3164	2926	1305
V/C Ratio(X)	0.79	0.00	0.07	0.24	0.37	0.05
Avail Cap(c_a), veh/h	189	0	602	3164	2926	1305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	0.0	1.1	0.9	0.0	0.0
Incr Delay (d2), s/veh	20.7	0.0	0.1	0.2	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	0.1	0.8	0.3	3.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	78.2	0.0	1.1	1.1	0.4	0.1
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	46			791	1154	
Approach Delay, s/veh	78.2			1.1	0.4	
Approach LOS	E			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		111.3		8.7	8.0	103.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		97.5		13.5	9.5	83.5
Max Q Clear Time (g_c+I1), s		5.5		5.3	2.3	2.0
Green Ext Time (p_c), s		6.4		0.0	0.0	11.5

Intersection Summary	
HCM 6th Ctrl Delay	2.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	22	15	0	65	21	10	0	5	14	0	5
Future Vol, veh/h	4	22	15	0	65	21	10	0	5	14	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	24	17	0	72	23	11	0	6	16	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	95	0	0	41	0	0	128	136	33	128	133	84
Stage 1	-	-	-	-	-	-	41	41	-	84	84	-
Stage 2	-	-	-	-	-	-	87	95	-	44	49	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1499	-	-	1571	-	-	851	759	1047	851	762	975
Stage 1	-	-	-	-	-	-	979	863	-	924	825	-
Stage 2	-	-	-	-	-	-	921	816	-	975	857	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1499	-	-	1571	-	-	844	756	1047	845	759	975
Mov Cap-2 Maneuver	-	-	-	-	-	-	844	756	-	845	759	-
Stage 1	-	-	-	-	-	-	976	860	-	921	825	-
Stage 2	-	-	-	-	-	-	916	816	-	967	854	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	9.1	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	902	1499	-	-	1571	-	-	876
HCM Lane V/C Ratio	0.018	0.003	-	-	-	-	-	0.024
HCM Control Delay (s)	9.1	7.4	-	-	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	15	0	81	10	0
Future Vol, veh/h	41	15	0	81	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	17	0	90	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	63	0	145	55
Stage 1	-	-	-	-	55	-
Stage 2	-	-	-	-	90	-
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	-	-	1542	-	852	1018
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	934	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1542	-	852	1018
Mov Cap-2 Maneuver	-	-	-	-	852	-
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	934	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	852	-	-	1542	-
HCM Lane V/C Ratio	0.013	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	47	20	0	79	12	15	0	0	9	0	5
Future Vol, veh/h	9	47	20	0	79	12	15	0	0	9	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	52	22	0	88	13	17	0	0	10	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	101	0	0	74	0	0	181	184	63	178	189	95
Stage 1	-	-	-	-	-	-	83	83	-	95	95	-
Stage 2	-	-	-	-	-	-	98	101	-	83	94	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1491	-	-	1536	-	-	806	726	1029	809	721	962
Stage 1	-	-	-	-	-	-	948	837	-	912	816	-
Stage 2	-	-	-	-	-	-	908	811	-	948	828	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1491	-	-	1536	-	-	797	721	1029	805	716	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	797	721	-	805	716	-
Stage 1	-	-	-	-	-	-	941	831	-	906	816	-
Stage 2	-	-	-	-	-	-	903	811	-	941	822	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	9.6	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	797	1491	-	-	1536	-	-	855
HCM Lane V/C Ratio	0.021	0.007	-	-	-	-	-	0.018
HCM Control Delay (s)	9.6	7.4	-	-	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	0	6	74	0	137	10	664	25	36	959	19
Future Vol, veh/h	13	0	6	74	0	137	10	664	25	36	959	19
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	-	-	-	100	-	-	-	-	100	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	0	7	82	0	152	11	738	28	40	1066	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1548	1945	544	1373	1927	369	1087	0	0	766	0	0
Stage 1	1157	1157	-	760	760	-	-	-	-	-	-	-
Stage 2	391	788	-	613	1167	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	*393	248	*685	*393	264	*815	*1024	-	-	1189	-	-
Stage 1	*577	521	-	*746	658	-	-	-	-	-	-	-
Stage 2	*768	635	-	*645	513	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	1	-	-	1	-	-
Mov Cap-1 Maneuver	*307	235	*685	*374	250	*815	*1024	-	-	1189	-	-
Mov Cap-2 Maneuver	*307	235	-	*374	250	-	-	-	-	-	-	-
Stage 1	*566	503	-	*732	646	-	-	-	-	-	-	-
Stage 2	*613	623	-	*618	495	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.3	12.8	0.2	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	* 1024	-	-	372	374	815	1189	-	-
HCM Lane V/C Ratio	0.011	-	-	0.057	0.22	0.187	0.034	-	-
HCM Control Delay (s)	8.6	0.1	-	15.3	17.3	10.4	8.1	-	-
HCM Lane LOS	A	A	-	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.7	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (veh/h)	466	405	434	380	326	548		
Future Volume (veh/h)	466	405	434	380	326	548		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No		No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870		
Adj Flow Rate, veh/h	518	450	482	422	362	609		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	573	510	1501	1179	501	2144		
Arrive On Green	0.32	0.32	0.14	0.14	0.29	1.00		
Sat Flow, veh/h	1781	1585	3647	1585	1781	3647		
Grp Volume(v), veh/h	518	450	482	422	362	609		
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1585	1781	1777		
Q Serve(g_s), s	33.4	32.3	14.7	13.4	14.3	0.0		
Cycle Q Clear(g_c), s	33.4	32.3	14.7	13.4	14.3	0.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	573	510	1501	1179	501	2144		
V/C Ratio(X)	0.90	0.88	0.32	0.36	0.72	0.28		
Avail Cap(c_a), veh/h	750	667	1501	1179	683	2144		
HCM Platoon Ratio	1.00	1.00	0.33	0.33	2.00	2.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.83	0.83		
Uniform Delay (d), s/veh	38.9	38.6	36.1	8.4	13.1	0.0		
Incr Delay (d2), s/veh	12.0	10.8	0.6	0.8	2.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	22.9	20.0	11.5	19.1	7.4	0.1		
Unsig. Movement Delay, s/veh								
LnGrp Delay(d),s/veh	50.9	49.4	36.7	9.3	15.1	0.3		
LnGrp LOS	D	D	D	A	B	A		
Approach Vol, veh/h	968		904			971		
Approach Delay, s/veh	50.2		23.9			5.8		
Approach LOS	D		C			A		
Timer - Assigned Phs	1	2				6	8	
Phs Duration (G+Y+Rc), s	21.7	55.2				76.9	43.1	
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5	
Max Green Setting (Gmax), s	29.5	26.5				60.5	50.5	
Max Q Clear Time (g_c+I1), s	16.3	16.7				2.0	35.4	
Green Ext Time (p_c), s	0.9	3.5				4.9	3.2	
Intersection Summary								
HCM 6th Ctrl Delay			26.7					
HCM 6th LOS			C					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	0	137	178	0	330	29	776	35	63	559	67
Future Volume (veh/h)	165	0	137	178	0	330	29	776	35	63	559	67
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	183	0	152	198	0	367	32	862	39	70	621	74
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	0	806	243	5	384	302	1181	53	204	1126	134
Arrive On Green	0.06	0.00	0.51	0.41	0.00	0.41	0.03	0.34	0.34	0.08	0.70	0.70
Sat Flow, veh/h	1781	0	1585	496	11	939	1781	3462	157	1781	3198	380
Grp Volume(v), veh/h	183	0	152	565	0	0	32	442	459	70	345	350
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1446	0	0	1781	1777	1842	1781	1777	1802
Q Serve(g_s), s	7.0	0.0	6.3	44.6	0.0	0.0	1.4	26.2	26.2	3.1	11.3	11.3
Cycle Q Clear(g_c), s	7.0	0.0	6.3	45.5	0.0	0.0	1.4	26.2	26.2	3.1	11.3	11.3
Prop In Lane	1.00		1.00	0.35		0.65	1.00		0.09	1.00		0.21
Lane Grp Cap(c), veh/h	461	0	806	631	0	0	302	606	628	204	625	634
V/C Ratio(X)	0.40	0.00	0.19	0.90	0.00	0.00	0.11	0.73	0.73	0.34	0.55	0.55
Avail Cap(c_a), veh/h	461	0	839	661	0	0	364	606	628	247	625	634
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.90	0.90	0.90	0.89	0.89	0.89
Uniform Delay (d), s/veh	17.6	0.0	16.0	34.4	0.0	0.0	24.8	34.7	34.7	26.2	13.2	13.2
Incr Delay (d2), s/veh	0.6	0.0	0.1	14.4	0.0	0.0	0.1	6.8	6.6	0.9	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	0.0	4.1	25.1	0.0	0.0	1.1	17.9	18.4	2.3	6.8	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	0.0	16.2	48.8	0.0	0.0	24.9	41.5	41.3	27.1	16.3	16.3
LnGrp LOS	B	A	B	D	A	A	C	D	D	C	B	B
Approach Vol, veh/h		335			565			933			765	
Approach Delay, s/veh		17.2			48.8			40.8			17.3	
Approach LOS		B			D			D			B	

Timer - Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	45.4		65.5	7.8	46.7	12.0	53.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	35.5		63.5	7.5	35.5	7.5	51.5
Max Q Clear Time (g_c+I1), s	15.1	28.2		8.3	3.4	13.3	9.0	47.5
Green Ext Time (p_c), s	0.0	3.3		1.1	0.0	4.5	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	668	147	487	555	33	269	117	885	46	55	4
Future Volume (veh/h)	17	668	147	487	555	33	269	117	885	46	55	4
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	19	742	163	541	617	37	299	130	0	51	61	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	462	883	847	615	2240	1053	334	590		294	466	30
Arrive On Green	0.02	0.47	0.47	0.36	1.00	1.00	0.10	0.28	0.00	0.03	0.14	0.14
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	1781	3554	1585	1781	3388	220
Grp Volume(v), veh/h	19	742	163	541	617	37	299	130	0	51	32	33
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1781	1777	1585	1781	1777	1831
Q Serve(g_s), s	0.7	41.7	6.4	17.6	0.0	0.0	7.5	3.4	0.0	2.9	1.9	1.9
Cycle Q Clear(g_c), s	0.7	41.7	6.4	17.6	0.0	0.0	7.5	3.4	0.0	2.9	1.9	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	462	883	847	615	2240	1053	334	590		294	244	252
V/C Ratio(X)	0.04	0.84	0.19	0.88	0.28	0.04	0.90	0.22		0.17	0.13	0.13
Avail Cap(c_a), veh/h	539	883	847	965	2240	1053	334	590		345	244	252
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.68	0.68	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	27.7	14.5	37.4	0.0	0.0	46.4	37.4	0.0	42.4	45.4	45.5
Incr Delay (d2), s/veh	0.0	9.5	0.5	6.0	0.3	0.1	18.8	0.6	0.0	0.3	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	26.8	0.2	10.9	0.2	0.0	10.8	2.7	0.0	2.4	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	37.2	15.0	43.4	0.3	0.1	65.2	38.0	0.0	42.7	46.5	46.5
LnGrp LOS	B	D	B	D	A	A	E	D		D	D	D
Approach Vol, veh/h		924			1195			429	A		116	
Approach Delay, s/veh		32.9			19.8			57.0			44.8	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	24.4	25.9	61.1	12.0	21.0	6.8	80.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	16.5	33.5	44.5	7.5	16.5	7.5	70.5
Max Q Clear Time (g_c+I1), s	4.1	5.4	19.6	43.7	9.5	3.9	2.7	2.0
Green Ext Time (p_c), s	0.0	0.5	1.8	0.5	0.0	0.2	0.0	5.1

Intersection Summary	
HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

Notes

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

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

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1409	190	0	1075	0	259
Future Vol, veh/h	1409	190	0	1075	0	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1566	211	0	1194	0	288

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	783
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	*491
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*491
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	491	-	-	-
HCM Lane V/C Ratio	0.586	-	-	-
HCM Control Delay (s)	22.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	3.7	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1493	175	479	803	272	259
Future Volume (veh/h)	1493	175	479	803	272	259
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1659	194	532	892	302	288
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1821	1149	562	2532	379	337
Arrive On Green	0.51	0.51	0.11	0.48	0.21	0.21
Sat Flow, veh/h	3647	1585	3456	3647	1781	1585
Grp Volume(v), veh/h	1659	194	532	892	302	288
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1777	1781	1585
Q Serve(g_s), s	51.2	4.6	18.4	18.9	19.3	21.0
Cycle Q Clear(g_c), s	51.2	4.6	18.4	18.9	19.3	21.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1821	1149	562	2532	379	337
V/C Ratio(X)	0.91	0.17	0.95	0.35	0.80	0.86
Avail Cap(c_a), veh/h	1821	1149	562	2532	379	337
HCM Platoon Ratio	1.00	1.00	0.67	0.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.44	0.44	1.00	1.00
Uniform Delay (d), s/veh	26.7	5.2	53.0	14.0	44.8	45.5
Incr Delay (d2), s/veh	8.4	0.3	14.5	0.2	16.0	23.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	29.5	5.2	12.7	11.5	15.4	15.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.1	5.5	67.4	14.1	60.8	68.7
LnGrp LOS	D	A	E	B	E	E
Approach Vol, veh/h	1853			1424	590	
Approach Delay, s/veh	32.0			34.0	64.6	
Approach LOS	C			C	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		30.0	24.0	66.0		90.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		25.5	19.5	61.5		85.5
Max Q Clear Time (g_c+I1), s		23.0	20.4	53.2		20.9
Green Ext Time (p_c), s		0.6	0.0	6.4		8.1

Intersection Summary	
HCM 6th Ctrl Delay	37.7
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	673	23	36	792	144	159
Future Vol, veh/h	673	23	36	792	144	159
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	100	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	748	26	40	880	160	177

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	774	0	1268	374
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	520	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	837	-	*332	623
Stage 1	-	-	-	-	*429	-
Stage 2	-	-	-	-	*720	-
Platoon blocked, %	-	-		-	1	
Mov Cap-1 Maneuver	-	-	837	-	*316	623
Mov Cap-2 Maneuver	-	-	-	-	*316	-
Stage 1	-	-	-	-	*429	-
Stage 2	-	-	-	-	*685	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	316	623	-	-	837	-
HCM Lane V/C Ratio	0.506	0.284	-	-	0.048	-
HCM Control Delay (s)	27.5	13.1	-	-	9.5	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.7	1.2	-	-	0.1	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↱		↱
Traffic Vol, veh/h	0	356	251	2	0	59
Future Vol, veh/h	0	356	251	2	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	396	279	2	0	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	279
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	760
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	760
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	760
HCM Lane V/C Ratio	-	-	-	0.086
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.4

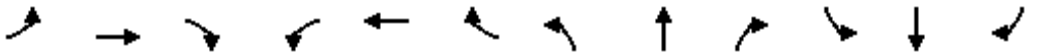
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	324	205	4	12	48
Future Vol, veh/h	32	324	205	4	12	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	360	228	4	13	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	232	0	-	0	660	228
Stage 1	-	-	-	-	228	-
Stage 2	-	-	-	-	432	-
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	1336	-	-	-	466	811
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1336	-	-	-	453	811
Mov Cap-2 Maneuver	-	-	-	-	453	-
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1336	-	-	-	700
HCM Lane V/C Ratio	0.027	-	-	-	0.095
HCM Control Delay (s)	7.8	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

APPENDIX F. LONG RANGE FUTURE TOTAL TRAFFIC LOS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	410	0	0	230	10	625	0	140	0	0	0
Future Volume (veh/h)	265	410	0	0	230	10	625	0	140	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	294	456	0	0	256	11	694	0	156			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	370	3522	0	0	2785	864	813	440	373			
Arrive On Green	0.04	0.23	0.00	0.00	0.55	0.55	0.24	0.00	0.24			
Sat Flow, veh/h	3456	5274	0	0	5274	1585	3456	1870	1585			
Grp Volume(v), veh/h	294	456	0	0	256	11	694	0	156			
Grp Sat Flow(s),veh/h/ln	1728	1702	0	0	1702	1585	1728	1870	1585			
Q Serve(g_s), s	10.1	8.5	0.0	0.0	2.9	0.4	23.1	0.0	10.0			
Cycle Q Clear(g_c), s	10.1	8.5	0.0	0.0	2.9	0.4	23.1	0.0	10.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	370	3522	0	0	2785	864	813	440	373			
V/C Ratio(X)	0.80	0.13	0.00	0.00	0.09	0.01	0.85	0.00	0.42			
Avail Cap(c_a), veh/h	648	3522	0	0	2785	864	1281	694	588			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	56.6	17.7	0.0	0.0	13.1	12.5	43.9	0.0	38.9			
Incr Delay (d2), s/veh	3.5	0.1	0.0	0.0	0.1	0.0	3.5	0.0	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.1	6.0	0.0	0.0	1.9	0.2	15.4	0.0	7.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	17.7	0.0	0.0	13.1	12.5	47.4	0.0	39.7			
LnGrp LOS	E	B	A	A	B	B	D	A	D			
Approach Vol, veh/h		750			267			850				
Approach Delay, s/veh		34.3			13.1			46.0				
Approach LOS		C			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		32.7		87.3			17.3	69.9				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		44.5		66.5			22.5	39.5				
Max Q Clear Time (g_c+I1), s		25.1		10.5			12.1	4.9				
Green Ext Time (p_c), s		3.2		3.1			0.7	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			36.6									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	640	337	30	855	0	0	0	0	40	0	678
Future Volume (veh/h)	0	640	337	30	855	0	0	0	0	40	0	678
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	711	0	33	950	0				44	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	4220		641	4553	0				59	0	
Arrive On Green	0.00	0.27	0.00	0.01	0.29	0.00				0.03	0.00	0.00
Sat Flow, veh/h	0	5274	1585	1781	5274	0				1781	0	1585
Grp Volume(v), veh/h	0	711	0	33	950	0				44	0	0
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1702	0				1781	0	1585
Q Serve(g_s), s	0.0	12.7	0.0	0.3	16.8	0.0				2.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	12.7	0.0	0.3	16.8	0.0				2.9	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	4220		641	4553	0				59	0	
V/C Ratio(X)	0.00	0.17		0.05	0.21	0.00				0.74	0.00	
Avail Cap(c_a), veh/h	0	4220		703	4553	0				1002	0	
HCM Platoon Ratio	1.00	0.33	0.33	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.98	0.00	0.90	0.90	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	12.2	0.0	2.0	10.5	0.0				57.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.1	0.0				16.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	9.2	0.0	0.1	11.9	0.0				2.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.3	0.0	2.0	10.6	0.0				74.1	0.0	0.0
LnGrp LOS	A	B		A	B	A				E	A	
Approach Vol, veh/h		711	A		983						44	A
Approach Delay, s/veh		12.3			10.3						74.1	
Approach LOS		B			B						E	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		7.8	103.7		8.5		111.5					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		7.5	31.5		67.5		43.5					
Max Q Clear Time (g_c+I1), s		2.3	14.7		4.9		18.8					
Green Ext Time (p_c), s		0.0	4.1		0.2		6.5					

Intersection Summary	
HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	591	467	212	390	87	287	849	297	130	414	180
Future Volume (veh/h)	205	591	467	212	390	87	287	849	297	130	414	180
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	228	657	519	236	433	97	319	943	330	144	460	200
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	1340	534	506	1115	443	958	2327	834	294	2260	884
Arrive On Green	0.11	0.26	0.26	0.07	0.22	0.22	0.02	0.15	0.15	0.06	0.44	0.44
Sat Flow, veh/h	1781	5106	1585	3456	5106	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	228	657	519	236	433	97	319	943	330	144	460	200
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.5	13.1	31.5	6.3	8.7	5.6	5.8	20.1	19.8	5.2	6.6	7.7
Cycle Q Clear(g_c), s	11.5	13.1	31.5	6.3	8.7	5.6	5.8	20.1	19.8	5.2	6.6	7.7
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	392	1340	534	506	1115	443	958	2327	834	294	2260	884
V/C Ratio(X)	0.58	0.49	0.97	0.47	0.39	0.22	0.33	0.41	0.40	0.49	0.20	0.23
Avail Cap(c_a), veh/h	492	1340	534	593	1115	443	1724	2327	834	371	2260	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	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	29.7	37.5	39.3	32.9	40.1	33.2	16.5	36.3	28.3	18.2	20.5	13.4
Incr Delay (d2), s/veh	1.4	0.3	31.9	0.7	0.2	0.2	0.2	0.5	1.4	1.3	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	9.1	26.2	4.7	6.4	3.9	4.3	14.2	13.5	3.9	4.7	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	37.7	71.2	33.6	40.3	33.4	16.7	36.8	29.7	19.5	20.7	14.0
LnGrp LOS	C	D	E	C	D	C	B	D	C	B	C	B
Approach Vol, veh/h		1404			766			1592			804	
Approach Delay, s/veh		49.0			37.3			31.3			18.8	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	59.2	13.0	36.0	13.4	57.6	18.3	30.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	46.5	11.5	31.5	35.5	23.5	20.5	22.5
Max Q Clear Time (g_c+I1), s	7.2	22.1	8.3	33.5	7.8	9.7	13.5	10.7
Green Ext Time (p_c), s	0.1	8.1	0.2	0.0	1.1	3.0	0.3	2.3

Intersection Summary	
HCM 6th Ctrl Delay	35.6
HCM 6th LOS	D

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	15	0	1418	72	0	1068	25
Future Vol, veh/h	0	0	10	0	0	15	0	1418	72	0	1068	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	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	17	0	1576	80	0	1187	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	608	-	-	828	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*668	0	0	*580	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %			1			1		-	-		-	-
Mov Cap-1 Maneuver	-	-	*668	-	-	*580	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	11.4	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	668	580	-	-
HCM Lane V/C Ratio	-	-	0.017	0.029	-	-
HCM Control Delay (s)	-	-	10.5	11.4	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

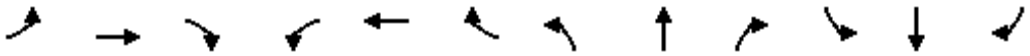
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	35	0	0	33	25	1456	9	17	1042	20
Future Vol, veh/h	0	0	35	0	0	33	25	1456	9	17	1042	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	125	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	39	0	0	37	28	1618	10	19	1158	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	590	-	-	814	1180	0	0	1628	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*675	0	0	*588	*848	-	-	722	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*675	-	-	*588	*848	-	-	722	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	11.5	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 848	-	-	675	588	722	-	-
HCM Lane V/C Ratio	0.033	-	-	0.058	0.062	0.026	-	-
HCM Control Delay (s)	9.4	-	-	10.7	11.5	10.1	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	10	115	106	10	160	30	1275	149	83	903	90
Future Volume (veh/h)	55	10	115	106	10	160	30	1275	149	83	903	90
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	61	11	128	118	11	178	33	1417	166	92	1003	100
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	13	157	218	406	407	432	3220	1116	289	3033	302
Arrive On Green	0.11	0.11	0.11	0.07	0.22	0.22	0.03	0.63	0.63	0.08	1.00	1.00
Sat Flow, veh/h	1194	127	1477	1781	1870	1585	1781	5106	1585	1781	4720	470
Grp Volume(v), veh/h	61	0	139	118	11	178	33	1417	166	92	723	380
Grp Sat Flow(s),veh/h/ln	1194	0	1604	1781	1870	1585	1781	1702	1585	1781	1702	1786
Q Serve(g_s), s	5.8	0.0	10.2	6.8	0.6	11.3	0.8	17.0	4.2	2.2	0.0	0.0
Cycle Q Clear(g_c), s	5.8	0.0	10.2	6.8	0.6	11.3	0.8	17.0	4.2	2.2	0.0	0.0
Prop In Lane	1.00		0.92	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	187	0	170	218	406	407	432	3220	1116	289	2187	1148
V/C Ratio(X)	0.33	0.00	0.82	0.54	0.03	0.44	0.08	0.44	0.15	0.32	0.33	0.33
Avail Cap(c_a), veh/h	254	0	261	346	647	611	494	3220	1116	493	2187	1148
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	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	50.5	0.0	52.5	42.2	37.0	37.3	7.1	11.3	5.9	8.2	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	11.2	2.1	0.0	0.7	0.1	0.4	0.3	0.6	0.4	0.8
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(95%),veh/ln	3.2	0.0	8.1	5.7	0.5	7.9	0.5	10.4	2.5	1.4	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	0.0	63.7	44.3	37.0	38.1	7.2	11.8	6.1	8.8	0.4	0.8
LnGrp LOS	D	A	E	D	D	D	A	B	A	A	A	A
Approach Vol, veh/h		200			307			1616			1195	
Approach Delay, s/veh		60.0			40.4			11.1			1.2	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	80.2	13.3	17.2	7.8	81.6		30.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	18.5	46.5	17.5	19.5	7.5	57.5		41.5				
Max Q Clear Time (g_c+I1), s	4.2	19.0	8.8	12.2	2.8	2.0		13.3				
Green Ext Time (p_c), s	0.2	13.3	0.2	0.5	0.0	9.9		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	65	0	0	5	105	1449	5	0	935	190
Future Vol, veh/h	0	0	65	0	0	5	105	1449	5	0	935	190
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	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	72	0	0	6	117	1610	6	0	1039	211

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	625	-	-	808	1250	0	0	1616	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*712	0	0	*580	641	-	-	*729	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*712	-	-	*580	641	-	-	*729	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	11.3	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	641	-	-	712	580	* 729	-	-
HCM Lane V/C Ratio	0.182	-	-	0.101	0.01	-	-	-
HCM Control Delay (s)	11.9	-	-	10.6	11.3	0	-	-
HCM Lane LOS	B	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	0.3	0	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

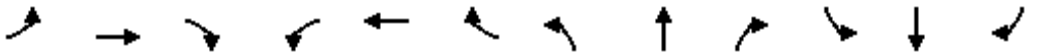
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	15	10	1544	30	25	940	35
Future Vol, veh/h	0	0	30	0	0	15	10	1544	30	25	940	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	33	0	0	17	11	1716	33	28	1044	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	542	-	-	875	1083	0	0	1749	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*718	0	0	*567	783	-	-	677	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*718	-	-	*567	783	-	-	677	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	11.5	0.1	0.3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	783	-	-	718	567	677	-	-
HCM Lane V/C Ratio	0.014	-	-	0.046	0.029	0.041	-	-
HCM Control Delay (s)	9.7	-	-	10.3	11.5	10.5	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	307	1425	255	378	743	485	125	792	787	287	524	129
Future Volume (veh/h)	307	1425	255	378	743	485	125	792	787	287	524	129
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	341	1583	283	420	826	0	139	880	0	319	582	143
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	405	1793	646	488	1915		195	1337		331	1539	663
Arrive On Green	0.12	0.35	0.35	0.24	0.63	0.00	0.06	0.26	0.00	0.10	0.30	0.30
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	341	1583	283	420	826	0	139	880	0	319	582	143
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	11.6	35.0	15.5	14.0	9.9	0.0	4.7	18.4	0.0	11.0	10.8	6.9
Cycle Q Clear(g_c), s	11.6	35.0	15.5	14.0	9.9	0.0	4.7	18.4	0.0	11.0	10.8	6.9
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	405	1793	646	488	1915		195	1337		331	1539	663
V/C Ratio(X)	0.84	0.88	0.44	0.86	0.43		0.71	0.66		0.96	0.38	0.22
Avail Cap(c_a), veh/h	504	1851	664	677	2106		274	1337		331	1539	663
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.89	0.89	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	36.6	25.6	44.7	15.9	0.0	55.7	39.5	0.0	54.0	33.1	22.3
Incr Delay (d2), s/veh	10.2	5.3	0.5	7.4	0.1	0.0	5.0	2.5	0.0	39.6	0.7	0.7
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(95%),veh/ln	9.4	21.4	9.8	9.6	5.9	0.0	3.9	12.4	0.0	10.7	7.9	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.1	41.9	26.1	52.1	16.0	0.0	60.7	42.0	0.0	93.6	33.8	23.0
LnGrp LOS	E	D	C	D	B		E	D		F	C	C
Approach Vol, veh/h		2207			1246	A		1019	A		1044	
Approach Delay, s/veh		43.0			28.2			44.6			50.6	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	35.9	21.4	46.6	11.3	40.7	18.6	49.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	23.5	23.5	43.5	9.5	25.5	17.5	49.5
Max Q Clear Time (g_c+I1), s	13.0	20.4	16.0	37.0	6.7	12.8	13.6	11.9
Green Ext Time (p_c), s	0.0	1.6	0.9	5.2	0.1	3.4	0.5	6.6

Intersection Summary	
HCM 6th Ctrl Delay	41.4
HCM 6th LOS	D

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2253	120	70	1436	5	150	0	200	15	0	20
Future Volume (veh/h)	5	2253	120	70	1436	5	150	0	200	15	0	20
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	6	2503	133	78	1596	6	167	0	222	17	0	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	3385	178	207	3978	15	253	0	265	97	0	80
Arrive On Green	1.00	1.00	1.00	0.04	0.76	0.76	0.08	0.00	0.17	0.05	0.00	0.05
Sat Flow, veh/h	317	4966	261	1781	5251	20	1781	0	1585	1159	0	1585
Grp Volume(v), veh/h	6	1707	929	78	1035	567	167	0	222	17	0	22
Grp Sat Flow(s),veh/h/ln	317	1702	1823	1781	1702	1867	1781	0	1585	1159	0	1585
Q Serve(g_s), s	0.1	0.0	0.0	1.4	12.7	12.7	9.5	0.0	16.3	1.7	0.0	1.6
Cycle Q Clear(g_c), s	3.7	0.0	0.0	1.4	12.7	12.7	9.5	0.0	16.3	4.0	0.0	1.6
Prop In Lane	1.00		0.14	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	267	2320	1243	207	2579	1414	253	0	265	97	0	80
V/C Ratio(X)	0.02	0.74	0.75	0.38	0.40	0.40	0.66	0.00	0.84	0.18	0.00	0.27
Avail Cap(c_a), veh/h	267	2320	1243	249	2579	1414	253	0	469	246	0	284
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.11	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.1	0.0	0.0	4.4	5.1	5.1	48.7	0.0	48.4	57.1	0.0	54.8
Incr Delay (d2), s/veh	0.0	0.2	0.5	1.1	0.5	0.8	6.2	0.0	6.9	0.9	0.0	1.8
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(95%),veh/ln	0.0	0.1	0.3	1.0	7.2	8.1	9.1	0.0	11.2	1.0	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	0.2	0.5	5.5	5.5	5.9	54.9	0.0	55.2	57.9	0.0	56.6
LnGrp LOS	A	A	A	A	A	A	D	A	E	E	A	E
Approach Vol, veh/h		2642			1680			389			39	
Approach Delay, s/veh		0.3			5.7			55.1			57.2	
Approach LOS		A			A			E			E	

Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		24.6	9.1	86.3	14.0	10.6		95.4				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		35.5	7.5	63.5	9.5	21.5		75.5				
Max Q Clear Time (g_c+I1), s		18.3	3.4	5.7	11.5	6.0		14.7				
Green Ext Time (p_c), s		1.2	0.0	42.4	0.0	0.1		18.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	513	1835	121	83	909	350	86	234	124	424	108	347
Future Volume (veh/h)	513	1835	121	83	909	350	86	234	124	424	108	347
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	570	2039	134	92	1010	0	96	260	138	471	120	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	631	2764	955	183	2063		307	384	243	537	718	
Arrive On Green	0.18	0.54	0.54	0.09	0.81	0.00	0.06	0.11	0.11	0.16	0.20	0.00
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	570	2039	134	92	1010	0	96	260	138	471	120	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	19.4	36.6	4.4	3.6	7.5	0.0	5.7	8.4	9.7	16.0	3.3	0.0
Cycle Q Clear(g_c), s	19.4	36.6	4.4	3.6	7.5	0.0	5.7	8.4	9.7	16.0	3.3	0.0
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	631	2764	955	183	2063		307	384	243	537	718	
V/C Ratio(X)	0.90	0.74	0.14	0.50	0.49		0.31	0.68	0.57	0.88	0.17	
Avail Cap(c_a), veh/h	677	2764	955	244	2063		309	577	329	619	992	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.0	21.0	10.3	21.4	7.6	0.0	43.7	51.5	47.1	49.6	39.5	0.0
Incr Delay (d2), s/veh	14.9	1.8	0.3	2.1	0.8	0.0	0.6	2.1	2.1	12.3	0.1	0.0
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(95%),veh/ln	14.7	20.8	2.9	2.8	3.8	0.0	4.6	7.0	7.1	12.4	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.0	22.8	10.6	23.5	8.4	0.0	44.3	53.6	49.2	61.8	39.6	0.0
LnGrp LOS	E	C	B	C	A		D	D	D	E	D	
Approach Vol, veh/h		2743			1102	A		494			591	A
Approach Delay, s/veh		30.6			9.7			50.6			57.3	
Approach LOS		C			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	17.5	9.9	69.5	11.9	28.7	26.4	53.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	19.5	9.5	51.5	7.5	33.5	23.5	37.5
Max Q Clear Time (g_c+I1), s	11.4	11.7	5.6	38.6	7.7	5.3	21.4	9.5
Green Ext Time (p_c), s	0.6	1.3	0.1	10.7	0.0	0.7	0.5	8.3

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	1

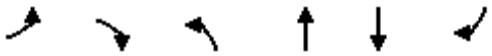
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	15	8	0	21	5	1063	29	72	855	0
Future Vol, veh/h	5	0	15	8	0	21	5	1063	29	72	855	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	17	9	0	23	6	1181	32	80	950	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1713	2335	475	1844	2319	607	950	0	0	1213	0	0
Stage 1	1110	1110	-	1209	1209	-	-	-	-	-	-	-
Stage 2	603	1225	-	635	1110	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	112	39	*737	*81	40	439	*1102	-	-	571	-	-
Stage 1	517	489	-	*194	254	-	-	-	-	-	-	-
Stage 2	453	249	-	*695	489	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	94	33	*737	*70	34	439	*1102	-	-	571	-	-
Mov Cap-2 Maneuver	94	33	-	*70	34	-	-	-	-	-	-	-
Stage 1	514	421	-	*193	253	-	-	-	-	-	-	-
Stage 2	427	248	-	*584	421	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	27.5	0	1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	* 1102	-	-	272	70	439	571	-	-
HCM Lane V/C Ratio	0.005	-	-	0.082	0.127	0.053	0.14	-	-
HCM Control Delay (s)	8.3	-	-	19.4	63.8	13.7	12.3	-	-
HCM Lane LOS	A	-	-	C	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0.2	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	141	138	133	956	789	121
Future Volume (veh/h)	141	138	133	956	789	121
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	153	148	1062	877	134
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	171	217	552	2947	2666	1341
Arrive On Green	0.10	0.10	0.04	0.83	1.00	1.00
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	157	153	148	1062	877	134
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	10.5	11.1	2.1	8.7	0.0	0.0
Cycle Q Clear(g_c), s	10.5	11.1	2.1	8.7	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	171	217	552	2947	2666	1341
V/C Ratio(X)	0.92	0.70	0.27	0.36	0.33	0.10
Avail Cap(c_a), veh/h	171	217	679	2947	2666	1341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	53.8	49.4	2.4	2.5	0.0	0.0
Incr Delay (d2), s/veh	46.3	9.8	0.3	0.3	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.2	15.3	1.1	4.1	0.2	7.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	100.1	59.2	2.7	2.8	0.3	0.1
LnGrp LOS	F	E	A	A	A	A
Approach Vol, veh/h	310			1210	1011	
Approach Delay, s/veh	79.9			2.8	0.3	
Approach LOS	E			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		104.0		16.0	9.5	94.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		46.5		11.5	13.5	48.5
Max Q Clear Time (g_c+I1), s		10.7		13.1	4.1	2.0
Green Ext Time (p_c), s		9.7		0.0	0.2	8.4

Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	255	5	5	240	9	10	0	10	20	0	8
Future Vol, veh/h	2	255	5	5	240	9	10	0	10	20	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	283	6	6	267	10	11	0	11	22	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	277	0	0	289	0	0	579	579	286	580	577	272
Stage 1	-	-	-	-	-	-	290	290	-	284	284	-
Stage 2	-	-	-	-	-	-	289	289	-	296	293	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1286	-	-	*1299	-	-	*484	*460	*868	*484	*461	767
Stage 1	-	-	-	-	-	-	*818	*717	-	*723	*676	-
Stage 2	-	-	-	-	-	-	*719	*673	-	*818	*717	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1286	-	-	*1299	-	-	*477	*456	*868	*475	*458	767
Mov Cap-2 Maneuver	-	-	-	-	-	-	*477	*456	-	*475	*458	-
Stage 1	-	-	-	-	-	-	*817	*715	-	*722	*673	-
Stage 2	-	-	-	-	-	-	*707	*670	-	*806	*715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	11.1	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	616	1286	-	-	* 1299	-	-	533
HCM Lane V/C Ratio	0.036	0.002	-	-	0.004	-	-	0.058
HCM Control Delay (s)	11.1	7.8	-	-	7.8	-	-	12.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	252	5	5	253	10	10
Future Vol, veh/h	252	5	5	253	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	280	6	6	281	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	286	0	576	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	293	-
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	-	-	1308	-	507	868
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	757	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1308	-	504	868
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	753	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	-	-	1308	-
HCM Lane V/C Ratio	0.035	-	-	0.004	-
HCM Control Delay (s)	10.8	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

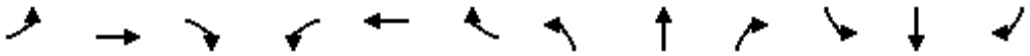
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	239	0	5	253	5	15	0	5	13	0	8
Future Vol, veh/h	4	239	0	5	253	5	15	0	5	13	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	266	0	6	281	6	17	0	6	14	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	287	0	0	266	0	0	575	573	266	573	570	284
Stage 1	-	-	-	-	-	-	274	274	-	296	296	-
Stage 2	-	-	-	-	-	-	301	299	-	277	274	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1275	-	-	1334	-	-	477	458	891	479	460	755
Stage 1	-	-	-	-	-	-	830	729	-	712	668	-
Stage 2	-	-	-	-	-	-	708	666	-	826	729	-
Platoon blocked, %		-	-	1	-	-	1	1	1	1	1	
Mov Cap-1 Maneuver	1275	-	-	1334	-	-	469	454	891	473	457	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	469	454	-	473	457	-
Stage 1	-	-	-	-	-	-	828	727	-	710	665	-
Stage 2	-	-	-	-	-	-	697	663	-	819	727	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	12.1	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	532	1275	-	-	1334	-	-	551
HCM Lane V/C Ratio	0.042	0.003	-	-	0.004	-	-	0.042
HCM Control Delay (s)	12.1	7.8	-	-	7.7	-	-	11.8
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	9	21	0	36	4	1022	71	130	940	9
Future Volume (veh/h)	18	0	9	21	0	36	4	1022	71	130	940	9
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	20	0	10	23	0	40	4	1136	79	144	1044	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	9	17	141	0	79	528	2949	205	462	3155	30
Arrive On Green	0.05	0.00	0.05	0.05	0.00	0.05	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	486	188	337	1405	0	1585	535	3371	234	460	3606	35
Grp Volume(v), veh/h	30	0	0	23	0	40	4	598	617	144	514	540
Grp Sat Flow(s),veh/h/ln	1012	0	0	1405	0	1585	535	1777	1828	460	1777	1864
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.2	0.0	0.0	1.5	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.67		0.33	1.00		1.00	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	101	0	0	141	0	79	528	1555	1599	462	1555	1631
V/C Ratio(X)	0.30	0.00	0.00	0.16	0.00	0.50	0.01	0.38	0.39	0.31	0.33	0.33
Avail Cap(c_a), veh/h	250	0	0	288	0	244	528	1555	1599	462	1555	1631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.90	0.90	0.90	0.94	0.94	0.94
Uniform Delay (d), s/veh	56.1	0.0	0.0	54.9	0.0	55.5	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.5	0.0	4.9	0.0	0.7	0.6	1.6	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	0.0	1.2	0.0	2.3	0.0	0.5	0.5	0.4	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	0.0	55.4	0.0	60.4	0.0	0.7	0.6	1.6	0.5	0.5
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		30			63			1219			1198	
Approach Delay, s/veh		57.8			58.6			0.6			0.7	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		109.5		10.5		109.5		10.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		92.5		18.5		92.5		18.5				
Max Q Clear Time (g_c+I1), s		2.0		6.2		2.0		5.0				
Green Ext Time (p_c), s		11.9		0.1		13.3		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			2.8									
HCM 6th LOS			A									

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	96	91	947	128	110	982
Future Volume (veh/h)	96	91	947	128	110	982
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	107	101	1052	142	122	1091
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	288	132	2648	357	455	2991
Arrive On Green	0.08	0.08	1.00	1.00	1.00	1.00
Sat Flow, veh/h	3456	1585	3240	424	469	3647
Grp Volume(v), veh/h	107	101	594	600	122	1091
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1794	469	1777
Q Serve(g_s), s	3.5	7.5	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	7.5	0.0	0.0	0.0	0.0
Prop In Lane	1.00	1.00		0.24	1.00	
Lane Grp Cap(c), veh/h	288	132	1495	1510	455	2991
V/C Ratio(X)	0.37	0.76	0.40	0.40	0.27	0.36
Avail Cap(c_a), veh/h	677	310	1495	1510	455	2991
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	0.89	0.89
Uniform Delay (d), s/veh	52.0	53.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	8.8	0.7	0.7	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	5.9	0.5	0.6	0.3	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	52.8	62.6	0.7	0.7	1.3	0.3
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	208		1194			1213
Approach Delay, s/veh	57.6		0.7			0.4
Approach LOS	E		A			A

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	105.5			105.5	14.5
Change Period (Y+Rc), s	4.5			4.5	4.5
Max Green Setting (Gmax), s	87.5			87.5	23.5
Max Q Clear Time (g_c+I1), s	2.0			2.0	9.5
Green Ext Time (p_c), s	11.6			14.8	0.5

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	0	44	28	0	54	90	773	175	327	1020	209
Future Volume (veh/h)	49	0	44	28	0	54	90	773	175	327	1020	209
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	54	0	49	31	0	60	100	859	194	363	1133	232
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	0	104	156	0	87	399	2383	1105	574	2549	1197
Arrive On Green	0.04	0.00	0.07	0.03	0.00	0.05	0.08	1.00	1.00	0.12	0.95	0.95
Sat Flow, veh/h	1781	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	54	0	49	31	0	60	100	859	194	363	1133	232
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.4	0.0	3.6	2.0	0.0	4.5	2.1	0.0	0.0	7.3	3.1	0.9
Cycle Q Clear(g_c), s	3.4	0.0	3.6	2.0	0.0	4.5	2.1	0.0	0.0	7.3	3.1	0.9
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	151	0	104	156	0	87	399	2383	1105	574	2549	1197
V/C Ratio(X)	0.36	0.00	0.47	0.20	0.00	0.69	0.25	0.36	0.18	0.63	0.44	0.19
Avail Cap(c_a), veh/h	210	0	258	220	0	244	468	2383	1105	902	2549	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	0.51	0.51	0.51
Uniform Delay (d), s/veh	51.0	0.0	54.1	51.5	0.0	55.7	5.1	0.0	0.0	3.8	0.8	0.6
Incr Delay (d2), s/veh	1.4	0.0	3.3	0.6	0.0	9.4	0.3	0.4	0.3	0.6	0.3	0.2
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(95%),veh/ln	2.8	0.0	2.7	1.6	0.0	3.6	1.3	0.2	0.2	3.8	1.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	0.0	57.3	52.1	0.0	65.1	5.4	0.4	0.3	4.4	1.1	0.8
LnGrp LOS	D	A	E	D	A	E	A	A	A	A	A	A
Approach Vol, veh/h		103			91			1153			1728	
Approach Delay, s/veh		54.8			60.7			0.8			1.8	
Approach LOS		D			E			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	85.0	7.7	12.4	9.3	90.6	9.0	11.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	42.5	7.5	19.5	9.5	65.5	8.5	18.5
Max Q Clear Time (g_c+I1), s	19.3	2.0	4.0	5.6	4.1	5.1	5.4	6.5
Green Ext Time (p_c), s	1.1	8.3	0.0	0.1	0.1	13.2	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	745	178	664	753	6	88	546	242	16	714	14
Future Volume (veh/h)	4	745	178	664	753	6	88	546	242	16	714	14
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	4	828	198	738	837	7	98	607	0	18	793	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	1298	483	763	2617	812	238	1466		268	1157	23
Arrive On Green	0.08	0.08	0.08	0.44	1.00	1.00	0.02	0.14	0.00	0.32	0.32	0.32
Sat Flow, veh/h	652	5106	1585	3456	5106	1585	1781	3554	1585	813	3562	72
Grp Volume(v), veh/h	4	828	198	738	837	7	98	607	0	18	395	414
Grp Sat Flow(s),veh/h/ln	652	1702	1585	1728	1702	1585	1781	1777	1585	813	1777	1857
Q Serve(g_s), s	0.7	18.8	13.4	25.0	0.0	0.0	4.2	18.8	0.0	2.0	23.2	23.2
Cycle Q Clear(g_c), s	0.7	18.8	13.4	25.0	0.0	0.0	4.2	18.8	0.0	10.2	23.2	23.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	226	1298	483	763	2617	812	238	1466		268	577	603
V/C Ratio(X)	0.02	0.64	0.41	0.97	0.32	0.01	0.41	0.41		0.07	0.69	0.69
Avail Cap(c_a), veh/h	226	1298	483	763	2617	812	275	1466		268	577	603
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	0.92	0.92	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	49.6	41.4	33.1	0.0	0.0	27.6	38.6	0.0	34.0	35.2	35.2
Incr Delay (d2), s/veh	0.1	2.3	2.5	24.7	0.3	0.0	1.0	0.8	0.0	0.5	6.5	6.2
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(95%),veh/ln	0.2	13.6	10.0	16.3	0.1	0.0	3.5	13.9	0.0	0.8	16.5	17.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	51.9	43.8	57.7	0.3	0.0	28.6	39.4	0.0	34.4	41.7	41.4
LnGrp LOS	D	D	D	E	A	A	C	D		C	D	D
Approach Vol, veh/h		1030			1582			705	A		827	
Approach Delay, s/veh		50.3			27.1			37.9			41.4	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	54.0	31.0	35.0	10.5	43.5	66.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	49.5	26.5	30.5	8.5	36.5	61.5
Max Q Clear Time (g_c+I1), s	20.8	27.0	20.8	6.2	25.2	2.0
Green Ext Time (p_c), s	4.5	0.0	4.1	0.0	4.0	7.3

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	939	64	0	1423	0	49
Future Vol, veh/h	939	64	0	1423	0	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1043	71	0	1581	0	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	522
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	*718
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*718
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	718	-	-	-
HCM Lane V/C Ratio	0.076	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	928	59	162	1371	53	49
Future Volume (veh/h)	928	59	162	1371	53	49
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1031	66	180	1523	59	54
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	4461	1385	991	4461	177	81
Arrive On Green	1.00	1.00	1.00	1.00	0.05	0.05
Sat Flow, veh/h	5274	1585	997	5274	3456	1585
Grp Volume(v), veh/h	1031	66	180	1523	59	54
Grp Sat Flow(s),veh/h/ln	1702	1585	499	1702	1728	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.0	2.0	4.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	2.0	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	4461	1385	991	4461	177	81
V/C Ratio(X)	0.23	0.05	0.18	0.34	0.33	0.66
Avail Cap(c_a), veh/h	4461	1385	991	4461	734	337
HCM Platoon Ratio	1.33	1.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	54.9	55.9
Incr Delay (d2), s/veh	0.1	0.1	0.3	0.1	1.1	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.1	0.0	0.1	0.1	1.6	3.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.1	0.1	0.3	0.1	56.0	64.8
LnGrp LOS	A	A	A	A	E	E
Approach Vol, veh/h	1097			1703	113	
Approach Delay, s/veh	0.1			0.2	60.2	
Approach LOS	A			A	E	

Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		10.7		109.3		109.3
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		25.5		85.5		85.5
Max Q Clear Time (g_c+I1), s		6.0		2.0		2.0
Green Ext Time (p_c), s		0.3		8.7		26.4

Intersection Summary	
HCM 6th Ctrl Delay	2.5
HCM 6th LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	903	116	184	671	23	25
Future Volume (veh/h)	903	116	184	671	23	25
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1003	129	204	746	26	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3218	1309	438	3723	349	310
Arrive On Green	0.63	0.63	0.12	1.00	0.20	0.20
Sat Flow, veh/h	5274	1585	1781	5274	1781	1585
Grp Volume(v), veh/h	1003	129	204	746	26	28
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1781	1585
Q Serve(g_s), s	10.8	1.8	4.9	0.0	1.4	1.7
Cycle Q Clear(g_c), s	10.8	1.8	4.9	0.0	1.4	1.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3218	1309	438	3723	349	310
V/C Ratio(X)	0.31	0.10	0.47	0.20	0.07	0.09
Avail Cap(c_a), veh/h	3218	1309	707	3723	349	310
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	10.2	2.0	6.5	0.0	39.4	39.5
Incr Delay (d2), s/veh	0.3	0.2	0.7	0.1	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.7	2.3	2.8	0.1	1.2	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.5	2.1	7.2	0.1	39.8	40.1
LnGrp LOS	B	A	A	A	D	D
Approach Vol, veh/h	1132			950	54	
Approach Delay, s/veh	9.5			1.6	39.9	
Approach LOS	A			A	D	

Timer - Assigned Phs	2	3	4		8
Phs Duration (G+Y+Rc), s	28.0	11.9	80.1		92.0
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	23.5	25.5	57.5		87.5
Max Q Clear Time (g_c+I1), s	3.7	6.9	12.8		2.0
Green Ext Time (p_c), s	0.1	0.5	8.5		6.3

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.1

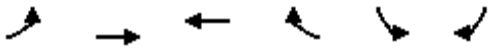
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2384	1320	6	0	21
Future Vol, veh/h	0	2384	1320	6	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2649	1467	7	0	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	737
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	*602
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*602
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	602
HCM Lane V/C Ratio	-	-	-	0.039
HCM Control Delay (s)	-	-	-	11.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

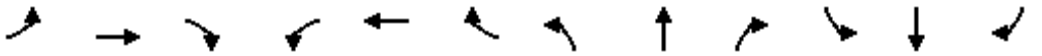
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	286	2098	1154	100	69	172
Future Volume (veh/h)	286	2098	1154	100	69	172
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	318	2331	1282	111	77	191
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	424	4016	3397	1274	247	219
Arrive On Green	0.17	1.00	0.67	0.67	0.14	0.14
Sat Flow, veh/h	1781	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	318	2331	1282	111	77	191
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1781	1585
Q Serve(g_s), s	7.1	0.0	13.5	1.8	4.7	14.2
Cycle Q Clear(g_c), s	7.1	0.0	13.5	1.8	4.7	14.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	424	4016	3397	1274	247	219
V/C Ratio(X)	0.75	0.58	0.38	0.09	0.31	0.87
Avail Cap(c_a), veh/h	772	4016	3397	1274	334	297
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	0.0	9.0	2.5	46.5	50.6
Incr Delay (d2), s/veh	2.7	0.6	0.3	0.1	0.7	18.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.6	0.4	8.4	1.9	3.8	18.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.0	0.6	9.3	2.6	47.3	69.1
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h		2649	1393		268	
Approach Delay, s/veh		1.7	8.8		62.8	
Approach LOS		A	A		E	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			98.9		21.1	14.5	84.3
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			88.5		22.5	33.5	50.5
Max Q Clear Time (g_c+I1), s			2.0		16.2	9.1	15.5
Green Ext Time (p_c), s			46.4		0.5	0.9	12.7

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	973	175	0	0	575	15	596	0	30	0	0	0
Future Volume (veh/h)	973	175	0	0	575	15	596	0	30	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	1081	194	0	0	639	17	662	0	33			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	1214	3606	0	0	1621	503	756	409	347			
Arrive On Green	0.12	0.23	0.00	0.00	0.32	0.32	0.22	0.00	0.22			
Sat Flow, veh/h	3456	5274	0	0	5274	1585	3456	1870	1585			
Grp Volume(v), veh/h	1081	194	0	0	639	17	662	0	33			
Grp Sat Flow(s),veh/h/ln	1728	1702	0	0	1702	1585	1728	1870	1585			
Q Serve(g_s), s	37.0	3.5	0.0	0.0	11.7	0.9	22.2	0.0	2.0			
Cycle Q Clear(g_c), s	37.0	3.5	0.0	0.0	11.7	0.9	22.2	0.0	2.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	1214	3606	0	0	1621	503	756	409	347			
V/C Ratio(X)	0.89	0.05	0.00	0.00	0.39	0.03	0.88	0.00	0.10			
Avail Cap(c_a), veh/h	1397	3606	0	0	1621	503	994	538	456			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.70	0.70	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	50.8	14.9	0.0	0.0	32.0	28.3	45.3	0.0	37.4			
Incr Delay (d2), s/veh	5.0	0.0	0.0	0.0	0.7	0.1	7.1	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	23.7	2.1	0.0	0.0	8.4	0.6	15.5	0.0	1.4			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.7	14.9	0.0	0.0	32.7	28.4	52.4	0.0	37.5			
LnGrp LOS	E	B	A	A	C	C	D	A	D			
Approach Vol, veh/h		1275			656			695				
Approach Delay, s/veh		49.5			32.6			51.7				
Approach LOS		D			C			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		30.8		89.2			46.7	42.6				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		34.5		76.5			48.5	23.5				
Max Q Clear Time (g_c+I1), s		24.2		5.5			39.0	13.7				
Green Ext Time (p_c), s		2.0		1.3			3.1	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			45.8									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1153	854	110	1071	0	0	0	0	10	0	606
Future Volume (veh/h)	0	1153	854	110	1071	0	0	0	0	10	0	606
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1281	0	122	1190	0				11	0	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	4257		407	4658	0				23	0	
Arrive On Green	0.00	0.28	0.00	0.05	1.00	0.00				0.01	0.00	0.00
Sat Flow, veh/h	0	5274	1585	1781	5274	0				1781	0	1585
Grp Volume(v), veh/h	0	1281	0	122	1190	0				11	0	0
Grp Sat Flow(s),veh/h/ln	0	1702	1585	1781	1702	0				1781	0	1585
Q Serve(g_s), s	0.0	23.8	0.0	1.0	0.0	0.0				0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	23.8	0.0	1.0	0.0	0.0				0.7	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	4257		407	4658	0				23	0	
V/C Ratio(X)	0.00	0.30		0.30	0.26	0.00				0.48	0.00	
Avail Cap(c_a), veh/h	0	4257		446	4658	0				839	0	
HCM Platoon Ratio	1.00	0.33	0.33	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.68	0.00	0.74	0.74	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	15.9	0.0	4.5	0.0	0.0				58.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.3	0.1	0.0				15.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	15.2	0.0	1.1	0.1	0.0				0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.0	0.0	4.8	0.1	0.0				73.8	0.0	0.0
LnGrp LOS	A	B		A	A	A				E	A	
Approach Vol, veh/h		1281	A		1312						11	A
Approach Delay, s/veh		16.0			0.5						73.8	
Approach LOS		B			A						E	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		9.4	104.6		6.0		114.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		7.5	42.5		56.5		54.5					
Max Q Clear Time (g_c+I1), s		3.0	25.8		2.7		2.0					
Green Ext Time (p_c), s		0.1	7.8		0.0		10.2					

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	473	341	318	829	159	317	933	341	137	1028	230
Future Volume (veh/h)	195	473	341	318	829	159	317	933	341	137	1028	230
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	217	526	379	353	921	177	352	1037	379	152	1142	256
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	278	995	500	427	1043	428	415	2380	934	333	2101	833
Arrive On Green	0.11	0.19	0.19	0.12	0.20	0.20	0.24	0.93	0.93	0.07	0.41	0.41
Sat Flow, veh/h	1781	5106	1585	3456	5106	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	217	526	379	353	921	177	352	1037	379	152	1142	256
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1585	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.5	11.1	23.4	12.0	21.0	11.0	11.7	2.8	2.9	5.9	20.3	11.0
Cycle Q Clear(g_c), s	11.5	11.1	23.4	12.0	21.0	11.0	11.7	2.8	2.9	5.9	20.3	11.0
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	278	995	500	427	1043	428	415	2380	934	333	2101	833
V/C Ratio(X)	0.78	0.53	0.76	0.83	0.88	0.41	0.85	0.44	0.41	0.46	0.54	0.31
Avail Cap(c_a), veh/h	335	995	500	677	1085	441	619	2380	934	357	2101	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	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	34.8	43.4	37.0	51.3	46.4	36.0	44.5	2.3	1.4	17.9	26.8	16.1
Incr Delay (d2), s/veh	9.4	0.5	6.6	4.8	8.6	0.6	7.1	0.6	1.3	1.0	1.0	1.0
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(95%),veh/ln	9.4	8.1	15.8	9.1	14.4	7.6	8.3	1.4	1.5	4.4	12.9	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.1	43.9	43.6	56.1	54.9	36.7	51.6	2.9	2.7	18.9	27.8	17.1
LnGrp LOS	D	D	D	E	D	D	D	A	A	B	C	B
Approach Vol, veh/h		1122			1451			1768			1550	
Approach Delay, s/veh		43.8			53.0			12.5			25.1	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.4	60.4	19.3	27.9	18.9	53.9	18.2	29.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	9.5	49.5	23.5	19.5	21.5	37.5	17.5	25.5
Max Q Clear Time (g_c+I1), s	7.9	4.9	14.0	25.4	13.7	22.3	13.5	23.0
Green Ext Time (p_c), s	0.1	10.8	0.8	0.0	0.8	7.5	0.2	1.5

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	60	0	0	99	0	1493	14	0	1177	25
Future Vol, veh/h	0	0	60	0	0	99	0	1493	14	0	1177	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	-	-	0	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	67	0	0	110	0	1659	16	0	1308	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	668	-	-	838	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*646	0	0	*558	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %			1			1		-	-		-	-
Mov Cap-1 Maneuver	-	-	*646	-	-	*558	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	13	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	646	558	-	-
HCM Lane V/C Ratio	-	-	0.103	0.197	-	-
HCM Control Delay (s)	-	-	11.2	13	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.3	0.7	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

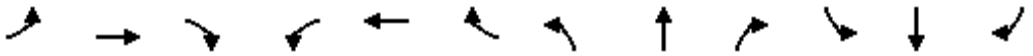
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	0	0	23	35	1484	20	36	1616	45
Future Vol, veh/h	0	0	10	0	0	23	35	1484	20	36	1616	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	125	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	26	39	1649	22	40	1796	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	923	-	-	836	1846	0	0	1671	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*545	0	0	*567	661	-	-	*713	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*545	-	-	*567	661	-	-	*713	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	11.6	0.2	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	661	-	-	545	567	* 713	-	-
HCM Lane V/C Ratio	0.059	-	-	0.02	0.045	0.056	-	-
HCM Control Delay (s)	10.8	-	-	11.7	11.6	10.3	-	-
HCM Lane LOS	B	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.1	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	45	134	10	140	20	1359	176	104	1482	40
Future Volume (veh/h)	30	10	45	134	10	140	20	1359	176	104	1482	40
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	33	11	50	149	11	156	22	1510	196	116	1647	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	16	74	253	350	361	252	3368	1046	281	3773	101
Arrive On Green	0.06	0.06	0.06	0.09	0.19	0.19	0.66	0.66	0.66	0.05	0.98	0.98
Sat Flow, veh/h	1218	294	1336	1781	1870	1585	291	5106	1585	1781	5113	137
Grp Volume(v), veh/h	33	0	61	149	11	156	22	1510	196	116	1096	595
Grp Sat Flow(s),veh/h/ln	1218	0	1630	1781	1870	1585	291	1702	1585	1781	1702	1846
Q Serve(g_s), s	3.2	0.0	4.4	9.1	0.6	10.1	3.3	17.2	5.8	2.4	1.3	1.3
Cycle Q Clear(g_c), s	3.2	0.0	4.4	9.1	0.6	10.1	3.3	17.2	5.8	2.4	1.3	1.3
Prop In Lane	1.00		0.82	1.00		1.00	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	128	0	91	253	350	361	252	3368	1046	281	2512	1362
V/C Ratio(X)	0.26	0.00	0.67	0.59	0.03	0.43	0.09	0.45	0.19	0.41	0.44	0.44
Avail Cap(c_a), veh/h	248	0	251	375	662	626	252	3368	1046	557	2512	1362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	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	55.0	0.0	55.6	45.7	39.9	39.7	7.5	9.9	7.9	7.6	0.3	0.3
Incr Delay (d2), s/veh	1.1	0.0	8.4	2.2	0.0	0.8	0.7	0.4	0.4	1.0	0.6	1.0
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(95%),veh/ln	1.8	0.0	3.6	7.6	0.5	7.3	0.4	10.3	3.6	1.6	0.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.1	0.0	64.0	47.9	39.9	40.5	8.2	10.3	8.3	8.5	0.9	1.3
LnGrp LOS	E	A	E	D	D	D	A	B	A	A	A	A
Approach Vol, veh/h		94			316			1728			1807	
Approach Delay, s/veh		61.2			44.0			10.1			1.5	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	9.4	83.7	15.8	11.2		93.1		26.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	23.5	40.5	19.5	18.5		68.5		42.5				
Max Q Clear Time (g_c+I1), s	4.4	19.2	11.1	6.4		3.3		12.1				
Green Ext Time (p_c), s	0.3	12.9	0.2	0.3		20.6		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.1									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	40	0	0	0	30	1555	10	5	1616	40
Future Vol, veh/h	0	0	40	0	0	0	30	1555	10	5	1616	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	-	-	0	-	-	0	200	-	-	200	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	44	0	0	0	33	1728	11	6	1796	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	920	-	-	870	1840	0	0	1739	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*536	0	0	*558	*673	-	-	*701	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*536	-	-	*558	*673	-	-	*701	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	0	0.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 673	-	-	536	-	* 701	-	-
HCM Lane V/C Ratio	0.05	-	-	0.083	-	0.008	-	-
HCM Control Delay (s)	10.6	-	-	12.3	0	10.2	-	-
HCM Lane LOS	B	-	-	B	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

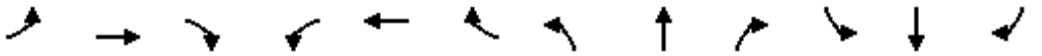
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	25	0	0	20	40	1575	15	5	1626	25
Future Vol, veh/h	0	0	25	0	0	20	40	1575	15	5	1626	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	28	0	0	22	44	1750	17	6	1807	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	918	-	-	884	1835	0	0	1767	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.14	-	-	7.14	5.34	-	-	5.34	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.92	-	-	3.92	3.12	-	-	3.12	-	-
Pot Cap-1 Maneuver	0	0	*545	0	0	*545	673	-	-	*686	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*545	-	-	*545	673	-	-	*686	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	11.9	0.3	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	673	-	-	545	545	* 686	-	-
HCM Lane V/C Ratio	0.066	-	-	0.051	0.041	0.008	-	-
HCM Control Delay (s)	10.7	-	-	12	11.9	10.3	-	-
HCM Lane LOS	B	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	339	1448	305	810	1595	518	205	774	437	434	926	266
Future Volume (veh/h)	339	1448	305	810	1595	518	205	774	437	434	926	266
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	377	1609	339	900	1772	0	228	860	0	482	1029	296
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	441	1511	594	850	2114		274	872		475	1170	566
Arrive On Green	0.13	0.30	0.30	0.16	0.28	0.00	0.08	0.17	0.00	0.14	0.23	0.23
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	377	1609	339	900	1772	0	228	860	0	482	1029	296
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	12.8	35.5	20.4	29.5	39.2	0.0	7.8	20.2	0.0	16.5	23.3	17.7
Cycle Q Clear(g_c), s	12.8	35.5	20.4	29.5	39.2	0.0	7.8	20.2	0.0	16.5	23.3	17.7
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	441	1511	594	850	2114		274	872		475	1170	566
V/C Ratio(X)	0.85	1.07	0.57	1.06	0.84		0.83	0.99		1.01	0.88	0.52
Avail Cap(c_a), veh/h	533	1511	594	850	2114		274	872		475	1170	566
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.54	0.54	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.3	42.3	29.8	50.1	39.6	0.0	54.5	49.6	0.0	51.8	44.6	30.5
Incr Delay (d2), s/veh	11.1	42.7	1.3	40.3	1.7	0.0	19.3	27.3	0.0	44.9	9.5	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.2	29.1	12.4	23.8	22.3	0.0	7.3	15.9	0.0	15.2	16.0	11.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.4	85.0	31.1	90.4	41.3	0.0	73.8	76.9	0.0	96.7	54.2	34.0
LnGrp LOS	E	F	C	F	D		E	E		F	D	C
Approach Vol, veh/h		2325			2672	A		1088	A		1807	
Approach Delay, s/veh		73.4			57.8			76.2			62.2	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	25.0	34.0	40.0	14.0	32.0	19.8	54.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	16.5	20.5	29.5	35.5	9.5	27.5	18.5	46.5
Max Q Clear Time (g_c+I1), s	18.5	22.2	31.5	37.5	9.8	25.3	14.8	41.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.5	0.5	4.3

Intersection Summary	
HCM 6th Ctrl Delay	66.0
HCM 6th LOS	E

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2095	170	230	2743	15	170	0	110	10	0	10
Future Volume (veh/h)	10	2095	170	230	2743	15	170	0	110	10	0	10
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	11	2328	189	256	3048	17	189	0	122	11	0	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	3046	244	284	4063	23	235	0	237	112	0	66
Arrive On Green	0.63	0.63	0.63	0.11	0.78	0.78	0.07	0.00	0.15	0.04	0.00	0.04
Sat Flow, veh/h	74	4819	386	1781	5240	29	1781	0	1585	1269	0	1585
Grp Volume(v), veh/h	11	1635	882	256	1978	1087	189	0	122	11	0	11
Grp Sat Flow(s),veh/h/ln	74	1702	1801	1781	1702	1865	1781	0	1585	1269	0	1585
Q Serve(g_s), s	11.2	40.8	42.4	10.5	37.4	37.7	8.5	0.0	8.5	1.0	0.0	0.8
Cycle Q Clear(g_c), s	31.7	40.8	42.4	10.5	37.4	37.7	8.5	0.0	8.5	1.0	0.0	0.8
Prop In Lane	1.00		0.21	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	2152	1138	284	2639	1446	235	0	237	112	0	66
V/C Ratio(X)	0.12	0.76	0.77	0.90	0.75	0.75	0.81	0.00	0.51	0.10	0.00	0.17
Avail Cap(c_a), veh/h	94	2152	1138	326	2639	1446	235	0	403	245	0	231
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)	0.28	0.28	0.28	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	15.6	15.9	37.3	7.2	7.3	52.0	0.0	47.0	55.6	0.0	55.5
Incr Delay (d2), s/veh	0.7	0.7	1.5	24.6	2.0	3.6	18.2	0.0	1.7	0.4	0.0	1.2
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(95%),veh/ln	0.4	18.3	20.2	14.5	17.2	19.5	4.9	0.0	6.3	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	16.4	17.4	61.9	9.2	10.9	70.2	0.0	48.7	56.0	0.0	56.7
LnGrp LOS	C	B	B	E	A	B	E	A	D	E	A	E
Approach Vol, veh/h		2528			3321			311			22	
Approach Delay, s/veh		16.7			13.8			61.8			56.4	
Approach LOS		B			B			E			E	

Timer - Assigned Phs	2	3	4	5	6	8
Phs Duration (G+Y+Rc), s	22.5	17.2	80.4	13.0	9.5	97.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	30.5	15.5	60.5	8.5	17.5	80.5
Max Q Clear Time (g_c+I1), s	10.5	12.5	44.4	10.5	3.0	39.7
Green Ext Time (p_c), s	0.6	0.2	14.3	0.0	0.0	36.5

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	548	1583	83	117	2029	68	112	291	67	576	242	847
Future Volume (veh/h)	548	1583	83	117	2029	68	112	291	67	576	242	847
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	609	1759	92	130	2254	0	124	323	74	640	269	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	2633	938	229	2101		322	403	272	562	710	
Arrive On Green	0.16	0.52	0.52	0.02	0.14	0.00	0.08	0.11	0.11	0.16	0.20	0.00
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	1781	3554	1585	3456	3554	1585
Grp Volume(v), veh/h	609	1759	92	130	2254	0	124	323	74	640	269	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1781	1777	1585	1728	1777	1585
Q Serve(g_s), s	19.5	30.5	3.0	5.0	49.4	0.0	7.3	10.6	4.9	19.5	7.9	0.0
Cycle Q Clear(g_c), s	19.5	30.5	3.0	5.0	49.4	0.0	7.3	10.6	4.9	19.5	7.9	0.0
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	562	2633	938	229	2101		322	403	272	562	710	
V/C Ratio(X)	1.08	0.67	0.10	0.57	1.07		0.39	0.80	0.27	1.14	0.38	
Avail Cap(c_a), veh/h	562	2633	938	311	2101		327	518	324	562	814	
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	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	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.3	21.5	10.6	22.0	51.9	0.0	42.3	51.9	43.2	50.3	41.6	0.0
Incr Delay (d2), s/veh	62.9	1.4	0.2	2.2	42.5	0.0	0.8	6.8	0.5	82.7	0.3	0.0
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(95%),veh/ln	20.0	17.9	2.0	4.1	42.1	0.0	5.9	8.8	3.5	22.5	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	113.1	22.8	10.8	24.2	94.3	0.0	43.1	58.7	43.7	133.0	41.9	0.0
LnGrp LOS	F	C	B	C	F		D	E	D	F	D	
Approach Vol, veh/h		2460			2384	A		521			909	A
Approach Delay, s/veh		44.7			90.5			52.8			106.0	
Approach LOS		D			F			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	18.1	11.5	66.4	13.6	28.5	24.0	53.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	17.5	12.5	52.5	9.5	27.5	19.5	45.5
Max Q Clear Time (g_c+I1), s	21.5	12.6	7.0	32.5	9.3	9.9	21.5	51.4
Green Ext Time (p_c), s	0.0	1.0	0.1	13.4	0.0	1.5	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	71.7
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	15.7

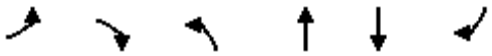
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	24	0	61	15	1516	12	30	1631	5
Future Vol, veh/h	5	0	10	24	0	61	15	1516	12	30	1631	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	11	27	0	68	17	1684	13	33	1812	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2757	3612	909	2697	3609	849	1818	0	0	1697	0	0
Stage 1	1881	1881	-	1725	1725	-	-	-	-	-	-	-
Stage 2	876	1731	-	972	1884	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	*7	*0	*386	*~ 10	*0	304	*578	-	-	372	-	-
Stage 1	*364	*319	-	*92	*142	-	-	-	-	-	-	-
Stage 2	*310	*141	-	*364	*319	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	*~ 5	*0	*386	*~ 9	*0	304	*578	-	-	372	-	-
Mov Cap-2 Maneuver	*~ 5	*0	-	*~ 9	*0	-	-	-	-	-	-	-
Stage 1	*354	*291	-	*89	*138	-	-	-	-	-	-	-
Stage 2	*234	*137	-	*322	*291	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 617.3	$ 494.5	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	* 578	-	-	15	9	304	372	-	-
HCM Lane V/C Ratio	0.029	-	-	1.111	2.963	0.223	0.09	-	-
HCM Control Delay (s)	11.4	-	-	$ 617.3	$ 1700.1	20.2	15.6	-	-
HCM Lane LOS	B	-	-	F	F	C	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	4.5	0.8	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	135	171	158	1424	1495	164
Future Volume (veh/h)	135	171	158	1424	1495	164
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	150	190	176	1582	1661	182
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	134	198	289	2967	2631	1292
Arrive On Green	0.08	0.08	0.05	0.83	0.74	0.74
Sat Flow, veh/h	1781	1585	1781	3647	3647	1585
Grp Volume(v), veh/h	150	190	176	1582	1661	182
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1777	1777	1585
Q Serve(g_s), s	7.5	7.5	2.1	13.2	22.8	2.4
Cycle Q Clear(g_c), s	7.5	7.5	2.1	13.2	22.8	2.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	134	198	289	2967	2631	1292
V/C Ratio(X)	1.12	0.96	0.61	0.53	0.63	0.14
Avail Cap(c_a), veh/h	134	198	406	2967	2631	1292
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.72	0.72
Uniform Delay (d), s/veh	46.3	43.5	12.2	2.5	6.3	1.9
Incr Delay (d2), s/veh	114.6	52.9	2.1	0.7	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.5	18.7	4.5	4.8	10.7	9.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	160.9	96.4	14.2	3.1	7.2	2.1
LnGrp LOS	F	F	B	A	A	A
Approach Vol, veh/h	340			1758	1843	
Approach Delay, s/veh	124.9			4.3	6.7	
Approach LOS	F			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		88.0		12.0	9.5	78.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		43.5		7.5	11.5	52.5
Max Q Clear Time (g_c+I1), s		15.2		9.5	4.1	24.8
Green Ext Time (p_c), s		15.3		0.0	0.3	16.9

Intersection Summary		
HCM 6th Ctrl Delay	15.8	
HCM 6th LOS	B	

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	287	5	10	290	21	5	0	5	14	0	5
Future Vol, veh/h	4	287	5	10	290	21	5	0	5	14	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	319	6	11	322	23	6	0	6	16	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	345	0	0	325	0	0	689	697	322	689	689	334
Stage 1	-	-	-	-	-	-	330	330	-	356	356	-
Stage 2	-	-	-	-	-	-	359	367	-	333	333	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1214	-	-	*1260	-	-	*360	*365	*842	*360	*369	708
Stage 1	-	-	-	-	-	-	*794	*695	-	*661	*629	-
Stage 2	-	-	-	-	-	-	*659	*622	-	*794	*695	-
Platoon blocked, %		-	-	1	-	-			1			
Mov Cap-1 Maneuver	1214	-	-	*1260	-	-	*354	*361	*842	*354	*365	708
Mov Cap-2 Maneuver	-	-	-	-	-	-	*354	*361	-	*354	*365	-
Stage 1	-	-	-	-	-	-	*791	*693	-	*659	*623	-
Stage 2	-	-	-	-	-	-	*648	*616	-	*786	*693	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	12.4	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	498	1214	-	-	* 1260	-	-	408
HCM Lane V/C Ratio	0.022	0.004	-	-	0.009	-	-	0.052
HCM Control Delay (s)	12.4	8	-	-	7.9	-	-	14.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	286	10	10	291	5	10
Future Vol, veh/h	286	10	10	291	5	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	318	11	11	323	6	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	329	0	669	324
Stage 1	-	-	-	-	324	-
Stage 2	-	-	-	-	345	-
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	-	-	1231	-	423	717
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1231	-	419	717
Mov Cap-2 Maneuver	-	-	-	-	419	-
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	580	-	-	1231	-
HCM Lane V/C Ratio	0.029	-	-	0.009	-
HCM Control Delay (s)	11.4	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

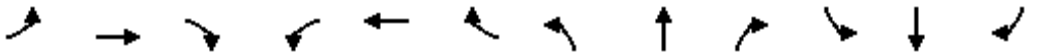
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	282	10	15	269	12	10	0	5	9	0	5
Future Vol, veh/h	9	282	10	15	269	12	10	0	5	9	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	313	11	17	299	13	11	0	6	10	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	312	0	0	324	0	0	682	685	319	682	684	306
Stage 1	-	-	-	-	-	-	339	339	-	340	340	-
Stage 2	-	-	-	-	-	-	343	346	-	342	344	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1248	-	-	1236	-	-	364	371	722	364	371	734
Stage 1	-	-	-	-	-	-	676	640	-	675	639	-
Stage 2	-	-	-	-	-	-	672	635	-	673	637	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1248	-	-	1236	-	-	355	363	722	355	363	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	363	-	355	363	-
Stage 1	-	-	-	-	-	-	671	635	-	670	630	-
Stage 2	-	-	-	-	-	-	658	626	-	662	632	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	13.8	13.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	427	1248	-	-	1236	-	-	435
HCM Lane V/C Ratio	0.039	0.008	-	-	0.013	-	-	0.036
HCM Control Delay (s)	13.8	7.9	-	-	8	-	-	13.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	6	74	0	137	10	1564	25	36	1644	19
Future Volume (veh/h)	13	0	6	74	0	137	10	1564	25	36	1644	19
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	14	0	7	82	0	152	11	1738	28	40	1827	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	80	9	20	252	0	213	257	2829	45	220	2844	33
Arrive On Green	0.04	0.00	0.04	0.06	0.00	0.13	0.79	0.79	0.79	1.00	1.00	1.00
Sat Flow, veh/h	724	219	471	1781	0	1585	250	3579	58	271	3598	41
Grp Volume(v), veh/h	21	0	0	82	0	152	11	861	905	40	901	947
Grp Sat Flow(s),veh/h/ln	1413	0	0	1781	0	1585	250	1777	1860	271	1777	1863
Q Serve(g_s), s	0.6	0.0	0.0	5.1	0.0	11.0	1.2	23.7	23.8	5.5	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	5.1	0.0	11.0	1.2	23.7	23.8	29.3	0.0	0.0
Prop In Lane	0.67		0.33	1.00		1.00	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	109	0	0	252	0	213	257	1404	1470	220	1404	1472
V/C Ratio(X)	0.19	0.00	0.00	0.33	0.00	0.71	0.04	0.61	0.62	0.18	0.64	0.64
Avail Cap(c_a), veh/h	248	0	0	264	0	390	257	1404	1470	220	1404	1472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.79	0.79	0.79	0.74	0.74	0.74
Uniform Delay (d), s/veh	55.8	0.0	0.0	49.4	0.0	49.7	2.8	5.1	5.1	3.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.7	0.0	4.4	0.2	1.6	1.5	1.3	1.7	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	0.0	0.0	4.2	0.0	8.2	0.1	11.5	12.0	0.6	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.7	0.0	0.0	50.1	0.0	54.1	3.0	6.7	6.7	5.0	1.7	1.6
LnGrp LOS	E	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		21			234			1777			1888	
Approach Delay, s/veh		56.7			52.7			6.7			1.7	
Approach LOS		E			D			A			A	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		99.3	11.2	9.5		99.3		20.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		81.5	7.5	17.5		81.5		29.5				
Max Q Clear Time (g_c+I1), s		25.8	7.1	3.5		31.3		13.0				
Green Ext Time (p_c), s		24.5	0.0	0.0		27.1		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

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

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	466	405	1334	380	326	1233
Future Volume (veh/h)	466	405	1334	380	326	1233
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	518	450	1482	422	362	1370
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	562	419	1719	469	389	2710
Arrive On Green	0.16	0.16	1.00	1.00	0.20	1.00
Sat Flow, veh/h	3456	1585	2853	752	1781	3647
Grp Volume(v), veh/h	518	450	931	973	362	1370
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1735	1781	1777
Q Serve(g_s), s	17.7	19.5	0.0	0.0	9.4	0.0
Cycle Q Clear(g_c), s	17.7	19.5	0.0	0.0	9.4	0.0
Prop In Lane	1.00	1.00		0.43	1.00	
Lane Grp Cap(c), veh/h	562	419	1107	1081	389	2710
V/C Ratio(X)	0.92	1.07	0.84	0.90	0.93	0.51
Avail Cap(c_a), veh/h	562	419	1107	1081	526	2710
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.75	0.75	0.68	0.68
Uniform Delay (d), s/veh	49.5	44.1	0.0	0.0	11.2	0.0
Incr Delay (d2), s/veh	20.9	64.9	5.9	9.3	14.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.2	28.2	3.3	5.1	8.6	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.4	109.1	5.9	9.3	25.8	0.5
LnGrp LOS	E	F	A	A	C	A
Approach Vol, veh/h	968		1904			1732
Approach Delay, s/veh	88.4		7.7			5.8
Approach LOS	F		A			A

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	16.7	79.3				96.0	24.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	21.5	65.5				91.5	19.5
Max Q Clear Time (g_c+I1), s	11.4	2.0				2.0	21.5
Green Ext Time (p_c), s	0.8	30.4				16.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	23.9
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	0	137	178	0	330	29	1676	35	63	1244	67
Future Volume (veh/h)	165	0	137	178	0	330	29	1676	35	63	1244	67
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	183	0	152	198	0	367	32	1862	39	70	1382	74
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	0	337	403	0	388	179	1766	951	127	1802	916
Arrive On Green	0.07	0.00	0.21	0.10	0.00	0.24	0.03	0.50	0.50	0.04	0.51	0.51
Sat Flow, veh/h	1781	0	1585	1781	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	183	0	152	198	0	367	32	1862	39	70	1382	74
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	8.5	0.0	10.0	10.1	0.0	27.3	1.0	59.6	1.2	2.3	37.6	2.5
Cycle Q Clear(g_c), s	8.5	0.0	10.0	10.1	0.0	27.3	1.0	59.6	1.2	2.3	37.6	2.5
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	204	0	337	403	0	388	179	1766	951	127	1802	916
V/C Ratio(X)	0.90	0.00	0.45	0.49	0.00	0.95	0.18	1.05	0.04	0.55	0.77	0.08
Avail Cap(c_a), veh/h	204	0	337	479	0	390	242	1766	951	171	1802	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.20	0.20	0.20	0.58	0.58	0.58
Uniform Delay (d), s/veh	39.4	0.0	41.1	31.2	0.0	44.5	19.9	30.2	9.9	28.3	23.8	11.2
Incr Delay (d2), s/veh	36.7	0.0	0.9	0.9	0.0	32.0	0.1	28.0	0.0	2.2	1.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.2	0.0	7.2	7.9	0.0	20.2	0.8	37.0	0.8	1.9	20.7	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.1	0.0	42.1	32.2	0.0	76.5	20.0	58.2	9.9	30.5	25.7	11.3
LnGrp LOS	E	A	D	C	A	E	B	F	A	C	C	B
Approach Vol, veh/h		335			565			1933			1526	
Approach Delay, s/veh		60.7			61.0			56.6			25.2	
Approach LOS		E			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	64.1	16.8	30.0	7.8	65.4	13.0	33.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.5	56.5	17.5	20.5	7.5	56.5	8.5	29.5
Max Q Clear Time (g_c+I1), s	4.3	61.6	12.1	12.0	3.0	39.6	10.5	29.3
Green Ext Time (p_c), s	0.0	0.0	0.2	0.5	0.0	9.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.5
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	923	147	487	950	33	269	1017	885	46	740	4
Future Volume (veh/h)	17	923	147	487	950	33	269	1017	885	46	740	4
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	19	1026	163	541	1056	37	299	1130	0	51	822	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	1474	662	632	2599	861	309	1224		140	904	4
Arrive On Green	0.10	0.10	0.10	0.06	0.17	0.17	0.13	0.34	0.00	0.03	0.25	0.25
Sat Flow, veh/h	516	5106	1585	3456	5106	1585	1781	3554	1585	1781	3626	18
Grp Volume(v), veh/h	19	1026	163	541	1056	37	299	1130	0	51	403	423
Grp Sat Flow(s),veh/h/ln	516	1702	1585	1728	1702	1585	1781	1777	1585	1781	1777	1867
Q Serve(g_s), s	4.0	23.4	9.5	18.6	22.2	2.2	14.7	36.7	0.0	2.5	26.4	26.4
Cycle Q Clear(g_c), s	4.0	23.4	9.5	18.6	22.2	2.2	14.7	36.7	0.0	2.5	26.4	26.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	209	1474	662	632	2599	861	309	1224		140	443	466
V/C Ratio(X)	0.09	0.70	0.25	0.86	0.41	0.04	0.97	0.92		0.36	0.91	0.91
Avail Cap(c_a), veh/h	209	1474	662	821	2599	861	309	1224		191	466	490
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	0.16	0.16	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	49.2	29.4	54.8	33.7	22.1	30.5	37.8	0.0	34.7	43.7	43.7
Incr Delay (d2), s/veh	0.8	2.6	0.9	7.1	0.5	0.1	13.4	2.3	0.0	1.6	21.1	20.3
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(95%),veh/ln	1.0	16.3	7.3	14.3	15.5	1.5	9.1	18.7	0.0	2.1	20.3	21.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	51.8	30.2	61.9	34.2	22.2	43.9	40.1	0.0	36.3	64.8	64.1
LnGrp LOS	D	D	C	E	C	C	D	D		D	E	E
Approach Vol, veh/h		1208			1634			1429	A		877	
Approach Delay, s/veh		48.7			43.1			40.9			62.8	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	45.8	26.5	39.1	20.0	34.4		65.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	7.5	39.5	28.5	26.5	15.5	31.5		59.5
Max Q Clear Time (g_c+I1), s	4.5	38.7	20.6	25.4	16.7	28.4		24.2
Green Ext Time (p_c), s	0.0	0.6	1.3	0.8	0.0	1.5		9.5

Intersection Summary	
HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑	↱		↑↑↑		↱
Traffic Vol, veh/h	1664	190	0	1470	0	259
Future Vol, veh/h	1664	190	0	1470	0	259
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1849	211	0	1633	0	288

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	925
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	*524
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*524
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	524	-	-	-
HCM Lane V/C Ratio	0.549	-	-	-
HCM Control Delay (s)	19.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	3.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1748	175	479	1198	272	259
Future Volume (veh/h)	1748	175	479	1198	272	259
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1942	194	532	1331	302	288
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2646	1134	594	3715	682	313
Arrive On Green	1.00	1.00	0.34	1.00	0.20	0.20
Sat Flow, veh/h	5274	1585	3456	5274	3456	1585
Grp Volume(v), veh/h	1942	194	532	1331	302	288
Grp Sat Flow(s),veh/h/ln	1702	1585	1728	1702	1728	1585
Q Serve(g_s), s	0.0	0.0	17.5	0.0	9.2	21.4
Cycle Q Clear(g_c), s	0.0	0.0	17.5	0.0	9.2	21.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2646	1134	594	3715	682	313
V/C Ratio(X)	0.73	0.17	0.90	0.36	0.44	0.92
Avail Cap(c_a), veh/h	2646	1134	734	3715	706	324
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.72	0.72	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	38.4	0.0	42.4	47.2
Incr Delay (d2), s/veh	1.8	0.3	8.9	0.2	0.5	30.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.2	10.6	0.1	7.2	16.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	1.8	0.3	47.3	0.2	42.8	77.2
LnGrp LOS	A	A	D	A	D	E
Approach Vol, veh/h	2136			1863	590	
Approach Delay, s/veh	1.7			13.6	59.6	
Approach LOS	A			B	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		28.2	25.1	66.7		91.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		24.5	25.5	56.5		86.5
Max Q Clear Time (g_c+I1), s		23.4	19.5	2.0		2.0
Green Ext Time (p_c), s		0.3	1.1	25.1		14.8

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	928	23	36	1187	144	159
Future Volume (veh/h)	928	23	36	1187	144	159
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1031	26	40	1319	160	177
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	3691	1146	463	4039	239	212
Arrive On Green	0.72	0.72	0.06	1.00	0.13	0.13
Sat Flow, veh/h	5274	1585	1781	5274	1781	1585
Grp Volume(v), veh/h	1031	26	40	1319	160	177
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1781	1585
Q Serve(g_s), s	8.4	0.6	0.6	0.0	10.3	13.1
Cycle Q Clear(g_c), s	8.4	0.6	0.6	0.0	10.3	13.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	3691	1146	463	4039	239	212
V/C Ratio(X)	0.28	0.02	0.09	0.33	0.67	0.83
Avail Cap(c_a), veh/h	3691	1146	579	4039	542	482
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.82	0.82	1.00	1.00
Uniform Delay (d), s/veh	5.8	4.7	3.6	0.0	49.4	50.7
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.2	3.2	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.5	0.3	0.4	0.1	8.4	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.7	3.7	0.2	52.7	58.9
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	1057			1359	337	
Approach Delay, s/veh	5.9			0.3	55.9	
Approach LOS	A			A	E	

Timer - Assigned Phs	2	3	4		8
Phs Duration (G+Y+Rc), s	20.6	8.2	91.2		99.4
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	36.5	11.5	58.5		74.5
Max Q Clear Time (g_c+I1), s	15.1	2.6	10.4		2.0
Green Ext Time (p_c), s	1.0	0.0	8.3		14.5

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.3

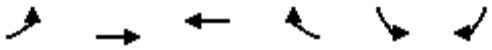
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2226	2776	2	0	59
Future Vol, veh/h	0	2226	2776	2	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2473	3084	2	0	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1543
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	0	-	-	-	0	*249
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*249
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	249
HCM Lane V/C Ratio	-	-	-	0.263
HCM Control Delay (s)	-	-	-	24.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	267	1959	2500	64	117	278
Future Volume (veh/h)	267	1959	2500	64	117	278
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	2177	2778	71	130	309
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	316	3936	3042	1189	275	462
Arrive On Green	0.28	1.00	0.60	0.60	0.15	0.15
Sat Flow, veh/h	1781	5274	5274	1585	1781	1585
Grp Volume(v), veh/h	297	2177	2778	71	130	309
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1585	1781	1585
Q Serve(g_s), s	14.6	0.0	57.9	1.4	8.0	18.5
Cycle Q Clear(g_c), s	14.6	0.0	57.9	1.4	8.0	18.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	316	3936	3042	1189	275	462
V/C Ratio(X)	0.94	0.55	0.91	0.06	0.47	0.67
Avail Cap(c_a), veh/h	316	3936	3042	1189	275	462
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	21.5	3.9	46.3	37.4
Incr Delay (d2), s/veh	35.0	0.6	5.5	0.1	5.8	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	15.0	0.4	30.9	1.5	7.2	25.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.5	0.6	27.0	4.0	52.1	44.9
LnGrp LOS	E	A	C	A	D	D
Approach Vol, veh/h		2474	2849		439	
Approach Delay, s/veh		8.7	26.4		47.0	
Approach LOS		A	C		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	97.0	23.0	21.0	76.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	92.5	18.5	16.5	71.5
Max Q Clear Time (g_c+I1), s	2.0	20.5	16.6	59.9
Green Ext Time (p_c), s	41.0	0.0	0.0	11.0

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C

mments in green are provided by rommert@auroragov.org

1st Review

Please provide your response to comments adjacent to the comment made on the page prior to upload. This is not quired.

Please include airport boundary map in the appendix and identify the site, this map can be located on the city's website. https://auroraco.maps.arcgis.com/apps/webappviewer/ dex.html?id=a5477f6e176243849ec7cc77928ba7b7

tten, remove shx files.

MASTER DRAINAGE REPORT

Green Valley
Master Drainage Report
Amendment 3

GREEN VALLEY MASTER PLAN AMENDMENT 2

DECEMBER 22, 2021

MARCH 1, 2022

Dewberry

PREPARED FOR
Oakwood Homes
4908 Tower Rd
Denver, CO 80249
Contact: David Carro
303.486.8500

PREPARED BY
Dewberry
8100 E. Maplewood Ave
Suite 150
Greenwood Village, CO 80111
Contact: Jason D. Margraf, PE
Phone: 720-386-4325

JOB NO. 50145755

APPROVED FOR ONE YEAR FROM THIS DATE

_____

_____ _____
CITY ENGINEER **DATE**

_____ _____
WATER DEPARTMENT **DATE**

MHFD
MILE HIGH FLOOD DISTRICT

2480 W. 26th Ave Suite 156-B | Denver, CO 80211
TEL 303 455 6277 | FAX 303 455 7880
www.mhfd.org

For MHFD staff use only.	
Project ID:	102550
Submittal ID:	10008309
Partner ID:	1611254

April 21, 2022

To: Richard Ommert (Aurora)
Via email
Subject: MHFD Review Comments
Re: Green Valley (1611254)

This letter responds to the referral request for our comments concerning the referenced project. We have reviewed the referral only as it relates to a major drainageway and for maintenance eligibility of storm drainage features, in this case:

- First Creek, First Creek Trib T, Second Creek

MHFD staff has the following comments to offer:

Second Creek Watershed Comments

1) Provide details regard the 56th Ave connection to Possum Gully when available.
2) It appears that the SWMM analysis provided accounts for local detention in Ponds A, B, & C. Please note that MHFD does not recognize local detention for regional hydrology purposes, MHFD would need to see a separate SWMM analysis that did not include the local ponds to verify the flows into S-215 are in line with the MDP.
3) How will EURV/WQCV be accounted for? Please note that the Second Creek MDP states "each new development should provide its own on-site water quality best management practices" and this area is within the airport exclusion zone, as such pond S-215 will not be able to provide EURV/WQCV for upstream sites.
4) The SWMM model shows a high storage amount (7.165 ac-ft), consider increasing the duration of the model run time to account for these flows.

First Creek Watershed Comments

1) Help us understand how this differs from the original MDR. Concerning regional detention (8503C) provided in the First Creek watershed, provide the supporting documentation that the facilities been sized to account for the drainage area and different imperviousness modifications used in this design.
2) Please note that the models are being developed with outdated UD workbooks (UD-Detention v3.07). Refer to our website for the updated versions of the design workbooks (MHFD-Detention v4.05).
3) Concerning the Blue Gramma Draw area, the drainage report states this area will drain to a regional pond (Pond 840). How will permanent EURV/WQCV be accommodated from subwatershed A?

We appreciate the opportunity to review this proposal. Please feel free to reach out to me with any questions or concerns.

DENVER INTERNATIONAL AIRPORT
8500 Peña Blvd. | Denver, Colorado 80249-6340 | (303) 342-2000

DEN

MEMO

Date: March 23, 2022

To: City of Aurora
From: DEN Planning + Real Estate Through: Lisa Nguyen/Elise Brenninkmeyer

Subject: GREEN VALLEY RANCH

Denver International Airport (DEN) received your referral letter and we appreciate the opportunity to comment on the proposal. DEN provides the following comments:

- The proposed development is in the **"5-Mile 'Known - Wildlife Attractant Separation Area"** for the final build-out of future DEN Runways, as defined by the Federal Aviation Administration (FAA). The USDA Wildlife Biologists assigned to DEN (Benjamin.J.Massey@usda.gov and #dia-operations-usdawildlife@flydenver.com) assist in implementing DEN's Wildlife Hazard Management Plan and have requested coordination as this project progresses. USDA and DEN will provide assistance with the requirements outlined in the current version of FAA Advisory Circular 150/5200-33C (see link below). DEN also requests that the landscape plan include maintenance of trees and grasses to reduce attractants for wildlife such as raptor species, blackbirds/starlings, and geese. Fruit-producing trees and shrubs should be avoided. Water quality ponds/detention structures must be designed to meet a 48-hour drain time following a 100-year event.

  https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentnumber/150_5200-33

- The site is found within/under the navigable airspace associated with DEN, as promulgated and regulated by the Federal Aviation Administration (FAA) under 14 CFR Part 77, Objects Affecting the Navigable Airspace. Based on Part 77 and the development site location, the proponent is required to file notice with the FAA, via the FAA Form 7460-1 process (Notice of Proposed Construction or Alteration), of any structure or temporary construction equipment (e.g., cranes) that penetrate Part 77 surfaces. The FAA website from which the need for the 7460 process can be determined ("Notice Criteria Tool") and/or the filing can be initiated is: https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

8

9

9

10

12

1. Compliance with Standards 12

2. Summary of Concept 12

G. REFERENCES 13

APPENDIX A - FIGURES AND SUPPORTING DOCUMENTS 14

Vicinity Map 15-16

Planning Areas 15-16

DEN Airport Wildlife Attractant Separation Map 15-16

FEMA Flood Insurance Rate Map (FIRM) No.08005C0061L 17-18

NRCS Hydrologic Soil Group Map 19-22

NRCS Wind Erodibility Group Map 23-26

NRCS Water Soil Erodibility Group Map 27-30

APPENDIX B - HYDROLOGIC COMPUTATIONS 31

CUHP Model 32-34

SWMM Model 35-42

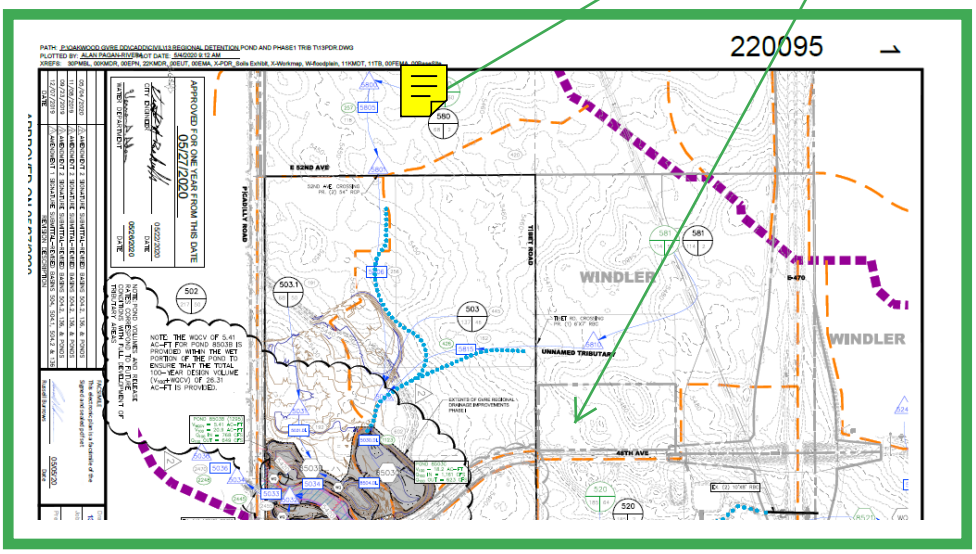
APPENDIX C – REFERENCE MATERIAL 43

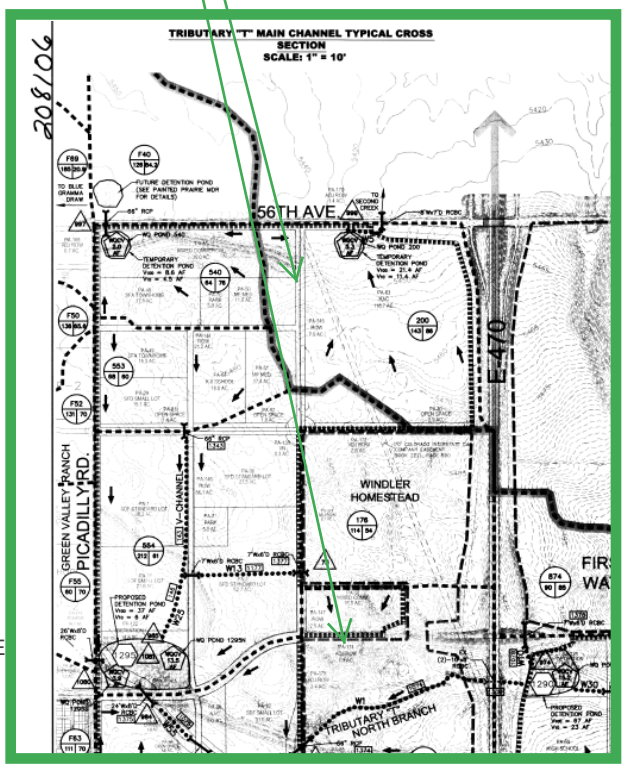
Pages from Referenced MDPs 44-49

Why maps for wind
d soil erodibility?

Id project limits, typical

Amendment 2





Please include reference to previous master plan and amendment. Describe what has changed from previous master plan or amendment.
List and incl a short desc of each (what did Amed 1&2 change from the Addendum?)
206069 Orig MP
208106 Addendum
218019 Amend 1
220095 Amend 2
This site should be overlayed onto the Amendment and Addendum
You will need to compare flows from this amendment to the previous study(s) use the most current values.
ntact MHFD concerning the update to First Creek MDP

2010). The Green Valley Master Plan Amendment 2 development will be referred to as "Site", "Parcel", "Project", and "Green Valley Master Plan Amendment 2" within the body of this Report.

Add in the report "that the master plan is conceptual and bject to change in the PDR and FDR"

The Site is tributary to three major basins; Blue Grama Draw (a tributary to First Creek), First Creek Tributary T, and Second Creek within the City of Aurora. The Site is bounded on the north by East 56th Avenue; along the south by East 52nd Avenue and the future Windler development; along the west by Piccadilly Road; and along the east by E-470.

The entire Project is located within the City of Aurora and is approximately 289.1 acres in size. The Project is further described as being located within the north ½ of Section 13, Township 3 South, Range 66 West of the Sixth Principal Meridian, City of Aurora, County of Adams, and State of Colorado. The approximate latitude and longitude are 39°, 47' 11" North and 104°, 43' 37" West. A Vicinity Map has been provided as Figure 1 to depict the Project and the surrounding area. Additionally, the property is located approximately 3 miles south of the Denver International Airport. Due to current FAA design criteria, this proximity ultimately influences the proposed regional pond designs servicing the Site within the adjacent developments. Please refer to the Design Criteria section of this Report for more information.

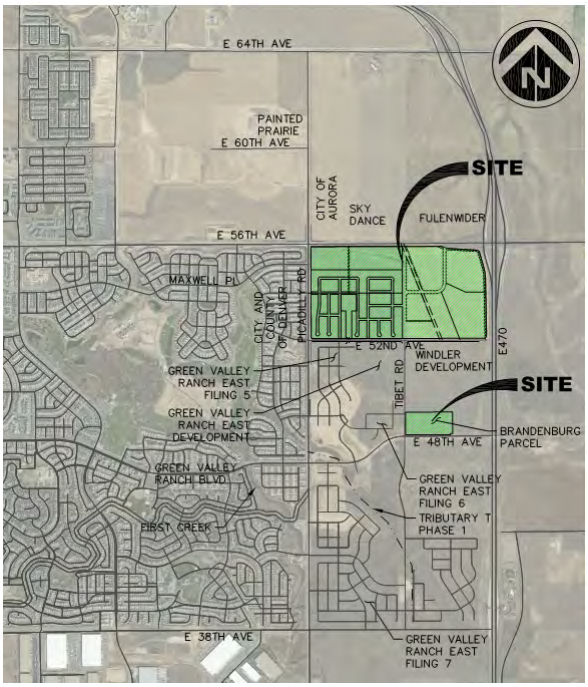


Figure 1- *Vicinity Map*

The existing conditions for the Site are generally described as historic farmland. The existing conditions are estimated to be 2% impervious based on these land uses. The proposed and future tributary basin improvements are calculated to yield a weighted imperviousness of approximately 61.2% based upon the concept presented within Figure 2. According to the *FEMA Flood Insurance Rate Map (FIRM) No. 08005C0061L*, dated February 17, 2017 (Reference 3), the Site is a Zone X – Areas of Minimal Flood Hazard. A copy of the FIRM Panel can be found within Appendix A of this report for reference.

3, typical

2. Proposed Development

The Green Valley Master Plan Amendment 2 Master Plan is a mixed-use development consisting of residential parcels with proposed single-family homes, multi-family homes, commercial parcels, community parks, open space and associated amenities; See Figure 1 – Vicinity Map for the two parcels that generate the Green Valley Master Plan Amendment 2 project. Those two parcels consist of the approximately 289.1 acre parcel north of Green Valley Ranch East and the Windler Developments and the Brandenburg parcel, which is approximately 18 acres and is located at the northeast corner of the Tibet Road and 48th Avenue intersection; See Figure 2 – Concept Plan. The southerly Brandenburg parcel is included within tributary Basin 581 as identified within the Green Valley – Amendment 1 Master Drainage Report and subsequent Amendments (GVRE Prior Studies). We have reviewed the assumptions therein and note that the anticipated uses for the Brandenburg parcel is a 50/50 mix of residential and commercial with a resultant, anticipated composite imperviousness (Comp I) of 60%. The information within the GVRE Prior Studies does not delineate how land use within the parcels consisting of Basin 581 were accounted for, however; the overall Comp I for Basin 581 is 54%. Given the Brandenburg parcel's composite imperviousness of 60%

Please clarify statement. Wouldn't this assume that adjacent areas within the basin would need to be less than 54% to offset your site. Please determine impacts to downstream infrastructure and ponds.

being generally consistent with the prior studies, it is reasonable to assume that the remaining portions of Basin 581 will offset the Brandenburg parcel to meet the original 54% for the overall basin. Of note, an Amendment dated August 12, 2021 to the Green Valley Ranch East Master Drainage Study was processed and approved correcting the map to depict the Brandenburg Parcel to be within the Tributary T watershed (not the Unnamed Tributary), w corrected the map to match the approved modeling.

reference approved EDNs, typical

Illustrate these areas on the previously approved master plans, typical

Please include all reference material in the appendix

Per section 3.02.1 Text: Minimum lettering size shall be 0.08 ”high (can only be used to annotate existing features on the plans). Otherwise, minimum text height shall be .10 ” .

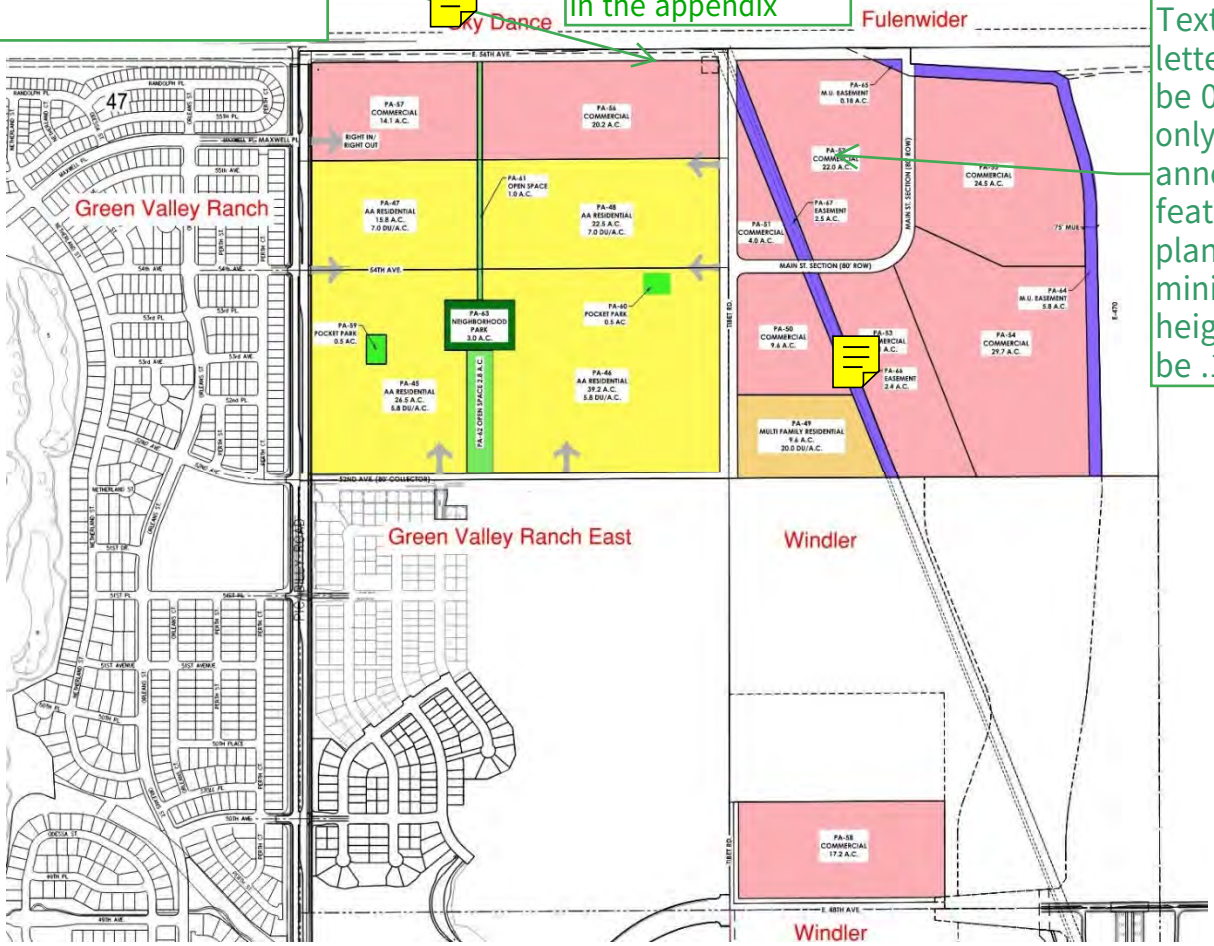


Figure 2- *Green Valley Master Plan Amendment 2 Concept Plan*

B. HISTORIC DRAINAGE

1. Description of Property

What is this reference?

The Site comprises an area of approximately 289.1 acres and is located approximately 3 miles south of the airport. The Parcel and surrounding areas are predominantly farms and open fields but are anticipated to develop into mixed uses such as single-family homes, multifamily housing, and commercial office spaces as growth continues in the area. As development occurs, it is anticipated that developers will provide stormwater detention and/or water quality for each individual site or utilize regional detention facilities farther dow eam wherein developed detention is already planned, in conjunction with the City of Aurora (City of Aurora, 18) and as outlined within the regional master plans for the area. Referenced and applicable master plans include First Creek (Upstream of Buckley Road)

Please contact MHFD for most recent MDP.

Please include Amend 2 and adjacent subdivisions discussion. What is planned by Windler? Include relevant excerpts from approved or "in process" plans.

Major Drainageway Plan by M[illegible] & Associates, Second Creek (Upstream of Denver International Airpo[illegible] Drainageway Plan by Olsson Associates and Matrix Design Group, and Green Valley – Amendment 1 Ma[illegible] Drainage Report by Calibre Engineering, Inc.

The Site is divided into three major basins: Blue [illegible]ima Draw (a portion of the First Creek) Watershed, th[illegible] Creek Tributary T Watershed, and the Second Creek Watershed. An existing ridgeline separates the basins at the high point located near the center of the Site, and the ridgeline extends to the approximate midpoint of the north and west Site boundaries, which will be generally followed with the development of the Site.

Soils at the Site consist of primarily sandy loams, loams, and loamy sands as shown in the National Resources Conservation Service (NRCS) Web Soil Survey in Appendix A (USDA, 2017). Refer to Table 1 for more information regarding the soil classifications and hydrologic soil groups.

TABLE 1 – SOILS AND HYDROLOGIC SOIL GROUPS

ID	NAME	HYDROLOGIC SOIL GROUP	ACRES	PERCENT OF AREA
ASB	ASCALON SANDY LOAM, 0 TO 3 PERCENT SLOPES	B	26.5	9.2%
AVC	ASCALON-VONA SANDY LOAMS, 1 TO 5 PERCENT SLOPES	B	21.9	7.6%
PIB	PLATNER LOAM, 0 TO 3 PERCENT SLOPES	C	46.8	16.2%
TTB	TRUCKTON LOAMY SAND, 0 TO 3 PERCENT SLOPES	A	81.2	28.1%
TTD	TRUCKTON LOAMY SAND, 3 TO 9 PERCENT SLOPES	A	112.7	39.0%

Based on the soil classifications, the on-Site and tributary off-Site areas have soils within Hydrologic Soil Groups (HSG) A, B, and C. Type 'A' soils are identified as having low runoff potential and high infiltration rates. Type 'B' soils are identified as having medium runoff, moderate infiltration rates and a moderate erosion hazard. Type 'C' soils are identified as having low infiltration rates when thoroughly wetted, moderate runoff, and moderate to severe erosion hazard.

No portion of the Site or off-Site area is located within a 100-year floodplain as determined by the FEMA Flood Insurance Rate Map for the area. Refer to Appendix A for the FEMA map (map panel number 08005C0061L) illustrating the location of the Site.

Include a description of the changes from the previously approved plans to the amendment, basins, % imperviousness, detention vols, and a peak flow comparison as flows leave the site/ amendment area.

2. Overall Basin Description

The Site is divided into three major basins; 20% of the Site is tributary to Blue Grama Draw (a portion of the First Creek) Watershed, 31% of the Site is tributary to the First Creek Tributary T Watershed, and 49% of the Site is tributary to the Second Creek Watershed.

Blue Grama Draw (a portion of the First Creek) Watershed

The northwest portion of the Site is tributary to Blue Grama Draw, which is a portion of the First Creek watershed. This area's existing conditions comprise approximately 65.1 acres, delineated as Basin A in the existing conditions map. Runoff from basin drains to the northwest corner of the parcel where it collects and flows north and west to the Moffit parcel and then along East 56th Avenue to the Painted Prairie development, with an ultimate outfall into First Creek through the Blue Grama Draw. A Regional Pond (Pond 840) is planned downstream for the developed flows from this Site as detailed within the First Creek (Upstream of Buckley Road) Major Drainageway Plan.

First Creek Tributary T Watershed

The southwest portion of the Site is part of the First Creek Tributary T watershed. This area's existing conditions comprise approximately 115.7 acres, delineated as Basin B in the existing conditions map. Runoff from this basin drains to the southern boundary of the parcel where it collects and flows south through Green Valley Ranch East and Region Detention Pond 8503C, with an ultimate outfall to First Creek Tributary T.

Second Creek Watershed

The northeast portion of the Site is within the Second Creek Watershed. It flows directly to Possum Gully and then to Second Creek. This area's existing conditions comprise 108.3 acres, delineated as Basin C in the existing conditions map. Runoff from this basin flows to the northern boundary, across 56th Avenue, into Possum Gully, and ultimately into Second Creek. There is a Regional Pond, Pond S-215 planned downstream of the Site as part of Second Creek MDP, which was anticipated to attenuate developed runoff from the Site.

C. DESIGN CRITERIA

1. List of References

The *City of Aurora Storm Drainage Design and Technical Criteria Manual (SDDTC)* and the *Mile-High Flood District (MHFD), Urban Storm Drainage Criteria Manuals (USDCM)* (References 1 and 2, respectively) were the major technical references used for this report. Additionally, the *Flood Insurance Rate Map No. 08005C0063L* (Reference 3) was utilized to understand the regulatory floodplains existing on Site. Referenced and applicable master plans include First Creek (Upstream of Buckley Road) Major Drainageway Plan by Moser & Associates, Second Creek (Upstream of Denver International Airport) Major Drainageway Plan by Olsson Associates and Matrix Design Group, and Green Valley – Amendment 1 Master Drainage Report by Calibre Engineering, Inc.

2. Hydrologic Criteria

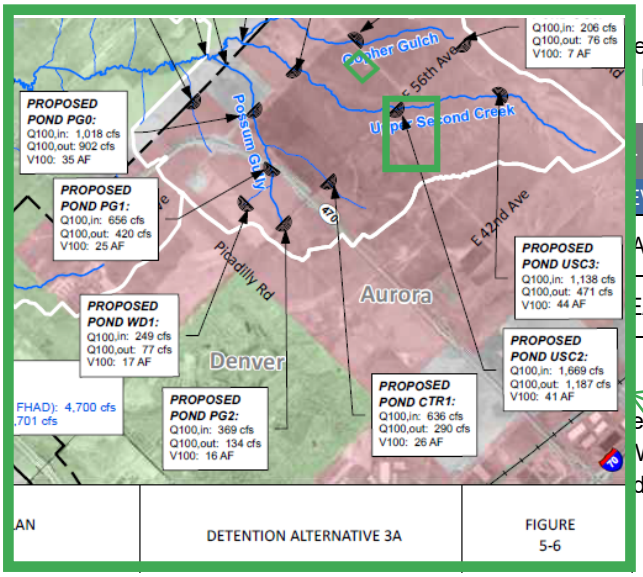
Hydrologic criteria and calculations are in conformance with Section 5.0 of the City of Aurora's Drainage Criteria Manual (City of Aurora, October 11, 2010). The Colorado Urban Hydrograph Procedure (CUHP) is an acceptable method for calculating peak flows and runoff volumes according to the Urban Storm Drainage Criteria Manual (USDCM) for basins up to 3,000 acres (Urban Drainage and Flood Control District, 2016).

The Colorado Urban Hydrograph Procedure (CUHP) version 2.0.0 was used to determine existing and proposed peak runoff rates for Site drainage areas. The storm hydrographs developed by CUHP for each sub-catchments are used as the 'inflows' for the routing analysis performed using the Environmental Protection Agency (EPA) Stormwater Management Model (SWMM). EPA SWMM version 5.1.012 was used to determine peak discharge rates at each

node and the required volume for each proposed pond.

Please provide digital CUHP and SWMM files
Include a comparison from the approved models to the proposed models.
The master plan model as part of Amendment 2 should be updated and peak flows compared at downstream primary design points.

Due to the Site's proximity to the Denver International [A]irport (DIA), the FAA [A]dvisory Circular 150/5200-33B Hazardous Wildlife Attractants On or Near Airports is applicable. This requires detention ponds to drain within 48 hours. It is assumed that off-Site, Regional ponds servicing the Site will be, or were designed to provide water quality and the 10-year and 100-year design volumes for those events and drain within 48 hours. Any temporary detention and water quality facilities required to service the Site due to downstream phasing will meet this requirement. Those temporary pond volume(s), if applicable, will be the 100-year volume as calculated by the EPA-SWMM model plus the water quality capture volume as determined by the UD-Detention workbook, VTotal = V100-SWMM + ½ WQCVUD-DET.



ed were the 2-year (minor), and the 100-year (major) storm events. The below.

1 HOUR POINT RAINFALL DEPTHS, DIA

EVENT	1-HOUR RAINFALL DEPTH
AR	0.85
EAR	2.49

Please use NOAA 14 rainfall for CUHP analysis

eloped and used for the computation of peak flow rates implemented WMM model inputs are presented within Appendix B. The procedures d MHFD Criteria outlined in References 1 and 2, respectively.

Please review the RESPEC alt 3A and verify anticipated ponds to be built.

The hydraulic criteria and calculations used for this analysis conform to Section 6.0 Hydraulic Aurora's Drainage Criteria Manual (City of Aurora, October 11, 2010) and the UDFCD Drainag ainage and Flood Control District, 2016).

Contact Westwood for pond design information. Moffit/ Skydance site

nd downstream regional drainage infrastructure is planned to received runoff from this site. This includes g Region Detention Pond 8503C for the First Creek W shed and then two planned ponds for Blue aw and Second Creek; namely Pond 840 and Pond S2 respectively. As it relates to these three ponds, two options or design constraints are contemplated, as follows.

Please include EDN of approved plan, illustrate this site within the planned detention area, and include pond certificate

Option 1 – Temporary Ponds Not Required

I see an option 2 but not B

- Presumes that Ponds 840 and S215 **WILL** be constructed in ad of the residential and commercial evelopment within these individual tributary basins.
- This option recognizes and confirms that runoff from the Blue Grama (a portion of First Creek) wate has been anticipated within the master planned Pond 840. This site's 56.2 acres and 65.6% Comp confirmed and accounted for within design of Pond 840. This project's design team will work with th downstream developers, City, and MHFD as Pond 840 undergoes design and construc and if ncomplete, Option B will be triggered.

Does this % impervious agree with previously approved master plan values

Review pond 816 in painted prairie for Q/EURV

Please review latest downstream master plans - RESPEC alt

This option recognizes and confirms th ipated within the master planned Pond S215. This site's 139.7 acres and 83.2% Comp I are confirmed and accounted for within design of Pond S215. This project's design team will work with the downstream developers, City, and MHFD as Pond S215 undergoes design and construction and if incomplete, Option B will be triggered.

Verify that pond 840 includes or does not include WQ/EURV

- This option recognizes and confirms that runoff from First Creek Tributary T watershed has been anticipated within the previously constructed Pond 8503C. This site's 85.6 acres and 44.9% Comp I are confirmed and accounted for within design of Pond 8503C.

Include relevant excerpts from approved plans to support this statement

Please include supporting information from approved plans.

Will the ponds be temporary? The master plan illustrates permanent ponds

Option 2 – Temporary Ponds Required

- This option recognizes and confirms that runoff from First Creek Tributary T watershed has been anticipated within the previously constructed Pond 8503C. This sites 89.6 acres and 44.9% Comp I are confirmed and accounted for within design of Pond 8503C

UPDATE

- Presumes that Ponds 840 and S215 **WILL NOT** be constructed in advance of the residential and commercial development within these individual tributary basins and therefore, construction of two corresponding temporary ponds will be needed.

- If the downstream Moffit (Sky Dance) Parcel and the Fulenwider Parcels are not complete, then temporary on-Site ponds will be designed, constructed, and later removed once the regional ponds are in place.

Include a variance section with the drain time listed

emporary pond calculations are provided within this report and assume the full tributary development in dvance of the downstream ponds, however; phasing of the temporary ponds may occur with updated olumes provided within subsequent Preliminary and Final Drainage Report.

- On-site ponds will meet Urban Drainage and City of Aurora, FAA requirements for 10-year and 100-year design while draining in 48 hours. The total pond volume provides sufficient capacity for: Water Quality Capture Volume (WQCV), Excess Urban Runoff Volume (EURV), and detention for the 100-year storm event under proposed conditions.

- Sheet flow routed directly to the ponds is modeled in EPA SWMM as a dummy conduit with a Manning's roughness coefficient of 0.05. Detention ponds are modeled as a storage node with tabular stora rating curves. Curves for the ponds are determined per the UDFCD UD-Detention Workbook vers Refer to Appendix B for calculated pond sizes as determined by the UD-Detention workbook.

WQ/EURV, 100-year (FSD). remove 10-year, typical

Existing conditions were modeled for the 2-year and 100-year flood event using a free outfall for each watershed, totaling three (3) outfalls. Future conditions were modeled yielding important results for two alternate conditions: A) to provide peak flow rates to the outfall locations to the downstream regional facilities and B) to determine the the temporary facilities on-Site, should the downstream regional facilities not be completed at the ent within the tributary. Any temporary ponds proposed will be removed with the develop t of the ties. All on-site ponds will meet Urban Drainage and City of Aurora, FAA requirements for 10-year ign while draining in 48 hours. The total pond volume provides sufficient capacity for: Water Quality WQCV), Excess Urban Runoff Volume (EURV), and detention for the 100-year storm event under proposed conditions. Sheet flow routed directly to the ponds is modeled in EPA SWMM as a dummy conduit with a Manning's roughness coefficient of 0.05. Detention ponds are modeled as a storage node with tabular storage and rating curves. Curves for the ponds are determined per the UDFCD UD-Detention Workbook version 3.07. Refer to Appendix B for calculated pond sizes as determined by the UD-Detention workbook.

Use the latest version of MHFD detention spreadsheet and the spreadsheets are not included in Appendix B.

The temporary pond calculations within this Report assume the full tributary de downstream ponds, however; phasing of the temporary ponds may occur with Preliminary and Final Drainage Report.

Not located

Provide supporting information for pond A how flows will be conveyed to pond 840.
If a connection cannot be accommodated then an amendment to s report will be required.

D. DRAINAGE PLAN

nfirm that regional facilities provide WQ/EURV

1. General Concept

This proposed drainage plan analyzes the proposed development and estimates the developed runoff within the Project. Developed runoff is generally anticipated to flow overland to streets for conveyance to inlets and a proposed storm sewer system. The storm sewer system will either discharge off-Site in the case of the tributary to Draw (First Creek) and Possum Gully (Second Creek) for conveyance to future, regional detention facilities. The storm sewer system within the Tributary T, First Creek tributary will discharge to an open channel for conveyance under 56th Avenue and into the drainage channel system within Green Valley Ranch East. In the event th downstream, regional detention ponds within the Blue Grama Draw (Pond 840) and/or Possum Gully (Pond S-215) are not completed at the time of development within the Site's tributary areas to those facilities, the Project will construct an on-Site, temporary detention pond (identified as either Pond A and Pond C) for First Creek and Second

revise, typical

Include the following statements related to the detention ponds:
COA freeboard requirement
- 1' min from 100yr WSEL to spillway crest)

COA considers 100yr to be 100yr+1/2EURV for full spectrum ponds, 100yr+1.2WQCV for detention + WQ ponds and WSEL reached in pond during 100yr event for EURV or WQ only ponds.
UDFCD Freeboard requirement
- 1' min freeboard from 100yr WSEL over emergency weir up to top of embankment.
- PD must include calc of 100yr WSEL over weir to determine freeboard

ed (Basin B) has a proposed regional
4 for a summary of potential pond
ts to the major basin delineations will be
estimate the anticipated major basins.
ncement of the individual planning areas,
for the three major basins.

e Blue Grama Draw (a portion of First
3), and the Second Creek Watershed
Site ponds (Pond A and Pond C) are
proposed to provide detention before routing further downstream. These temporary detention ponds are sized to match historic runoff flow rates. The ponds will be located near the low-lying points on-Site. To prevent spending unnecessary capital, it is hopeful that downstream regional ponds and infrastructure will be constructed prior to the residential or commercial development within these individual tributary basins and therefore, construction of these temporary ponds will not occur. Refer to Appendices for applicable inputs to the CUHP and EPA SWMM models. First Creek Tributary T watershed (Basin B) has a proposed regional pond (8503C) and will collect developed flows from Basin B. The specific drainage

For all ponds discussed below please include reference documents with 6 digit EDN COA approval # or 7 digit RSN for documents currently under review
Ponds should show these areas were taken into account and associated % imperviousness

Basin A: First Creek

The proposed layout for Basin A is b
the Site tributary to Blue Grama Dra
with a composite imperviousness of 65.6% in the proposed condition. On-site runoff will be conveyed via overland flow, curb and gutter, and storm sewer to the proposed E. 56th Avenue crossing for attenuation within regional Pond 840. These flows will outfall ultimately into First Creek from Design Point A at the outfall of temporary Pond A. If Pond 840 is constructed and therefore the temporary Pond A is not required, the discharge into Pond 840 would be the inflow hydrograph shown going into the temporary Pond A. See Tables 3 – 5 below for details of the proposed pond volume, flows, and tributary area. The proposed design of the pond is in conformance with the associated Major Drainageway Plan.

Basin B: First Creek Tributary T

The proposed layout for Basin B is broken into 6 sub-basins (B1-B6) and corresponds to the southwestern portion of the Site tributary to First Creek Tributary T. It has a total contributing area of 89.6 acres. It was modeled with a composite imperviousness of 44.9% in the proposed condition. Runoff in the proposed condition will be conveyed via overland flow, curb and gutter and storm sewer to the proposed open space tract between Sub-Basin B4 and B5. This runoff will flow through a reinforce concrete box culvert under East 52nd Avenue into the proposed North Channel at Design Point B3 as a part of the ongoing East Green Valley Ranch development to the south. Sub-basin B6 does not discharge to design point B but does enter East Green Valley Ranch along Piccadilly. These flows will outfall into Regional Detention Pond 8503C and ultimately into First Creek Tributary T. See Tables 3 – 5 below for details of the proposed pond volume, flows, and tributary area. The proposed design of the pond is in conformance with the

Pond release rates per COA 6.33 or as permitted
m previous master plans.

The proposed layout for Basin C is broken into 4 sub-basins (C1-C4) and corresponds to the southwestern portion of the Site tributary to Possum Gully and ultimately to Second Creek. It has a total contributing area of 139.7 acres. It was modeled with a composite imperviousness of 83.2% in the proposed condition. Runoff in the proposed condition will be conveyed via overland flow, curb and gutter and storm sewer to the proposed E. 56th Avenue crossing for attenuation within regional Pond S-215. If the downstream Region Pond and infrastructure is built, and therefore the temporary Pond C is not required, the discharge into Pond 840 would be the inflow hydrograph shown going into the temporary Pond C. See Tables 3 – 5 below for details of the proposed pond volume, flows, and tributary area. The

proposed design of the pond is in conformance with the associated Major Drainageway Plan.

Possum Gully is an ephemeral stream and runoff flows along grades ranging from one to 20 percent towards Second Creek, with slopes primarily between 1 and 3%. Possum Gully is a well-defined drainageway with a 25-ft bottom width, 15:1 and 35:1 side slopes, a 25-foot depth, and longitudinal slope of 1.3% (Second Creek (Upstream of Denver International Airport) Major Drainageway Plan, September 2011). According to the 2016 High Point MDR and the 2011 Second Creek MDP, Possum Gully is in good condition with no signs of erosion. The need for grade control structures will be assessed once the conceptual plan provided herein has been preliminarily approved. All work within Possum Gully is anticipated to be by others and is beyond the scope of the development of the Site.

Summary of Flows

A map that illustrates these sub-basin and directions of flow is included in the Ap this report. Also included within the A porting documentation, calculations, and ta summary of CUHP and SWMM input below contain a summary of hydrologic pa and calculated flows at critical design e 2-year and 100-year storm events.

include these reference documents. What basins? What is the MP EDN?

Earlier you state that the % imperviousness increases but here it suggests that the % imperviousness decreases.

TABLE 3– WEIGHTED COMPOSITE IMPERVIOUSNESS

BASIN	EXISTING AREA (AC)	AREA (AC)	PROPOSED AREA (AC)	HISTORIC COMPOSITE IMPERVIOUSNESS (%)	MDP COMPOSITE IMPERVIOUSNESS (%)	PROPOSED COMPOSITE IMPERVIOUSNESS (%)
A – FIRST CREEK	65.1	55	56.2	2.0	76	65.6
B – FIRST CREEK TRIBUTARY T	115.7	89	89.6	2.0	54	44.9
C – SECOND CREEK	108.3	145	139.7	2.0	86	83.2
TOTAL WEIGHTED COMPOSITE IMPERVIOUSNESS	**289.1**	**289**	**285.6**	**2.0**	**-**	**67.7**

TABLE 4 – SUMMARY OF FLOWS

DESIGN POINT	TRIBUTARY BASINS	DESCRIPTION	EXISTING CONDITION		PROPOSED CONDITION	
			2-YEAR (CFS)	100-YEAR (CFS)	2-YEAR (CFS)	100-YEAR (CFS)
A	A1-A4	FIRST CREEK	0	58	33	136
B	B1-B6	FIRST CREEK TRIBUTARY T	0	52	24	122
C	C1-C4	SECOND CREEK	1	129	114	414

Please include a comparison to previously approved allowable MP flows, include supporting reference material in appendix.

TABLE 5 – POTENTIAL TEMPORARY POND VOLUMES FOR PROPOSED CONDITION				
POND	WATER QUALITY CAPTURE VOLUME (AF)	100-YR DETENTION VOLUME (AF)	TOTAL VOLUME (AF)	OWNERSHIP
A	1.3	7.0	7.6	PRIVATE
C	2.8	16.0	17.4	PRIVATE

Include MHFD forms in the appendix

Each of the potential, temporary on-Site ponds will be located within a propos equired per the City's SDC Manual, which would be vacated to allow for developmer c facilities were constructed. Ownership (private) and maintenance of the temporar n-s ined based on City criteria and is provided in Table 5. Further discussion and coordination with the City on this matter will be on-going, should the temporary pond be required. Maintenance access will be provided by access roads within the temporary pond drainage easements designed per City criteria. As shown in Table 5, each of the outfall culverts from the proposed temporary ponds will traverse an arterial roadway and will therefore be drainageway public improvements. These culverts have been included and identified in the FDP and PIP documents for the development. Enhanced stormwater quality for each of the proposed on-Site temporary ponds, if needed, will be provided by the Water Quality Capture Volume (WQCV) that has been incorporated into the total pond volumes.

E. CONCLUSION

1. Compliance with Standards

The drainage plan provided in this report is in general compliance with the *City of Aurora Storm Drainage Design and Technical Criteria Manual* and the *Mile High Flood District, Urban Storm Drainage Criteria Manuals (*References 1 and 2, respectively), and FAA regulations. This proposed drainage plan provides recommended drainage systems that control flows to be consistent with First Creek (Upstream of Buckley Road) Major Drainageway Plan (Moser & Associates, August 2010) and Second Creek (Upstream of Denver International Airport) Major Drainageway Plan (Olsson Associates and Matrix Design Group, September 2011). Additionally, design for the potential temporary detention ponds has been provided, which will be implemented should the downstream, regional detention ponds not be completed at the time of development within the associated tributary.

2. Summary of Concept

The recommended drainage plan for the Green Valley Master Plan Amendment 2 development include the following main components: two (2) temporary on-Site detention ponds (Pond A and Pond C) for basins draining to First Creek (Basin A) and Second Creek – Possum Gully (Basin C) until downstream detention and improvements are in place, and routing of Basin B to Region Detention Pond 8503 C and ultimately First Creek Tributary T through the ongoing East Green Valley Ranch development. The proposed plan will provide water quality and mitigate flooding impacts to the Site and downstream properties. Dewberry Engineers looks forward to future collaboration with the City of Aurora and MHFD on development of the proposed Green Valley Master Plan Amendment 2 Development.

G. REFERENCES

1. *The City of Aurora Storm Drainage Design and Technical Criteria, City of Aurora; Revised, 2010.*

2. *Urban Storm Drainage Criteria Manuals, Volumes 1, 2, and 3, Mile High Flood District; August 2018.*

3. *Flood Insurance Rate Map (FIRM) Map No. 08005C0061L, National Flood Insurance Program, Federal Emergency Management Agency (FEMA), February 17, 2017.*

4. *Custom Soil Resource Report for Adams County Area, Parts of Adams and Denver Counties, Colorado, Natural Resources Conservation Service (NRCS), May 2020.*

5. *First Creek (Upstream of Buckley Road) Major Drainageway Plan, Moser & Associates, August*

6. *Second Creek (Upstream of Denver International Airport) Major Drainageway Plan, Olsson Associates and Matrix Design Group, September 2011*

7. *Green Valley – Amendment 1 Master Drainage Report, Calibre Engineering, Inc., January 201*

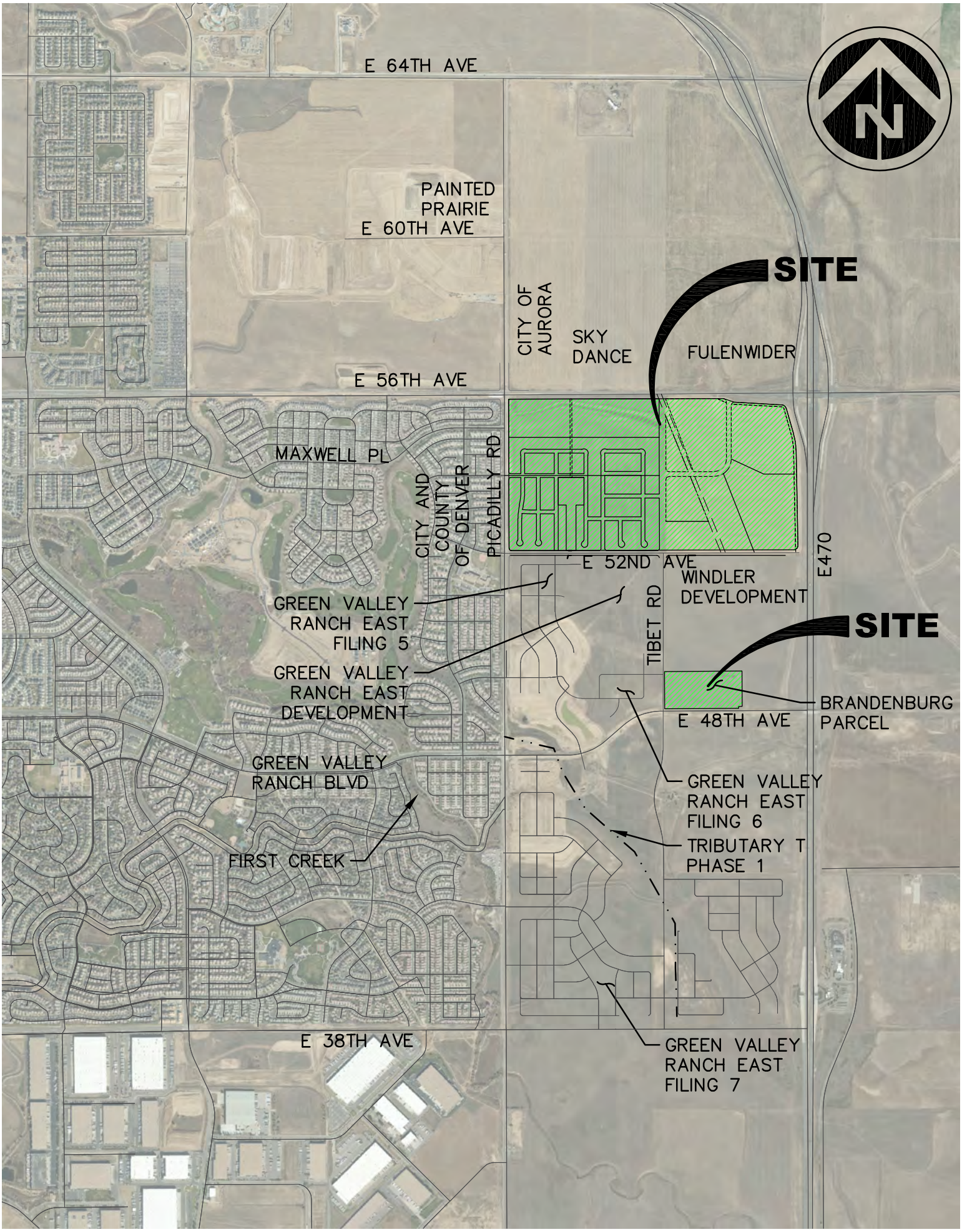
EDN

clude adjacent plan references and 6 digit EDN

lude 7 digit RSN of plans under review

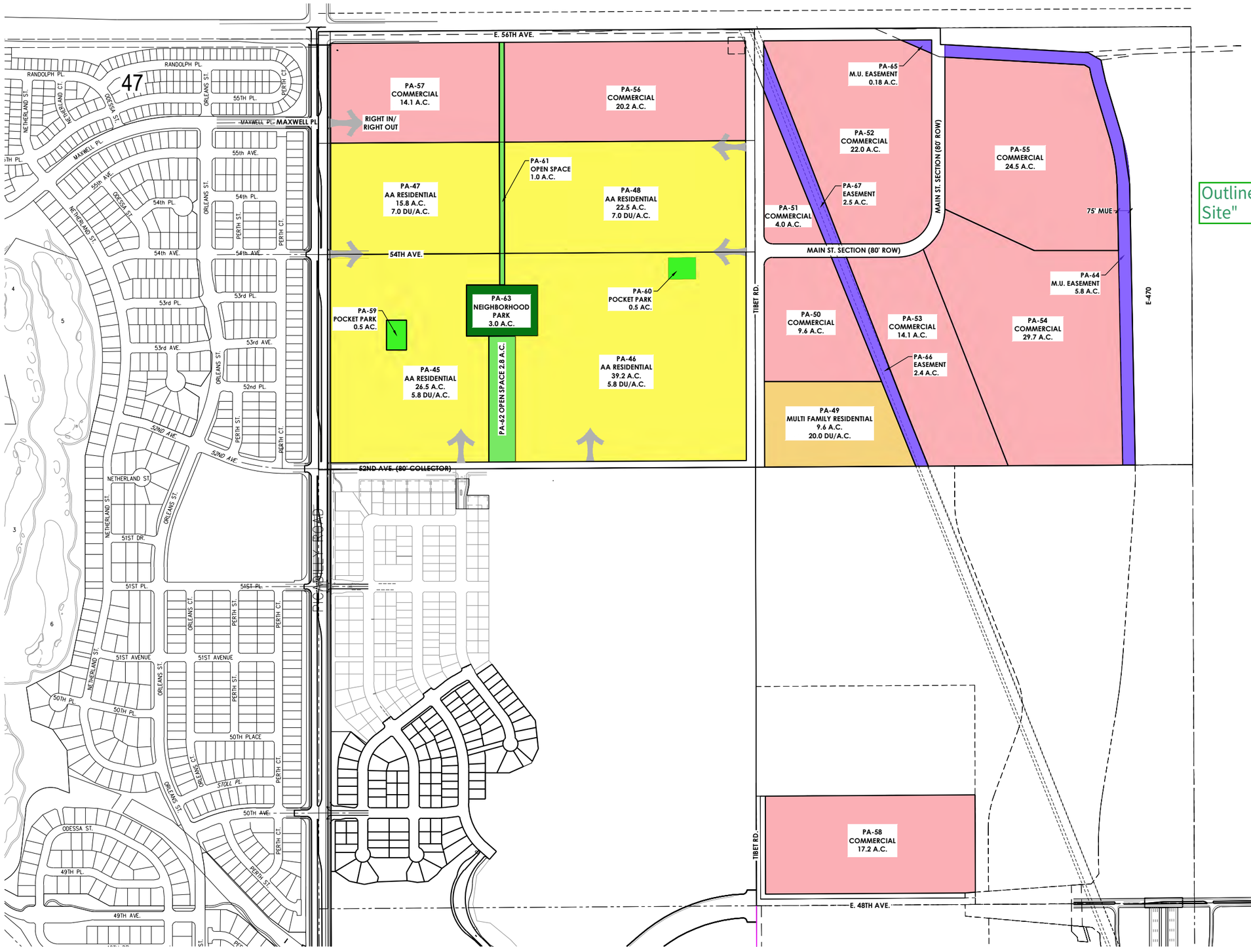
APPENDIX A – FIGURES AND SUPPORTING DOCUMENTS

Hyperviousness and C Values match COA SDDTC Table 1



VICINITY MAP

SCALE: 1"=2000'



Outline and label as "Project Site"

p:\oakwood master folder\gvr east - 310 parcel\ cad\dwg\310 site plan planning areas 11242021.dwg

Green Valley FDP Amendment 2

Planning Areas

terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

Scale: 1"=500'

December 1, 2021

0 300 600 1200

size to 11x17, typcial all drawings/figures

104°45'0"
39°48'45"
05 22 000m E
05 23 000m E
104°43'7.5"
39°48'45"
1720000 FT
1715000 FT
3215000 FT
39°46'52.5"
104°45'0"
39°46'52.5"
104°43'7.5"
44 06 000m N
44 05 000m N
44 04 000m N

Adams County Unincorporated Areas
(AREA NOT INCLUDED)

City of Aurora
080002

ADAMS COUNTY
CITY OF AURORA

11
12
13
24

E 56TH AVENUE
E 48TH AVENUE
PICADILLY ROAD

CITY AND COUNTY OF DENVER
CITY OF AURORA

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 3 SOUTH, RANGE 66 WEST.

ADAMS COUNTY
CITY OF AURORA

Outline and label as "Project Site"

ZONE AE
First Creek Tributary T
5419
5419.4
5420
5421
5422
0.2%-ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE
Profile Baseline

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

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*

OTHER AREAS
- NO SCREEN Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike, or Floodwall
- Non-accredited Levee, Dike, or Floodwall

OTHER FEATURES
- E 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
- 8 Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided by the Arapahoe County and Cities of Aurora and Littleton GIS depts. The coordinate system used for production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to the North American Datum of 1983 and the GRS 1980 spheroid, Western Hemisphere.

SCALE

N

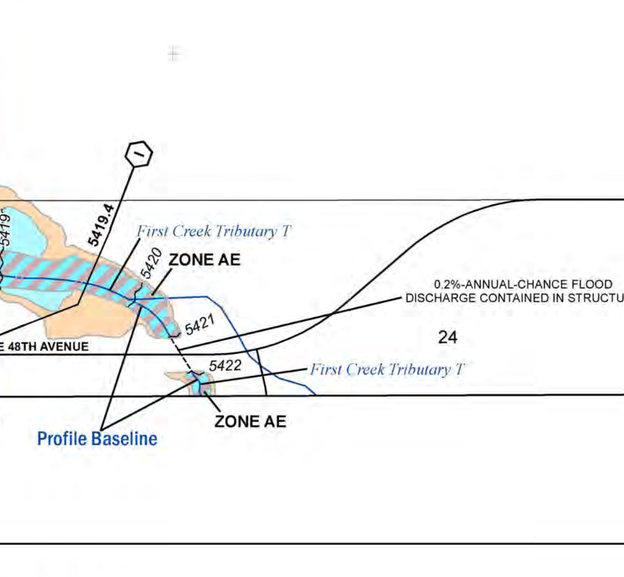
Map Projection:
NAD83 UTM Zone 13N
Western Hemisphere; Vertical Datum: NAVD88

1 inch = 500 feet 1:6,000

0 1,000 2,000 Feet

0 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA
National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARAPAHOE COUNTY, COLORADO
And Incorporated Areas

PANEL 61 OF 725

FEMA

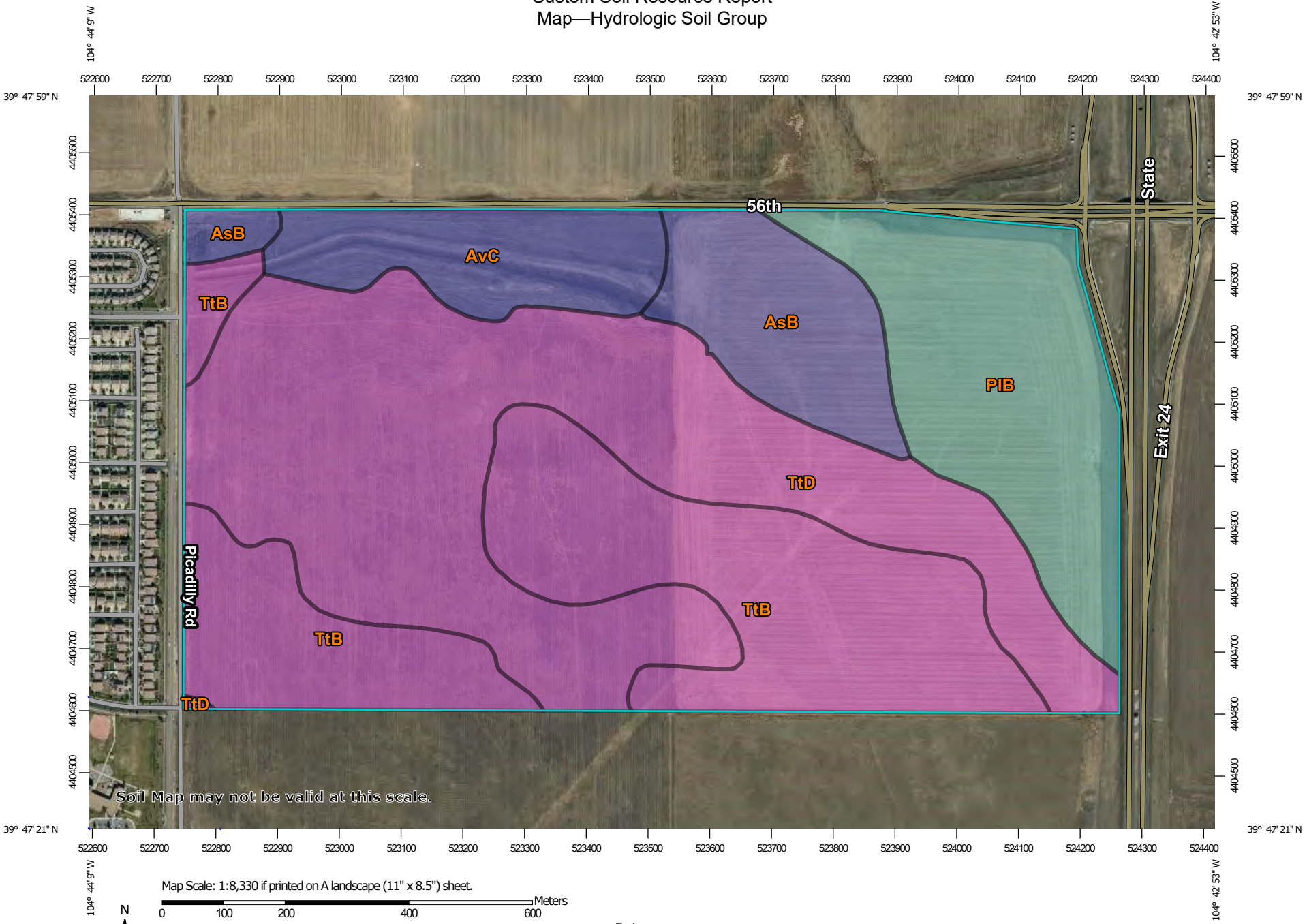
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
AURORA, CITY OF	080002	0061	L

VERSION NUMBER
2.3.3.2

MAP NUMBER
08005C0061L

MAP REVISED
FEBRUARY 17, 2017



Map Scale: 1:8,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

MAP LEGEND

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

Soils

Soil 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 1:20,000.

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: Adams County Area, Parts of Adams and Denver Counties, Colorado
Survey Area Data: Version 18, Aug 31, 2021

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

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
AsB	Ascalon sandy loam, 0 to 3 percent slopes	B	27.1	9.1%
AvC	Ascalon-Vona sandy loams, 1 to 5 percent slopes	B	22.9	7.6%
PlB	Platner loam, 0 to 3 percent slopes	C	48.6	16.2%
TtB	Truckton loamy sand, 0 to 3 percent slopes	A	84.1	28.1%
TtD	Truckton loamy sand, 3 to 9 percent slopes	A	116.8	39.0%
Totals for Area of Interest			**299.4**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

104° 44' 9" W
104° 42' 53" W
39° 47' 59" N
39° 47' 21" N
522600
522700
522800
522900
523000
523100
523200
523300
523400
523500
523600
523700
523800
523900
524000
524100
524200
524300
524400
4405500
4405400
4405300
4405200
4405100
4405000
4404900
4404800
4404700
4404600
4404500
56th
State
Exit 24
Picadilly Rd
AsB
AvC
TtB
AsB
PIB
TtD
TtB
TtB
TtD
Soil Map may not be valid at this scale.
Map Scale: 1:8,330 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
100
200
400
600
Feet
0
400
800
1600
2400
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

1
2
3
4
4L
5
6
7
8
Not rated or not available

Soil Rating Lines

1
2
3
4
4L
5
6
7
8
Not rated or not available

Soil Rating Points

1
2
3
4
4L
5
6
7
8
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 1:20,000.

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: Adams County Area, Parts of Adams and Denver Counties, Colorado
Survey Area Data: Version 18, Aug 31, 2021

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

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Wind Erodibility Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AsB	Ascalon sandy loam, 0 to 3 percent slopes	4L	27.1	9.1%
AvC	Ascalon-Vona sandy loams, 1 to 5 percent slopes	3	22.9	7.6%
PlB	Platner loam, 0 to 3 percent slopes	5	48.6	16.2%
TtB	Truckton loamy sand, 0 to 3 percent slopes	2	84.1	28.1%
TtD	Truckton loamy sand, 3 to 9 percent slopes	2	116.8	39.0%
Totals for Area of Interest			**299.4**	**100.0%**

Rating Options—Wind Erodibility Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

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.

Custom Soil Resource Report
Soil Map

Map Scale: 1:8,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Adams County Area, Parts of Adams and Denver Counties, Colorado
Survey Area Data: Version 18, Aug 31, 2021

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

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
AsB	Ascalon sandy loam, 0 to 3 percent slopes	27.1	9.1%
AvC	Ascalon-Vona sandy loams, 1 to 5 percent slopes	22.9	7.6%
PlB	Platner loam, 0 to 3 percent slopes	48.6	16.2%
TtB	Truckton loamy sand, 0 to 3 percent slopes	84.1	28.1%
TtD	Truckton loamy sand, 3 to 9 percent slopes	116.8	39.0%
Totals for Area of Interest		**299.4**	**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.

APPENDIX B – HYDROLOGIC COMPUTATIONS

Is t the approved master plan CUHP input or revised? Please highlight the rows which have changed. Include a comparison between the approved and this study, typical.

CUHP SUBCATCHMENTS

Columns with this color heading are for required user-input
Columns with this color heading are for optional override values
Columns with this color heading are for program-calculated values

								Maximum Depression Storage (Watershed inches)		Horton's Infiltration Parameters			DCIA
Subcatchment Name	EPA SWMM Target Node	Raingage	Area (mi^2)	Length to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Pervious	Impervious	Initial Rate (in/hr)	Decay Coefficient (1/seconds)	Final Rate (in/hr)	Level 0, 1, or 2
A1	A1	100-YR	0.065646	0.174463	0.423641	0.009352544	72.91	0.4	0.1	4.798	0.001144356	0.8384	0
A2	A2	100-YR	0.018441	0.103306	0.216793	0.015052412	44.06	0.4	0.1	5	0.0007	1	0
A3	A3	100-YR	0.003934	0.051742	0.083513	0.033564	45	0.4	0.1	5	0.0007	1	0
B1	B1	100-YR	0.021965	0.12207	0.244008	0.002941719	26.58	0.4	0.1	5	0.0007	1	0
B2	B2	100-YR	0.030985	0.138399	0.258649	0.011789114	45	0.4	0.1	5	0.0007	1	0
B3	B3	100-YR	0.025418	0.166126	0.291849	0.010954191	45	0.4	0.1	5	0.0007	1	0
B4	B4	100-YR	0.009275	0.042677	0.117763	0.013300339	45	0.4	0.1	5	0.0007	1	0
B5	B5	100-YR	0.014517	0.04494	0.168772	0.013331595	45	0.4	0.1	5	0.0007	1	0
B6	B6	100-YR	0.00765	0.091485	0.220436	0.015697197	45	0.4	0.1	5	0.0007	1	0
B7	B7	100-YR	0.012939	0.066368	0.159544	0.00771612	75.68	0.4	0.1	5	0.0007	1	0
B8	B8	100-YR	0.017288	0.14121	0.238587	0.003953199	45	0.4	0.1	5	0.0007	1	0
C1	C1	100-YR	0.043657	0.138088	0.283967	0.017647697	85	0.4	0.1	4.323	0.001677967	0.6289	0
C2	C2	100-YR	0.048373	0.209633	0.37255	0.014702114	85	0.4	0.1	3.021	0.001797214	0.5023	0
C3	C3	100-YR	0.009531	0.160103	0.270409	0.0144282	85	0.4	0.1	4.884	0.000955213	0.9072	0
C4	C4	100-YR	0.022253	0.164209	0.314512	0.007141896	82.6	0.4	0.1	5	0.0007	1	0
C5	C5	100-YR	0.020403	0.106101	0.260179	0.019166583	85	0.4	0.1	5	0.0007	1	0
C6	C6	100-YR	0.046816	0.209777	0.355447	0.019038128	85	0.4	0.1	4.387	0.001037241	0.8467	0
C7	C7	100-YR	0.02728	0.119094	0.342988	0.011463428	72.55	0.4	0.1	4.725	0.001305438	0.7798	0

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

2-Year

		Unit Hydrograph Parameters and Results									Excess Precip.		Storm Hydrograph			
Catchment Name/ID	User Comment for Catchment	CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A1		0.080	0.182	18.1	4.03	9.4	2.85	6.7	109	152,509	0.57	86,400	30.0	29	85,970	0.69
A2		0.093	0.081	23.8	2.98	12.4	2.11	5.0	23	42,842	0.30	12,996	30.0	3	12,806	0.30
A3		0.092	0.041	17.5	2.05	9.1	1.45	3.4	7	9,139	0.31	2,848	30.0	1	2,714	0.36
B1		0.108	0.065	58.3	4.42	30.3	3.12	7.4	11	51,029	0.12	6,052	45.0	1	6,041	0.06
B2		0.092	0.104	24.6	3.45	12.8	2.44	5.8	38	71,984	0.31	22,429	30.0	6	22,296	0.30
B3		0.092	0.095	31.6	3.80	16.4	2.69	6.3	24	59,051	0.31	18,399	35.0	4	18,316	0.25
B4		0.092	0.060	16.0	2.24	8.3	1.58	3.7	17	21,548	0.31	6,714	30.0	2	6,412	0.39
B5		0.092	0.074	15.9	2.40	8.3	1.70	4.0	27	33,726	0.31	10,508	30.0	4	10,095	0.39
B6		0.092	0.055	32.7	2.89	17.0	2.04	4.8	7	17,772	0.31	5,538	35.0	1	5,470	0.24
B7		0.079	0.089	15.1	2.53	7.9	1.79	4.2	26	30,060	0.59	17,782	30.0	6	17,080	0.77
B8		0.092	0.080	40.3	3.97	21.0	2.80	6.6	13	40,163	0.31	12,514	40.0	2	12,477	0.21
C1		0.076	0.158	12.6	3.03	6.5	2.14	5.0	104	101,424	0.69	69,845	30.0	29	67,726	1.02
C2		0.076	0.166	17.4	3.72	9.1	2.63	6.2	83	112,380	0.69	78,080	30.0	27	77,475	0.87
C3		0.076	0.080	27.5	3.18	14.3	2.25	5.3	10	22,142	0.68	15,006	35.0	4	14,882	0.59
C4		0.077	0.116	24.6	3.68	12.8	2.60	6.1	27	51,698	0.66	33,875	30.0	9	33,726	0.63
C5		0.076	0.112	14.7	2.77	7.6	1.95	4.6	42	47,400	0.68	32,124	30.0	12	31,063	0.90
C6		0.076	0.163	16.3	3.54	8.5	2.50	5.9	86	108,763	0.68	73,710	30.0	26	73,262	0.88
C7		0.080	0.123	19.3	3.32	10.0	2.34	5.5	42	63,377	0.56	35,700	30.0	11	35,396	0.65

Summary of Unit Hydrograph Parameters Used By Program and Calculated Results (Version 2.0.0)

100-Year

		Unit Hydrograph Parameters and Results									Excess Precip.		Storm Hydrograph			
Catchment Name/ID	User Comment for Catchment	CT	Cp	W50 (min.)	W50 Before Peak	W75 (min.)	W75 Before Peak	Time to Peak (min.)	Peak (cfs)	Volume (c.f)	Excess (inches)	Excess (c.f.)	Time to Peak (min.)	Peak Flow (cfs)	Total Volume (c.f.)	Runoff per Unit Area (cfs/acre)
A1		0.080	0.183	17.9	4.02	9.3	2.84	6.7	110	152,509	2.13	325,518	35.0	115	323,830	2.73
A2		0.092	0.082	23.2	2.97	12.1	2.10	4.9	24	42,842	1.34	57,617	35.0	18	56,695	1.54
A3		0.092	0.042	17.1	2.05	8.9	1.45	3.4	7	9,139	1.37	12,485	35.0	5	11,883	1.88
B1		0.106	0.065	57.3	4.36	29.8	3.08	7.3	12	51,029	0.93	47,705	45.0	8	47,629	0.60
B2		0.092	0.105	24.0	3.44	12.5	2.43	5.7	39	71,984	1.37	98,336	40.0	31	97,685	1.54
B3		0.092	0.096	30.9	3.78	16.0	2.67	6.3	25	59,051	1.37	80,668	40.0	21	80,333	1.31
B4		0.092	0.061	15.6	2.23	8.1	1.58	3.7	18	21,548	1.37	29,436	35.0	12	28,030	1.99
B5		0.092	0.075	15.5	2.39	8.1	1.69	4.0	28	33,726	1.37	46,072	35.0	19	44,149	2.01
B6		0.092	0.056	31.9	2.87	16.6	2.03	4.8	7	17,772	1.37	24,278	40.0	6	23,991	1.26
B7		0.079	0.089	15.0	2.53	7.8	1.79	4.2	26	30,060	2.07	62,113	35.0	23	59,586	2.81
B8		0.092	0.081	39.4	3.95	20.5	2.79	6.6	13	40,163	1.37	54,866	45.0	12	54,722	1.08
C1		0.076	0.158	12.5	3.02	6.5	2.14	5.0	105	101,424	2.42	245,076	35.0	100	237,577	3.58
C2		0.076	0.166	17.4	3.71	9.0	2.62	6.2	84	112,380	2.45	275,607	35.0	97	273,406	3.12
C3		0.076	0.080	27.4	3.18	14.2	2.24	5.3	10	22,142	2.33	51,504	40.0	13	51,087	2.17
C4		0.077	0.116	24.4	3.68	12.7	2.60	6.1	27	51,698	2.23	115,045	40.0	32	114,537	2.25
C5		0.076	0.112	14.6	2.76	7.6	1.95	4.6	42	47,400	2.28	108,107	35.0	41	104,484	3.11
C6		0.076	0.163	16.2	3.54	8.4	2.50	5.9	87	108,763	2.35	255,616	35.0	94	254,039	3.13
C7		0.080	0.123	19.1	3.30	9.9	2.34	5.5	43	63,377	2.16	137,132	35.0	46	135,971	2.64

Please label this output file, is the 100-year proposed run?

Please include swmm input file

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)
--------------------------------------------------------------

WARNING 04: minimum elevation drop used for Conduit 10

*************
Element Count
*************
Number of rain gages ...... 0
Number of subcatchments ... 0
Number of nodes ........... 26
Number of links ........... 22
Number of pollutants ...... 0
Number of land uses ....... 0


************
Node Summary
************
                                    Invert      Max.    Ponded    External
Name                Type             Elev.     Depth      Area    Inflow
-------------------------------------------------------------------------
1                   JUNCTION       5447.00      5.00       0.0
17                  JUNCTION       5445.00      4.00       0.0
18                  JUNCTION       5448.25      4.00       0.0
A1                  JUNCTION       5457.47      4.00       0.0
A2                  JUNCTION       5462.00      4.00       0.0
A3                  JUNCTION       5461.50      4.00       0.0
B1                  JUNCTION       5442.00      5.00       0.0
B2                  JUNCTION       5464.35      0.00       0.0
B3                  JUNCTION       5465.13      4.00       0.0
B4                  JUNCTION       5461.54      4.00       0.0
B5                  JUNCTION       5461.54      4.00       0.0
B6                  JUNCTION       5461.54      0.00       0.0
B7                  JUNCTION       5471.63      4.00       0.0
B8                  JUNCTION       5459.62      4.00       0.0
C1                  JUNCTION       5453.08      4.00       0.0
C2                  JUNCTION       5465.99      0.00       0.0
C3                  JUNCTION       5464.25      4.00       0.0
C4                  JUNCTION       5471.63      4.00       0.0
C5                  JUNCTION       5476.80      4.00       0.0
C6                  JUNCTION       5486.20      4.00       0.0
C7                  JUNCTION       5466.04      0.00       0.0
A_OUT               OUTFALL        5434.00      0.00       0.0
B_OUT               OUTFALL        5442.00      4.00       0.0
```

C_OUT	OUTFALL	54.36	0.00	0.0
POND_A	STORAGE	5436.55	6.00	0.0
POND_C	STORAGE	5438.43	5.00	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
1	18	1	CONDUIT	200.0	0.6250	0.0100
10	B1	B_OUT	CONDUIT	1288.4	0.0001	0.0100
13	C1	POND_C	CONDUIT	400.0	3.6650	0.0100
15	A1	POND_A	CONDUIT	400.0	5.2372	0.0100
16	A2	A1	CONDUIT	935.0	0.4845	0.0100
18	C4	C3	CONDUIT	1427.8	0.5169	0.0100
19	C3	17	CONDUIT	400.0	4.8181	0.0100
20	C7	17	CONDUIT	400.0	5.2673	0.0100
21	C5	C1	CONDUIT	1370.0	1.7316	0.0100
22	C6	C1	CONDUIT	1370.0	2.4182	0.0100
23	C2	POND_C	CONDUIT	400.0	6.9064	0.0100
24	17	POND_C	CONDUIT	990.0	0.6637	0.0100
25	B7	B3	CONDUIT	1541.0	0.4218	0.0100
26	B3	18	CONDUIT	1541.0	1.0955	0.0100
27	B2	18	CONDUIT	1365.7	1.1790	0.0100
28	B8	1	CONDUIT	780.0	1.6182	0.0100
29	B4	1	CONDUIT	220.0	6.6236	0.0100
30	B5	B_OUT	CONDUIT	600.0	3.2584	0.0100
32	1	B1	CONDUIT	800.0	0.6250	0.0350
6	A3	A1	CONDUIT	1300.0	0.3100	0.0100
14	POND_C	C_OUT	OUTLET			
17	POND_A	A_OUT	OUTLET			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
1	CIRCULAR	4.00	12.57	1.00	4.00	1	147.63
10	DUMMY	0.00	0.00	0.00	0.00	1	0.00
13	DUMMY	0.00	0.00	0.00	0.00	1	0.00
15	DUMMY	0.00	0.00	0.00	0.00	1	0.00
16	CIRCULAR	4.00	12.57	1.00	4.00	1	129.98
18	CIRCULAR	4.00	12.57	1.00	4.00	1	134.26

19	DUMMY	0.00	0.00	0.00	0.00	1	0.00
20	DUMMY	0.00	0.00	0.00	0.00	1	0.00
21	CIRCULAR	4.00	12.57	1.00	4.00	1	245.73
22	CIRCULAR	4.00	12.57	1.00	4.00	1	290.39
23	DUMMY	0.00	0.00	0.00	0.00	1	0.00
24	CIRCULAR	4.00	12.57	1.00	4.00	1	152.12
25	CIRCULAR	4.00	12.57	1.00	4.00	1	121.28
26	DUMMY	0.00	0.00	0.00	0.00	1	0.00
27	DUMMY	0.00	0.00	0.00	0.00	1	0.00
28	CIRCULAR	4.00	12.57	1.00	4.00	1	237.54
29	CIRCULAR	4.00	12.57	1.00	4.00	1	480.59
30	CIRCULAR	4.00	12.57	1.00	4.00	1	337.08
32	TRAPEZOIDAL	5.00	75.00	3.11	20.00	1	535.98
6	CIRCULAR	4.00	12.57	1.00	4.00	1	103.97

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... NO
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Flow Routing Method ..... KINWAVE
Starting Date 01/01/2005 00:00:00
Ending Date 01/02/2005 06:00:00
Antecedent Dry Days 0.0
Report Time Step 00:15:00
Routing Time Step ..... 30.00 sec

**********	Volume	Volume
Flow Routing Continuity	acre-feet	10^6 gal
**********	---------	---------

Dry Weather Inflow	0.000 0.000
Wet Weather Inflow	0.000 0.000
Groundwater Inflow	0.000 0.000
RDII Inflow	0.000 0.000
External Inflow	45.904 14.958
External Outflow	38.633 12.589
Flooding Loss	0.000 0.000
Evaporation Loss	0.000 0.000
Exfiltration Loss	0.000 0.000
Initial Stored Volume	0.000 0.000
Final Stored Volume	7.165 2.335
Continuity Error (%)	0.229

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****

Minimum Time Step	:	30.00 sec
Average Time Step	:	30.00 sec
Maximum Time Step	:	30.00 sec
Percent in Steady State	:	0.00
Average Iterations per Step	:	1.07
Percent Not Converging	:	0.00

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
1	JUNCTION	0.09	2.00	5449.00	0 00:40	1.94
17	JUNCTION	0.10	2.21	5447.21	0 00:38	2.15
18	JUNCTION	0.09	2.00	5450.25	0 00:40	1.94
A1	JUNCTION	0.05	1.01	5458.48	0 00:41	0.99
A2	JUNCTION	0.05	1.01	5463.01	0 00:35	0.98
A3	JUNCTION	0.02	0.58	5462.08	0 00:35	0.54

B1	JUNCTION	0.08	1.88	5443.88	0	00:42	1.86
B2	JUNCTION	0.00	0.00	5464.35	0	00:00	0.00
B3	JUNCTION	0.05	1.17	5466.30	0	00:38	1.11
B4	JUNCTION	0.02	0.43	5461.97	0	00:35	0.39
B5	JUNCTION	0.02	0.64	5462.18	0	00:35	0.58
B6	JUNCTION	0.00	0.00	5461.54	0	00:00	0.00
B7	JUNCTION	0.05	1.19	5472.82	0	00:35	1.09
B8	JUNCTION	0.04	0.61	5460.23	0	00:45	0.61
C1	JUNCTION	0.06	1.55	5454.63	0	00:36	1.44
C2	JUNCTION	0.00	0.00	5465.99	0	00:00	0.00
C3	JUNCTION	0.07	1.33	5465.58	0	00:41	1.31
C4	JUNCTION	0.07	1.33	5472.96	0	00:40	1.30
C5	JUNCTION	0.04	1.10	5477.90	0	00:35	1.02
C6	JUNCTION	0.06	1.56	5487.76	0	00:35	1.43
C7	JUNCTION	0.00	0.00	5466.04	0	00:00	0.00
A_OUT	OUTFALL	0.00	0.00	5434.00	0	00:00	0.00
B_OUT	OUTFALL	0.02	0.64	5442.64	0	00:36	0.58
C_OUT	OUTFALL	0.00	0.00	54.36	0	00:00	0.00
POND_A	STORAGE	2.80	4.46	5441.01	0	01:21	4.44
POND_C	STORAGE	2.98	4.66	5443.09	0	01:10	4.65

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days	Time of Max Occurrence hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
1	JUNCTION	0.00	96.63	0	00:40	0	2.39	0.000
17	JUNCTION	0.00	89.85	0	00:38	0	2.25	0.000
18	JUNCTION	0.00	74.00	0	00:40	0	1.77	0.000
A1	JUNCTION	114.67	135.62	0	00:36	2.42	2.93	0.000
A2	JUNCTION	18.20	18.20	0	00:35	0.424	0.424	-0.000
A3	JUNCTION	4.73	4.73	0	00:35	0.0889	0.0889	0.000
B1	JUNCTION	8.48	104.65	0	00:42	0.356	2.75	0.000
B2	JUNCTION	30.62	30.62	0	00:40	0.731	0.731	0.000
B3	JUNCTION	21.24	43.40	0	00:40	0.601	1.04	0.000
B4	JUNCTION	11.82	11.82	0	00:35	0.21	0.21	0.000
B5	JUNCTION	18.72	18.72	0	00:35	0.33	0.33	0.000
B6	JUNCTION	6.16	6.16	0	00:40	0.179	0.179	0.000
B7	JUNCTION	23.24	23.24	0	00:35	0.446	0.446	0.000
B8	JUNCTION	12.00	12.00	0	00:45	0.409	0.409	0.000

C1	JUNCTION	100.10	231.59	0	00:36	1.78	4.45	0.000
C2	JUNCTION	96.58	96.58	0	00:35	2.05	2.05	0.000
C3	JUNCTION	13.21	45.18	0	00:41	0.382	1.24	0.000
C4	JUNCTION	32.09	32.09	0	00:40	0.857	0.857	0.000
C5	JUNCTION	40.57	40.57	0	00:35	0.782	0.782	0.000
C6	JUNCTION	93.68	93.68	0	00:35	1.9	1.9	0.000
C7	JUNCTION	46.04	46.04	0	00:35	1.02	1.02	0.000
A_OUT	OUTFALL	0.00	44.55	0	01:21	0	2.27	0.000
B_OUT	OUTFALL	0.00	121.67	0	00:41	0	3.08	0.000
C_OUT	OUTFALL	0.00	184.35	0	01:10	0	7.06	0.000
POND_A	STORAGE	0.00	135.62	0	00:36	0	2.93	0.118
POND_C	STORAGE	0.00	414.11	0	00:36	0	8.74	0.139

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
POND_A	125.832	31	0	0	267.895	65	0 01:20	44.55
POND_C	321.656	42	0	0	692.036	90	0 01:10	184.35

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
A_OUT	99.42	2.83	44.55	2.270
B_OUT	25.39	15.02	121.67	3.081
C_OUT	99.42	8.79	184.35	7.059

System	74.74	26.63	184.35	12.409

Link Flow Summary

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
1	CONDUIT	73.98	0 00:40	11.75	0.50	0.50
10	DUMMY	104.65	0 00:42			
13	DUMMY	231.59	0 00:36			
15	DUMMY	135.62	0 00:36			
16	CONDUIT	18.12	0 00:41	7.31	0.14	0.25
18	CONDUIT	32.04	0 00:41	8.80	0.24	0.33
19	DUMMY	45.18	0 00:41			
20	DUMMY	46.04	0 00:35			
21	CONDUIT	40.21	0 00:36	14.47	0.16	0.27
22	CONDUIT	92.67	0 00:36	20.58	0.32	0.39
23	DUMMY	96.58	0 00:35			
24	CONDUIT	89.81	0 00:40	12.62	0.59	0.55
25	CONDUIT	22.52	0 00:38	7.44	0.19	0.29
26	DUMMY	43.40	0 00:40			
27	DUMMY	30.62	0 00:40			
28	CONDUIT	12.00	0 00:46	9.91	0.05	0.15
29	CONDUIT	11.79	0 00:36	16.13	0.02	0.11
30	CONDUIT	18.64	0 00:36	14.45	0.06	0.16
32	CONDUIT	96.43	0 00:42	4.34	0.18	0.38
6	CONDUIT	4.49	0 00:41	4.21	0.04	0.14
14	DUMMY	184.35	0 01:10			
17	DUMMY	44.55	0 01:21			

Conduit Surcharge Summary

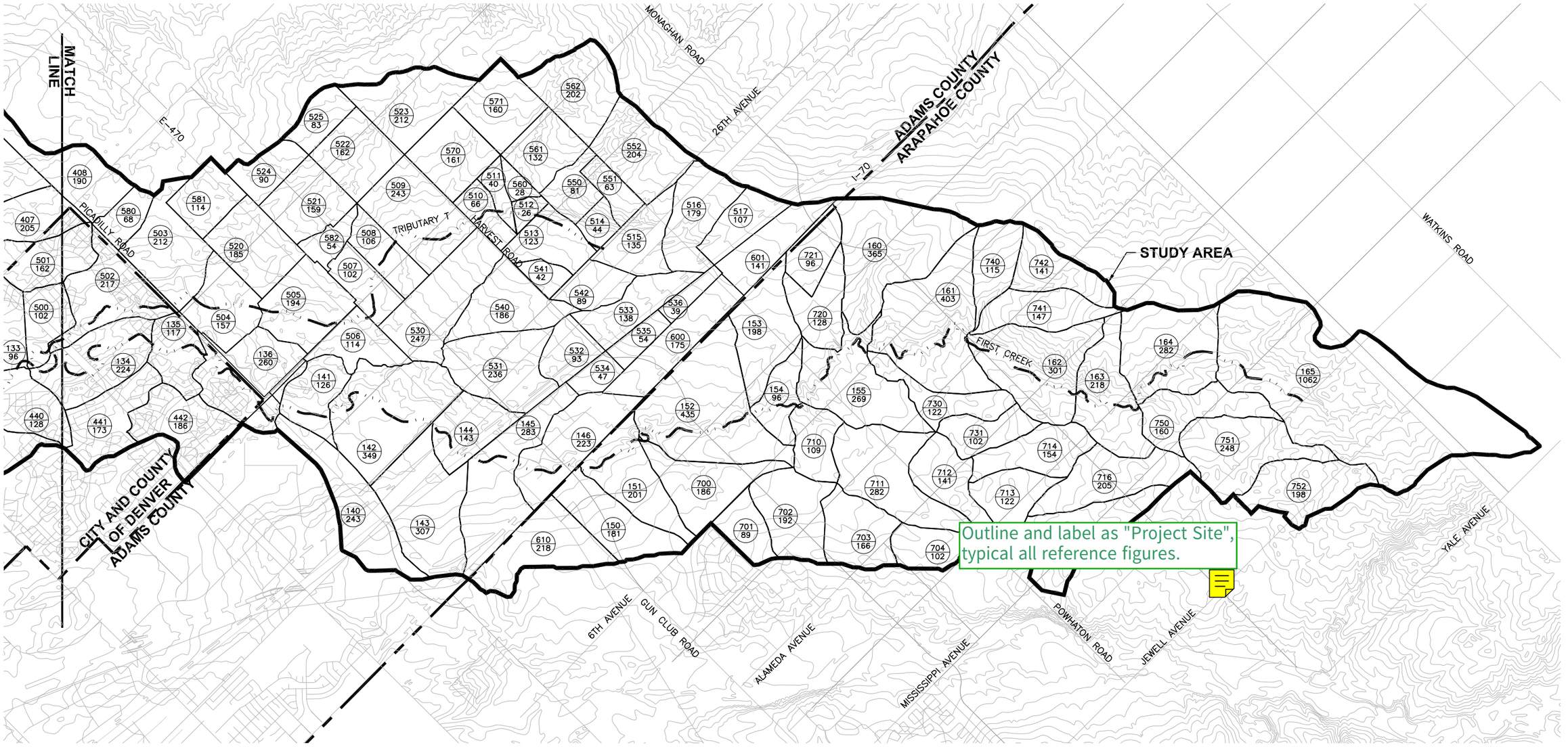
No conduits were surcharged.

Analysis begun on: Fri Dec 10 13:47:37 2021
Analysis ended on: Fri Dec 10 13:47:38 2021

```
Total elapsed time: 00:00:01
```

APPENDIX C – REFERENCE MATERIAL

List reference material and include additional supporting information from adjacent sites and proposed infrastructure (Bond 840 etc..)



LEGEND

- SUB-WATERSHED ID
- SUB-WATERSHED AREA (ACRES)
- WATERSHED BOUNDARY
- SUB-WATERSHED BOUNDARY
- STREAM CENTERLINE

2000 0 1000 2000 4000

SCALE: 1" = 4000'

NAME: Z:\UDFCD PLANNING\Upper First Creek\CAD_UFC\DWG\Alt Rpt\Fig 3-1 - SubWatershed Map.dwg
PLOT DATE: Oct 05, 2009 3:52pm

MOSER & associates ENGINEERING
720 S. COLORADO BLVD.
SUITE 410 S
DENVER, CO 80246
PHONE: 303-757-3655
FAX: 303-300-1635

DESIGNED	AGC	DATE 5/28/09
DRAWN	AGC	DATE 5/28/09
CHECKED	TLP	DATE 7/10/09
REVISED		DATE

CITY AND COUNTY OF DENVER
CITY OF AURORA
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

FIRST CREEK (UPPER)
MAJOR DRAINAGEWAY
PLANNING STUDY

SUB-WATERSHED BOUNDARIES

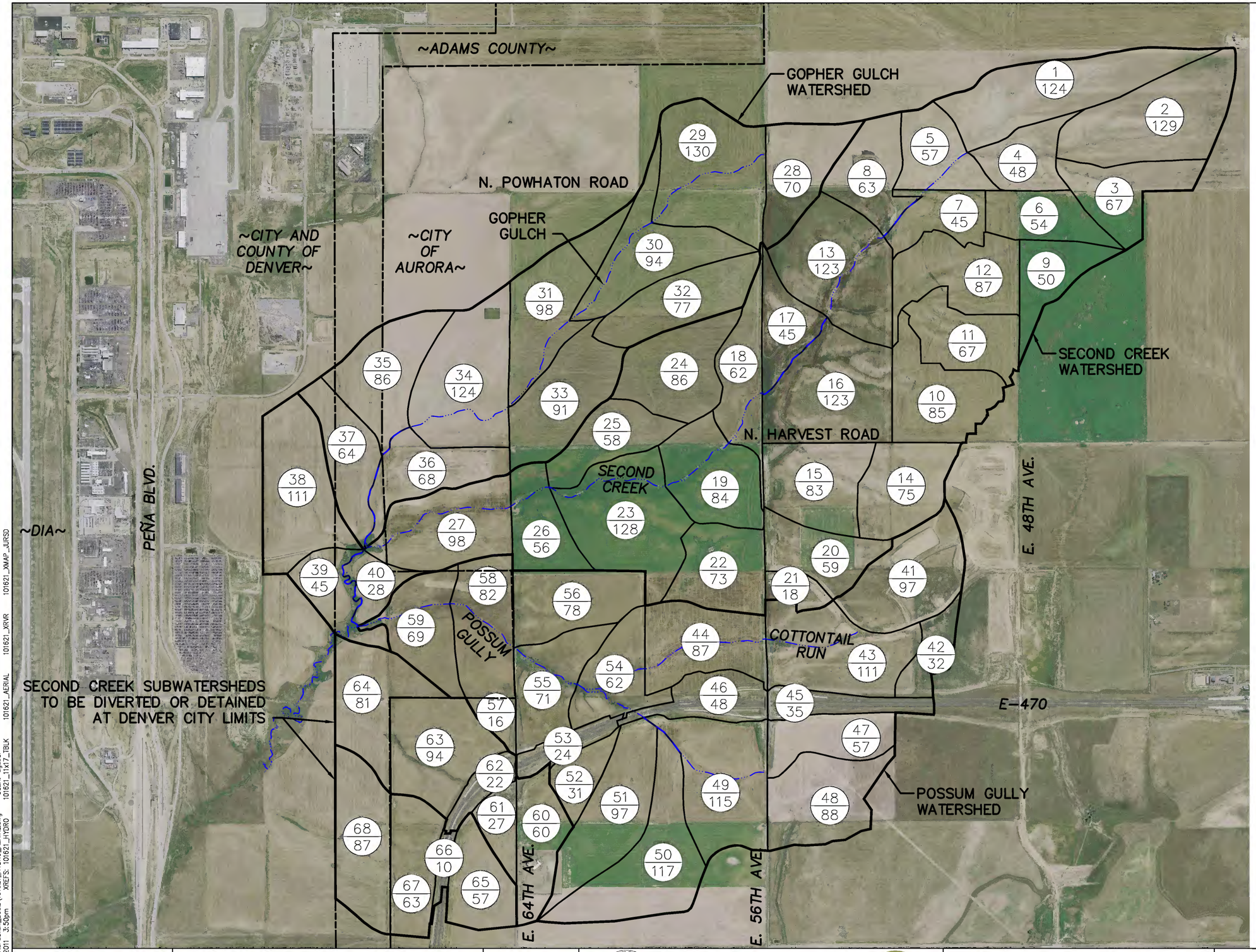
FIGURE 3-2

Table 3.3-2(continued)
CUHP Subwatershed Characteristics

Subwatershed	Area (sq. mi.)	Distance to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperviousness		Depression Storage		Horton's Infiltration Parameters		
					Existing	Future	Pervious (inches)	Impervious (inches)	Initial Rate (in/hr)	Horton's Decay Coefficient (1/seconds)	Final Rate (in/hr)
231	0.24	0.46	0.90	0.009	52.32	62.87	0.35	0.10	3.96	0.0018	0.56
232	0.23	0.44	0.59	0.007	44.36	55.70	0.35	0.10	3.04	0.0018	0.50
240	0.26	0.64	0.76	0.004	47.72	65.36	0.35	0.10	3.84	0.0018	0.56
241	0.15	0.28	0.64	0.014	35.58	51.70	0.35	0.10	4.17	0.0018	0.58
250	0.26	0.36	0.75	0.010	16.67	39.15	0.35	0.10	4.35	0.0018	0.59
251	0.35	0.47	0.85	0.014	2.00	2.09	0.35	0.10	3.57	0.0018	0.54
260	0.85	0.72	1.63	0.009	2.74	6.63	0.35	0.10	3.27	0.0018	0.52
261	0.49	0.53	1.17	0.016	2.00	2.00	0.35	0.10	4.00	0.0018	0.56
300	0.49	0.78	1.04	0.013	2.00	2.00	0.35	0.10	3.70	0.0016	0.60
301	0.69	0.93	1.67	0.014	2.00	2.00	0.35	0.10	3.90	0.0018	0.56
302	0.30	0.27	0.70	0.005	2.00	2.00	0.35	0.10	3.73	0.0017	0.58
303	0.61	0.68	1.31	0.011	2.00	2.00	0.35	0.10	3.31	0.0018	0.52
304	0.47	0.85	1.04	0.007	2.00	2.00	0.35	0.10	3.50	0.0017	0.52
310	0.37	0.72	1.29	0.009	2.00	2.00	0.35	0.10	4.01	0.0018	0.57
311	0.23	0.44	0.81	0.008	2.00	2.00	0.35	0.10	3.83	0.0018	0.56
312	0.14	0.47	0.70	0.006	2.00	2.00	0.35	0.10	3.42	0.0018	0.53
313	0.14	0.23	0.47	0.009	2.00	4.00	0.35	0.10	3.30	0.0018	0.51
314	0.36	0.46	1.08	0.006	2.00	2.00	0.35	0.10	3.36	0.0018	0.52
315	0.14	0.72	1.10	0.008	2.00	7.00	0.35	0.10	3.69	0.0018	0.55
320	0.35	0.81	1.21	0.008	2.00	2.00	0.35	0.10	3.52	0.0018	0.53
321	0.18	0.49	0.86	0.005	2.00	17.00	0.35	0.10	4.33	0.0017	0.58
330	0.27	0.57	1.02	0.009	2.00	2.00	0.35	0.10	4.13	0.0018	0.58
331	0.88	0.49	1.14	0.007	2.00	2.00	0.35	0.10	4.14	0.0018	0.58
400	0.22	0.34	0.65	0.010	2.00	64.00	0.35	0.10	4.51	0.0018	0.61
401	0.42	0.25	0.84	0.009	2.48	71.67	0.35	0.10	4.50	0.0017	0.62
402	0.34	0.21	0.85	0.014	14.81	57.04	0.35	0.10	4.43	0.0017	0.61
403	0.23	1.46	1.16	0.012	62.44	51.96	0.35	0.10	4.51	0.0018	0.61
404	0.17	0.36	0.64	0.013	44.69	50.22	0.35	0.10	4.50	0.0017	0.63
405	0.35	0.49	1.06	0.013	34.53	53.01	0.35	0.10	4.50	0.0018	0.60
406	0.38	0.63	1.36	0.010	2.00	54.98	0.35	0.10	3.42	0.0018	0.53
407	0.32	0.82	1.30	0.011	6.22	54.23	0.35	0.10	4.41	0.0018	0.59
408	0.30	0.41	1.02	0.010	2.00	75.92	0.35	0.10	9.99	0.0018	0.57
410	0.22	0.27	0.58	0.006	2.00	16.00	0.35	0.10	4.50	0.0018	0.60
411	0.20	0.21	0.97	0.006	2.00	32.00	0.35	0.10	4.05	0.0018	0.57
412	0.19	0.52	0.54	0.006	2.00	79.46	0.35	0.10	4.50	0.0018	0.60
413	0.14	0.32	0.72	0.013	2.00	63.32	0.35	0.10	4.50	0.0018	0.60
440	0.20	0.27	0.47	0.025	50.00	50.02	0.35	0.10	4.68	0.0014	0.74
441	0.27	0.35	0.79	0.006	49.99	49.99	0.35	0.10	4.68	0.0014	0.74
442	0.29	0.41	0.77	0.014	50.00	50.00	0.35	0.10	4.66	0.0014	0.73
500	0.16	0.40	0.64	0.016	50.00	50.00	0.35	0.10	4.64	0.0015	0.71
501	0.25	0.17	0.66	0.007	38.67	50.99	0.35	0.10	4.50	0.0018	0.60
502	0.31	0.40	1.03	0.014	46.93	50.00	0.35	0.10	4.54	0.0017	0.63
503	0.25	0.26	0.60	0.009	2.00	59.58	0.35	0.10	4.44	0.0018	0.60
504	0.38	0.24	1.15	0.009	2.00	69.85	0.35	0.10	4.21	0.0017	0.62
505	0.19	0.22	0.37	0.010	2.00	54.96	0.40	0.10	4.16	0.0018	0.59
506	0.16	0.34	0.72	0.020	2.00	62.39	0.35	0.10	3.80	0.0018	0.55
507	0.17	0.24	0.75	0.020	2.00	50.01	0.35	0.10	3.41	0.0018	0.53
508	0.38	0.41	0.91	0.020	2.00	50.10	0.35	0.10	3.68	0.0018	0.55
509	0.25	0.27	0.64	0.020	2.00	50.00	0.35	0.10	3.63	0.0017	0.53
510	0.27	0.27	0.72	0.020	2.00	55.00	0.35	0.10	3.69	0.0018	0.54

Table 3.3-2 (continued)
CUHP Subwatershed Characteristics

Subwatershed	Area (sq. mi.)	Distance to Centroid (miles)	Length (miles)	Slope (ft./ft.)	Percent Imperviousness		Depression Storage		Horton's Infiltration Parameters		
					Existing	Future	Pervious (inches)	Impervious (inches)	Initial Rate (in/hr)	Horton's Decay Coefficient (1/seconds)	Final Rate (in/hr)
511	0.22	0.40	0.80	0.022	5.00	76.96	0.40	0.10	3.41	0.0018	0.53
512	0.29	0.45	0.85	0.018	11.69	79.15	0.40	0.10	3.01	0.0018	0.50
513	0.16	0.42	0.80	0.014	2.00	78.77	0.40	0.10	3.00	0.0018	0.50
520	0.47	0.40	1.03	0.011	2.00	60.91	0.35	0.10	4.50	0.0018	0.60
521	0.18	0.37	0.77	0.020	2.00	77.76	0.35	0.10	4.49	0.0018	0.60
530	0.29	0.31	0.84	0.020	2.00	69.33	0.35	0.10	3.97	0.0018	0.56
531	0.27	0.20	0.66	0.020	2.00	84.57	0.35	0.10	3.86	0.0018	0.56
532	0.14	0.46	0.63	0.020	2.00	84.21	0.40	0.10	4.03	0.0018	0.57
533	0.38	0.24	0.65	0.017	2.00	49.89	0.37	0.10	3.27	0.0018	0.52
534	0.32	0.33	0.85	0.016	2.00	44.25	0.40	0.10	3.23	0.0018	0.52
540	0.39	0.55	1.10	0.015	2.00	54.13	0.40	0.10	3.19	0.0018	0.51
541	0.42	0.64	1.12	0.008	2.00	72.59	0.40	0.10	3.32	0.0018	0.52
542	0.22	0.24	0.50	0.011	17.11	80.00	0.40	0.10	3.01	0.0018	0.50
543	0.37	0.37	1.09	0.012	10.77	80.00	0.40	0.10	3.00	0.0018	0.50
550	0.30	0.62	1.14	0.015	2.00	58.74	0.40	0.10	3.07	0.0018	0.50
551	0.21	0.08	0.69	0.017	2.00	70.40	0.38	0.10	3.01	0.0018	0.50
560	0.25	0.41	0.70	0.020	2.00	59.95	0.35	0.10	3.00	0.0018	0.50
561	0.26	0.46	0.59	0.020	2.00	59.71	0.35	0.10	3.06	0.0018	0.50
570	0.21	0.36	0.72	0.020	2.00	50.09	0.35	0.10	3.71	0.0018	0.55
571	0.31	0.28	0.59	0.024	2.00	78.74	0.40	0.10	3.58	0.0018	0.54
580	0.23	0.28	0.72	0.020	2.00	53.97	0.35	0.10	3.73	0.0018	0.55
581	0.34	0.28	0.69	0.026	2.00	78.24	0.40	0.10	3.58	0.0018	0.54
600	0.27	0.69	1.30	0.012	17.19	79.86	0.40	0.10	3.00	0.0018	0.50
601	0.24	0.38	1.00	0.008	2.05	79.27	0.40	0.10	3.00	0.0018	0.50
610	0.34	0.27	0.83	0.011	2.00	66.02	0.40	0.10	3.09	0.0018	0.51
700	0.29	0.71	1.28	0.012	4.70	81.85	0.40	0.10	3.01	0.0018	0.50
701	0.14	0.38	0.64	0.012	14.30	53.80	0.40	0.10	3.32	0.0018	0.52
702	0.30	0.38	0.93	0.010	38.86	46.77	0.40	0.10	3.06	0.0018	0.50
703	0.26	0.30	0.80	0.012	38.42	47.25	0.40	0.10	3.15	0.0018	0.51
704	0.16	0.36	0.68	0.011	2.00	54.92	0.40	0.10	3.39	0.0018	0.53
710	0.17	0.32	0.64	0.015	41.28	49.27	0.40	0.10	3.58	0.0018	0.54
711	0.44	0.59	1.76	0.008	31.48	51.17	0.40	0.10	3.38	0.0018	0.53
712	0.22	0.34	0.91	0.008	3.39	52.87	0.40	0.10	3.54	0.0018	0.54
713	0.19	0.49	0.83	0.008	2.00	55.00	0.40	0.10	3.44	0.0018	0.53
714	0.24	0.64	1.00	0.010	2.00	54.92	0.40	0.10	3.90	0.0018	0.56
715	0.37	0.47	1.13	0.011	2.00	55.00	0.40	0.10	3.76	0.0018	0.55
716	0.32	0.64	1.47	0.012	2.00	55.00	0.40	0.10	3.33	0.0018	0.52
717	0.18	0.38	0.76	0.015	2.00	54.85	0.40	0.10	3.62	0.0018	0.54
720	0.20	0.31	0.87	0.017	5.36	55.00	0.40	0.10	3.40	0.0018	0.53
721	0.15	0.36	0.68	0.015	8.73	55.10	0.40	0.10	3.11	0.0018	0.51
730	0.19	0.71	1.28	0.012	2.00	51.63	0.40	0.10	3.63	0.0018	0.54
731	0.16	0.38	1.61	0.014	2.00	52.96	0.40	0.10	3.59	0.0018	0.54
740	0.18	0.42	0.85	0.018	2.00	54.50	0.40	0.10	3.00	0.0018	0.50
741	0.23	0.47	0.90	0.019	2.00	54.18	0.40	0.10	3.01	0.0018	0.50
742	0.22	0.34	0.57	0.021	2.00	52.72	0.40	0.10	3.00	0.0018	0.50
750	0.25	0.45	1.14	0.018	2.00	47.24	0.40	0.10	3.73	0.0018	0.55
751	0.39	0.57	1.23	0.019	2.00	47.70	0.40	0.10	3.69	0.0018	0.55
752	0.31	0.43	0.95	0.018	2.00	38.20	0.40	0.10	4.36	0.0018	0.59



This is superseded by RESPEC hydrology.
Outline and ID project site on all erence material. Typical

N

1" = 2000'

0' 1000' 2000' 4000'

SCALE IN FEET

LEGEND

WATERSHED BOUNDARY

SUBWATERSHED BOUNDARY

XX / XXX — SUBWATERSHED ID / SUBWATERSHED AREA (ACRES)

DWG: C:\Temp\AcPublish_5092\101621_HYDRO_AERIAL.dwg
DATE: Sep 06, 2011 3:50pm
XREFS: 101621_HYDRO
101621_11x17_TBLK
USER: aqobor
101621_AERIAL
101621_XRVR
101621_XMAP_JURSD

TOPOGRAPHIC MAPPING METHOD:	LIDAR
TOPOGRAPHIC MAPPING BY:	SANBORN
TOPOGRAPHIC MAPPING QA/QC BY:	USGS
CONTOUR INTERVAL:	2 FOOT
DATE FLOWN:	2008

OLSSON ASSOCIATES
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Matrix Design Group, Inc.
An Employee Owned Company

designed by:	AG/DQ
drawn by:	AG
checked by:	DQ/DK
project no.:	010-1621
date:	9/2011

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT
CITY OF AURORA

SECOND CREEK (UPSTREAM OF DIA)
MAJOR DRAINAGEWAY PLAN
CONCEPTUAL DESIGN

SUBWATERSHED DELINEATION WITH AERIAL BACKGROUND

FIGURE 2

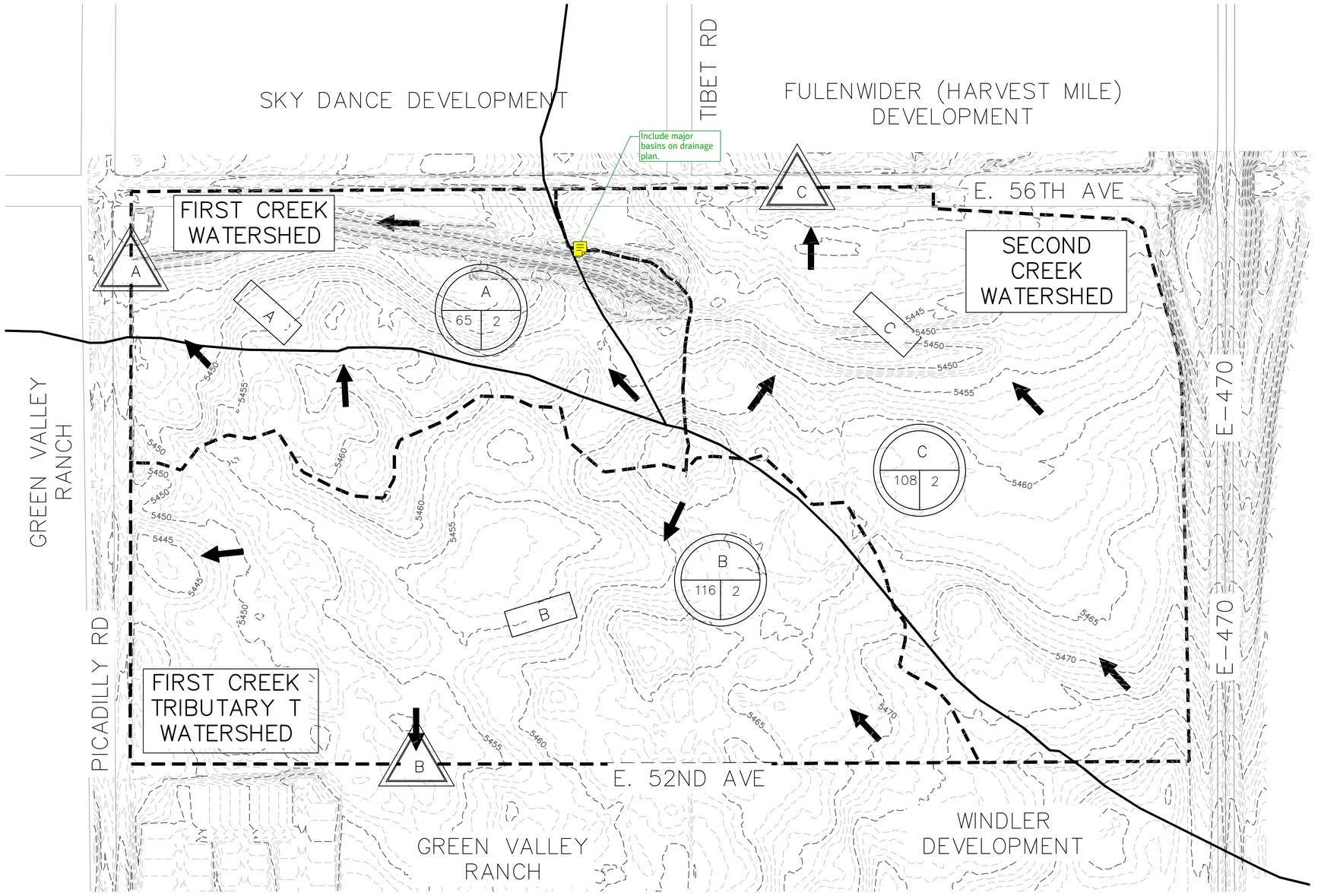
ld v t information has changed.

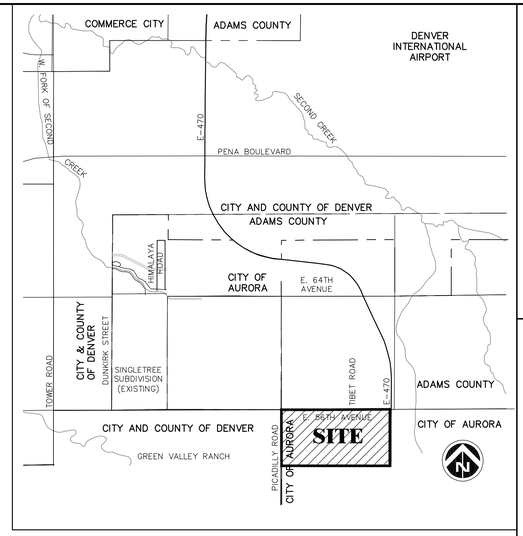
Table B-2 - CUHP 2005 Input Parameters

Basin	Area	Area	Existing Distance to Centroid	Existing Length	Future Distance to Centroid	Future Length	Existing Weighted Slope	Future Weighted Slope	Existing Imperviousness	Future Imperviousness	Existing Avg. Max. Depression Storage on Pervious	Future Avg. Max. Depression Storage on Pervious	Avg. Max. Depression Storage on Impervious	Initial Infiltration Rate (fi)	Horton's Decay Rate (a)	Final Infiltration Rate (fo)
	acres	mi^2	mi	mi	mi	mi	ft/ft	ft/ft	%	%	in	in	in	in/hr	1/second	in/hr
1	124	0.1944	0.5549	1.1725	0.5549	1.1725	0.0260	0.0260	2	80	0.4	0.35	0.1	3.31	0.0018	0.52
2	129	0.2019	0.3799	0.9631	0.3799	0.9631	0.0279	0.0279	2	80	0.4	0.35	0.1	3.71	0.0018	0.55
3	67	0.1040	0.3195	0.6502	0.3195	0.6502	0.0268	0.0268	2	67	0.4	0.35	0.1	3.65	0.0018	0.54
4	48	0.0742	0.2239	0.5203	0.2239	0.5203	0.0254	0.0254	2	80	0.4	0.35	0.1	3.32	0.0018	0.52
5	57	0.0890	0.1638	0.4580	0.1638	0.4580	0.0216	0.0216	2	80	0.4	0.35	0.1	3.54	0.0018	0.54
6	54	0.0836	0.2786	0.6481	0.2786	0.6481	0.0210	0.0250	2	60	0.4	0.35	0.07	3.48	0.0018	0.53
7	45	0.0702	0.2403	0.4852	0.2706	0.5027	0.0243	0.0243	2	59	0.4	0.35	0.1	3.28	0.0018	0.52
8	63	0.0988	0.2723	0.7826	0.2723	0.7826	0.0165	0.0165	2	79	0.4	0.35	0.1	3.73	0.0018	0.55
9	50	0.0782	0.2992	0.5123	0.2992	0.5123	0.0130	0.0230	2	47	0.4	0.35	0.05	3.00	0.0018	0.50
10	85	0.1331	0.2521	0.4053	0.5619	0.8644	0.0354	0.0200	2	41	0.4	0.35	0.05	3.08	0.0018	0.51
11	67	0.1044	0.2280	0.4862	0.3769	0.8277	0.0352	0.0230	2	43	0.4	0.35	0.05	3.58	0.0018	0.54
12	87	0.1365	0.2951	0.5847	0.2778	0.7706	0.0283	0.0200	2	46	0.4	0.35	0.05	3.42	0.0018	0.53
13	123	0.1929	0.2148	0.6462	0.2148	0.6462	0.0180	0.0180	2	80	0.4	0.35	0.1	3.61	0.0018	0.54
14	75	0.1176	0.2068	0.3720	0.2068	0.3720	0.0403	0.0241	2	45	0.4	0.35	0.1	3.33	0.0018	0.52
15	83	0.1299	0.3625	0.5864	0.3625	0.5864	0.0259	0.0261	2	44	0.4	0.35	0.1	3.00	0.0018	0.50
16	123	0.1925	0.3701	0.6627	0.3701	0.6627	0.0231	0.0231	2	80	0.4	0.35	0.1	3.15	0.0018	0.51
17	45	0.0706	0.2801	0.6544	0.2801	0.6544	0.0224	0.0224	2	80	0.4	0.35	0.1	3.47	0.0018	0.53
18	62	0.0971	0.2019	0.8369	0.2019	0.8369	0.0201	0.0201	2	81	0.4	0.35	0.1	3.18	0.0018	0.51
19	84	0.1314	0.1697	0.4585	0.1697	0.4585	0.0223	0.0223	2	93	0.4	0.35	0.1	3.16	0.0018	0.51
20	59	0.0929	0.2341	0.5008	0.2381	0.4847	0.0279	0.0250	2	49	0.4	0.35	0.1	3.00	0.0018	0.50
21	18	0.0286	0.1386	0.2678	0.1201	0.2932	0.0268	0.0268	2	95	0.4	0.35	0.1	3.00	0.0018	0.50
22	73	0.1134	0.1841	0.4883	0.1841	0.4883	0.0168	0.0168	2	95	0.4	0.35	0.1	3.00	0.0018	0.50
23	128	0.1996	0.3362	0.8612	0.3362	0.8612	0.0152	0.0152	2	95	0.4	0.35	0.1	3.00	0.0018	0.50
24	86	0.1347	0.3292	0.6807	0.3292	0.6807	0.0217	0.0217	2	80	0.4	0.35	0.1	3.00	0.0018	0.50
25	58	0.0913	0.3606	0.6481	0.3606	0.6481	0.0158	0.0158	2	86	0.4	0.35	0.1	3.00	0.0018	0.50
26	56	0.0879	0.3214	0.5331	0.3214	0.5331	0.0158	0.0158	2	95	0.4	0.35	0.1	3.00	0.0018	0.50
27	98	0.1533	0.2602	0.7765	0.2602	0.7765	0.0115	0.0115	2	91	0.4	0.35	0.1	3.00	0.0018	0.50
28	70	0.1088	0.2455	0.4595	0.2455	0.4595	0.0156	0.0156	2	80	0.4	0.35	0.1	3.79	0.0018	0.55
29	130	0.2030	0.3220	0.6735	0.3220	0.6735	0.0150	0.0150	2	80	0.4	0.35	0.1	3.99	0.0018	0.57
30	94	0.1463	0.5258	0.9360	0.5258	0.9360	0.0193	0.0193	2	80	0.4	0.35	0.1	3.19	0.0018	0.51
31	98	0.1538	0.6066	1.0411	0.6066	1.0411	0.0128	0.0128	2	80	0.4	0.35	0.1	3.00	0.0018	0.50
32	77	0.1208	0.3816	0.7610	0.3816	0.7610	0.0236	0.0236	2	80	0.4	0.35	0.1	3.06	0.0018	0.50
33	91	0.1417	0.2564	0.5545	0.2564	0.5545	0.0131	0.0131	2	81	0.4	0.35	0.1	3.00	0.0018	0.50
34	124	0.1942	0.2369	0.9409	0.2369	0.9409	0.0097	0.0097	2	80	0.4	0.35	0.1	3.00	0.0018	0.50
35	86	0.1339	0.3059	0.7004	0.3059	0.7004	0.0154	0.0154	2	47	0.4	0.35	0.1	3.00	0.0018	0.50
36	68	0.1060	0.5803	0.9127	0.5803	0.9127	0.0121	0.0121	2	80	0.4	0.35	0.1	3.00	0.0018	0.50
37	64	0.0993	0.5028	0.7970	0.5028	0.7970	0.0152	0.0152	2	25	0.4	0.35	0.1	3.00	0.0018	0.50
38	111	0.1734	0.3722	0.7129	0.3722	0.7129	0.0176	0.0176	2	85	0.4	0.4	0.1	3.01	0.0018	0.50
39	45	0.0707	0.3792	0.8481	0.3792	0.8481	0.0041	0.0041	2	46	0.4	0.35	0.1	3.77	0.0018	0.55
40	28	0.0435	0.2540	0.6044	0.2540	0.6044	0.0073	0.0073	2	19	0.4	0.35	0.1	3.00	0.0018	0.50
41	97	0.1511	0.2131	0.6360	0.2511	0.6720	0.0246	0.0183	2	49	0.4	0.35	0.1	3.03	0.0018	0.50
42	32	0.0499	0.2055	0.5032	0.2055	0.5032	0.0143	0.0143	2	95	0.4	0.35	0.1	3.08	0.0018	0.51
43	111	0.1735	0.2928	0.6267	0.2928	0.6267	0.0197	0.0197	2	88	0.4	0.35	0.1	3.00	0.0018	0.50
44	87	0.1352	0.2739	0.7011	0.2739	0.7011	0.0157	0.0157	2	89	0.4	0.35	0.1	3.00	0.0018	0.50
45	35	0.0551	0.3377	0.7220	0.3377	0.7220	0.0164	0.0164	*58*	58	0.4	0.35	0.1	3.23	0.0018	0.52
46	48	0.0757	0.2661	0.5650	0.2661	0.5650	0.0031	0.0031	*39*	39	0.4	0.35	0.1	3.00	0.0018	0.50
47	57	0.0889	0.3195	0.5960	0.3195	0.5960	0.0146	0.0146	2	86	0.4	0.35	0.1	3.39	0.0018	0.53
48	88	0.1375	0.3877	0.6242	0.3877	0.6242	0.0137	0.0137	2	86	0.4	0.35	0.1	4.31	0.0018	0.59
49	115	0.1795	0.2955	0.7341	0.2955	0.7341	0.0135	0.0135	2	85	0.4	0.35	0.1	3.10	0.0018	0.51
50	117	0.1823	0.8093	1.1765	0.8093	1.1765	0.0146	0.0146	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
51	97	0.1512	0.4847	0.9487	0.4847	0.9487	0.0208	0.0208	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
52	31	0.0479	0.2430	0.4479	0.2430	0.4479	0.0228	0.0228	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
53	24	0.0370	0.2322	0.4583	0.2322	0.4583	0.0149	0.0149	*50*	50	0.4	0.35	0.1	3.00	0.0018	0.50
54	62	0.0976	0.2114	0.5146	0.2114	0.5146	0.0213	0.0213	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
55	71	0.1111	0.1922	0.5078	0.1922	0.5078	0.0241	0.0241	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
56	78	0.1222	0.4699	0.7953	0.4699	0.7953	0.0184	0.0184	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
57	16	0.0255	0.1000	0.2739	0.1000	0.2739	0.0228	0.0228	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
58	82	0.1274	0.1691	0.5163	0.1691	0.5163	0.0152	0.0152	2	86	0.4	0.35	0.1	3.00	0.0018	0.50
59	69	0.1081	0.2172	0.5850	0.2172	0.5850	0.0205	0.0205	2	81	0.4	0.35	0.1	3.00	0.0018	0.50
60	60	0.0934	0.3057	0.6182	0.1672	0.6723	0.0237	0.0220	2	85	0.4	0.35	0.1	3.00	0.0018	0.50

Table B-2 - CUHP 2005 Input Parameters

Basin	Area	Area	Existing Distance to Centroid	Existing Length	Future Distance to Centroid	Future Length	Existing Weighted Slope	Future Weighted Slope	Existing Imperviousness	Future Imperviousness	Existing Avg. Max. Depression Storage on Pervious	Future Avg. Max. Depression Storage on Pervious	Avg. Max. Depression Storage on Impervious	Initial Infiltration Rate (fi)	Horton's Decay Rate (a)	Final Infiltration Rate (fo)
	acres	mi^2	mi	mi	mi	mi	ft/ft	ft/ft	%	%	in	in	in	in/hr	1/second	in/hr
61	27	0.0417	0.1686	0.4282	0.1686	0.4282	0.0256	0.0256	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
62	22	0.0343	0.0470	0.2593	0.0470	0.2593	0.0010	0.0010	*44*	44	0.4	0.35	0.1	3.00	0.0018	0.50
63	94	0.1476	0.2494	0.5366	0.2494	0.5366	0.0221	0.0230	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
64	81	0.1271	0.1564	0.4786	0.1564	0.4786	0.0267	0.0267	2	18	0.4	0.35	0.1	3.00	0.0018	0.50
65	57	0.0885	0.4419	0.6091	0.4419	0.6091	0.0237	0.0237	2	85	0.4	0.35	0.1	3.00	0.0018	0.50
66	10	0.0151	0.0831	0.2644	0.0831	0.2644	0.0030	0.0030	*52*	52	0.4	0.35	0.1	3.00	0.0018	0.50
67	63	0.0985	0.1928	0.2299	0.2473	0.6551	0.0214	0.0214	2	93	0.4	0.35	0.1	3.00	0.0018	0.50
68	87	0.1355	0.0150	0.4214	0.0150	0.4214	0.0242	0.0242	2	2	0.4	0.35	0.1	3.00	0.0018	0.50





KEY MAP
SCALE: 1" = 3000'

LEGEND

- WATERSHED BOUNDARY
- SUBWATERSHED BOUNDARY
- MHFD MAJOR BASIN BOUNDARY
- JUNCTION (NON-BASINS) OR DESIGN POINT
- FLOW DIRECTION
- BASIN DESIGNATION (ID, AREA (ACRES), IMPERVIOUS (%))

250 0 125 250 500
(IN FEET)
1 inch = 250 ft.

NOTE:

CITY OF AURORA PLAN REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH CITY OF AURORA DESIGN CRITERIA AND THE CITY CODE. THE CITY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND ELEVATIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE. THE CITY OF AURORA, THROUGH THE APPROVAL OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

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APPROVED FOR ONE YEAR FROM THIS DATE

CITY ENGINEER	**DATE**
WATER DEPARTMENT	**DATE**

BASIS OF BEARINGS:
SOUTHWEST QUARTER CORNER OF SECTION 2 T3S, R66W OF 6TH PM BEARING S89°36'23"W A DISTANCE OF 2645.55'

SITE BENCHMARK:
NATIONAL GEODETIC SURVEY CONTROL MONUMENT, DESIGNATION DVX H, BEING A STAINLESS STEEL ROD IN SLEEVE IN MONUMENT BOX STAMPED "DVX H 1995", LOCATED IN THE NORTHWEST QUARTER OF SECTION 2, TOWNSHIP 3 NORTH, RANGE 66 WEST OF THE 6TH P.M., COUNTY OF ADAMS, LYING APPROXIMATELY 623 FEET NORTH AND 6 FEET EAST OF THE WEST QUARTER CORNER OF SAID SECTION 2. ELEVATION = 5425.25 (NAVD 88)

COA BENCHMARK:
CITY OF AURORA BENCH MARK, COA ID 3S6611NW002 (OLD BENCH MARK ID AD-075A), BEING A 3" BRASS DISK ON 30" STEEL PIPE IN CONCRETE, SET ON SOUTH SIDE OF 64TH AVE. IN E-W 3/STRAND BARBED WIRE FENCE, 3' WEST OF BENCH MARK IS 4' HIGH 2 1/2" YELLOW COLORED PIPE, IN THE VICINITY OF THE N 1/4 CORNER OF SECTION 11, T3S, R66W. ELEVATION = 5424.588 (NAVD 88)

To request marking of underground facilities
811 Know what's **below.** **Call** before you dig.
Call 811 or visit call811.com for more information

It is the contractor's responsibility to contact UNCC a minimum of 2 days prior to the start of construction operations.
J3 Engineering Consultants, Inc claims no responsibility for the underground facilities depicted in this plan set.

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.368.5601
Contact: Jason A. Monforton, PE
Email: jmonforton@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
MASTER DRAINAGE REPORT
OVERALL BASIN MAP
EXISTING

OAKWOOD HOMES
18655 Green Valley Ranch Blvd.
Denver, CO 80249
Ph: 303-486-8734
Contact: Dave Carro

DOCUMENT AMENDMENTS

No.	Date	Description
2	03/01/2022	1ST SUBMITTAL - UPDATE
1	10/29/2021	1ST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: DLM
Drawn By: JAD
Checked By: JDM
Sheet Number:

J:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\MPC\CAD\DRN-EX-310PARCEL.DWG 2/28/2022 10:57 PM MARGRAF, JASON D.

ID culvert size under public road, typical

Label all proposed and existing roads, r 2.06.1.03 Show roadways and roadway e names. Label the roadway classification. c 2.07.1.02 Label roadway widths and S roadway names.
Include the EDN of approved plan or RSN number if currently under review, dimension ROW, typical all sheets.

Please explain this label?

Label the major roadways, typical

Coordinate with Westwood to confirm flows can be conveyed to pond 840. Include relevant supporting information in the appendix
Please note if flows will not be conveyed to pond 840 an amendment will be required to this plan.
Please note this in the report and on this sheet.

Included all text, not cutoff, typical

Label/dimension ROW, typical

What is the purple

f5 AND f12

Are all flows from basin B concentrated to this point. Include excerpts from approved plans to illustrate that the flows were anticipated downstream and pond was built for the area and % imperviousness.
Need to confirm that there is adequate and stable conveyance to the proposed pond.
Include a note that at the time of the PD that if construction of the offsite channel has not been built that the adjacent owner will need to provide a signed letter acceptance of the flows .

Label as future Tibet Road.

Please explain this label?

Check RESPEC master plan pond PG2 required at this ation

Check downstream Fulenwider Master plan amendment by Martin/Martin to coordinate release from property and expected charges.

This should be a separate file and uploaded separately.

Please illustrate the individual basin boundaries Blue Grama, Trib T, Second Creek, you can use a different or to label.

Per 2.03.7 Label adjacent subdivision names, lot and block, and their City of Aurora six digit Engineering Drawing Number (EDN) or seven digit RSN number. ypical all adjacent subdivisions).

Include peak flow summary table, include area, Q2, Q100, basin flows and accumulated flows and % erviousness.

Please include a table comparing the existing flows at the project boundary to the proposed flows.
Since the basin boundaries are changing cannot release greater than the existing conditions without a letter from adjacent property owner allowing the increase.

Please include a note stating: This Master Drainage Plan utilizes concept, mass grading to estimate the anticipated major basins. Minor adjustments to the grading presented herein may occur with the advancement of the individual planning areas, so long as the intent and the release rates presented herein are maintained for the three major sins.

For each pond include:
Pond Id
Trib Area
WQCV
EURV
V100
Vtotal
Q100in
Q100out

Please note that if the total drainage area exceeds 130acres or 250cfs then MEP eligibility will need to be cussed.

he planning areas and associated limits.

Explain in the report if roadways will be improved and t WQ/EURV detention will be provided.

lude floodplain panel number and effective date

ase include routing diagram for all three major basins in the appendix.

Id any offsite basins draining onto the site

el the EG contours

Add flow direction arrows within the site and a minimum of 50' beyond the site and offsite basin boundaries to confirm flow paths. Please include flow arrows within and outside of the site in sufficient detail confirm flow paths.

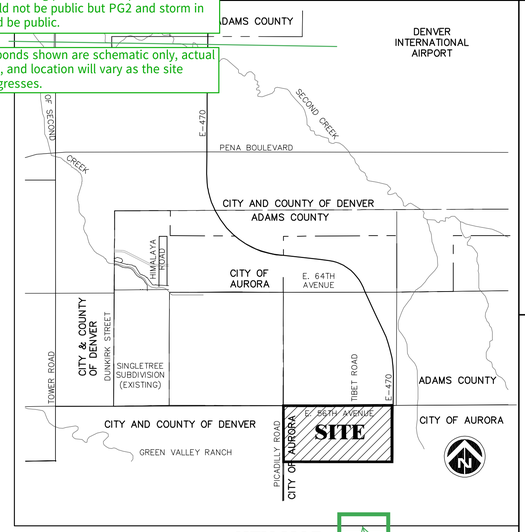
please illustrate the lower portion of the Amendment 3 area.

Add note describing public versus private interim ponds would not be public but PG2 and storm in W would be public.

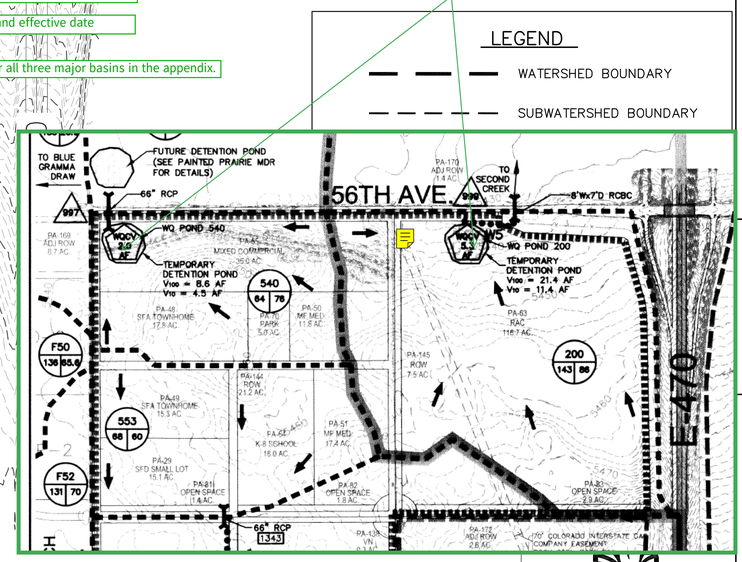
Add note: ponds shown are schematic only, actual size, shape, and location will vary as the site sign progresses.

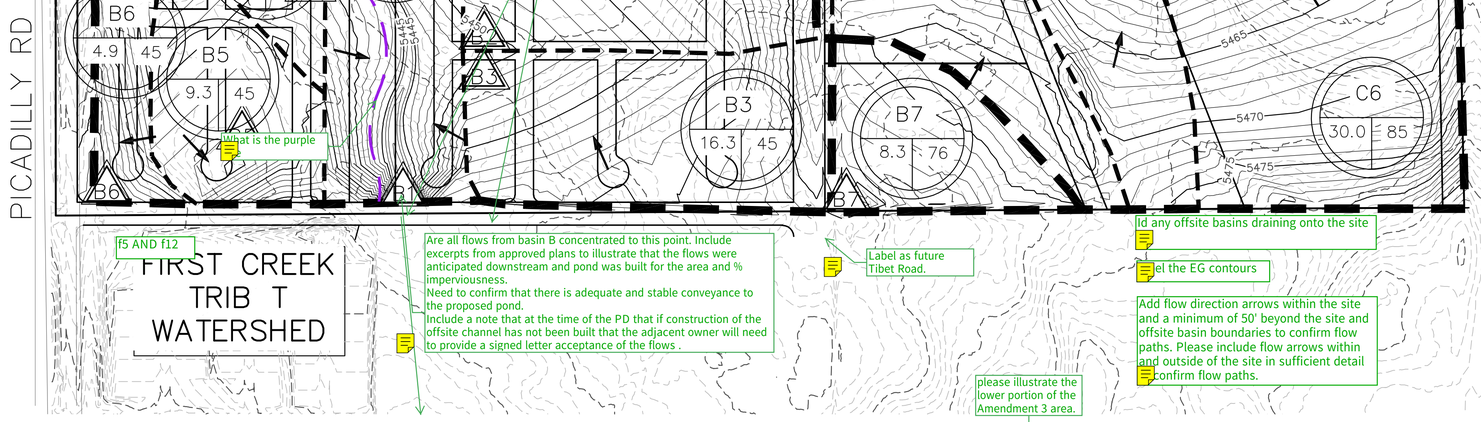
Please discuss WQ/ EURV ponds and interim detention and how the change in imperviousness impacts the downstream ponds.

Illustrate the second area



KEY MAP
SCALE: 1" = 3000'





500 0 250 500 1000
(IN FEET)
1 inch = 250 ft.

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WATER DEPARTMENT	**DATE**

Not necessary, please remove

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Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.368.5601
Contact: Jason A. Monforton, PE
Email: jmonforton@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
MASTER DRAINAGE REPORT
OVERALL BASIN MAP
PROPOSED

OAKWOOD HOMES
18655 Green Valley Ranch Blvd.
Denver, CO 80249
Ph: 303-486-8734
Contact: Dave Carro

No.	Date	Description
2	03/01/2022	1ST SUBMITTAL - UPDATE
1	10/29/2021	1ST SUBMITTAL

DOCUMENT AMENDMENTS

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: DLM
Drawn By: JAD
Checked By: JDM
Sheet Number:

A:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\MR\CAD\DRN_P-310PARCEL.DWG 2/28/2022 11:01 PM MARGRAF, JASON D.

The master plan amendment will not be approved by public works until the master drainage endment is approved.

include entire MP area in PIP

PUBLIC IMPROVEMENT PLAN

GREEN VALLEY MASTER PLAN AMENDMENT 2

DECEMBER 22, 2021

MARCH 1, 2022

Dewberry

PREPARED FOR
Oakwood Homes
4908 Tower Rd
Denver, CO 80249
Contact: David Carro
303.486.8500

PREPARED BY
Dewberry
8100 E. Maplewood Ave
Suite 150
Greenwood Village, CO 80111
Phone: 303-368-5601
Contact: Jason D. Margraf, PE

Job No. 50145755

CITY OF AURORA APPROVAL BLOCK

City Engineer	Date
Aurora Water Department	Date
Aurora Fire Department	Date

TABLE OF CONTENTS

A. INTRODUCTION 6

1. Project Location 6

2. Proposed Development 6

B. OVERALL INFRASTRUCTURE 7

1. Description 7

2. Roadway Improvements 8

3. Drainage Improvements 8

4. Water Improvements 9

5. Sanitary Sewer Improvements 9

6. Parks and Open Space 10

C. PLANNING AREA 45 10

1. Land Development 10

2. Roadway Improvements 11

3. Drainage Improvements 11

4. Water Improvements 11

5. Sanitary Sewer Improvements 11

6. Parks and Open Space 11

D. PLANNING AREA 46 11

1. Land Development 11

2. Roadway Improvements 12

3. Drainage Improvements 12

4. Water Improvements 12

5. Sanitary Sewer Improvements 12

6. Parks and Open Space 12

E. PLANNING AREA 47 12

1. Land Development 12

2. Roadway Improvements 13

3. Drainage Improvements 13

4. Water Improvements 13

5. Sanitary Sewer Improvements 13

6. Parks and Open Space 14

F. PLANNING AREA 48 14

1. Land Development 14

2. Roadway Improvements 14

3. Drainage Improvements 14

4. Water Improvements 14

5. Sanitary Sewer Improvements 15

6. Parks and Open Space 15

G. PLANNING AREA 49 15

1. Land Development 15

2. Roadway Improvements 15

3. Drainage Improvements 15

4. Water Improvements 16

5. Sanitary Sewer Improvements 16

6. Parks and Open Space 16

H. PLANNING AREA 50 16

1. Land Development 16

2. Roadway Improvements 16

3. Drainage Improvements 17

4. Water Improvements 17

5. Sanitary Sewer Improvements 17

6. Parks and Open Space 17

I. PLANNING AREA 51 17

1. Land Development 17

2. Roadway Improvements 18

3. Drainage Improvements 18

4. Water Improvements 18

5. Sanitary Sewer Improvements 18

6. Parks and Open Space 18

J. PLANNING AREA 52 18

1. Land Development 18

2. Roadway Improvements 19
3. Drainage Improvements 19
4. Water Improvements 19
5. Sanitary Sewer Improvements 19
6. Parks and Open Space 19

K. PLANNING AREA 53 20
1. Land Development 20
2. Roadway Improvements 20
3. Drainage Improvements 20
4. Water Improvements 20
5. Sanitary Sewer Improvements 20
6. Parks and Open Space 21

L. PLANNING AREA 54 21
1. Land Development 21
2. Roadway Improvements 21
3. Drainage Improvements 21
4. Water Improvements 21
5. Sanitary Sewer Improvements 22
6. Parks and Open Space 22

M. PLANNING AREA 55 22
1. Land Development 22
2. Roadway Improvements 22
3. Drainage Improvements 22
4. Water Improvements 23
5. Sanitary Sewer Improvements 23
6. Parks and Open Space 23

N. PLANNING AREA 56 23
1. Land Development 23
2. Roadway Improvements 23
3. Drainage Improvements 24
4. Water Improvements 24
5. Sanitary Sewer Improvements 24

6. Parks and Open Space 24

O. PLANNING AREA 57 24

1. Land Development 24

2. Roadway Improvements 25

3. Drainage Improvements 25

4. Water Improvements 25

5. Sanitary Sewer Improvements 25

6. Parks and Open Space 26

J. REFERENCES 26

APPENDIX A - SUPPORTING DOCUMENTS

Public Improvements Plan Sheets

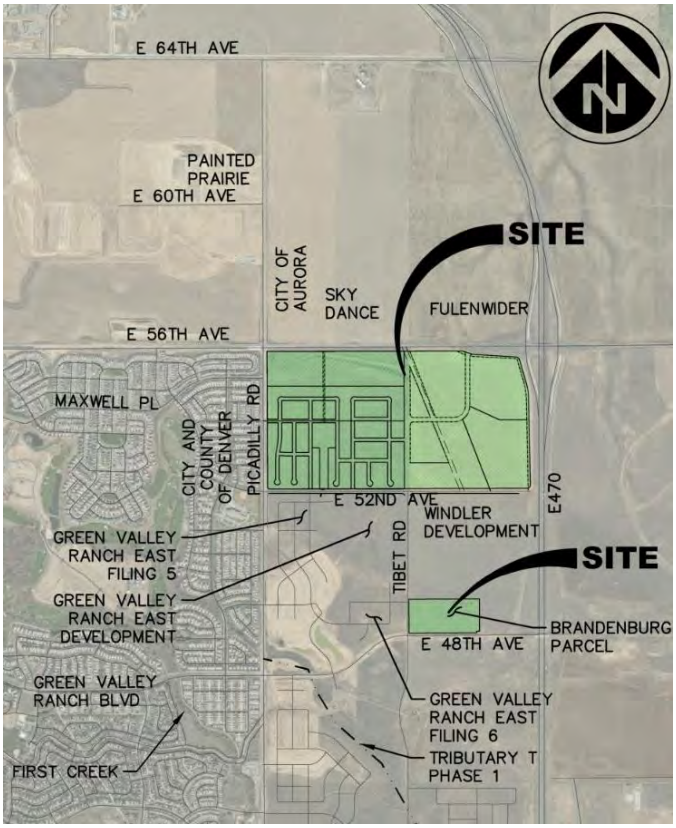
This is a stand alone document that does not incorporate or reference the previous improvements. At a minimum there should be text referring to the overall development and an overall exhibit showing the entirety of the new GVRE development. The other planning documents have treated this as an addition to the whole rather than a stand alone document.

ON

f Aurora with a guide for the anticipated planned land use and
ne proposed Green Valley Master Plan Amendment 2 Development.
ll project and infrastructure within each identified planning area of
family attached and detached residential homes and mixed-use commercial land uses within the proposed development. The Green Valley Master Plan Amendment 2 development will be referred to as “Site”, “Parcel”, or “Project” within the body of this Report.

1. Project Location

The Project is generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection and is bound by 56th Avenue to the north, Picadilly Road to the west, E-470 to the east and the Green Valley Ranch East and Windler Developments to the south. The Site is located within the North Half of Section 13, Township 3 South, Range 66 West of the 6th Principal Meridian in the City of Aurora, County of Adams, State of Colorado. The approximate latitude and longitude are 39°, 47’ 11” North and 104°, 43’ 37” West. Please refer to the Vicinity Map for additional information.



The Site is located in an area of active development and project entitlement, although much of the surrounding area is currently undeveloped, former pastureland. The adjacent projects that are actively being developed include Painted Prairie located north and west of the Site and Green Valley Ranch East south of the Site. Entitlements are in-process for three developments; Sky Dance to the north, Fulenwider to the south and Windler to the south and east. Entitlements are on-going within the Green Valley Ranch East development. The Green Valley Ranch development within Denver west of the Site is existing.

2. Proposed Development

The Project comprises approximately 289.1 acres within the parcel of ground north of E. 52nd Avenue and approximately 18.5 acres within the Brandenburg parcel. The Project consists of a mix of proposed uses including residential, multi-family, and commercial with associated amenities, parks and open spaces. Arterial, Collector, and local roadways to support the Site will be developed to support the individual planning areas and the ultimate full build out condition. Additionally, on- and off-site water, sanitary and stormwater utilities will be installed, as required, to service the development but are subject to modification as planning areas are developed.

Depending on the growth demands and infrastructure needs, construction of the planning areas may be combined or delayed as needed. The precise timing of the infrastructure will be determined by market demands and growth within this area and in accordance with the requirements of City of Aurora Life Safety and the Traffic Study for this project. Specific improvements will be further defined in a subsequent Contextual Site Plan (CSP) for the development. Each planning area will have two distinct points of access to ensure emergency vehicles can access the planned area. Water mains and associated fire hydrants will also be installed to provide sufficient fire flows to

each planned area. Figure 2 provides the Project concept plan and delineates the Project planning areas and major roadway network.

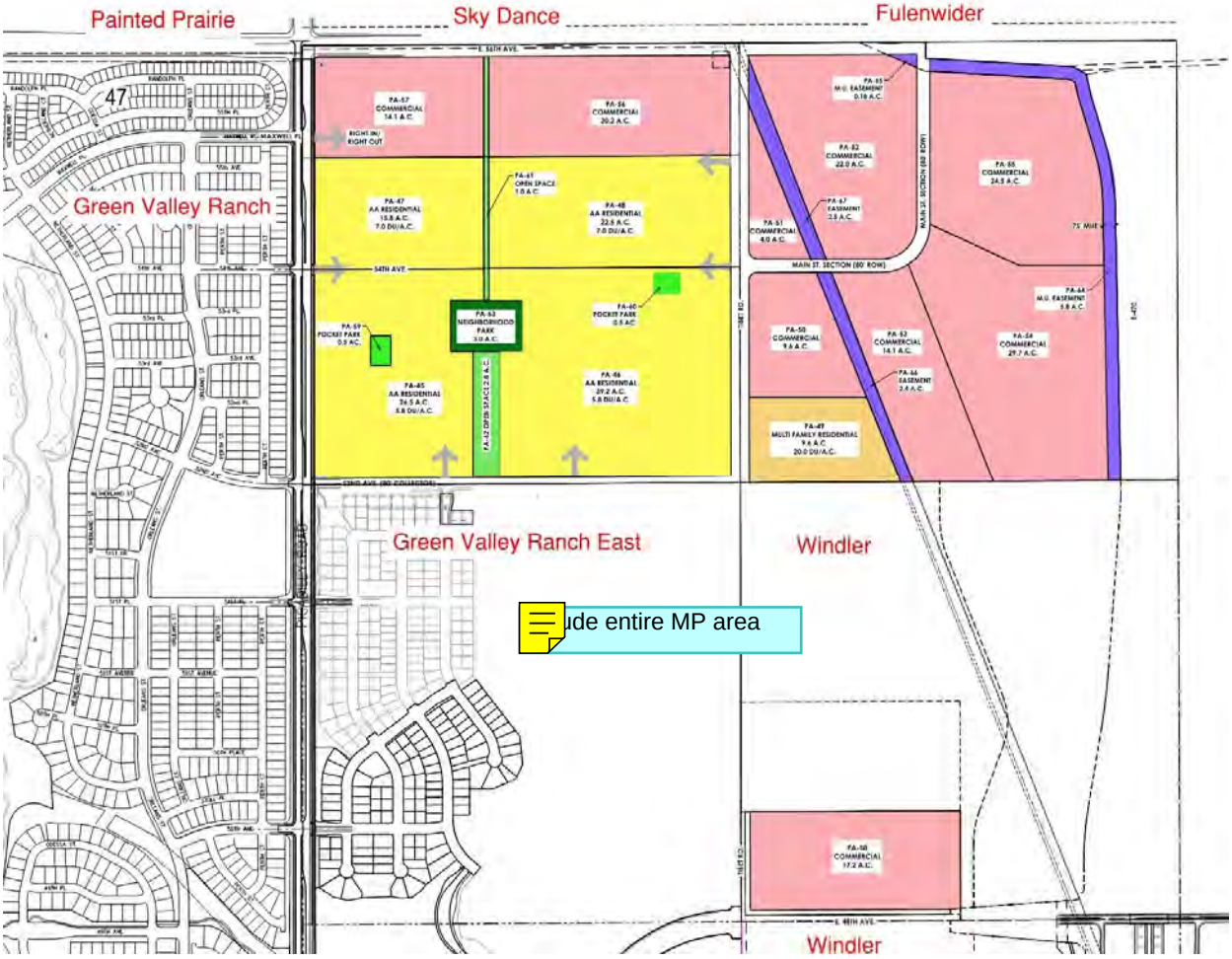


Figure 2- *Green Valley Master Plan Amendment 2 Concept Plan*

B. OVERALL INFRASTRUCTURE

1. Description

The Property is currently undeveloped and has historically been utilized for agricultural purposes. The proposed development of the Parcel will occur with a mix of uses including residential, multi-family, and commercial with associated amenities, parks and open spaces. The Project has been divided in to Planning Areas (PAs), as presented herein to identify the areas and uses planned within the different portions of the Site and to identify the infrastructure required to service the phased development. Planning areas within the 40s are a residential use, while PAs within the 50s are commercial. Civil infrastructure will be developed to support the Project in the form of roadways, water distribution system, sanitary sewer system and storm sewer system. All roadway and utility alignments (water, sanitary sewer, and storm sewer) are shown for illustrative purposes to identify the required infrastructure but are subject to change as Planning Areas are developed. Final roadway and utility alignments will be determined by subsequent Site Plan applications and Construction Document submittals. Each planning area shall

have two points of access, sufficient roadways to provide emergency vehicle access, sufficient fire hydrants to provide adequate coverage for the proposed use, a looped water main feed from an Aurora Water system, and a sanitary sewer outfall. All planning areas are serviced by off-site regional water quality and detention facilities and subsequent Preliminary and Final Drainage Reports will validate the tributary basins to ensure the proposed designs meet the assumed basin characteristics.

2. Roadway Improvements

Are there no planning areas from the rest of GVRE that may trigger these improvements?

The Site is bound by existing arterial and coll[illegible]n, east and a portion of the southern property boundaries. The existing roadway im[illegible]es of the Site development. Roadway improvement triggers have been ou[illegible] Area discussions in the body of this report. Roadway improvements will be consistent with the City of Aurora approved Traffic Impact Study (TIS) and are generally described, as follows, for the surrounding major roadways. Proposed roadway sections are anticipated to be constructed in conjunction with demands to meet traffic volumes and safety from the Project. Traffic signals are proposed at various locations along the proposed roadway network. The signals will not be installed until signal warrants a meet, as required by the City of Aurora. In lieu of construction with individual site plans, traffic signals will be funded in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

The approved PIFA for GVRE does not extend north of 52nd Avenue

The west ½ section of Picadilly Road is existing from 52nd Avenue to 56th Avenue along the western boundar[illegible] Site. The east ½ of Picadilly Road, along with median and landscape improvements, will be completed with t[illegible] Project. The construction of the east ½ section of Picadilly Road shall occur in accordance with the requirem[illegible] within the PIFA agreement between the Developer and the City of Aurora.

The north ½ section of 56th Avenue is existing from Picadilly Road to E-470 along the northern boundary of the Site. The south ½ of 56th Avenue, along with median and landscape improvements, will be completed with this Project. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

E-470 is existing to the east of the Site and no improvements to this roadway or the associated interchanges, ramps, bridges, traffic signals, or supporting utilities are required as a portion of this Project.

The south ½ section of 52nd Avenue from Picadilly Road to Tibet Road is considered to be existing for the purposes of this report. This portion of 52nd Avenue is in the design and City review and approval process at the time of this report. The Green Valley Ranch East subdivision to the south of the Site is responsible for the development of the southern ½ section of this collector roadway inclusive of the utilities, pedestrian improvements, and landscaping. The north ½ section of 52nd Avenue shall occur in accordance with the requirements within the PIFA agreement between the Develop and the City of Aurora. 52nd Avenue is not anticipated to be extended east beyond Tibet Road per the TIS.

3. Drainage Improvements

The Site is divided into three major basins; Blue Grama Draw a portion of the First Creek Watershed, the First Creek Tributary T Watershed, and the Second Creek Watershed. A ridgeline separates the basins at the high point located near the center of the Site, and the ridgeline extends to the approximate midpoint of the northern and western Site boundaries. The existing drainage improvements within the First Creek Tributary T watershed support the initial

phases of the Site development, while downstream, regional improvements are required within the Blue Grama Draw (First Creek) and Second Creek watersheds. Drainage improvement triggers have been outlined within the individual

Planning Area discussions within the body of this report. Drainage improvements will be consistent with the City of Aurora approved Master Drainage Report (MDR) and are generally described, as follows, for the three watersheds.

Blue Grama Draw (First Creek) Watershed

The northwest portion of the Site is tributary to Blue Grama Draw a portion of the First Creek watershed and this area comprises approximately 65.1 acres. Runoff from this watershed drains to the northwest corner of the parcel where it collects and flows north and west to the Moffit parcel and then along East 56th Avenue to the Painted Prairie development, ultimately outfalling into First Creek through the Blue Grama Draw. A Regional Pond (Pond 840) is anticipated within the Moffit parcel (Sky Dance) and will attenuate and treat the developed flows from this Site as detailed within the First Creek MDP. In the event that the downstream, regional Pond 840 is not existing at the time of development of the Planning Areas within this watershed, a temporary detention pond will be developed within the Site to attenuate runoff until Pond 840 has been developed. The temporary pond will be removed upon the completion of Pond 840.

First Creek Tributary T Watershed

The southwest portion of the Site is part of the First Creek Tributary T watershed and this area comprises approximately 115.6 acres. Runoff from this part of the Site drains to the southern boundary of the parcel where it collects and flows south through the box culvert within 52nd Avenue and into Green Valley Ranch East and Regional Detention Pond 8503C for attenuation, before ultimately outfalling to First Creek Tributary T. Regional Pond 8503C is existing and was sized to support the Site. For the purposes of this report, the downstream, drainage conveyance improvements that support this watershed within Green Valley Ranch East are considered existing since they are either existing, under construction, or within the design and approval process with the City of Aurora.

Second Creek Watershed

The Site area that is considered within the Second Creek Watershed is first tributary to Possum Gully, which is a left bank tributary to Second Creek and consists of approximately 108.2 acres. Runoff from this part of the Site flows to the northern boundary, across 56th Avenue, into Possum Gully, and ultimately into Second Creek. There is a Regional Pond, Pond S-215 planned downstream of the Site as part of Second Creek MDP, which was anticipated to attenuate developed runoff from the Site. In the event that the downstream, regional Pond S-215 is not existing at the time of development of the Planning Areas within this watershed, a temporary detention pond will be developed within the Site to attenuate runoff until Pond S-215 has been developed. The temporary pond will be removed upon the completion of Pond S-215.

4. Water Improvements

The Site will be serviced by Aurora Water utilities and a Master Utility Report (MUR) has been generated to outline the demands to service the Site and associated modeling to meet the City of Aurora requirements. The Project is located within Aurora Water pressure zone 3 with a static head of 5720 feet. There are existing water mains within the adjacent arterial roadways. A 24-inch steel water main is within 56th Avenue and a 24-inch PVC water main is within Picadilly Road adjacent to the Site. A 16-inch PVC main and a 12-inch PVC main located within 52nd Avenue and Tibet Road, respectively, are being developed as a portion of the Green Valley Ranch East development and are considered existing for the purposed of this report and the MUR. No off-Site water system improvements are required to service the Site, beyond the connections to the existing water mains.

5. Sanitary Sewer Improvements

The Site is located within three separate tributaries as previously identified within the Green Valley Ranch East Master Utility Report. That Report created three basins to correspond with those tributaries, as follows: Basin 310-1

which is tributary to the Second Creek Lift Station approximately two miles downstream of the Site. Basin 310-2 which is tributary to the Painted Prairie Development and Basin 310-3 which is tributary to the First Creek lift station within the Green Valley Ranch East subdivision. Due to serviceability issues within the Painted Prairie Development, Aurora Water has required downstream development within Sky Dance, Fullenwider and High Point to accommodate the effluent from both Basin 310-1 and 310-2. Subsequently, Fulenwider has designed Phase 1 of the 20-inch sanitary trunk main from the Second Creek lift station up Possum Gully to the E-470 inclusive of this direction. Phase I is under construction at the time of this report. Future phases of this trunk main will be extended west under E-470 and generally along the 60th Avenue and Tibet Road alignments to the Tibet Road and 56th Avenue intersection. This extension(s) will occur, by others, as a portion of downstream development. The timing extension of this sanitary trunk main to the Tibet Road and 56th Avenue intersection has yet to be determined. In the event that this system is not available at the time of the Site development and consistent with Option 2 discussed within the Master Utility Report, the areas tributary to the Second Creek lift station may be lifted, via a temporary lift station within the Site to the gravity sanitary sewer system within Tibet Road at the Green Valley Ranch East boundary until such time as the downstream improvements are available. The Green Valley Ranch East Master Utility Study anticipated this potential temporary condition. In the event that the Green Valley Master Plan Amendment 2 developer construct the downstream sanitary trunk main to complete the connection to the Phase I Possum Gulley improvement, reimbursement for the Possum Gully gravity, transmission main (Option 1) will be requested under the guidelines of the City of Aurora Municipal Code.

As a portion of the Green Valley Ranch East development two sanitary sewer connection points are planned for the Site. The first is a 10-inch sanitary sewer stub at the general location of the Green Valley Ranch East Filing No. 5 roadway connection to 52nd Avenue. The second is a 10-inch sanitary sewer main is being designed within Tibet Road and will be available for connection at the Tibet Road and 52nd Avenue intersection.

6. Parks and Open Space

The parks and open space required to support the Site development is identified within the Green Valley Master Plan Amendment 2 Master Plan with the associated triggers identified within the planning areas discussions below. Additionally, please refer to Form J for specific requirements for each park and open space. The Site's zoning requires a walkable main street and outdoor plazas and common areas. The main street will be developed with the appropriate Planning Area as outlined within the Planning Areas discussions below. The outdoor plazas and common areas will be created with the commercial parcels as a portion of the subsequent Site Plans.

The First Creek Trail is intended to continue north from Tributary T within the Green Valley Ranch development to the Project via a crossing of 52nd Avenue. The Site will extend the First Creek Trail from the grade separated crossing at 52nd Avenue north to 56th Avenue. This extension will occur through the open space and greenways presented within the Site as an 8-foot wide trail within a minimum 30-foot off street corridor and de[illegible] adjacent Planning Areas.

C. PLANNING AREA 45

1. Land Development

Planning Area (PA) 45 is generally located in the southwest corner of the Site ar[illegible]nd east of Picadilly Road. The PA consists of active adult residential and will be constituted [illegible]y detached product types and associated infrastructure within the 25.14 acres.

The half roadway section adjacent to the planning area is required to be constructed with the planning area. This PIP does not identify when full sections of roadway will be [illegible]mpleted. Typical

Planning Area 45		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	5.8	25.14

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½

section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the wes Picadilly Road along the PA boundary, the 8" sanitary sewer connection point within Green Valley Ra No. 5, Regional Detention Pond 8503, the box culvert to convey drainage south under 52nd Avenue to channel within the green space within Green Valley Ranch East at the eastern PA boundary.

Public improvements need to be completed with the first CO/TCO, typical

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 45 via local road access points off 52nd Avenue and off Picadilly Road at 54th Avenue. The construction of the east ½ section of Picadilly Road shall be in accordance with the PIFA agreement. The north ½ section of 52nd Avenue will be developed from t cadilly Road connection east to the western boundary of this Planning Area and must be constructed prior to the final certificate of occupancy within PA45.

3. Drainage Improvements

The Planning Area drainage will be conveyed from north to south to the outfall at the existing box culvert under 52nd Avenue, developed as a portion of the Green Valley Ranch East development. The open channel within the open space in Planning Area 63 to the east of PA-45 will be developed prior to or concurrent with PA-45 to convey developed runoff to the box culvert within 52nd Avenue. All water quality and detention for this PA will occur downstream and off-site within the existing regional facilities within Green Valley Ranch East.

4. Water Improvements

Local roadway water main within the Planning Area will provide two points of connection and associated looping. Aurora Water currently does not allow for connections to existing, large PVC mains and therefore, a connection to the main within Picadilly Road is not anticipated. A minimum of two points of connection to service the Planning Area will occur from the mains within 52nd Avenue, Picadilly Road or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-45 will outfall to the existing 8" sanitary main stub from within Green Valley Ranch East Filing No 5.

6. Parks and Open Space

The pocket park identified as PA-59 will be developed as a portion of this Planning Area and will be constructed prior to the last certificate of occupancy within PA45. The open space identified as PA-62 will be developed prior to or concurrent with the 1st certificate of occupancy within PA45 and PA46 with landscaping completed prior to the 50% certificate of occupancy of the two planning areas. The neighborhood park identified at PA-63 will be developed prior to the last certificate of occupancy within the residential Planning Areas of PA-45 and PA-46.

D. PLANNING AREA 46

1. Land Development

Planning Area (PA) 46 is generally located in the south central portion of the Site and is north of 52nd Avenue and east of Planning Area 45 and west of Tibet Road. The PA consists of active adult residential and will be constituted of a variety of single-family detached product types and associated infrastructure within the 37.52 acres.

Planning Area 46		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)

Assumed because it is already under construction?

RESIDENTIAL	5.8	37.52

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road along the PA boundary, the 8" sanitary sewer connection point within Green Valley Ranch East Filing No. 5, Regional Detention Pond 8503, the box culvert to convey drainage south under 52nd Avenue to the open channel within the green space within Green Valley Ranch East at the western PA boundary.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 46 via local road access point(s) off 52nd Avenue. Tibet Road will be extended from the intersection of 52nd Avenue to the northern most entry to PA-46 prior to or concurrent with the first certificate of occupancy of this Planning Area consisting of the western ½ section if the development if this Planning Area precedes the development of PA-49 or shall be the eastern ½ section if the western ½ section was developed with PA-49 prior to the development of this Planning Area. The construction of the east ½ section of Picadilly Road shall be in accordance with the PIFA agreement. The north ½ section of 52nd Avenue will be developed from the western Planning Area boundary, east to the Tibet Road intersection and must be constructed prior to the final certificate of occupancy within PA46.

3. Drainage Improvements

The Planning Area drainage will be conveyed from north to south to the outfall at the existing box culvert under 52nd Avenue, developed as a portion of the Green Valley Ranch East development. The open channel within the open space in Planning Area 62 to the west of PA-46 will be developed prior to or concurrent with PA-46 to convey developed runoff to the box culvert within 52nd Avenue. All water quality and detention for this PA will occur downstream and off-site within the existing regional facilities within Green Valley Ranch East.

4. Water Improvements

Local roadway water main within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within 52nd Avenue, Tibet Road, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-46 will outfall to the existing 8" sanitary main from within Green Valley Ranch East Filing No. 5.

6. Parks and Open Space

The pocket park identified as PA-60 will be developed as a portion of this Planning Area and will be constructed prior to the last certificate of occupancy within PA46. The open space identified as PA-62 will be developed prior to or concurrent with the 1st certificate of occupancy within PA45 and PA46 with landscaping completed prior to the 50% certificate of occupancy of the two planning areas. The neighborhood park identified at PA-63 will be developed prior to the last certificate of occupancy within the residential Planning Areas of PA-45 and PA-46.

E. PLANNING AREA 47

1. Land Development

Planning Area (PA) 47 is generally located in the west and central portion of the Site and is north of 54th Avenue and east of Picadilly Road. The PA consists of active adult residential and will be constituted of a variety of single-family attached and detached product types and associated infrastructure within the 15.8 acres.

Planning Area 47		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	7.0	15.8

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, and the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue.

This should be represented on the exhibit, typical

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 47 via local road access point(s) off Picadilly Road and a connection to either 52nd Avenue or Tibet Road through the adjacent Planning Areas. The construction of the east ½ section of Picadilly Road shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

56th is hatched on the exhibit but not mentioned in the narrative

3. Drainage Improvements

The Planning Area drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond 840 located at the northeast corner of the Picadilly Road and 56th Avenue intersection. The piped conveyance under 56th Avenue to convey developed runoff to Pond 840 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond 840 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection within Planning Area 57 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond 840.

4. Water Improvements

Local roadway water main within the Planning Area will provide two points of connection and associated looping. Aurora Water currently does not allow for connections to existing, large PVC mains and therefore, a connection to the main within Picadilly Road is not anticipated. A minimum of two points of connection to service the Planning Area will occur via the adjacent Planning Areas or should the City of Aurora allow, from the main within Picadilly Road.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-47 will outfall through the adjacent Planning Areas north to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east of the Project to the intersection of 56th Avenue and Tibet Road. This off-site sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

Additionally, PA-47 was analyzed for two potential on-site service options, either north through the commercial planning areas or east through the residential planning area to the main within Tibet Road. Either service option is viable and will be selected at the time of the development of this PA.

6. Parks and Open Space

The open space identified as PA-62 will be developed prior to or concurrent with this Planning Area with drainage improvements in place prior to the first certificate of occupancy and the landscape improvements prior to the 50% certificate of occupancy within the Planning Areas tributary to PA-62. The open space and trail within PA-61 will be developed prior to the final certificate of occupancy within PA-47 and PA-48.

F. PLANNING AREA 48

1. Land Development

Planning Area (PA) 48 is generally located in the west and central portion of the Site and is north of 54th Avenue and west of Tibet Road. The PA consists of active adult residential and will be constituted of a variety of single-family attached and detached product types and associated infrastructure within the 22.5 acres.

Planning Area 48		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	7.0	22.5

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, and the north ½ section of 56th Avenue from Picadilly Road to E-470.

2. Roadway Improvements

The existing roadway improvements will support the development [illegible]h? [illegible]al road access point(s) off Picadilly Road and a connection to 52nd Avenue through the adjacent Planning Areas. The western ½ section of Tibet Road will be developed along the eastern boundary of the Planning Area and shall either connect to 56th Avenue north or to 52nd Avenue to the south. The construction of the east ½ section of Picadilly Road shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area drainage is split between the Blue Grama Draw and Tributary T major basins and therefore, will be conveyed both north and south. The portion draining north will be conveyed under 56th Avenue to the off-site, regional detention pond identified as Pond 840 located at the northeast corner of the Picadilly Road and 56th Avenue intersection. The piped conveyance under 56th Avenue to convey developed runoff to Pond 840 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond 840 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection within Planning Area 57 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond 840. The portion of the Planning Area draining south will be conveyed to the drainage improvements within the open space of PA-62, under 52nd Avenue via the box culvert, and ultimately to Regional Pond 8503-C within the Green Valley Ranch East subdivision.

4. Water Improvements

Local roadway water main within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within 52nd Avenue, Tibet Road, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-48 will outfall through the adjacent Planning Areas north to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

Additionally, PA-48 was analyzed for two potential on-site service options, either north through the commercial planning areas or east through the residential planning area to the main within Tibet Road. Either service option is viable and will be selected at the time of the development of this PA.

6. Parks and Open Space

The open space identified as PA-62 will be developed prior to or concurrent with this Planning Area with drainage improvements in place prior to the first certificate of occupancy and the landscape improvements prior to the 50% certificate of occupancy within the Planning Areas tributary to PA-62. The open space and trail within PA-61 will be developed prior to the final certificate of occupancy within PA-47 and PA-48.

G. PLANNING AREA 49

1. Land Development

Planning Area (PA) 49 is generally located in the southcentral portion of the Site and is north of the Windler Development and east of Tibet Road. The PA consists of multi-family residential and associated infrastructure within the 9.6 acres.

Planning Area 49		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	20.0	9.6

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue f), and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12 wer mains.

The eastern half is required with this development.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 49. A ½ section of Tibet Road will be developed along the western boundary of the Planning Area and will be the western ½ section if the development if this Planning Area precedes the development of PA-46 or shall be the ea ½ section if the western ½ section was developed with PA-46 prior to the development of this Planning Area.

3. Drainage Improvements

The Planning Area drainage will be conveyed from northeast to southwest to the intersection of 52nd Avenue and Tibet Road and will be conveyed within storm sewer either 52nd Avenue or Tibet and conveyed through Green Valley Ranch East Planning Area PA-2 for discharge into the storm system network within that development. At the time of this report, Green Valley Ranch East PA-2 was not being processed and therefore, specifics of this conveyance is not currently know. However, the conveyance obligation was identified within the Green Valley Ranch East Master Drainage Report. All water quality and detention for this PA will occur downstream and off-site within the existing regional facilities within Green Valley Ranch East.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the main within Tibet Road directly west of the Planning Area.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-49 will outfall to the existing 10" sanitary main extended to the 52nd Avenue and Tibet Road intersection as a portion of the Green Valley Ranch East development, consistent with the Master Utility Report for that development.

6. Parks and Open Space

No Parks or Open Space have been identified as required to support this Planning Area.

H. PLANNING AREA 50

1. Land Development

Planning Area (PA) 50 is generally located in the southcentral portion of the Site and is southeast of the intersection of Tibet Road and Main Street. The PA consists of commercial uses and associated infrastructure within the 9.6 acres.

Planning Area 50		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	9.6

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 50. A ½ section of Tibet Road will be developed along the western boundary of the Planning Area and will be the western ½ section if the development if this Planning Area precedes the development of PA-46 or shall be the eastern ½ section if the western ½ section was developed with PA-46 prior to the development of this Planning Area. The Tibet Road improvements will extend from 52nd Avenue north to 56th Avenue, if not developed, either in whole or in part, by preceding Planning Areas. PA-50 will develop the full width of the directly adjacent Main Street section along the Planning Area northern boundary. The construction of the south ½ section of 56th shall occur in accordance with the requirements within the PIFA

agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within Tibet Road, and/or Main Street, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-50 will outfall to a main within Tibet Road and flow north to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support t

Package lift station is not an option to serve this development. Construction of the second creek interceptor will be required.

I. PLANNING AREA 51

1. Land Development

Planning Area (PA) 51 is generally located in the north and central portion of the Site and is northeast of the intersection of Tibet Road and Main Street. The PA consists of commercial uses and associated infrastructure within the 4.0 acres.

Planning Area 51		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	4.0

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer

mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 51. A ½ section of Tibet Road will be developed along the western boundary of the Planning Area and will be the western ½ section if the development if this Planning Area precedes the development of PA-48 or shall be the eastern ½ section if the western ½ section was developed with prior to the development of this Planning Area. The Tibet Road improvements will extend from 52nd Avenue north to 56th Avenue, if not developed, either in whole or in part, by preceding Planning Areas. PA-51 will develop the full width of the directly adjacent Main Street section along the Planning Area southern boundary, if not developed with a previous Planning Area. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within Tibet Road, and/or Main Street, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-51 will outfall to a main within Tibet Road and flow north to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

J. PLANNING AREA 52

1. Land Development

Planning Area (PA) 52 is generally located in the north and central portion of the Site and is southeast of the intersection of 56th Avenue and Tibet Road. The PA consists of commercial uses and associated infrastructure within the 22.0 acres.

Planning Area 52		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	22.0

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 52. The full width of the Main Street east and south of the PA will be developed and will extend from the intersection with 56th Avenue to the intersection with Tibet Rad, if not developed, either in whole or in part, by preceding Planning Areas. PA-52 will develop a ½ section of Tibet Road from the Main Street intersection north to the 56th Avenue intersection, if a ½ section of Tibet is not existing at the time of PA-52 development. Direct access points to 56th Avenue may occur, if supported by the Project's Traffic Impact Study. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within 56th Avenue, Main Street, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-52 will outfall to a main within Main Street or within the trunk main within the PA that flow east to west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

K. PLANNING AREA 53

1. Land Development

Planning Area (PA) 53 is generally located in the southern portion of the Site and is south of Main Street, east of the existing easement identified as PA-66, and north of the Windler development. The PA consists of commercial uses and associated infrastructure within the 14.1 acres.

Planning Area 53		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	14.1

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 53. The full width of the Main Street east and south of the PA will be developed and will extend from the intersection with 56th Avenue to the intersection with Tibet Rad, if not developed, either in whole or in part, by preceding Planning Areas. PA-53 will develop a ½ section of Tibet Road from the Main Street intersection north to the 56th Avenue intersection, if a ½ section of Tibet is not existing at the time of PA-53 development. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within Main Street or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-53 will outfall to a main within Main Street and flow north and west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event

that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

L. PLANNING AREA 54

1. Land Development

Planning Area (PA) 54 is generally located in the southeast portion of the Site and is south of Main Street, west of E-470 and north of the Windler development. The PA consists of commercial uses and associated infrastructure within the 29.7 acres.

Planning Area 54		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	29.7

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 54. The full width of the Main Street east and south of the PA will be developed and will extend from the intersection with 56th Avenue to the intersection with Tibet Rad, if not developed, either in whole or in part, by preceding Planning Areas. PA-54 will develop a ½ section of Tibet Road from the Main Street intersection north to the 56th Avenue intersection, if a ½ section of Tibet is not existing at the time of PA-52 development. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two

points of connection to service the Planning Area will occur from the mains within Main Street or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-54 will outfall to a main within Main Street and flow north and west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

M. PLANNING AREA 55

1. Land Development

Planning Area (PA) 55 is generally located in the northeast portion of the Site and is south of 56th Avenue, east of Main Street, and west of E-470. The PA consists of commercial uses and associated infrastructure within the 24.5 acres.

Planning Area 55		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	24.5

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 55. The full width of the Main Street north and west of the PA will be developed and will extend from the intersection with 56th Avenue to the intersection with Tibet Rad, if not developed, either in whole or in part, by preceding Planning Areas. PA-52 will develop a ½ section of Tibet Road from the Main Street intersection north to the 56th Avenue intersection, if a ½ section of Tibet is not existing at the time of PA-52 development. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area is located within the Second Creek Watershed and drainage will be conveyed from south to north

to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within Main Street, 56th Avenue, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-55 will outfall to a main within Main Street and flow north and west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

N. PLANNING AREA 56

1. Land Development

Planning Area (PA) 56 is generally located in the north central portion of the Site and is southwest of the intersection of 56th Avenue and Tibet Road. The PA consists of commercial uses and associated infrastructure within the 20.2 acres.

Planning Area 56		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	20.2

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 56. A ½ section of Tibet Road will

be developed along the eastern boundary of the Planning Area and will be the western ½ section if the development if this Planning Area precedes the development of PA-48. The Tibet Road improvements will extend from 56th Avenue to the southern PA 56 boundary. An additional access to 56th Avenue from the Planning Area is anticipated and will provide the second access point to the PA. 56th Avenue access points will be consistent with the recommendations within the approved Traffic Impact Analysis. The construction of the south ½ section of 56th Avenue shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area drainage is split between the Blue Grama Draw and Second Creek watersheds and therefore, will be conveyed both east and west. The portion draining west will be conveyed under 56th Avenue to the off-site, regional detention pond identified as Pond 840 located at the northeast corner of the Picadilly Road and 56th Avenue intersection. The piped conveyance under 56th Avenue to convey developed runoff to Pond 840 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond 840 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection within Planning Area 57 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond 840. The portion of the Planning Area draining east is within the Second Creek Watershed and drainage will be conveyed to the conveyance under 56th Avenue to the off-site, regional detention pond identified as Pond S-215 located downstream within Possum Gully within the Fulenwider development. The piped conveyance under 56th Avenue to convey developed runoff to Pond S-215 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond S-215 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at directly south of 56th Avenue within Planning Area 52 will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond S-215.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within Main Street, 56th Avenue, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-55 will outfall to a main within Main Street and flow north and west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

6. Parks and Open Space

The open space and trail within PA-61 along this PA boundary will be developed prior to the first certificate of occupancy within PA-56.

O. PLANNING AREA 57

1. Land Development

Planning Area (PA) 57 is generally located in the northwest portion of the Site and is southwest of the intersection of 56th Avenue and Picadilly Road. The PA consists of commercial uses and associated infrastructure within the 14.1 acres.

Planning Area 57		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
COMMERCIAL	N/A	14.1

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 52nd Avenue from Picadilly Road to Tibet Road and the associated 16" water main, the west ½ section of Picadilly Road from 52nd Avenue to 56th Avenue, the north ½ section of 56th Avenue from Picadilly Road to E-470, and the western ½ section of Tibet Road south of 52nd Avenue with the associated 12" water and 10" sanitary sewer mains.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 57. Access to this Planning Area will be via 56th Avenue and Picadilly Road at the locations and movements specified within the approved Traffic Impact Study. The construction of the south ½ section of 56th Avenue and the east ½ section of Picadilly Road shall occur in accordance with the requirements within the PIFA agreement between the Developer and the City of Aurora.

3. Drainage Improvements

The Planning Area drainage is located within the Blue Grama Draw major basins and will be conveyed to the northwest corner of the Site. The Planning Area will be conveyed under 56th Avenue to the off-site, regional detention pond identified as Pond 840 located at the northeast corner of the Picadilly Road and 56th Avenue intersection. The piped conveyance under 56th Avenue to convey developed runoff to Pond 840 will be extended prior to or concurrent with this Planning Area. In the event off-site Pond 840 isn't constructed by others prior to this Planning Area's development, a temporary detention pond generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection within this Planning Area will be constructed. This temporary pond, if required, will be removed with the development of Regional Pond 840.

4. Water Improvements

Water mains within the Planning Area will provide two points of connection and associated looping. A minimum of two points of connection to service the Planning Area will occur from the mains within 56th Avenue, via the adjacent Planning Areas, or within Picadilly Road, if allowed by Aurora Water.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-57 will flow east to a to a main within PA-56 and then west to the intersection of 56th Avenue and Tibet Road. Two options have been identified to service this Planning Area. The preferred option is to connect to the off-site 10" sanitary sewer main to be extended by developments to the north and east to the intersection of 56th Avenue and Tibet Road. This sanitary sewer main is anticipated to run north along the Tibet Road alignment and then north and east across E-470, down Possum Gully to the Second Creek Lift station. In the event that the off-site, gravity system is unavailable at the time of the development of this Planning Area, an alternative option to construct a package lift station generally located within Planning Area 56 at the southwest corner of the intersection of 56th Avenue and Tibet Road will occur. Effluent will then be pumped south along the Tibet Road alignment to the gravity main within Tibet Road in the Green Valley Ranch East subdivision, as identified within that developments Master Utility Study.

Additionally, PA-47 was analyzed for two potential on-site service options, either north through the commercial planning areas or east through the residential planning area to the main within Tibet Road. Either service option is

viable and will be selected at the time of the development of this PA.

6. Parks and Open Space

The open space and trail within PA-61 along this PA boundary will be developed prior to the first certificate of occupancy within PA-57.

J. REFERENCES

The following documents, reports, and plans were referenced during the generation of this Public Improvements Plan (PIP).

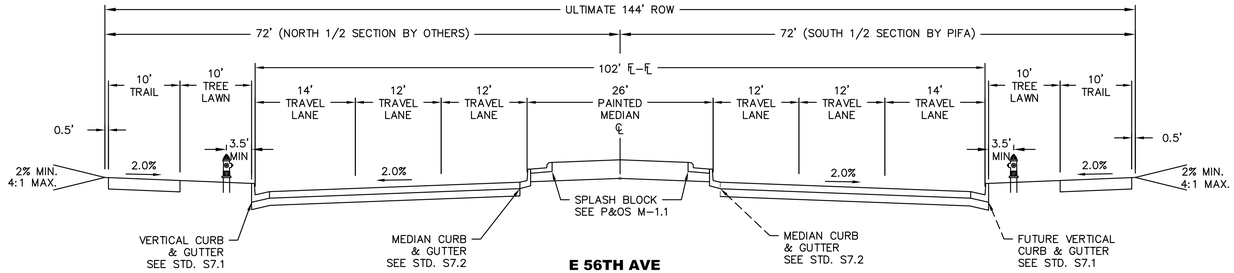
1) *Green Valley Master Plan Amendment 2 Master Plan and support reports, December 2021*

2) *Green Valley – Amendment 1 Public Improvement Plan, Revised September 2018, Prepared by: Calibre Engineering, Inc.*

3) Windler Master Plan Public Improvements Plan, October 2021, Prepared by: Olsson

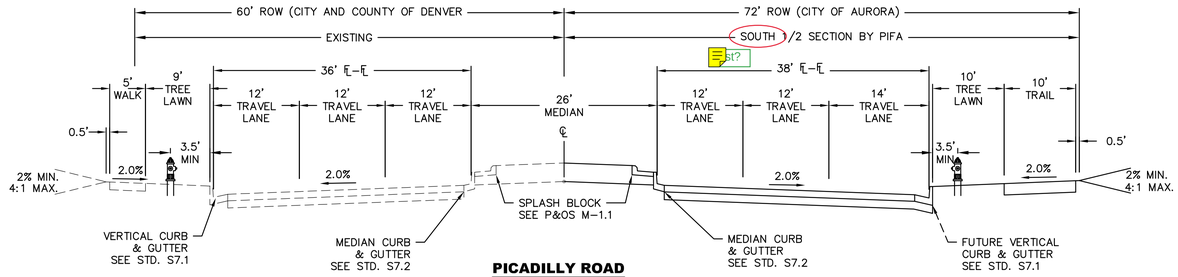
4) City of Aurora Roadway Design & Construction Specifications, October 2016

5) Aurora Water, Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specification, September 2019



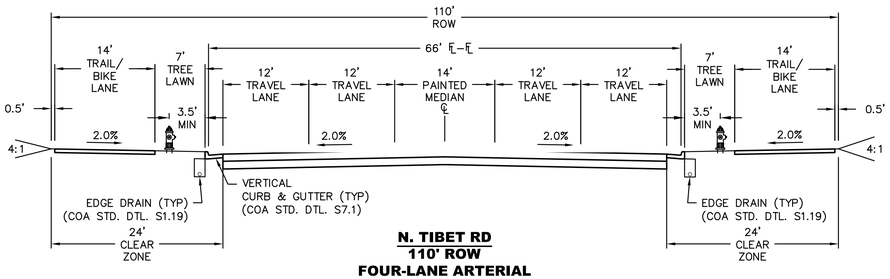
E 56TH AVE
144' ROW
SIX-LANE ARTERIAL
(FULL SECTION)

NTS



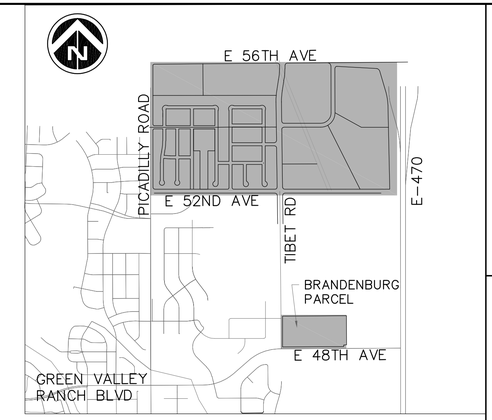
PICADILLY ROAD
132' ROW
SIX-LANE ARTERIAL
(FULL SECTION)

NTS

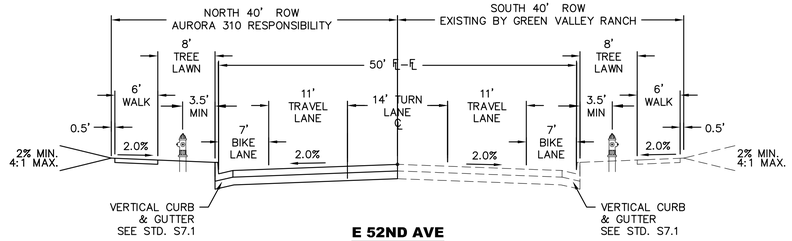


N. TIBET RD
110' ROW
FOUR-LANE ARTERIAL
SECTION (ULTIMATE)

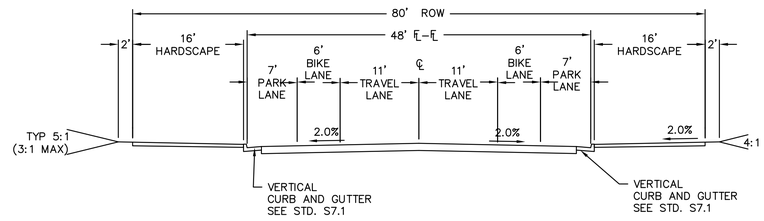
NTS



KEY MAP
N.T.S.



E 52ND AVE
80' ROW
THREE-LANE COLLECTOR
(FULL SECTION)
BY GREEN VALLEY RANCH EAST DEVELOPMENT
(FOR INFORMATION ONLY)
NTS



MAIN STREET
80' ROW
(FULL SECTION)
NTS

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

TYPICAL STREET SECTIONS

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

DOCUMENT AMENDMENTS

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM **Drawn By:** JTM
Checked By: JDM
Sheet Number: 1

H:_DENBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 STREET SECT.DWG 3/1/2022 10:10 AM MITCHELL, JULIE

LEGEND

EX STORM — D
EX WATER — W
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY

Revise emergency access to "two separate and approved points of access". The looped water supply and two points of access must be accounted for in the overall development and each individual phase of the project. TYP

Each individual site plan submittal must identify phasing requirements to include adjacent infrastructure needs to meet minimum water supply and access requirements.

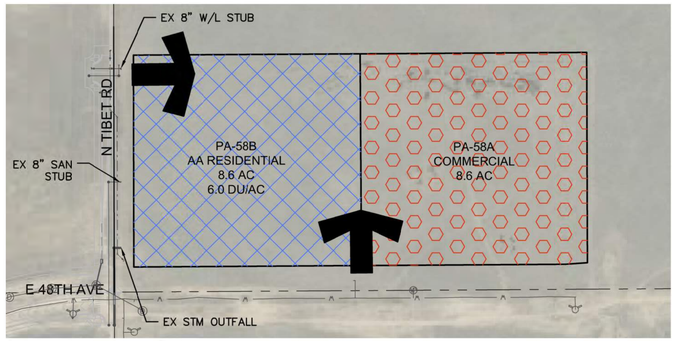
Show/label future potiential signalized intersections

Coordinate access locations with TIS. there are several inconsistencies present.

NOTES:

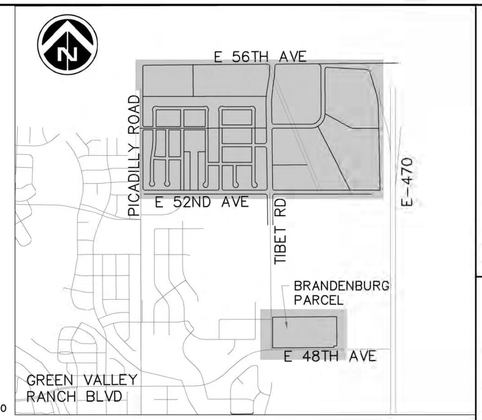
1. ALL ON-SITE ROADWAYS AND UTILITY LOCATIONS DEPICTED ARE FOR ILLUSTRATIVE PURPOSES. SUBSEQUENT SITE PLAN SUBMITTALS WILL DETERMINE THE FINAL PLACEMENT OF INFRASTRUCTURE.
2. PLANNING AREA PHASING WILL OCCUR TO MEET MARKET DEMANDS. PHASING SHALL NOT BE LIMITED, HOWEVER; EACH PHASE SHALL PROVIDE A LOOPED WATER SUPPLY, EMERGENCY ACCESS, SANITARY SERVICE AND ACCOMMODATION FOR DRAINAGE CONVEYANCE TO OFF-SITE REGIONAL ATTENUATION.
3. PICADILLY ROAD AND 56TH AVENUE ARE SUBJECT TO THE PIFA AGREEMENT. TRIGGERS AND FUNDING MECHANISMS FOR THESE TWO ROADWAYS SHALL BE IN ACCORDANCE WITH THE EXECUTED AGREEMENT.
4. NO OFF-SITE INFRASTRUCTURE, BEYOND WHAT IS DEPICTED WITHIN THIS PIP IS REQUIRED FOR THIS DEVELOPMENT.

Is offsite considered to be what is part of the original GVRE PIP?



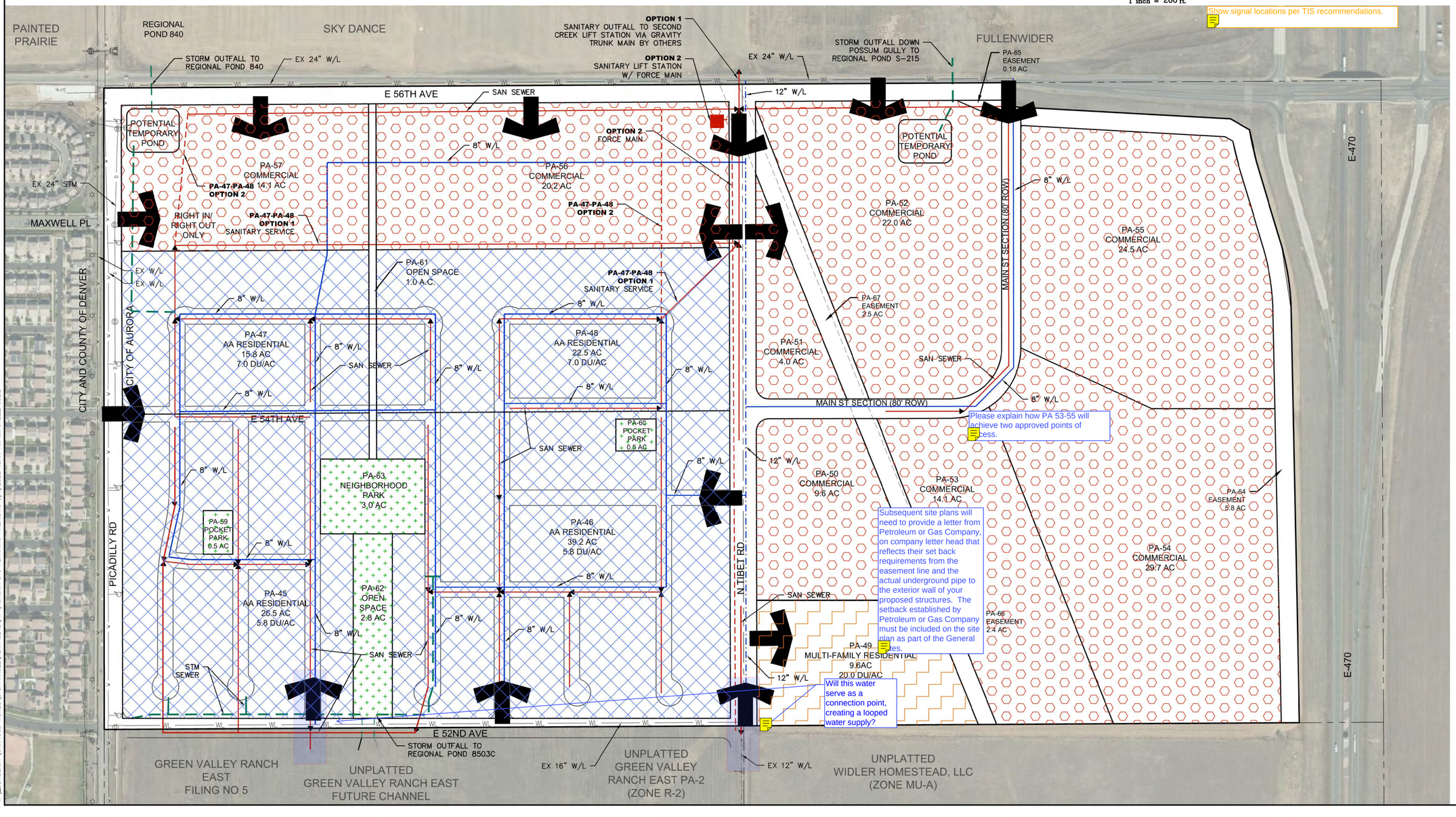
BRANDENBURG PARCEL
PA-58A & PA-58B
SCALE 1"=200'

200 0 100 200 400
(IN FEET)
1 inch = 200 ft.



KEY MAP
N.T.S.

Show signal locations per TIS recommendations.



Please explain how PA 53-55 will achieve two approved points of access.

Subsequent site plans will need to provide a letter from Petroleum or Gas Company, on company letter head that reflects their set back requirements from the easement line and the actual underground pipe to the exterior wall of your proposed structures. The setback established by Petroleum or Gas Company must be included on the site plan as part of the General notes.

Will this water serve as a connection point, creating a looped water supply?

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLANNING AREA.DWG 3/1/2022 10:11 AM MITCHELL, JULIE

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN
PLANNING AREAS

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

DOCUMENT AMENDMENTS

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JTM
Checked By: JDM
Sheet Number: 2

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

NOTES:

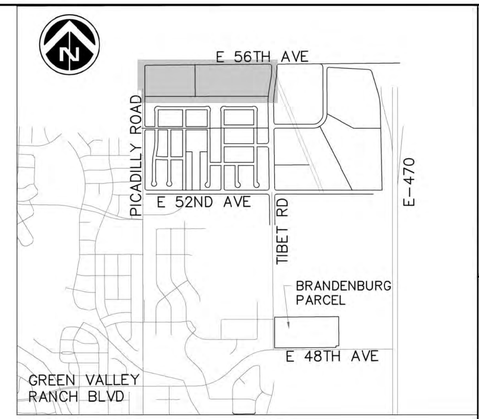
1. ALL ON-SITE ROADWAYS AND UTILITY LOCATIONS DEPICTED ARE FOR ILLUSTRATIVE PURPOSES. SUBSEQUENT SITE PLAN SUBMITTALS WILL DETERMINE THE FINAL PLACEMENT OF INFRASTRUCTURE.
2. PLANNING AREA PHASING WILL OCCUR TO MEET MARKET DEMANDS. PHASING SHALL NOT BE LIMITED, HOWEVER; EACH PHASE SHALL PROVIDE A LOOPED WATER SUPPLY, EMERGENCY ACCESS, SANITARY SERVICE AND ACCOMMODATION FOR DRAINAGE CONVEYANCE TO OFF-SITE REGIONAL ATTENUATION.
3. PICADILLY ROAD AND 56TH AVENUE ARE SUBJECT TO THE PIFA AGREEMENT. TRIGGERS AND FUNDING MECHANISMS FOR THESE TWO ROADWAYS SHALL BE IN ACCORDANCE WITH THE EXECUTED AGREEMENT.
4. NO OFF-SITE INFRASTRUCTURE, BEYOND WHAT IS DEPICTED WITHIN THIS PIP IS REQUIRED FOR THIS DEVELOPMENT.

Proposed grading is not part of the PIP. Please remove, typical

It would be helpful to have the exhibits in order they are described in the narrative

As the land use for the planning areas is included with the label, is the hatch needed? It does not clarify the presentation and distracts from the proposed improvements

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.



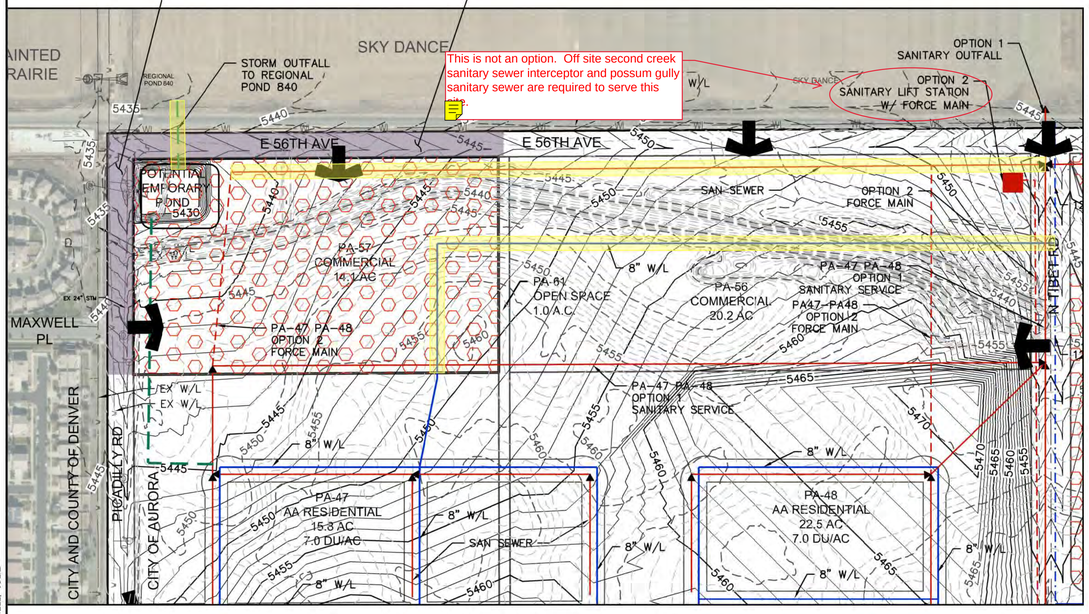
KEY MAP
N.T.S.

THE EAST 1/2 SECTION OF PICADILLY RD ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT

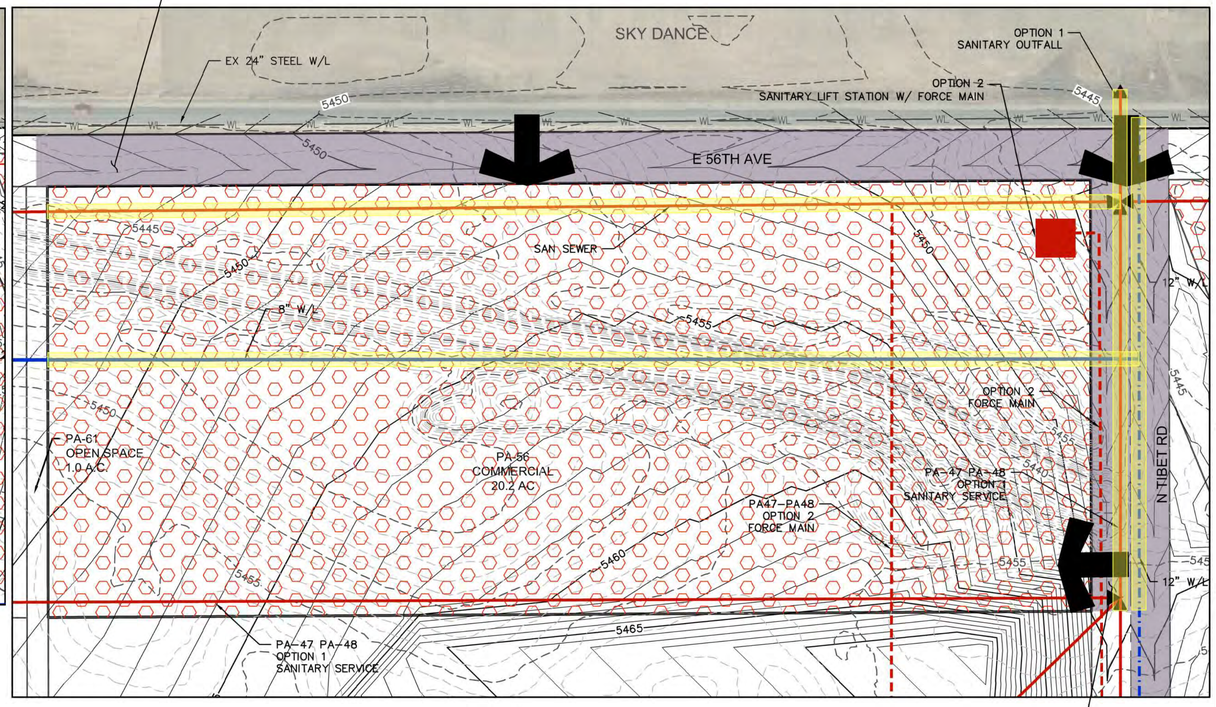
THE SOUTH 1/2 SECTION OF E 56TH AVE ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT

THE SOUTH 1/2 SECTION OF E 56TH AVE ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT

This is not an option. Off site second creek sanitary sewer interceptor and possum gully sanitary sewer are required to serve this area.



PA-57
COMMERCIAL
SCALE 1"=200'



PA-56
COMMERCIAL
SCALE 1"=100'

THE WEST 1/2 SECTION OF N TIBET RD ALONG THE PA BOUNDARY

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

DOCUMENT AMENDMENTS

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JTM
Checked By: JDM
Sheet Number: 3

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-3.DWG 3/1/2022 10:13 AM MITCHELL, JULIE

LEGEND

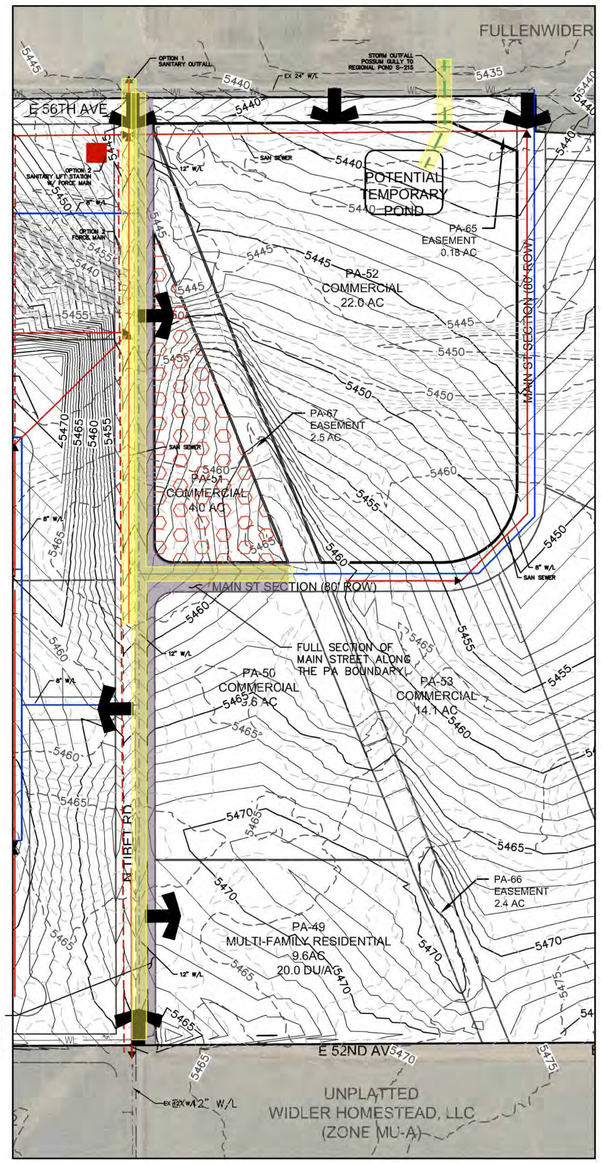
EX STORM — D —
EX WATER — W —
FUTURE SANITARY —●—
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

NOTES:

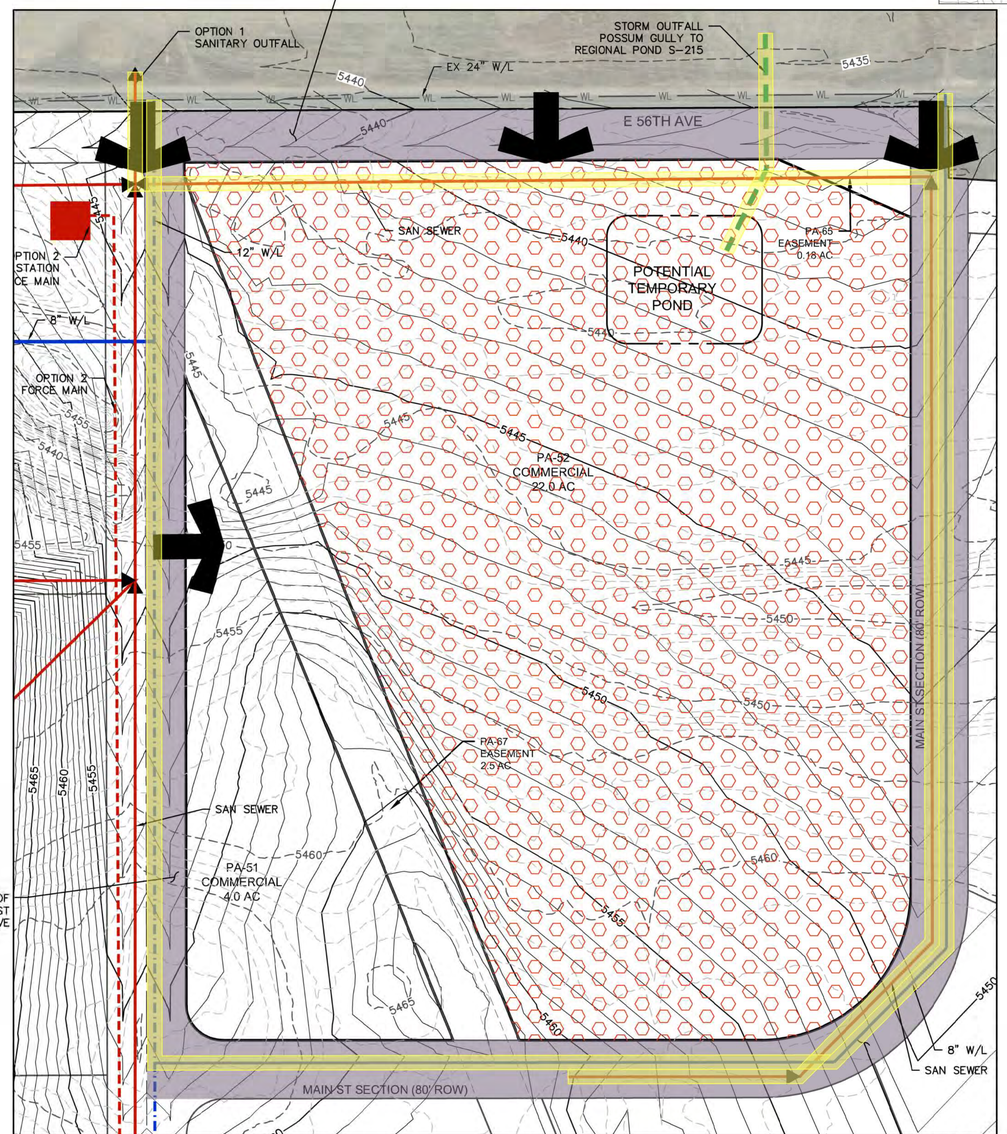
1. ALL ON-SITE ROADWAYS AND UTILITY LOCATIONS DEPICTED ARE FOR ILLUSTRATIVE PURPOSES. SUBSEQUENT SITE PLAN SUBMITTALS WILL DETERMINE THE FINAL PLACEMENT OF INFRASTRUCTURE.
2. PLANNING AREA PHASING WILL OCCUR TO MEET MARKET DEMANDS. PHASING SHALL NOT BE LIMITED, HOWEVER; EACH PHASE SHALL PROVIDE A LOOPED WATER SUPPLY, EMERGENCY ACCESS, SANITARY SERVICE AND ACCOMMODATION FOR DRAINAGE CONVEYANCE TO OFF-SITE REGIONAL ATTENUATION.
3. PICADILLY ROAD AND 56TH AVENUE ARE SUBJECT TO THE PIFA AGREEMENT. TRIGGERS AND FUNDING MECHANISMS FOR THESE TWO ROADWAYS SHALL BE IN ACCORDANCE WITH THE EXECUTED AGREEMENT.
4. NO OFF-SITE INFRASTRUCTURE, BEYOND WHAT IS DEPICTED WITHIN THIS PIP IS REQUIRED FOR THIS DEVELOPMENT.

Please see comments about the off site sanitary sewer improvements required to serve this development.

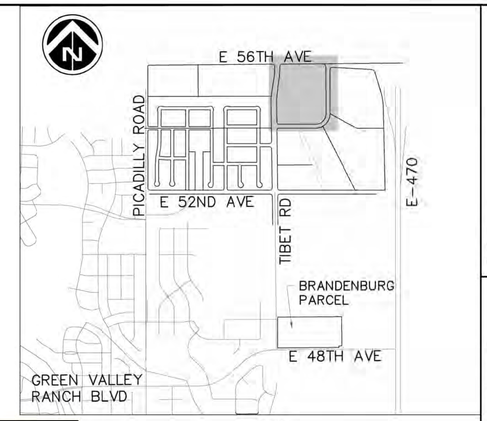


PA-51
COMMERCIAL
SCALE 1"=200'

THE SOUTH 1/2 SECTION OF E 56TH AVE ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT



PA-52
COMMERCIAL
SCALE 1"=100'



KEY MAP
N.T.S.

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

DOCUMENT AMENDMENTS

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JTM
Checked By: JDM
Sheet Number: 4

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-4.DWG 3/7/2022 10:14 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

NOTES:

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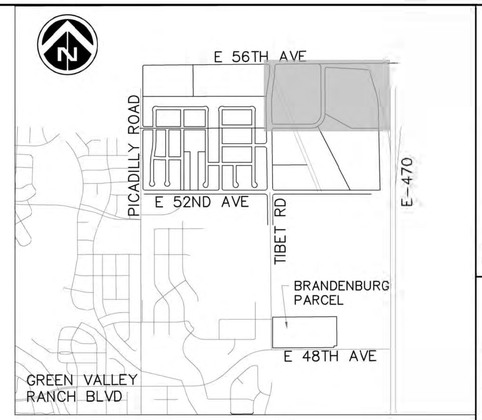
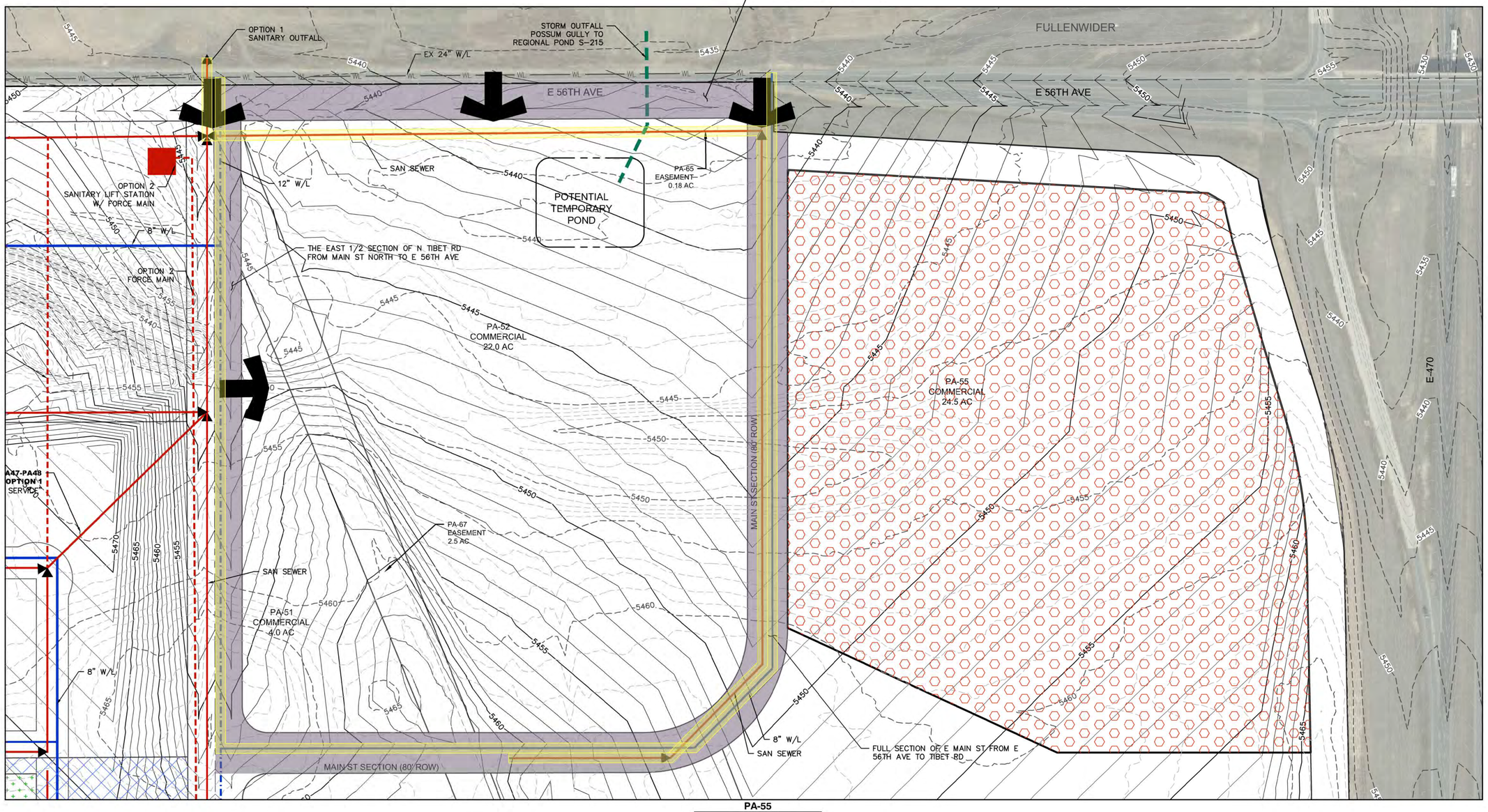


KEY MAP
N.T.S.

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.



PA-55
COMMERCIAL
SCALE 1"=100'

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PUBLIC IMPROVEMENT PLAN

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DENVER, CO 80249
Tel: 303-486-8734
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No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

DOCUMENT AMENDMENTS

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 5

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-4.DWG 3/1/2022 10:16 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY —●—
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

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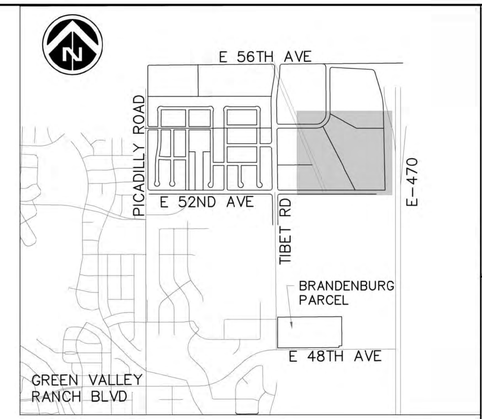
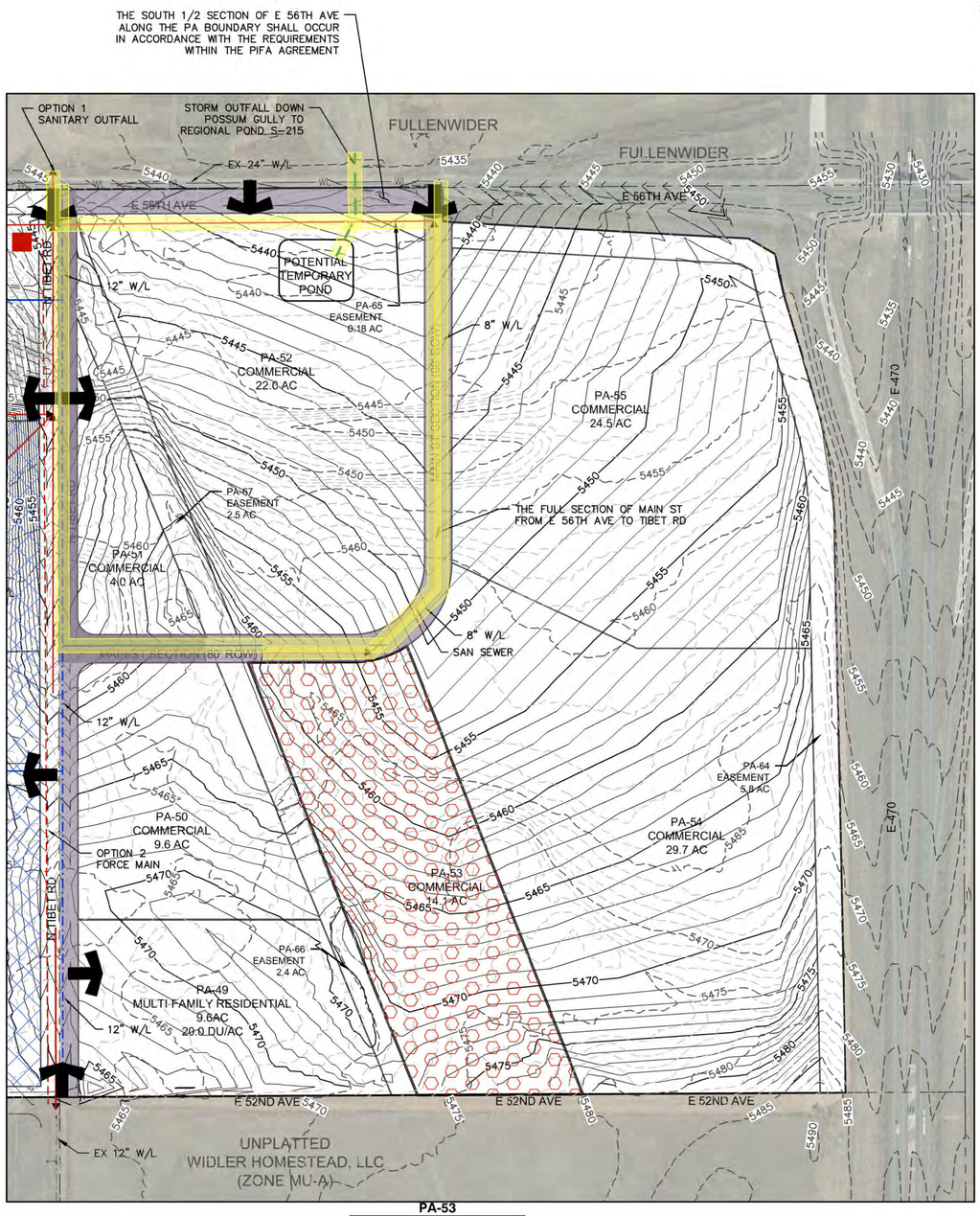
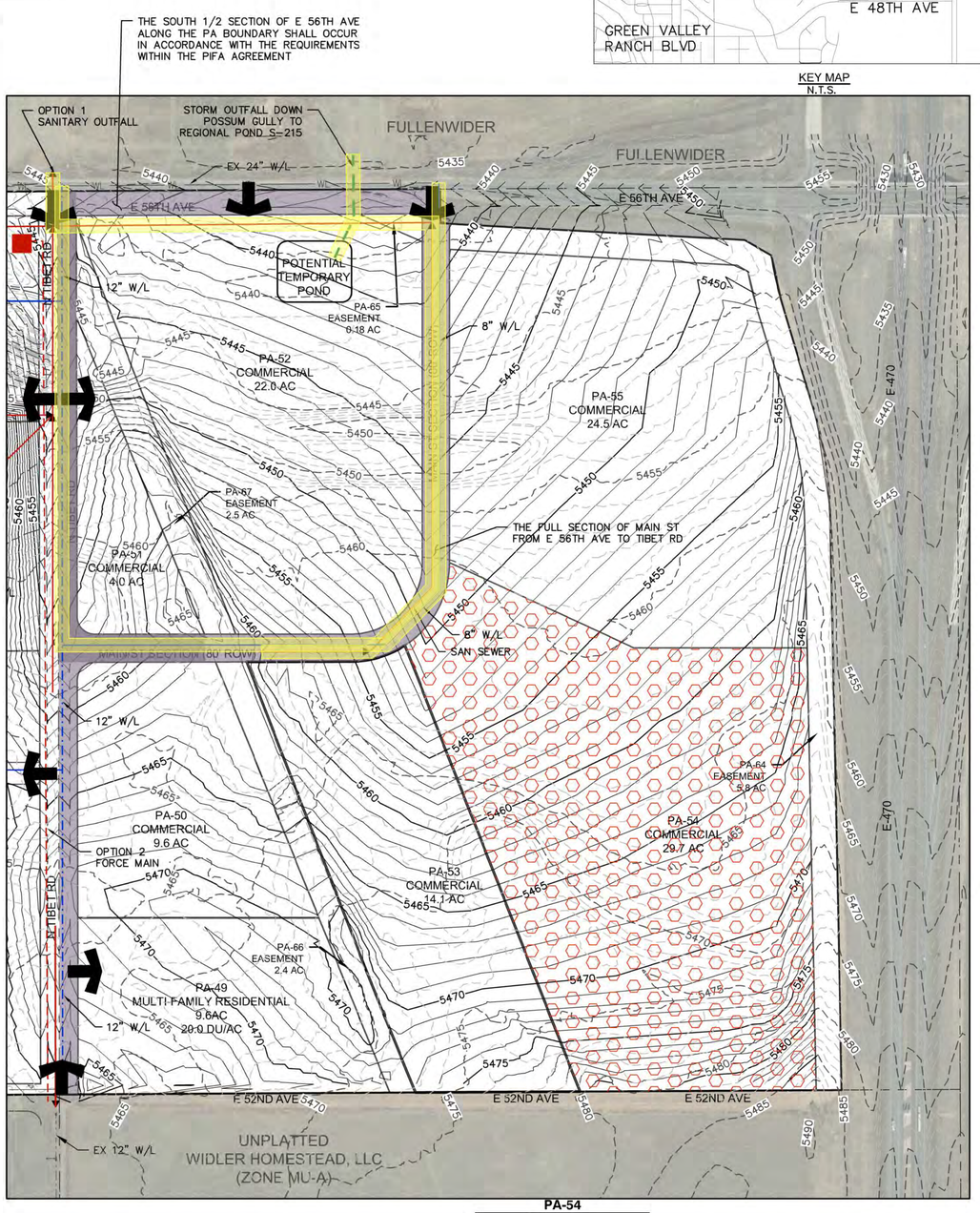
200 0 50 200 400
(IN FEET)
1 inch = 200 ft.



KEY MAP
N.T.S.



PA-53
COMMERCIAL
SCALE 1"=200'



PA-54
COMMERCIAL
SCALE 1"=200'

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GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

Client Name
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18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
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DOCUMENT AMENDMENTS

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 6

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-5.DWG 3/1/2022 10:19 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

NOTES:

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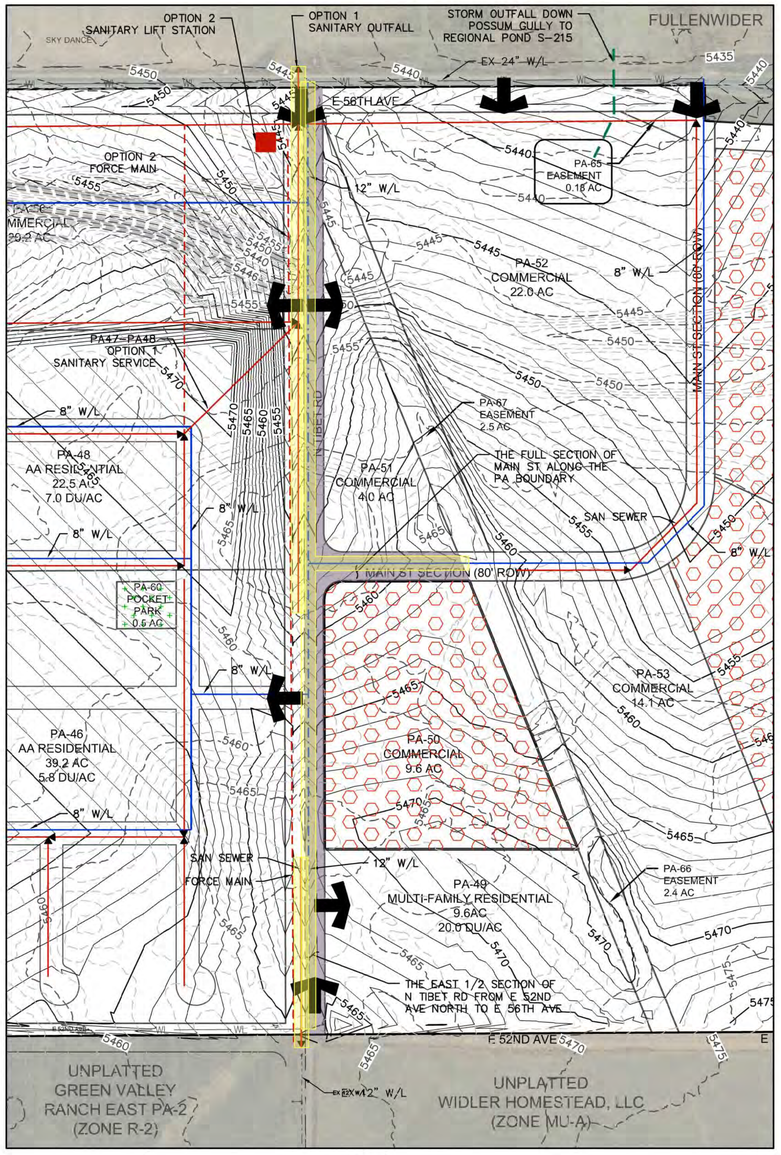
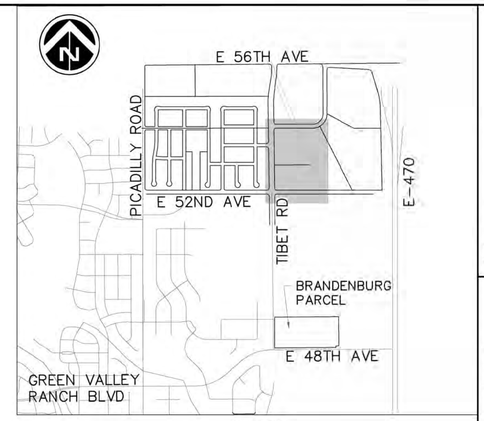
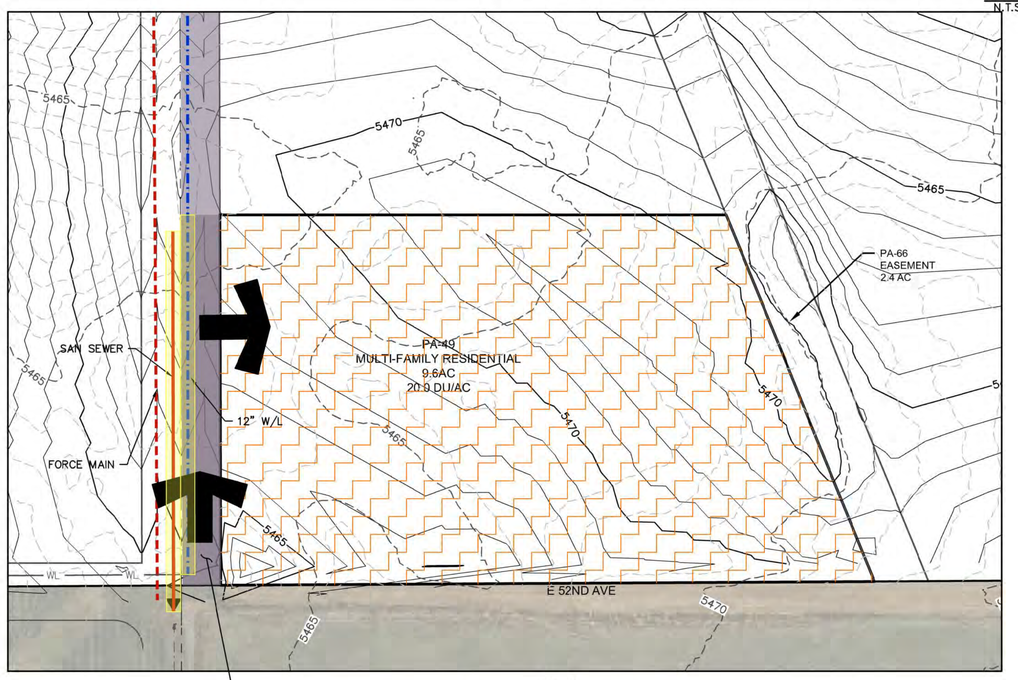


PA-50
COMMERCIAL
SCALE 1"=100'

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.



KEY MAP
N.T.S.



PA-49
MULTI-FAMILY RESIDENCE
SCALE 1"=100'

Dewberry
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GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

Client Name
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18655 GREEN VALLEY RANCH BLVD
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Tel: 303-486-8734
Contact: DAVID CARRO

DOCUMENT AMENDMENTS

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 7

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-7.DWG 3/1/2022 10:22 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY —
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

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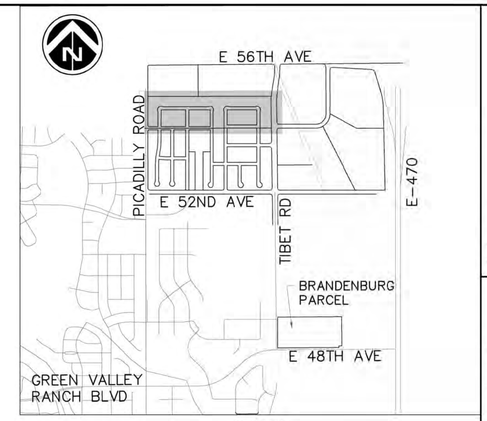
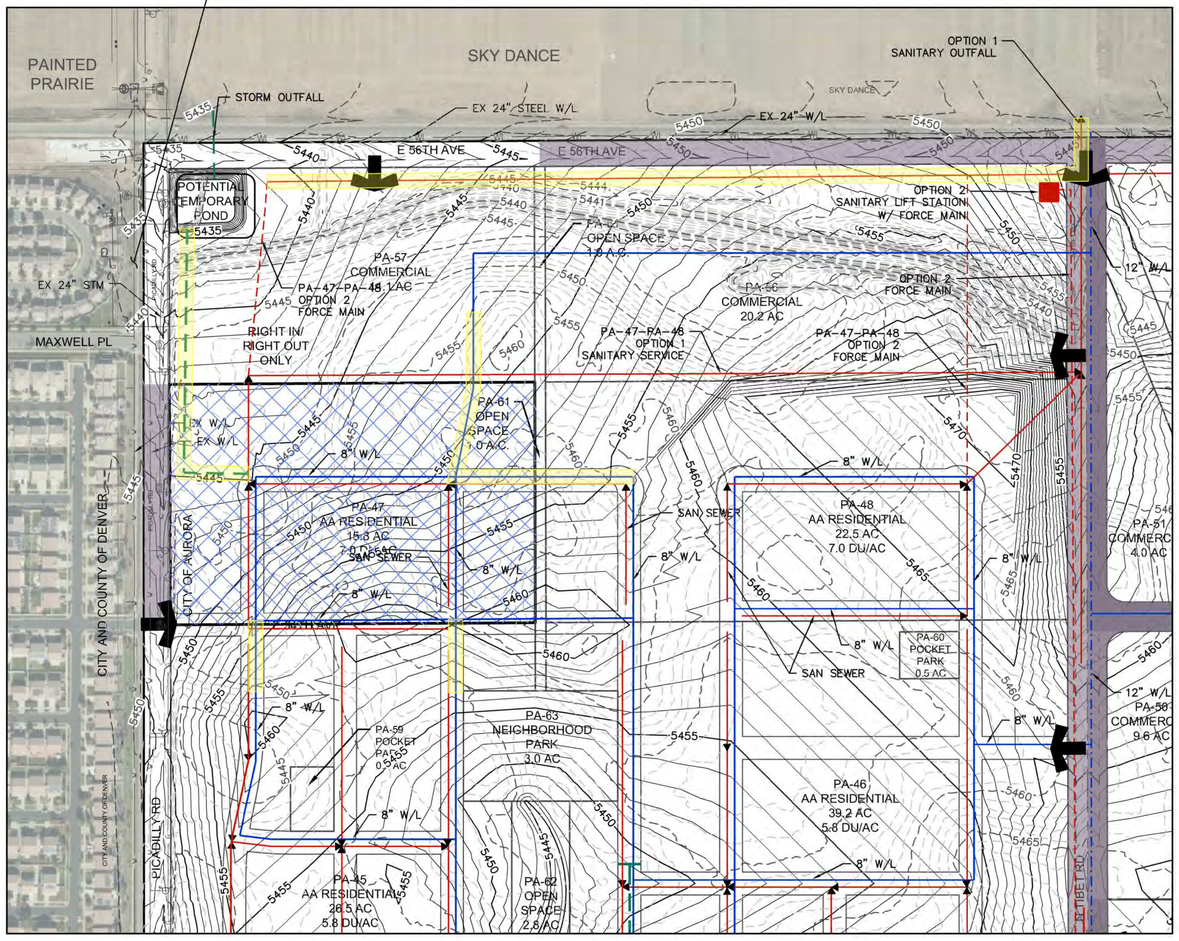
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

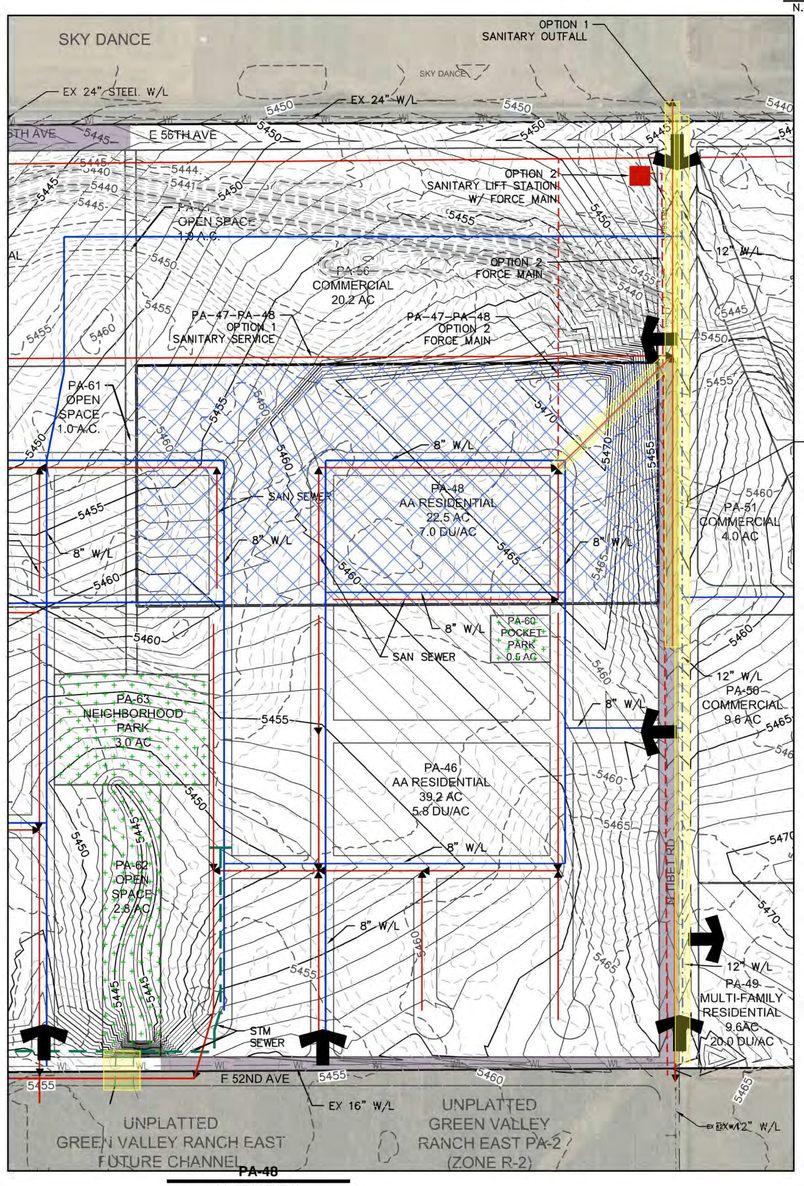


KEY MAP
N.T.S.

THE EAST 1/2 SECTION OF PICADILLY RD ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT



PA-47
AA RESIDENTIAL
SCALE 1"=100'



THE WEST 1/2 SECTION OF TIBET RD ALONG THE PA BOUNDARY AND THEN EITHER NORTH TO E 56TH AVE OR SOUTH TO E 52ND AVE. THE SOUTHERN EXTENSION IS DEPICTED, HOWEVER; THE DEVELOPER WILL SELECT THE NORTH OR SOUTH OPTION AT THE TIME OF PA-48 SITE PLAN.

PA-48
AA RESIDENTIAL
SCALE 1"=200'

Dewberry
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Greenwood Village, CO 80111
303.388.5601
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GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

No.	Date	Description
1	12/22/2021	FIRST SUBMITTAL

DOCUMENT AMENDMENTS

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 8

H:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-8.DWG 3/1/2022 10:24 AM MITCHELL, JULIE

LEGEND

EX STORM — D —

EX WATER — W —

FUTURE SANITARY —●—

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MULTI-FAMILY

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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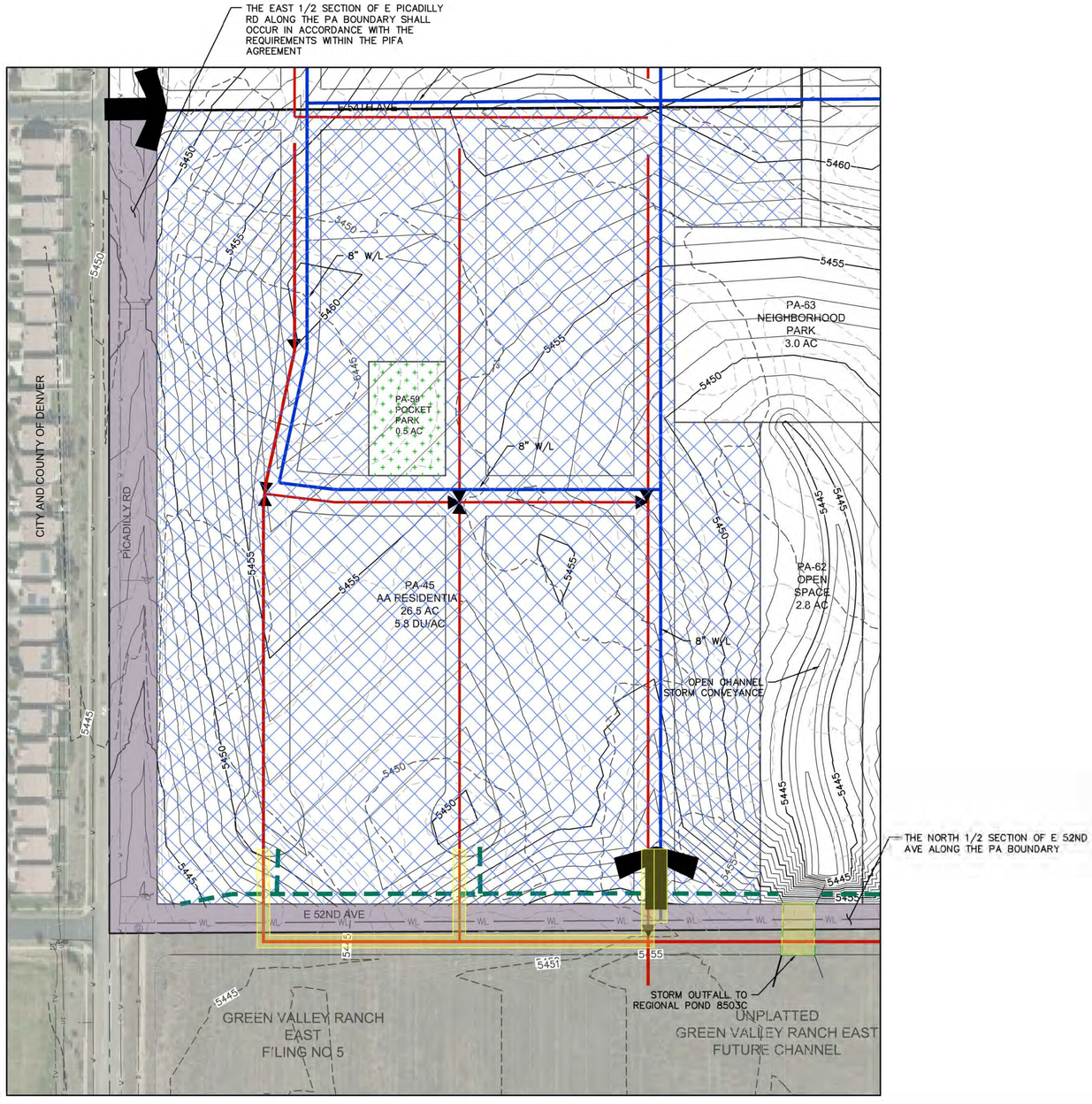
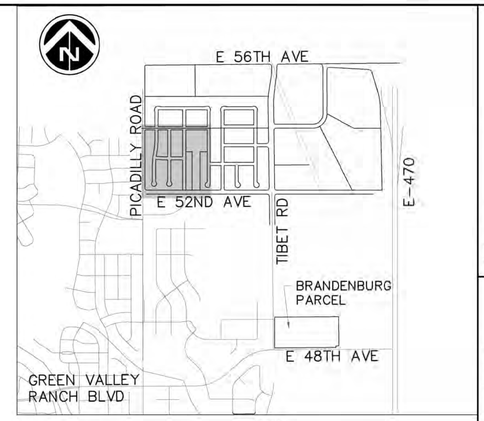
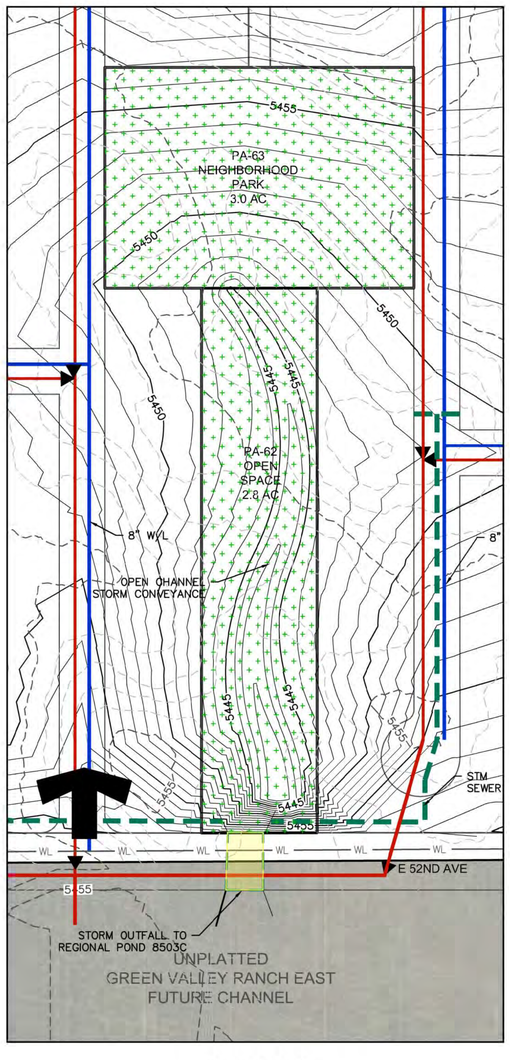


PA-45
AA RESIDENTIAL
SCALE 1"=100'

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.



KEY MAP
N.T.S.



PA-62 & PA-63
OPEN SPACE & NEIGHBORHOOD PARK
SCALE 1"=100'

Dewberry
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1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 9

H:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DT-9.DWG 3/1/2022 10:27 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY —●—
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

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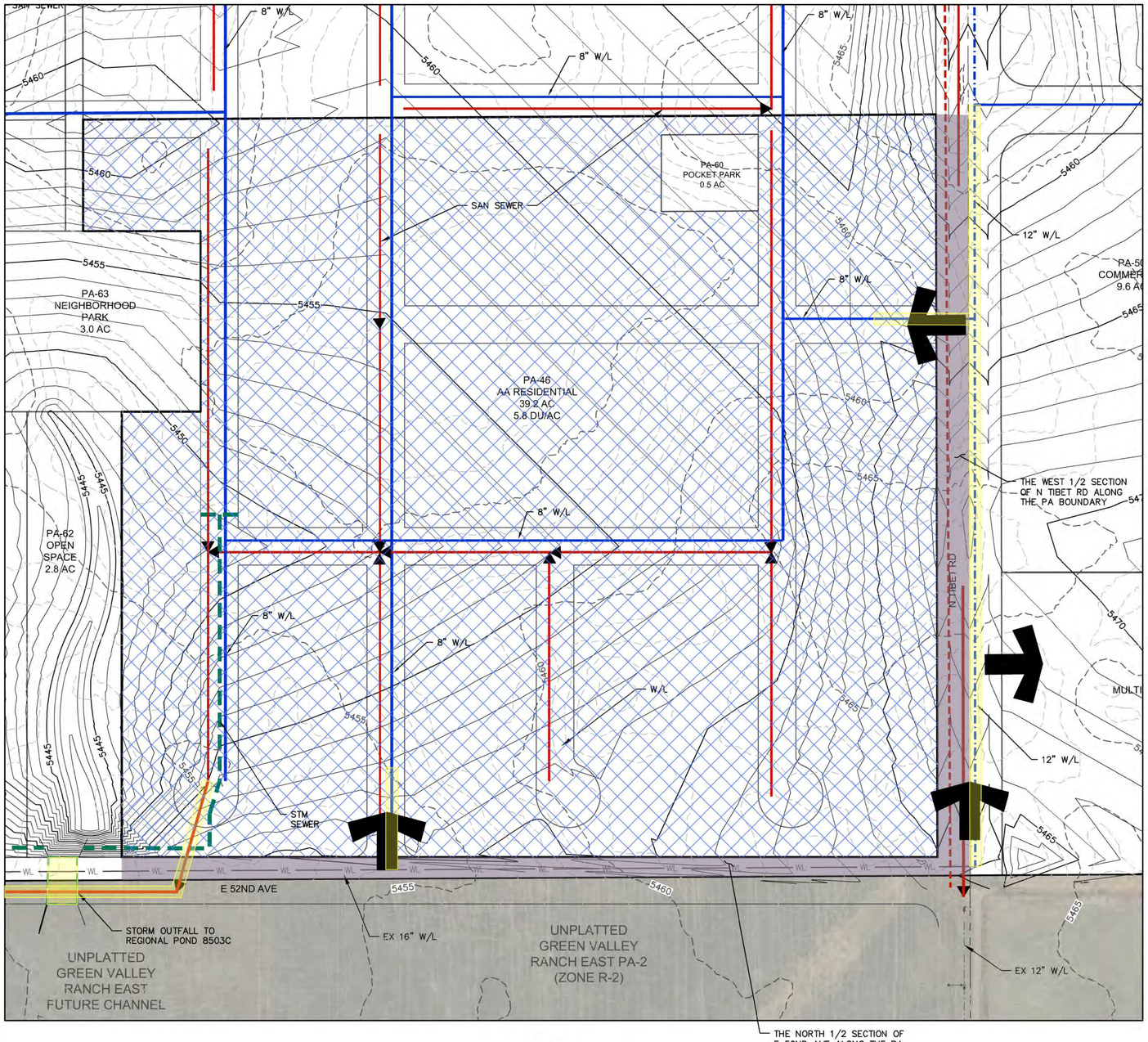
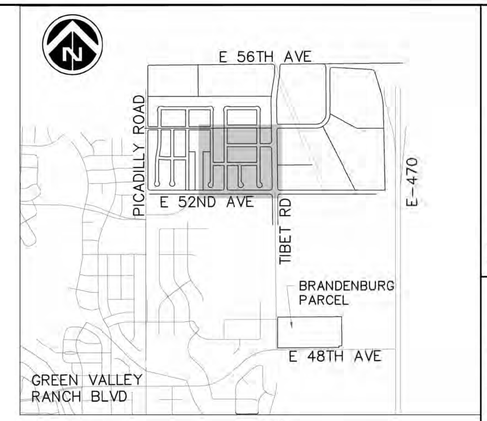


PA-46
AA RESIDENTIAL
SCALE 1"=100'

100 0 50 100 200
(IN FEET)
1 inch = 100 ft.



KEY MAP
N.T.S.

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PLANNING AREA DETAILS

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PRELIMINARY
NOT FOR
CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 10

H:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLN DTL-10.DWG 3/1/2022 10:30 AM MITCHELL, JULIE

LEGEND

EX STORM — D —
EX WATER — W —
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MULTI-FAMILY
OPEN SPACE
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UTILITIES REQUIRED PER PA

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(IN FEET)
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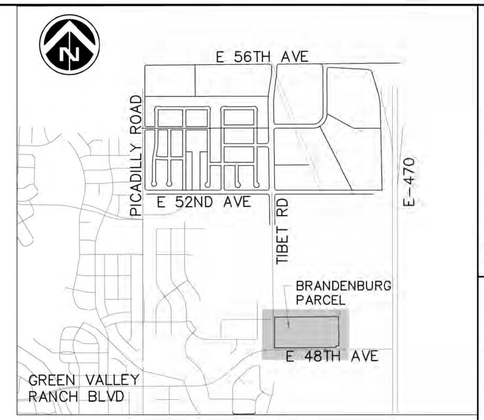
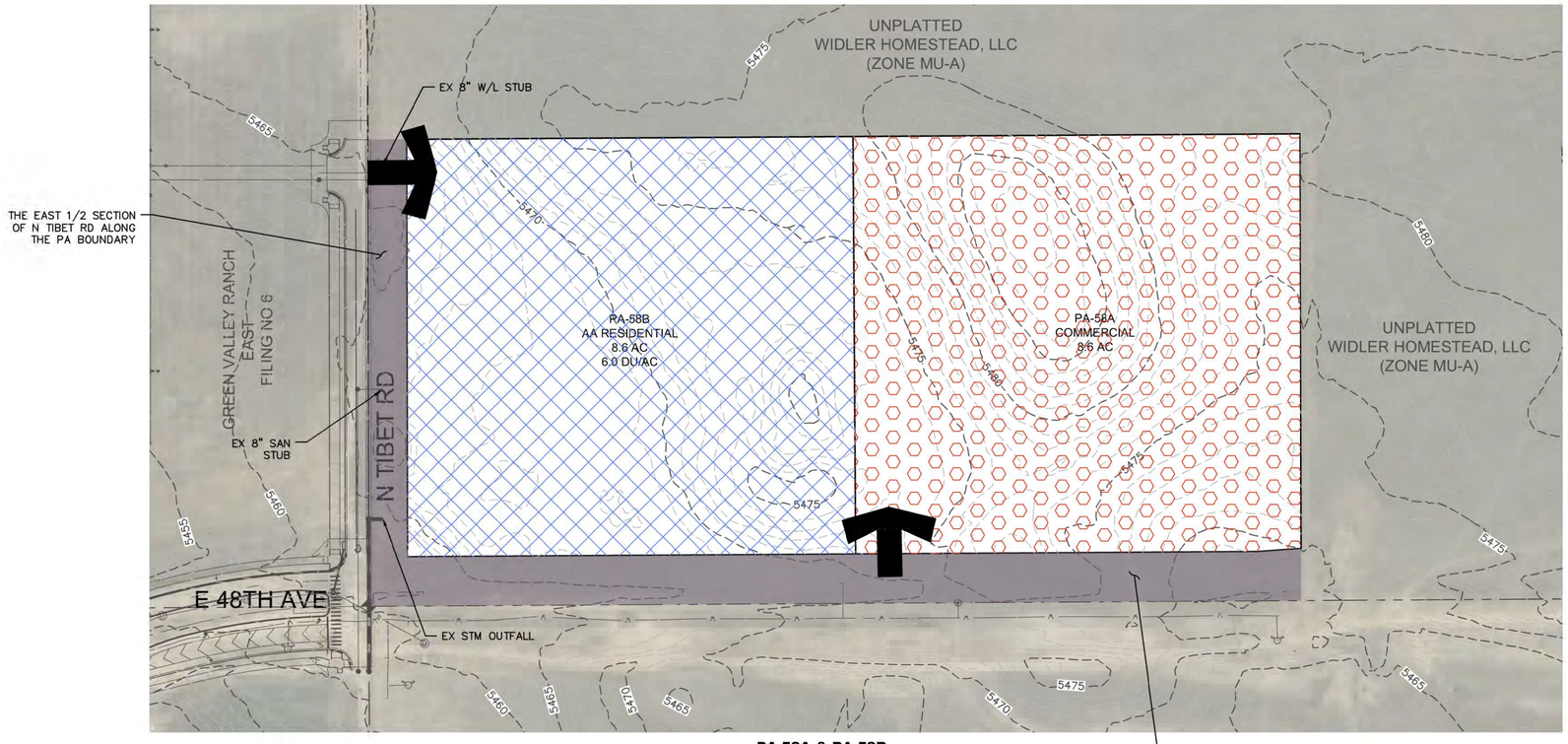


KEY MAP
N.T.S.



PA-58A & PA-58B
COMMERCIAL & AA RESIDENTIAL
SCALE 1"=100'

THE NORTH 1/2 SECTION OF E 48TH AVE ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT

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PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JTM
Checked By: JDM
Sheet Number: 11

I:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\AURORA 310 PLANNING AREA DTL-BRNDBG.DWG 3/1/2022 10:32 AM MITCHELL, JULIE

MASTER UTILITY REPORT
FOR
Green Valley Master Plan Amendment 2

December 22, 2021
March 1, 2022

Prepared for:

Oakwood Homes

18655 Green Valley Ranch Blvd
Denver, CO 80249
Contact: David Carro
Phone: 303-486-8734

Prepared by:

Dewberry

8100 East Maplewood Avenue, Suite 150
Greenwood Village, Colorado 80111
Contact: Jason Margraf, P.E.
Phone: 303-368-5601

CITY OF AURORA APPROVAL BLOCK

City Engineer	Date
Aurora Water Department	Date
Aurora Fire Department	Date

Job No. 50145755

Master Utility Report
For
Green Valley Master Plan Amendment 2

Engineer's Certification

"This Master Utility Report for the design of the Green Valley Master Plan Amendment 2 was prepared by me or under my direct supervision in accordance with Aurora Water's Standards and Specifications and acceptable professional practices of the industry. We acknowledge that Aurora Water's review of this Utility Study is only for general conformance with submittal requirements, current design criteria and standard engineering principles and practices.

_____

Jason Margraf, PE,
Licensed Professional Engineer
State of Colorado
No. 37782

_____
Date

TABLE OF CONTENTS

I. INTRODUCTION ..... **i**
II. GENERAL LOCATION AND DESCRIPTION ..... **i**
A. Location of Property i
B. Description of the Proposed Project i
C. Adjacent Areas i
III. EXISTING WATER AND SANITARY SEWER INFRASTRUCTURE ..... **ii**
A. References iii
B. Domestic Water Design Criteria iii
b. Water Peaking Factors and Demand Calculations iii
c. Water Transmission Lines Requirements iii
d. Fire Flow Demand Requirements iv
e. Minimum Pressure Requirements iv
C. Sanitary Sewer Design Criteria iv
a. Sewage Loading Criteria iv
b. Pipe Sizing Criteria and Sanitary Sewer Routing iv
WATER SYSTEM PLAN ..... **v**
A. General Concept v
B. Specific Details v
SANITARY SYSTEM PLAN ..... **vi**
A. General Concept vi
B. Specific Details vi
IV. CONCLUSIONS ..... **vii**
V. REFERENCES ..... **vii**

APPENDIX A – FIGURES and SUPPORTING DOCUMENTS
Vicinity Map
Planning Area Map
City of Aurora A310 Effluent Email
City of Aurora Sanitary Sewer Email
Fulenwider Master Utility Maps
Fulenwider Trunk Main (Phase 1)
GVRE Master Utility Maps
Windler Master Utility Maps
Skydance Master Utility Maps

APPENDIX B – WATER SYSTEM
Total Water Demand
Model Schematic
System Model Results: Average Day, Max Daily, Max Hour, and Fire Flow Analyses

APPENDIX C – SANITARY SEWER CALCULATIONS
Sanitary Sewer Design Flows
Sanitary Sewer Routing
Sanitary Routing Schematic
Sanitary Sewer FlowMaster Calculations

WATER AND SANITARY MAPS ~ ATTACHED

I. INTRODUCTION

The purpose of this report is to provide a guide for Aurora Water and the developer to use for the planning and design of the proposed sanitary and water facilities for the Green Valley Master Plan Amendment 2. This report does not address water treatment, storage, water rights,or attempt to critique the existing water systems. The narrative provides a description of the project, methodology utilized for analyses and summarizes the sanitary and water line infrastructure needed to serve the proposed uses and density within the development. Green Valley Master Plan Amendment 2 will be referred to as Site, Project or Development within the body of the report.

II. GENERAL LOCATION AND DESCRIPTION

A. Location of Property

The Project is generally located at the southeast corner of the Picadilly Road and 56th Avenue intersection and is bound by 56th Avenue to the north, Picadilly Road to the west, E-470 to the east and the Green Valley Ranch East and Windler Developments to the south. The Site is located within the North Half of Section 13, Township 3 South, Range 66 West of the 6th Principal Meridian in the City of Aurora, County of Adams, State of Colorado.

B. Description of the Proposed Project

The property comprises approximately 289.1 acres with a mix of proposed uses including residential, multi-family, and commercial with associated amenities, parks and open spaces. The residential uses are anticipated to be age targeted and will be developed as an extension of the Green Valley Ranch East community. This will occur via a greenway connection with pedestrian crossing, along with similar available products. The Project has been divided in to Planning Areas (PAs), as presented within the attached Master Utility Maps, to identify the areas and uses planned within the Site. Planning Areas within the 40s are a residential use, while PAs within the 50s are commercial. Civil infrastructure will be developed to support the Project in the form of roadways, water distribution system, sanitary sewer system and storm sewer system.

C. Adjacent Areas

The Green Valley Master Plan Amendment 2 development is surrounded by existing and in-process developments in both the City of Aurora and the City and County of Denver. The centerline of Picadilly Road serves as the municipal boundary between Aurora and Denver and the Green Valley Ranch subdivion within the City and County of Denver is located west of the Site. Green Valley Ranch East Filing No. 5 (under construction) and Planning Area 2 (future filing) are directly south of 52nd Avenue and east of Tibet Road. The Windler development is south of the Project along the projected 52nd Avenue alignment and the halfsection and is in the early stages of processing with the City of Aurora. The Sky Dance (Moffit Parcel) Development is the approximate southwest quarter section of Section 12 north of 56th Avenue and is within the Master Plan process with Aurora at the time of this report. Finally, a portion of the Fullenwider Development consisting of the southeast quarter section of Section 12 is

north of 56th Avenue and is within the Master Plan process with the City of Aurora. E-470 and the associated 56th Avenue interchange are directly east of the Project.

III. EXISTING WATER AND SANITARY SEWER INFRASTRUCTURE

Water: An existing 24-inch steel water main owned and operated by Aurora Water is within 56th Avenue along the entirety of the Site boundary. The 24-inch steel line was designed by Dewberry Engineers, Inc. and the construction plans were made available for reference during the development of this report. Aurora Water identified this 24-inch main as a desired connection location for the Green Valley Master Plan Amendment 2 development. A 12-inch PVC water main is being developed within Tibet Road as a portion of the Green Valley Ranch East Development and will provide a connection point for the Site. Additionally, a 16-inch PVC water main is being developed within 52nd Avenue as a portion of Green Valley Ranch East and provides additional connection opportunities. The existing 24-inch PVC water main within Picadilly will not be connected to at the direction of Aurora Water due to the increased potential of pipe damage during the connection process. However, during the development of the individual planning areas, Aurora Water will be consulted to determine if this direction still applies. The Site is located within pressure Zone 3.

Sanitary: The Site is located within three separate tributaries as previously identified within the Green Valley Ranch East Master Utility Report. That Report created three basins to correspond with those tributaries, as follows: Basin 310-1 which is tributary to the Second Creek Lift Station approximately two miles downstream of the Site. Basin 310-2 which is tributary to the Painted Prairie Development, and Basin 310-3 which is tributary to the First Creek lift station within the Green Valley Ranch East subdivision. Due to serviceability issues within the Painted Prairie Development, Aurora Water has required downstream development within Sky Dance, Fullenwider, and High Point to accommodate the effluent from the 310-2 basin. It is understood that those downstream developments are aware of this requirement and will accommodate the Green Valley Master Plan Amendment 2 parcel effluent. Please refer to the Appendix for correspondence within Aurora Water on this topic. Consistent with this direction, Fullenwider has designed Phase 1 of the 20-inch sanitary trunk main from the Second Creek lift station up Possum Gully to the E-470. Phase I is under construction at the time of this report. Future Phases of this trunk main will be extended west under E-470 and generally along the 60th Avenue and Tibet Road alignments to the Tibet Road and 56th Avenue intersection. This extension(s) will occur by others as a portion of downstream development or Oakwood will endeavor to make this extension to service the Green Valley Master Plan Amendment 2 parcel and will implement a reimbursement agreement or private development agreement to share the costs with those that benefit. Please see the additional discussion within the Sanitary System Plan section.

As a portion of the Green Valley Ranch East development two sanitary sewer connection points are planned for the Site. A 8-inch sanitary sewer stub is designed and under construction at the time of this report at the general location of the Green Valley Ranch East Filing No. 5 roadway connection to 52nd Avenue. Additionally, a 10-inch sanitary sewer main is being designed within Tibet Road and will be available for connection at the Tibet Road and 52nd Avenue intersection.

DESIGN CRITERIA

A. References

The criteria utilized for design and loading criteria was based on Section 5 of Aurora Water's *Water, Sanitary Sewer & Storm Drainage Infrastructure Standards & Specifications* (Reference 1). The Master Utility Studies either completed or in-process for the adjacent developments were referenced. Those studies included; *Moffit A Master Planned Community Master Utility Study*, dated July 2021 by CVL a Westwood team (Reference 2), *Green Valley – Amendment 1 Master Utility Report*, dated Revised September 2018 by Calibre (Reference 3), *Master Utility Report Windler Homestead*, dated 2nd Revision: January 2004 by Carter & Burgess, Inc. (Reference 4). In addition, two construction plan sets were reference to support this report, as follows: *20" Possum Gully Sanitary Sewer Construction Documents*, approval date of August 7, 2020 by Martin/Martin Consulting Engineers (Reference 5) and *24-Inch E. 56th Ave. Pipeline From Picadilly Rd. to Harvest Rd.*, approval date of September 6, 2019 by Dewberry Engineers, Inc. (Reference 6).

B. Domestic Water Design Criteria

i. Water Demands

Water demands for residential water use are based on a criteria of 2.77 people per unit and an average day per capita flow of 101 gallon per day. Non-residential demands were generated using the criteria in the table below. The calculation sheet can be found in the Appendix for reference.

Land Use	Ave Day (gpd/acre)	Max Day (gpd/acre)	Peak Hour (gpd/acre)
Commercial	1,500	4,200	6,750
Industrial	1,200	3,360	5,400
Parks and Greenbelts	1,800	5,040	N/A

ii. Water Peaking Factors and Demand Calculations

The maximum (peak) hourly and maximum day demands are based on peaking factors of 4.5:1 for Max Hour: Average Day and 2.8:1 Max Day: Average Day as required in Section 5.02.2 within Reference 1.

iii. Water Transmission Lines Requirements

Transmission system requirements include evaluations of demands, pressures, pipe sizes and lengths along with flow velocities and friction losses to verify they are within permissible values. The model created has delineated major water mains on-site to evaluate the serviceability, fire flows and required minimum system pressures. The table below presents the criteria utilized in the modeling analysis.

Pipe Diameter (in)	Max Velocity (fps)	Head Loss Not to Exceed (ft/1,000 ft)
6	2.5	5
8 to 12	3	5
16-24	4.5	5
Over 24	7.8	4

d. Fire Flow Demand Requirements

The required fire-flow for site was modeled using the table below.

Use Classification	Fire Flow Demand
Residential	1500 gpm for 2 hours
Commercial/Multifamily	2500 gpm for 2 hours
Industrial	3500 gpm for 3 hours

e. Minimum Pressure Requirements

Minimum residual pressure is required to be 20 p.s.i. under the maximum day plus fire flow model.

C. Sanitary Sewer Design Criteria

a. Sewage Loading Criteria

Peak demands were generated based on Section 5.03 of *Water, Sanitary Sewer & Storm Drainage Infrastructure Standards & Specifications* (Reference 1). The effluent from the Site basins were calculated at the 68 gallons per person per day within the residental planning areas and at 1,500 gallon per acerage per day for the commercial planning areas. The calculation sheet can be found in the Appendix for reference.

b. Pipe Sizing Criteria and Sanitary Sewer Routing

Analysis of the hydraulic capacity and characteristics of the pipe assumed open channel flow (not pressurized) and was completed using Manning's Equation. Bentley Flow Master was utilized for computations for the various routed locations. Based on Aurora Water's Requirements, a minimum slope of 0.40% was used for the basis of design and a Manning's n value of 0.011 was used for PVC pipe unless specified differently. The depth of flow in the pipes shall not exceed 75% of capacity for pipes 12 inches or smaller and 90% for pipes larger than 12 inches. Peak factors were calculated by using the equation:

$$\text{Peaking Factor} = 5 \div p^{0.167}$$

where p = population in thousands. A minimum peaking factor of 1.7 and a maximum peaking factor of 4 was used for the calculations. Infiltration and inflow was calculated at 10% of average day flows and added to the peaked flows. The flow velocities were validated to meeting the City's minimum of two feet per second and ten feet per second.

WATER SYSTEM PLAN

A. General Concept

The property lies within Aurora Water Pressure Zone 3, with a zero p.s.i. water surface elevation of 5720 feet. The Site will connect to the existing 24-inch diameter transmission main within 56th Avenue and the proposed 12-inch diameter main within Tibet Road and the 16-inch diameter main within 52nd Avenue. A 12-inch diameter distribution main will bisect the Site by extending the water main within Tibet Road north to connect at the 24-inch main within 56th Avenue. Additionally, an 8-inch main is provided within the Main Street sections within the Commercial areas and within the Residential Planning Areas to ensure servicabiliity. The remainder of the on-site distribution mains will be 8 inches in diameter. The water system was modeled utilities by implementing the Bentley WaterGEMS CONNECT Edition Update 3 program with results for the modeled scenarios presented within the Appendix.

B. Specific Details

The system was modeled with three reservoirs to depict the existing and future infrastructure within Zone 3. A junction was placed at each of the demand locations and some planning area demands were spread across multiple junctions, please refer to the Appendix for the associated demand calculations. The following scenariors were modeled for the Project to validate Aurora Water's criteria were maintained.

- Scenario 1 ~ Average Day Demand
- Scenario 2 ~ Maximum Day Demand
- Scenario 3 ~ Maximum Day Demand with Fire Flow
- Scenario 4 ~ Maximum (Peak) Hour Demand

Input for the scenarios include system layouts, junction elevations, demands, and connecting pipes sizes, lengths and coefficients. The scenario output lists the demands, presusures, velocities, and headloss for individual pipes within the system under the fire flow and steady state conditions.

The Site is generally located within three major basins, First Creek, Second Creek and Blue Grama Draw, which is a right bank tributary to First Creek. As such, the existing topography within the Site generally consists of a high point within the middle of the property at approximate elevation of 5470. Topography along the permeter of the Site varies from approximately 5435 at the northwest corner, approximately 5443 at the southwest corner, approximately 5460 at the Tibet Road Green Valley Ranch East connection and approximately 5490 at the southeast corner. The Second Creek portion of the Site has topography that generally runs south to north.

The models were analyzed for the scenarios presented to ensure design criteria were met and to determine the efficient pipe sizing required to service the uses proposed herein. Scenerios modeled output is presented witin the Appendix for review. Since all surrounding, regional water mains are existing or being constructed by adjacent

developments, it is assumed that no contribution or construction of those systems is required. Therefore, no off-site water improvements are contemplated herein.

The table below contains the key results of the analysis of the water scenario models for this Site. Full modeling results can be found in the Appendix of this report.

Model Results Summary	
Maximum Pressure	122 psi (Junction J-32 Avg. Daily Demand)
Minimum Residual Pressure	84 psi (Junction J-22, Fire Flow)
Peak Hour Maximum Pipe Velocity (8-12 inches)	2.48 fps, 2.00 ft/1000 ft Headloss, Pipes P-24(2)(1) & P-49
Peak Hour Maximum Pipe Velocity (16-24 inches)	0.96 fps, 0 ft/1000 ft Headloss, Pipe 51

SANITARY SYSTEM PLAN

A. General Concept

The porposed Site sanitary sewer infrastructure is has been sized to service the proposed uses and to meet Aurora Water's criterion. The system will consist of 8-inch and 10-inch gravity sewer mains generally consistent with the maps attached to this Report.

B. Specific Details

The Site is located within both the First Creek and Second Creek service areas and a servicing concept was presented within the Green Valley Ranch East Master Utility Study, Reference 3. That study anticipated the southwest portion of the Green Valley Master Plan Amendment 2 site, identified as Basin 310-3, to be serviced via gravity through an extension of the sanitary main through what is now GVRE Filing No. 5. The approved GVRE Filing No. 5 Construction Plans depict the extended sanitary main and therefore, the First Creek Wastershed portion of the Site west of proposed Tibet Road will be serviced via this connection. The multi-family parcel (PA-49) will be serviced via a sanitary connection within Tibet Road, developed as a portion of the Green Valley Ranch East – Tibet Road project. The gravity main was sized as a portion of Reference 3 to accept effluent from Basins 310-1 and 310-2, which far exceeds the contributing flow from PA-49.

The northwest corner of the Site that was identified within Reference 3 to outfall to the Painted Prairie subdivision (Option 1 of that report). However, through conversations with Aurora Water, it has been determined that Painted Prairie did not extend a sanitary main to provide for the outfall of the Site. As such, Aurora Water determined that the preferred solution for the basin identified at 310-2 was to gravity drain to a sanitary main to be extended to the intersection of 56th Avenue and Tibet Road. This sanitary main is also anticipated to service the basin 310-1, as named within Reference 3. Aurora Water provided the engineer of the downstream sanitary trunk main an anticipated effluent flow rate from the Site, as presented within the Appendix. The first phase of the downstream trunk main within the Second Creek tributary is under construction at the

time of this Report. The timing extension of this sanitary trunk main to the Tibet Road and 56th Avenue intersection (Phase 2) has yet to be determined. In the event that this system is not available at the time of the development of the planning areas within the Site tributary to Second Creek, and consistent with Option 2 previously presented within Reference 3; the areas tributary to the Second Creek lift station may be lifted, via a temporary lift station within the Site to the gravity sanitary sewer system within Tibet Road at the Green Valley Ranch East boundary. Reimbursement for this transmission main (Option 1) may be requested under the guidelines of the City of Aurora Municipal Code.

Additionally, two sanitary sewer servicing options were evaluated for Planning Areas 47 and 48 to provide flexibility of service. Specifically, PA47and P48 were evaluated routed directly to the main within Tibet Road to minimize impact to the commercial planning areas north of those areas. This solution would minimize the encumbrance to the commercial planning areas. The second option routes the two planning areas through the commercial areas, which provides the developer the option should the commercial planning areas be phased ahead of PA47 and PA48, potentially providing cost savings, if selected. Both routing options are presented within the Appendix and the selected routing will be determined at [redacted] as.

All segments of the second creek interceptor and possum gully sanitary main must be constructed to serve this development. No temporary lift station will be permitted. Please provide the [redacted]dated flows for each sanitary sewer basin.

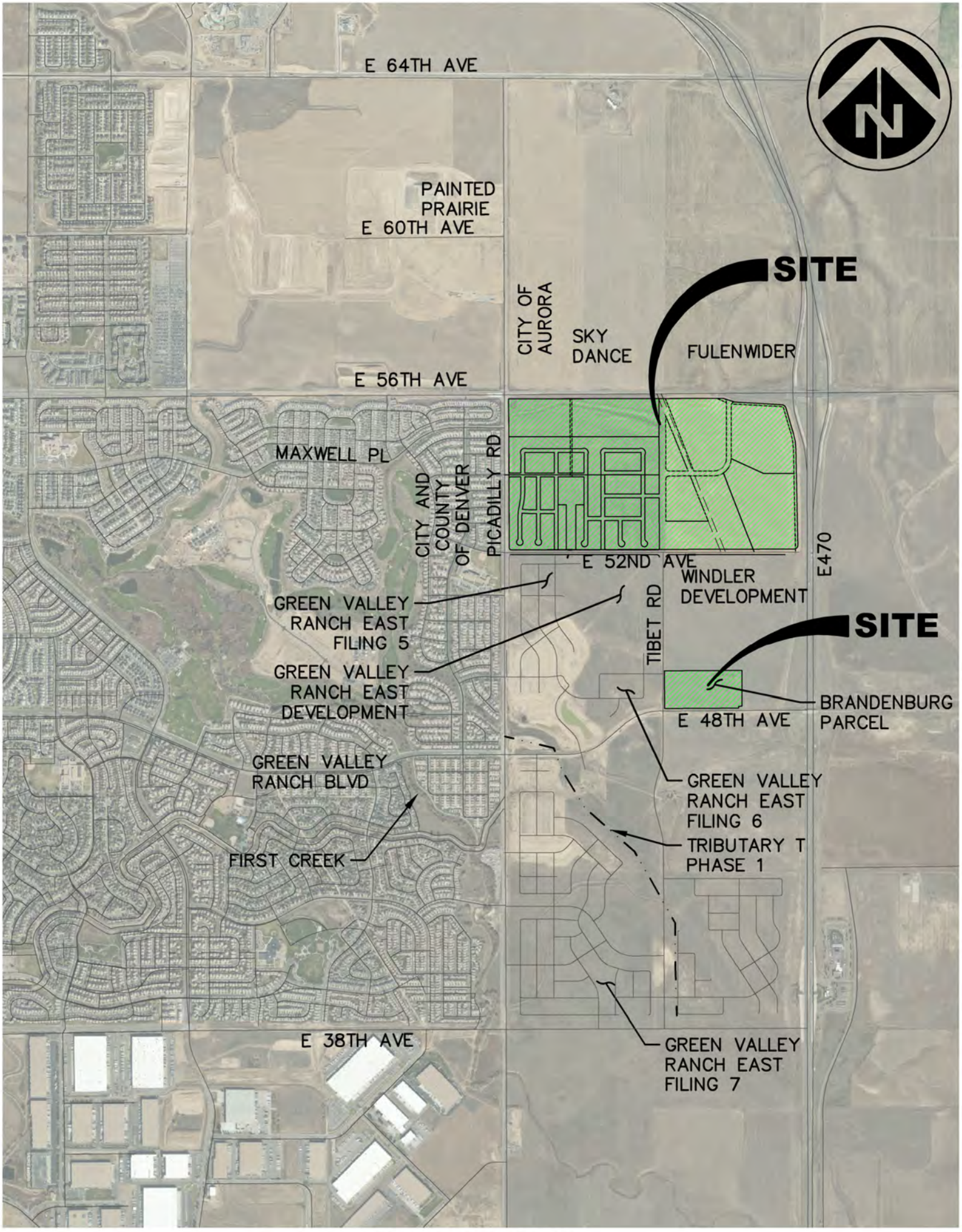
IV. CONCLUSIONS

The utility plan provided in th[redacted]*cations for the Design and Construction of Public and Private Improvements Standards and Specifications for Water, Sanitary Sewer and Storm Drainage Infrastructure* (Reference 1) as well as standard engineering practices. The utility plan addresses full development of the Site at complete buildout.

V. REFERENCES

1. *Water, Sanitary Sewer & Storm Drainage Infrastructure Standards & Specifications*, Aurora Water, September 2019.
2. *Moffit A Master Planned Community Master Utility Study*, dated July 2021 by CVL a Westwood team
3. *Green Valley – Amendment 1 Master Utility Report*, dated Revised September 2018 by Calibre
4. *Master Utility Report Windler Homestead*, dated 2nd Revision: January 2004 by Carter & Burgess, Inc.
5. *20" Possum Gully Sanitary Sewer Construction Documents*, approval date of August 7, 2020 by Martin/Martin Consulting Engineers
6. *24-Inch E. 56th Ave. Pipeline From Picadilly Rd. to Harvest Rd.*, approval date of September 6, 2019 by Dewberry Engineers, Inc.
7. *Windler Master Utility Study Aurora, CO, Rev. October 2021 by Olsson*

APPENDIX A – Figures and Supporting Documents



VICINITY MAP

SCALE: 1"=2000'

Painted Prairie

Sky Dance

Fulenwider

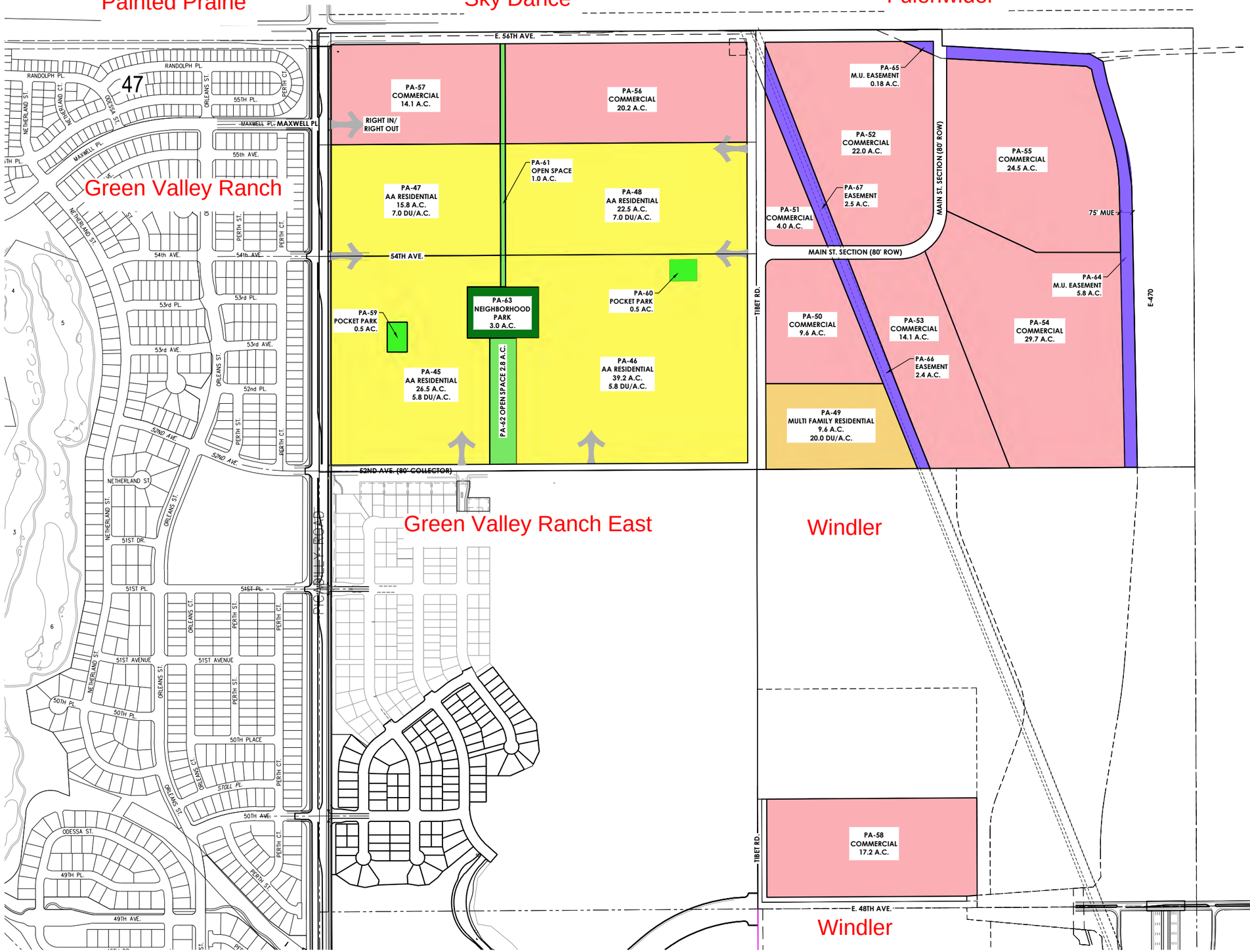
Green Valley Ranch

Green Valley Ranch East

Windler

Windler

FLATTEN AutoCAD SHX Text



p:\oakwood master folder\gvr east - 310 parcel\cad\dwg\310 site plan planning areas 11242021.dwg

Green Valley FDP Amendment 2

Planning Areas

terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

Scale: 1"=500'

December 1, 2021

0 300 600 1200

Greg Proulx

From: Ballard, Casey <cballard@auroragov.org>
Sent: Friday, November 1, 2019 9:56 AM
To: Greg Proulx; Tran, Anthony "Tony"
Subject: RE: Harvest Mile MUS
Attachments: 310 West SS Exhibit.pdf

Good morning Greg,

Based on discussion with planning we wanted to provide the below updated flows from the 310 West development. These flows are broken down to two scenarios. The first scenario being just the second creek flows going through the Harvest Mile development and the second scenario being all flows going through the Harvest Mile development. I have included a map from a previous utility study for planning areas but please use the below tables to view densities, uses, and flows. I want to have your report look at both of these scenarios and see if Harvest Mile can take these flows and if upsizing is required, what that upsizing would look like.

Scenario 1

					Non-Residential		Residential		Total			
Planning Area	Use	Acre	Units	DU/acre	Loading (gpd/acre)	Pop Equivelant/acre	Loading (gpd/cap)	Population/Unit	Average Day GPD	GPM	I+I (gpd)	Population
4	Residential	22.9	274.8	12			68	2.77	51,761.33	35.95	5,176.13	761.196
9	Residential	27.1	487.8	18			68	2.77	91,882.01	63.81	9,188.20	1351.206
16	Residential	20.5	246	12			68	2.77	46,336.56	32.18	4,633.66	681.42
5	Commercial	30.5			1500	22			45,750.00	31.77	4,575.00	671
12	Commercial	25.3			1500	22			37,950.00	26.35	3,795.00	556.6
18	Commercial	20.1			1500	22			30,150.00	20.94	3,015.00	442.2
17	Commercial	15.5			1500	22			23,250.00	16.15	2,325.00	341
	Total	161.90						Total	327,079.90	227.14	32,707.99	4804.622

Scenario 2

Use	Acre	Units	DU/Acre	Loading (gpd/acre)	Pop Equivelant/acre	Loading (gpd/cap)	Population/Unit	Average Day GPD	GPM	I+I (gpd)	Population
Residential	16.7	116.9	7			68	2.77	22,019.28	15.29	2,201.93	323.813
Residential	21.2	148.4	7			68	2.77	27,952.62	19.41	2,795.26	411.068
Residential	22.9	274.8	12			68	2.77	51,761.33	35.95	5,176.13	761.196
Residential	20	140	7			68	2.77	26,370.40	18.31	2,637.04	387.8
Residential	27.1	487.8	18			68	2.77	91,882.01	63.81	9,188.20	1351.206
Residential	20.5	246	12			68	2.77	46,336.56	32.18	4,633.66	681.42
Commercial	30.5			1500	22			45,750.00	31.77	4,575.00	671
Commercial	25.3			1500	22			37,950.00	26.35	3,795.00	556.6
Commercial	20.1			1500	22			30,150.00	20.94	3,015.00	442.2
Commercial	15.5			1500	22			23,250.00	16.15	2,325.00	341

Total	288.20	1892.7					Total	403,422.20	280.15	40,342.22	5927.303

Respectfully,

Casey Ballard
Engineer|City of Aurora|Aurora Water
office 303-739-7382

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From: Greg Proulx [mailto:GProulx@martinmartin.com]
Sent: Thursday, October 31, 2019 1:39 PM
To: Tran, Anthony "Tony" <atran@auroragov.org>
Cc: Ballard, Casey <cballard@auroragov.org>
Subject: RE: Harvest Mile MUS

Appreciate the update and you following up on my question.

We completely understand, since we were in a similar boat with providing Avelon our flows a few months ago.

Thanks again for the help and Happy Halloween!

Greg

Greg Proulx, PE
Professional Engineer
PE (CO)
V 303.431.6100 ext. 265
MARTIN/MARTIN CONSULTING ENGINEERS
12499 West Colfax Avenue | Lakewood, CO 80215
martinmartin.com
2019 Denver Post Top Workplace (Four Time Winner)

From: Tran, Anthony "Tony" <atran@auroragov.org>
Sent: Thursday, October 31, 2019 1:03 PM
To: Greg Proulx <GProulx@martinmartin.com>
Cc: Ballard, Casey <cballard@auroragov.org>
Subject: Harvest Mile MUS

Hi Greg,

Casey will be providing the planned loadings to be used for the MUS, hopefully by early-mid next week.

I apologize for the long delay, we were expecting this information to be provided by the current land owners, however, they have not been responsive.

We will provide loadings based on land use and zoning provided to us from our planning department to move this forward.

Thanks,

Tony H. Tran, PE, MCE, PMP, CFM
Project Engineer | City of Aurora | Aurora Water
15151 East Alameda Avenue, Suite 3600
Aurora, Colorado 80012
office 303.739.7376

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Kerstiens, Katherine

From: Ballard, Casey <cballard@auroragov.org>
Sent: Thursday, August 19, 2021 5:15 PM
To: Margraf, Jason D.
Subject: RE: Aurora 310 Sanitary

Follow Up Flag: Follow up
Flag Status: Flagged

[CAUTION] External Email. DO NOT click links or open attachments unless expected. Please use the "Phish Alert" button to report all suspicious emails.

Jason,

Please see below:

1) I understood from talking w/Vern that a portion of the sanitary main that is planned to service the A310 parcel is under construction (from the 2nd Creek lift station to E-470). I found what should be those CDs on the City's map system. Are you able to tell me where they stand in construction?
    a. I am waiting on information from the inspectors as to the current status of that extension.
2) Are you able to tell me what the trigger(s) are for the extension of the sanitary main to the west of E-470 for the areas within Fulenwider or Avelon?
    a. There is no specific trigger outside of development. What I mean is any part of what was Avelon needs that sanitary sewer extension to develop per their MUS while Fulenwider won't need it until they begin developing a land use that requires sanitary service in planning areas 2 or 40. Planning areas 12, 13, and 16 I don't think will require sanitary service as they are an Xcel substation, neighborhood park, or stormwater detention.
3) Are there any existing reimbursement agreement associated with the "under construction" portion of this sanitary?
    a. To my knowledge no reimbursement agreement has been started with the Fulenwider development regarding the Possum Gully sanitary sewer. That isn't saying one won't be started in the future.
4) In the GVRE Master Utility Study the A310 parcel was broken into three basins. Basin 310-1 is tributary to Possum Creek. Basin 310-2 to the northwest and Basin 310-3 appears to flow into GVRE. Do you have any information on down stream improvement for Basin 310-2?
    a. During the development of the Painted Prairie, Avelon, Fulenwider utility studies it was found that numerous utilities existed within the Picadilly and 56th Avenue intersection making a sanitary crossing in that area difficult. It was decided that 310 West was to discharge entirely north through the Possum Gully sanitary sewer.
5) I see in the Fulenwider study that you, via email on 11/1/19 provided Martin and Martin two scenarios for the A310 parcel. Where did you get that information? Which scenarios is the Fulenwider sanitary sized for?
    a. The information that I provided Fulenwider was information obtain from Terra Forma Solution. They provided anticipated uses while I used those uses and our current water/sanitary requirements to determine potential sanitary sewer loading. At the time they had an application in to rezone the property into commercial and medium density residential, 7-12 DU/acre with one area being 18 DU/acre.
6) What progress has Westside (and CVL) made on Avelon parcel and specifically on their Master Utility Study?
    a. The most recent information I have is the submittal made it to roughly the 5th round of review but the owner decided to no longer pursue the project. The utility study itself was essentially complete but needed to be updated to match the most current numbers from the High Point and Fulenwider studies.

Respectfully,

Casey Ballard, PE
Engineer|City of Aurora|Aurora Water
office 303-739-7382

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From: Margraf, Jason D. <jmargraf@Dewberry.com>
Sent: Thursday, August 19, 2021 11:29 AM
To: Ballard, Casey <cballard@auroragov.org>
Subject: RE: Aurora 310 Sanitary

Casey:

Just checking in on the questions below.

Thanks,

Jason

Jason Margraf, PE

Associate Vice President, Department Manager
Real Estate and Commercial Development Market Segment
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
D 720.386.4325 **C** 303.520.4575
LICENSED PE: CO, UT

Dewberry

www.dewberry.com

From: Margraf, Jason D.
Sent: Friday, August 13, 2021 4:03 PM
To: Ballard, Casey <cballard@auroragov.org>
Subject: Aurora 310 Sanitary

Casey:

I hope you are have a good Friday. Thank you for providing the Fulenwider Master Utility information. I am in the process of reviewing it and have a couple of quick questions/requests.

1) I understood from talking w/Vern that a portion of the sanitary main that is planned to service the A310 parcel is under construction (from the 2nd Creek lift station to E-470). I found what should be those CDs on the City's map system. Are you able to tell me where they stand in construction?
2) Are you able to tell me what the trigger(s) are for the extension of the sanitary main to the west of E-470 for the areas within Fulenwider or Avelon?
3) Are there any existing reimbursement agreement associated with the "under construction" portion of this sanitary?
4) In the GVRE Master Utility Study the A310 parcel was broken into three basins. Basin 310-1 is tributary to Possum Creek. Basin 310-2 to the northwest and Basin 310-3 appears to flow into GVRE. Do you have any information on down stream improvement for Basin 310-2?
5) I see in the Fulenwider study that you, via email on 11/1/19 provided Martin and Martin two scenarios for the A310 parcel. Where did you get that information? Which scenarios is the Fulenwider sanitary sized for?
6) What progress has Westside (and CVL) made on Avelon parcel and specifically on their Master Utility Study?

Thanks!

Jason.

Jason Margraf, PE

Associate Vice President, Department Manager
Real Estate and Commercial Development Market Segment
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
D 720.386.4325 **C** 303.520.4575
LICENSED PE: CO, UT

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www.dewberry.com

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1

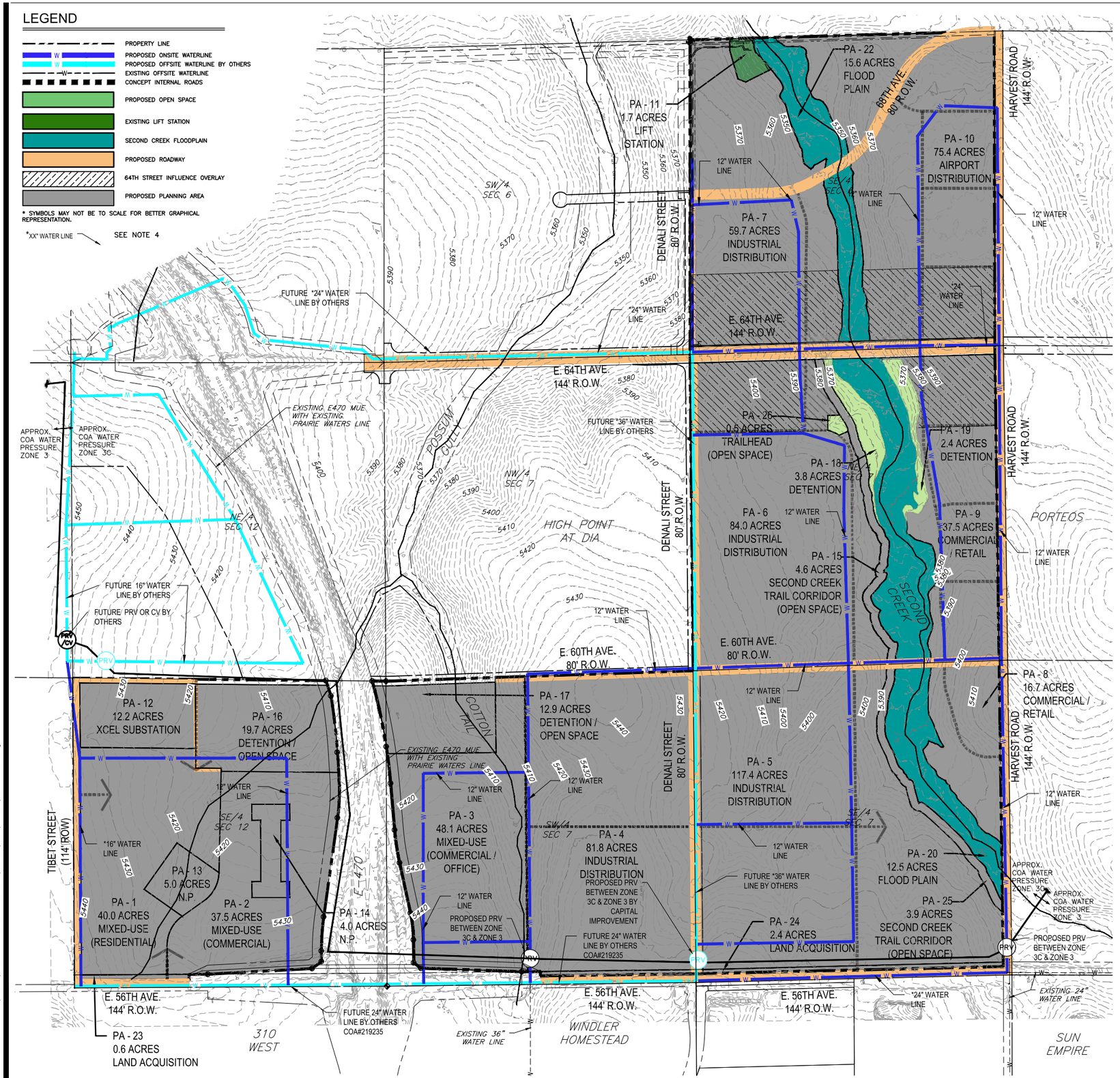
220131

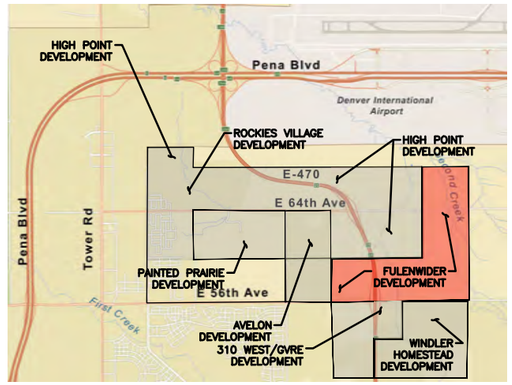
LEGEND

- PROPERTY LINE
- PROPOSED ONSITE WATERLINE
- PROPOSED OFFSITE WATERLINE BY OTHERS
- EXISTING OFFSITE WATERLINE
- CONCEPT INTERNAL ROADS
- PROPOSED OPEN SPACE
- EXISTING LIFT STATION
- SECOND CREEK FLOODPLAIN
- PROPOSED ROADWAY
- 64TH STREET INFLUENCE OVERLAY
- PROPOSED PLANNING AREA

* SYMBOLS MAY NOT BE TO SCALE FOR BETTER GRAPHICAL REPRESENTATION.

*XX" WATER LINE — SEE NOTE 4





VICINITY MAP
1"=4000'

NOTES:

1. LOOPED WATER TO SUPPORT PUBLIC FRIE HYDRANTS AND PRIVATE FIRE SUPPRESSION SYSTEMS ARE REQUIRED WITH EACH PHASE OF DEVELOPMENT.
2. ADDITIONAL PRVS MAY BE REQUIRED ON THE INTERNAL DEVELOPMENT WATER INFRASTRUCTURE TO SUPPORT CERTAIN PHASES OF DEVELOPMENT THAT ARE LOCATED ON OR NEAR THE WATER PRESSURE ZONE BOUNDARY.
3. IF THE OFF-SITE WATER SYSTEM INFRASTRUCTURE HAS NOT YET BEEN INSTALLED, OR IS LABELED AS BY-OTHERS, THE DEVELOPING PLANNING AREA MAY BE RESPONSIBLE FOR BUILDING THE NECESSARY OFF-SITE WATER SYSTEM REQUIRED TO SUPPORT THE PLANNING AREA. THE PLANNING AREA DEVELOPMENT SHALL WORK WITH THE CITY OF AURORA DURING THE CSP PROCESS TO DETERMINE THE BEST OPTION FOR CONNECTING TO THE CITY'S EXISTING WATER SYSTEM, BY EXTENDING THE EXISTING WATER SYSTEM, UPDATING THE DEMANDS AND DESIGN POINTS DESCRIBED IN THIS REPORT. THIS REPORT SHOWS GRAPHICAL WATER SYSTEM LOCATIONS THAT WILL BE LOCATED IN MORE DETAIL DURING THE CITY OF AURORA CSP PROCESS AND CAN BE UPDATED OR AMENDED IF NECESSARY, TO SUPPORT THE WATER NEEDS FOR PLANNING AREAS DETERMINED IN THE FUTURE.
4. FULENWIDER PROPERTY NEEDED 12" WATER LINE TO MEET PROPOSED FULENWIDER DEMANDS, INCREASED PIPE SIZE BASED ON THE COA COMMENTS, OTHER OFFSITE COA DEMANDS/LOOPING, CAPITAL IMPROVEMENT PROJECTS, ETC.

FACSIMILE

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(PE SIGNATURE) DATE 07/23/2020

DAVID M. LE
(PRINTED NAME)

N

400 200 0 400 800
SCALE: 1"=400'
ALL DIMENSIONS SHOWN ARE U.S. SURVEY FEET

THT

CITY OF AURORA APPROVAL BLOCK

Craig Paul for Victor Rachael	07/31/2020
CITY ENGINEER	DATE
	07/30/2020
FIRE DEPARTMENT	DATE
Vernon A. Adam	08/05/2020
AURORA WATER DEPARTMENT	DATE

MARTIN/MARTIN
CONSULTING ENGINEERS
12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215
303.431.6100 MARTINMARTIN.COM

FULENWIDER

MASTER UTILITY PLAN (WATER)

No.	Issue / Revision	Date	Name
1	ISSUE FOR COA APPROVAL	07/22/20	M/M

Job Number 19.0001
Project Manager D.LE & G. PROULX
Design By G. PROULX
Drawn By G. PROULX
Principal In Charge P.HORN

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Sheet Number:

MUS-W

PLOT DATE: Wednesday, July 22, 2020 1:28 PM LAST SAVED BY: GPROULX
DRAWING LOCATION: G:\HORN\19.0001-Harvest Mile FDP\PLANS\FDP\WATER\FDP WATER.dwg

APPROVED ON 08/05/2020

2

220131

NOTES:

1. CITY OF AURORA PLAN REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH CITY OF AURORA DESIGN CRITERIA AND THE CITY CODE. THE CITY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, OF DIMENSIONS AND ELEVATIONS WHICH SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE. THE CITY OF AURORA, THROUGH THE APPROVAL OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

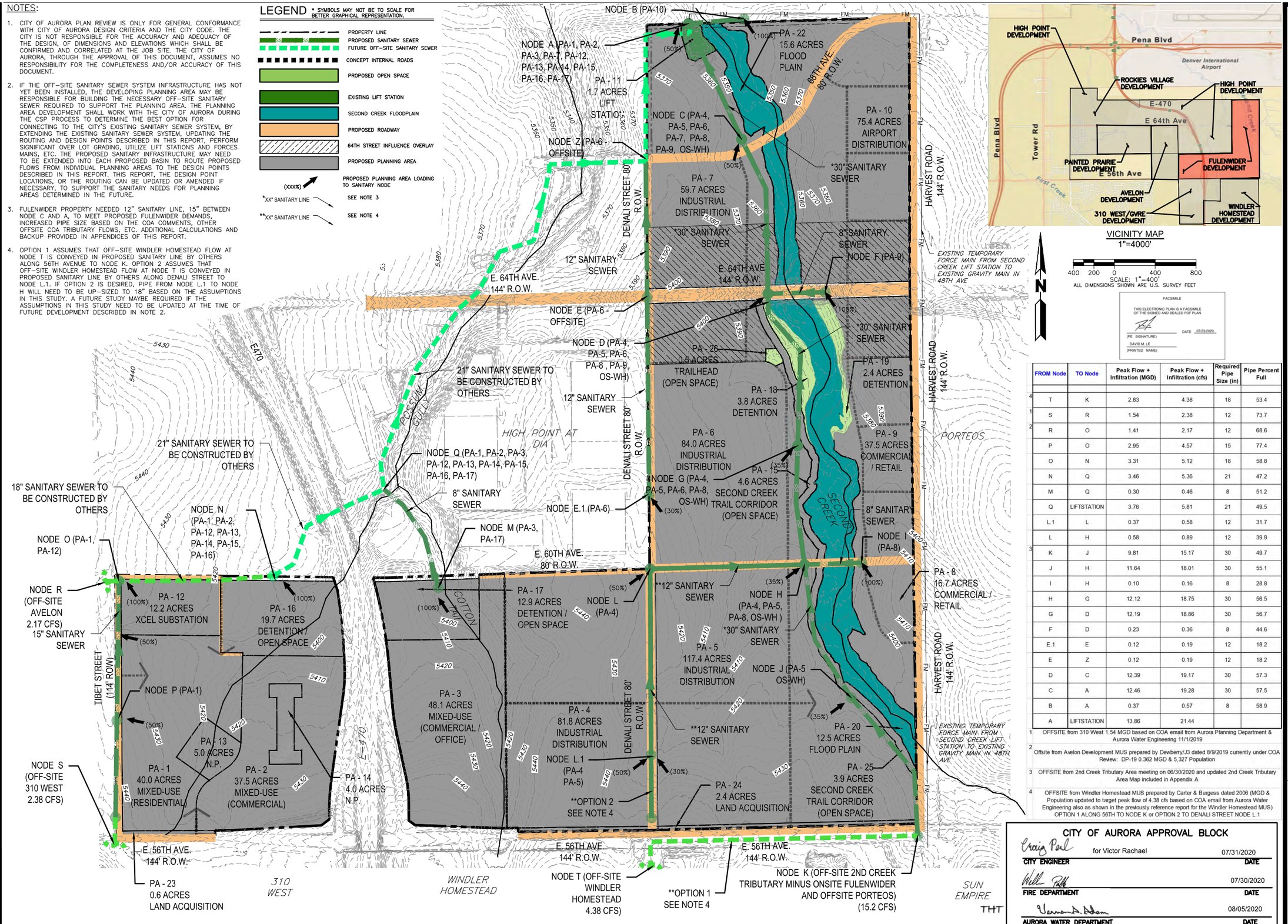
2. IF THE OFF-SITE SANITARY SEWER SYSTEM INFRASTRUCTURE HAS NOT YET BEEN INSTALLED, THE DEVELOPING PLANNING AREA MAY BE RESPONSIBLE FOR BUILDING THE NECESSARY OFF-SITE SANITARY SEWER REQUIRED TO SUPPORT THE PLANNING AREA. THE PLANNING AREA DEVELOPMENT SHALL WORK WITH THE CITY OF AURORA DURING THE CSP PROCESS TO DETERMINE THE BEST OPTION FOR CONNECTING TO THE CITY'S EXISTING SANITARY SEWER SYSTEM, BY EXTENDING THE EXISTING SANITARY SEWER SYSTEM, UPDATING THE ROUTING AND DESIGN POINTS DESCRIBED IN THIS REPORT, PERFORM SIGNIFICANT OVER LOT GRADING, UTILIZE LIFT STATIONS AND FORCES MAINS, ETC. THE PROPOSED SANITARY INFRASTRUCTURE MAY NEED TO BE EXTENDED INTO EACH PROPOSED BASIN TO ROUTE PROPOSED FLOWS FROM INDIVIDUAL PLANNING AREAS TO THE DESIGN POINTS DESCRIBED IN THIS REPORT. THIS REPORT, THE DESIGN POINT LOCATIONS, OR THE ROUTING CAN BE UPDATED OR AMENDED IF NECESSARY, TO SUPPORT THE SANITARY NEEDS FOR PLANNING AREAS DETERMINED IN THE FUTURE.

3. FULENWIDER PROPERTY NEEDED 12" SANITARY LINE, 15" BETWEEN NODE C AND A, TO MEET PROPOSED FULENWIDER DEMANDS, INCREASED PIPE SIZE BASED ON THE COA COMMENTS, OTHER OFFSITE COA TRIBUTARY FLOWS, ETC. ADDITIONAL CALCULATIONS AND BACKUP PROVIDED IN APPENDICES OF THIS REPORT.

4. OPTION 1 ASSUMES THAT OFF-SITE WINDLER HOMESTEAD FLOW AT NODE T IS CONVEYED IN PROPOSED SANITARY LINE BY OTHERS ALONG 56TH AVENUE TO NODE K. OPTION 2 ASSUMES THAT OFF-SITE WINDLER HOMESTEAD FLOW AT NODE T IS CONVEYED IN PROPOSED SANITARY LINE BY OTHERS ALONG DENALI STREET TO NODE L.1. IF OPTION 2 IS DESIRED, PIPE FROM NODE L.1 TO NODE H WILL NEED TO BE UP-SIZED TO 18" BASED ON THE ASSUMPTIONS IN THIS STUDY. A FUTURE STUDY MAYBE REQUIRED IF THE ASSUMPTIONS IN THIS STUDY NEED TO BE UPDATED AT THE TIME OF FUTURE DEVELOPMENT DESCRIBED IN NOTE 2.

LEGEND * SYMBOLS MAY NOT BE TO SCALE FOR BETTER GRAPHICAL REPRESENTATION.

- PROPERTY LINE
- PROPOSED SANITARY SEWER
- FUTURE OFF-SITE SANITARY SEWER
- CONCEPT INTERNAL ROADS
- PROPOSED OPEN SPACE
- EXISTING LIFT STATION
- SECOND CREEK FLOODPLAIN
- PROPOSED ROADWAY
- 64TH STREET INFLUENCE OVERLAY
- PROPOSED PLANNING AREA
- (XXX%) PROPOSED PLANNING AREA LOADING TO SANITARY NODE
- *XX" SANITARY LINE — SEE NOTE 3
- **XX" SANITARY LINE — SEE NOTE 4



VICINITY MAP
1"=4000'

400 200 0 400 800
SCALE: 1"=400'
ALL DIMENSIONS SHOWN ARE U.S. SURVEY FEET

FACSIMILE
THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF PLAN
(PE SIGNATURE)
DATE 07/23/2020
DAVID M. LE
(PRINTED NAME)

FROM Node	TO Node	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)	Required Pipe Size (in)	Pipe Percent Full
4 T	K	2.83	4.38	18	53.4
1 S	R	1.54	2.38	12	73.7
2 R	O	1.41	2.17	12	68.6
P	O	2.95	4.57	15	77.4
O	N	3.31	5.12	18	58.8
N	Q	3.46	5.36	21	47.2
M	Q	0.30	0.46	8	51.2
Q	LIFTSTATION	3.76	5.81	21	49.5
L.1	L	0.37	0.58	12	31.7
L	H	0.58	0.89	12	39.9
3 K	J	9.81	15.17	30	49.7
J	H	11.64	18.01	30	55.1
I	H	0.10	0.16	8	28.8
H	G	12.12	18.75	30	56.5
G	D	12.19	18.86	30	56.7
F	D	0.23	0.36	8	44.6
E.1	E	0.12	0.19	12	18.2
E	Z	0.12	0.19	12	18.2
D	C	12.39	19.17	30	57.3
C	A	12.46	19.28	30	57.5
B	A	0.37	0.57	8	58.9
A	LIFTSTATION	13.86	21.44		

1 OFFSITE from 310 West 1.54 MGD based on COA email from Aurora Planning Department & Aurora Water Engineering 11/1/2019

2 Offsite from Avelon Development MUS prepared by Dewberry/J3 dated 8/9/2019 currently under COA Review: DP-19 0.362 MGD & 5,327 Population

3 OFFSITE from 2nd Creek Tributary Area meeting on 06/30/2020 and updated 2nd Creek Tributary Area Map included in Appendix A

4 OFFSITE from Windler Homestead MUS prepared by Carter & Burgess dated 2006 (MGD & Population updated to target peak flow of 4.38 cfs based on COA email from Aurora Water Engineering also as shown in the previously reference report for the Windler Homestead MUS) OPTION 1 ALONG 56TH TO NODE K or OPTION 2 TO DENALI STREET NODE L.1

CITY OF AURORA APPROVAL BLOCK

Craig Paul for Victor Rachael 07/31/2020
CITY ENGINEER DATE

Will Pike 07/30/2020
FIRE DEPARTMENT DATE

Vernon A. Adam 08/05/2020
AURORA WATER DEPARTMENT DATE

MARTIN/MARTIN CONSULTING ENGINEERS
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303.431.6100 MARTINMARTIN.COM

FULENWIDER

MASTER UTILITY PLAN (SANITARY)

No.	Issue / Revision	Date	Name
1	ISSUE FOR COA APPROVAL	07/22/20	M/M

Job Number 19.0001
Project Manager D.LE & G. PROULX
Design By G. PROULX
Drawn By G. PROULX
Principal In Charge P.HORN

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APPROVED ON 08/05/2020

1

220136

20" POSSUM GULLY SANITARY SEWER

CONSTRUCTION DOCUMENTS

PARCELS OF LAND LOCATED IN THE SOUTH HALF OF SECTION 6, THE NORTHWEST QUARTER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST, AND THE NORTHEAST OF SECTION 12, TOWNSHIP 3 SOUTH, RANGE 66 WEST, OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO.

VICINITY MAP
1"=1000'

Sheet List Table	
SHEET NUMBER	SHEET TITLE
1	COVER
2	GENERAL NOTES
3	GENERAL NOTES
4	OVERALL UTILITY PLAN
5	SANITARY PLAN & PROFILE 0+00 – 12+00
6	SANITARY PLAN & PROFILE 12+00 – 25+00
7	SANITARY PLAN & PROFILE 25+00 – 32+50
8	SANITARY PLAN & PROFILE 32+50 – 42+50
9	SANITARY PLAN & PROFILE 42+50 – 52+50
10	SANITARY PLAN & PROFILE 52+50 – 62+50
11	SANITARY PLAN & PROFILE 62+50 – 69+50
12	SANITARY PLAN & PROFILE 69+50 – 77+00
13	EROSION CONTROL PLAN
14	SANITARY PLAN & PROFILE

Proposed Easements for this project are in the plat for High Point East No. 3

No initial acceptance shall occur until the plat for High Point East Subdivision Filing No. 3 has been recorded with the County.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	RIGHT-OF-WAY LINE	
	SECTION LINE	
	EASEMENT	
	RETAINING WALL	
	CURB & GUTTER	
	HANDICAP RAMPS	
	UTILITY CROSSING	
-ST-	STORM SEWER	
ST	STORM MANHOLE	
-RD-	ROOF DRAIN	
	STORM INLET	
	FLARED END SECTION	
-SS-	SANITARY SEWER	SS
SS	SANITARY MANHOLE	
	CLEAN OUT	
-W-	WATER LINE	
	WATER VALVE	
	FIRE HYDRANT	
WM	WATER METER	
-IR-	IRRIGATION LINE	
IRR	IRRIGATION CONTROL	
-OHE-	OVERHEAD ELECTRIC	
-E-	ELECTRIC LINE	
	LIGHT POLE	
	POWER POLE	
ELEC	ELECTRIC METER	
-T-	TELEPHONE LINE	
TEL		
-CT-	CABLE TV	
-G-	GAS LINE	
	SIGN	
O.W	MONITOR WELL	
DRIVE	DESCRIPTIONS	DRIVE

BASIS OF BEARINGS:
BEARINGS ARE BASED ON AN ASSUMED BEARING OF S00°33'21"E ALONG THE EASTERLY LINE OF THE SOUTHWEST QUARTER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE 6TH P.M. BEING MONUMENTED AS A FOUND 3 1/4" ALUMINUM CAP PLS # 25379 IN RANGEBOX AT THE CENTER QUARTER CORNER AND A FOUND 2 1/2" ALUMINUM CAP PLS # 28285 AT THE SOUTH QUARTER CORNER.

BENCHMARK:

COA ID: 3S6508NW001

ELEVATIONS ARE BASED ON THE CITY OF AURORA AND COUNTY OF ADAMS BENCHMARK #3S6508NW001 A CITY OF AURORA AND COUNTY OF ADAMS 3-1/4" ALUMINUM CAP STAMPED (CITY OF AURORA B.M., 3S6508NW001, 2007.) ON A 5' #6 REBAR, IN A 8" PVC PIPE WITH A CAP, LOCATED SOUTHEAST OF THE SECTION CORNER TO SECTIONS 6, 5, 8, 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST, SOUTHEAST OF YELLOW STEEL CONCRETE POST, SOUTH OF THE CENTERLINE OF A DIRT ROAD (64TH AVENUE) AND EAST OF THE INTERSECTION OF E-470 AND 64TH AVENUE.

ELEVATION = 5394.58 (NAVD 1988) DATUM.

COLORADO 811
KNOW WHAT'S BELOW. CALL BEFORE YOU DIG.

CALL 811 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE OR EXCAVATE FOR
MARKING OF UNDERGROUND MEMBER UTILITIES

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OWNER'S REPRESENTATIVE:
SILVERBLUFF COMPANIES
TED L. LAUDICK
303-638-9553

OWNER
C/O WESTSIDE INVESTMENT PARTNERS, INC
KEVIN SMITH
4100 E. MISSISSIPPI AVE., SUITE 500
DENVER, CO 80246
303-984-9800

ENGINEER:
MARTIN/MARTIN, INC.
ATTN: PAT HORN, P.E.
12499 WEST COLFAX AVENUE
LAKEWOOD, COLORADO 80215
PH: (303) 431-6100
PHORN@MARTINMARTIN.COM

FACSIMILE

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(PE SIGNATURE) DATE 08/05/2020

DAVID M. LE
(PRINTED NAME)

Approved for One Year From this Date
08/07/2020

CGE Craig Peal for Victor Rachael — City Engineer — 07/30/2020 Date

THT
Water Department — 08/07/2020 Date

Fire Department — 7-27-2020 Date

Traffic Manager — 7-29-2020 Date

Print Date: Thursday, July 23, 2020		Sheet Revisions			MARTIN/MARTIN CONSULTING ENGINEERS	As Constructed	COVER	Project No./Code
File Name: COVER		Date:	Comments	Init.		No Revisions:		
Horiz. Scale:	Vert. Scale:	07/23/20	FOR COA APPROVAL		12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215 MAIN 303.431.6100 MARTINMARTIN.COM	Revised:	Designer: DL/GP	
Unit Information	Unit Leader				M/M JOB NO.: 19.0281	Void:	Detailer: DB	
							Sheet Subset:	Subset Sheet: 1

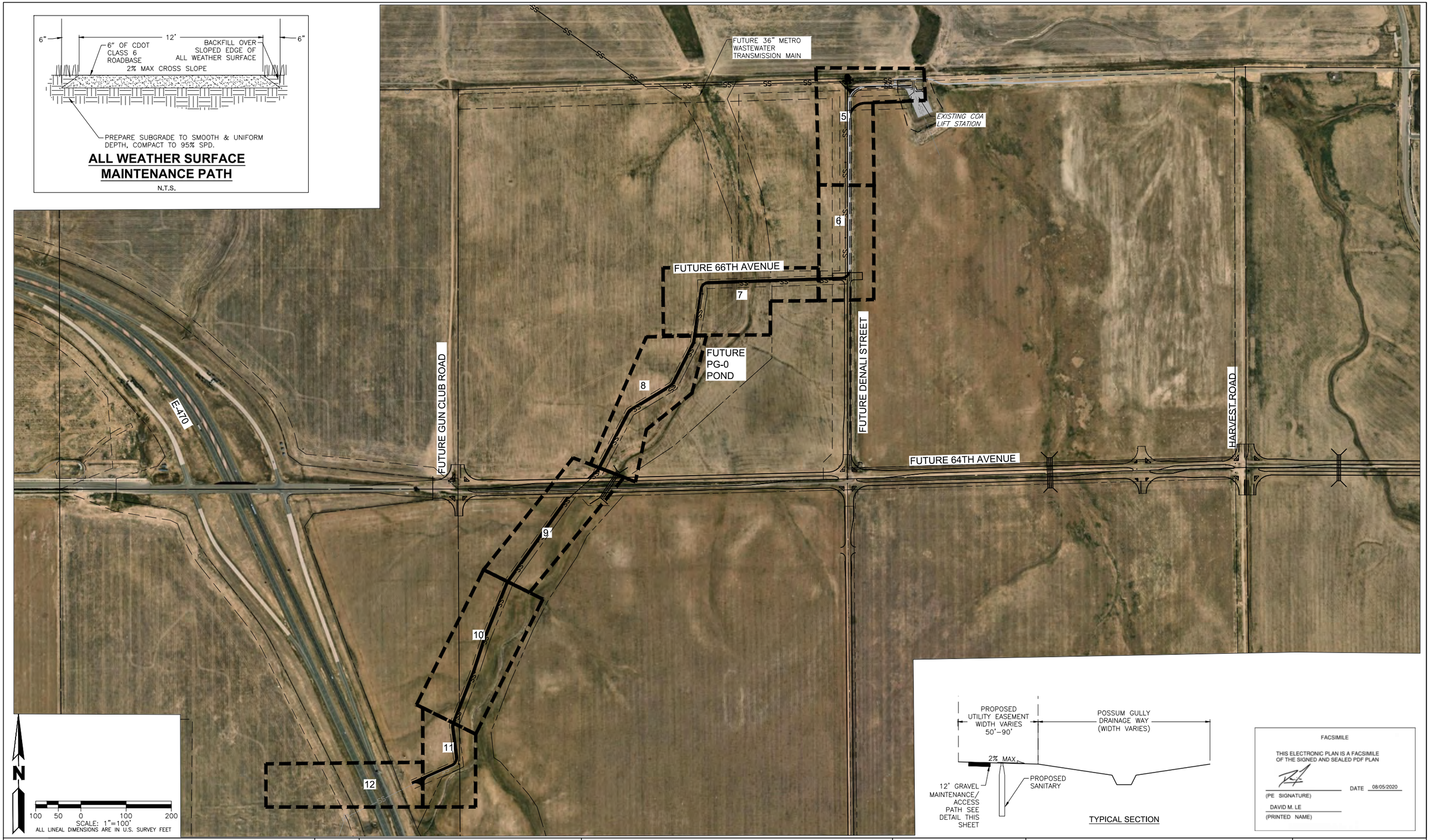
APPROVED ON 08/07/2020

4

220136

ALL WEATHER SURFACE MAINTENANCE PATH

N.T.S.



TYPICAL SECTION

FACSIMILE

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(PE SIGNATURE) DATE 08/05/2020

DAVID M. LE

(PRINTED NAME)

Print Date: Wednesday, August 5, 2020			
File Name: AERIAL			
Horiz. Scale:	Vert. Scale:		
Unit Information	Unit Leader		

Sheet Revisions

Date:	Comments	Init.
08/05/20	FOR COA APPROVAL	

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CONSULTING ENGINEERS
12499 WEST COLFAX AVENUE,
LAKEWOOD, COLORADO 80215
MAIN 303.431.6100
MARTINMARTIN.COM

M/M JOB NO.: 19.0281

As Constructed

No Revisions:

Revised:

Void:

OVERALL UTILITY PLAN

Designer: DL/GP

Detailer: DB

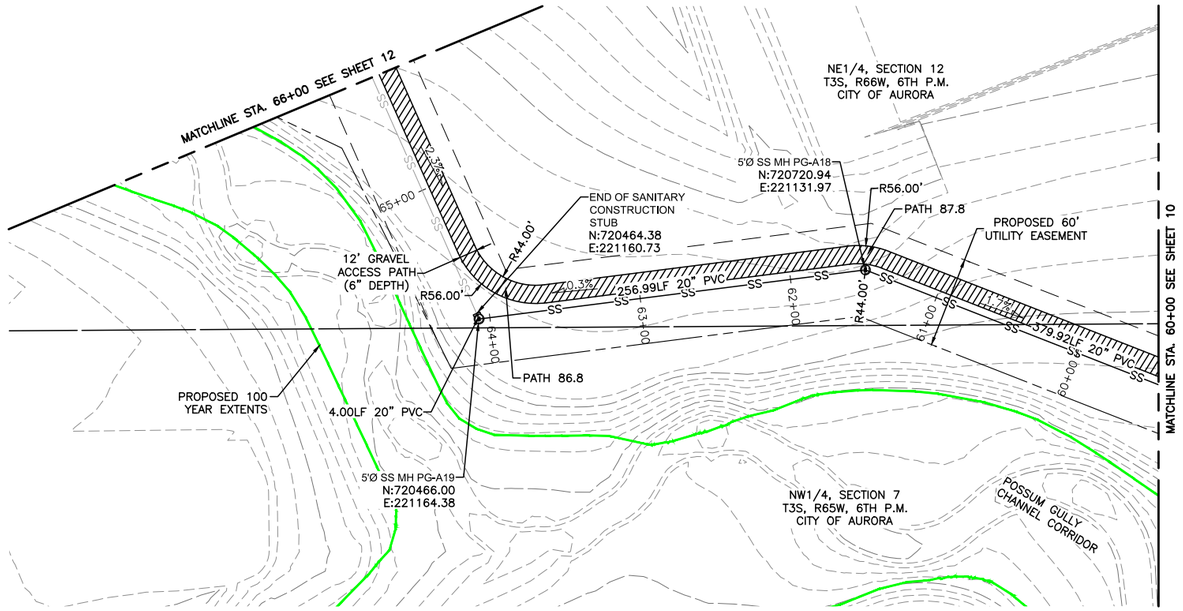
Sheet Subset:

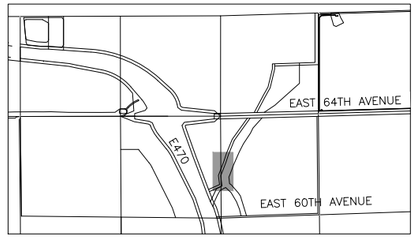
Subset Sheet:

Project No./Code

4

APPROVED ON 08/07/2020





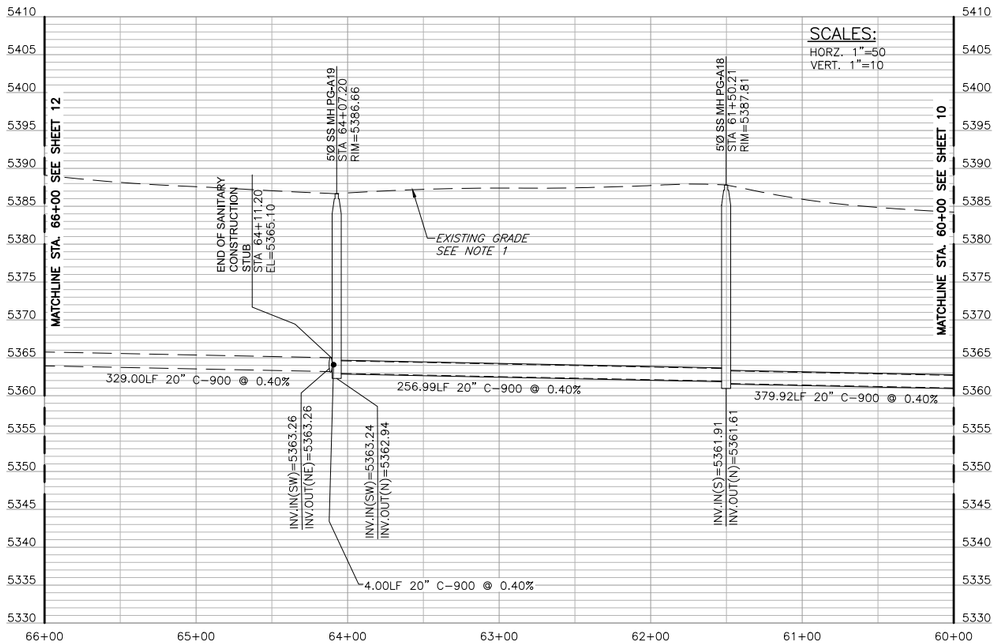
KEYMAP
SCALE: 1"=2000'

NOTES:

1. EXISTING CONTOURS SHOWN ARE ANTICIPATED GRADES THAT WILL BE PRESENT AT TIME OF SANITARY SEWER MAIN INSTALLATION BASED ON CURRENT OVERLOT GRADING OPERATIONS AND PLANNED IMPROVEMENTS
2. CONTRACTOR TO RESTORE DISTURBED AREA BACK TO EXISTING GRADE AND VEGETATION TO EXISTING CONDITION PRIOR TO CONSTRUCTION.
3. MAINTENANCE PATH FROM STATION 17+00 TO 68+00 TO BE GRADED SO THERE IS A MAXIMUM LONGITUDINAL SLOPE OF 5.0% AND A CROSS SLOPE OF 2.0%.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	RIGHT-OF-WAY LINE	
	SECTION LINE	
	EASEMENT	
SS	SANITARY SEWER	SS
(SS)	SANITARY MANHOLE	
(D.W.)	MONITOR WELL	
DRIVE	DESCRIPTIONS	DRIVE



BASIS OF BEARINGS:
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BENCHMARK:

COA ID: 3S6508NW001

ELEVATIONS ARE BASED ON THE CITY OF AURORA AND COUNTY OF ADAMS BENCHMARK #3S6508NW001 A CITY OF AURORA AND COUNTY OF ADAMS 3-1/4" ALUMINUM CAP STAMPED (CITY OF AURORA B.M., 3S6508NW001, 2007.) ON A 5' #6 REBAR, IN A 8" PVC PIPE WITH A CAP, LOCATED SOUTHEAST OF THE SECTION CORNER TO SECTIONS 6, 5, 8, 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST, SOUTHEAST OF YELLOW STEEL CONCRETE POST, SOUTH OF THE CENTERLINE OF A DIRT ROAD (64TH AVENUE) AND EAST OF THE INTERSECTION OF E-470 AND 64TH AVENUE.

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N

50 25 0 50 100
SCALE: 1"=50'
ALL LINEAL DIMENSIONS ARE IN U.S. SURVEY FEET

FACSIMILE

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(PE SIGNATURE)

DATE 08/05/2020

DAVID M. LE
(PRINTED NAME)

Print Date: Wednesday, August 5, 2020		Sheet Revisions		
File Name: SANITARY 62+50 – 69+50		Date:	Comments	Init.
Horiz. Scale:	Vert. Scale:	08/05/20	FOR COA APPROVAL	
Unit Information	Unit Leader			

MARTIN/MARTIN
CONSULTING ENGINEERS
12499 WEST COLFAX AVENUE,
LAKEWOOD, COLORADO 80215
MAIN 303.431.6100
MARTINMARTIN.COM

M/M JOB NO.: 19.0281

As Constructed
No Revisions:
Revised:
Void:

SANITARY PLAN & PROFILE
60+00 - 66+00

Designer: DL/GP
Detailer: DB
Sheet Subset:
Subset Sheet:

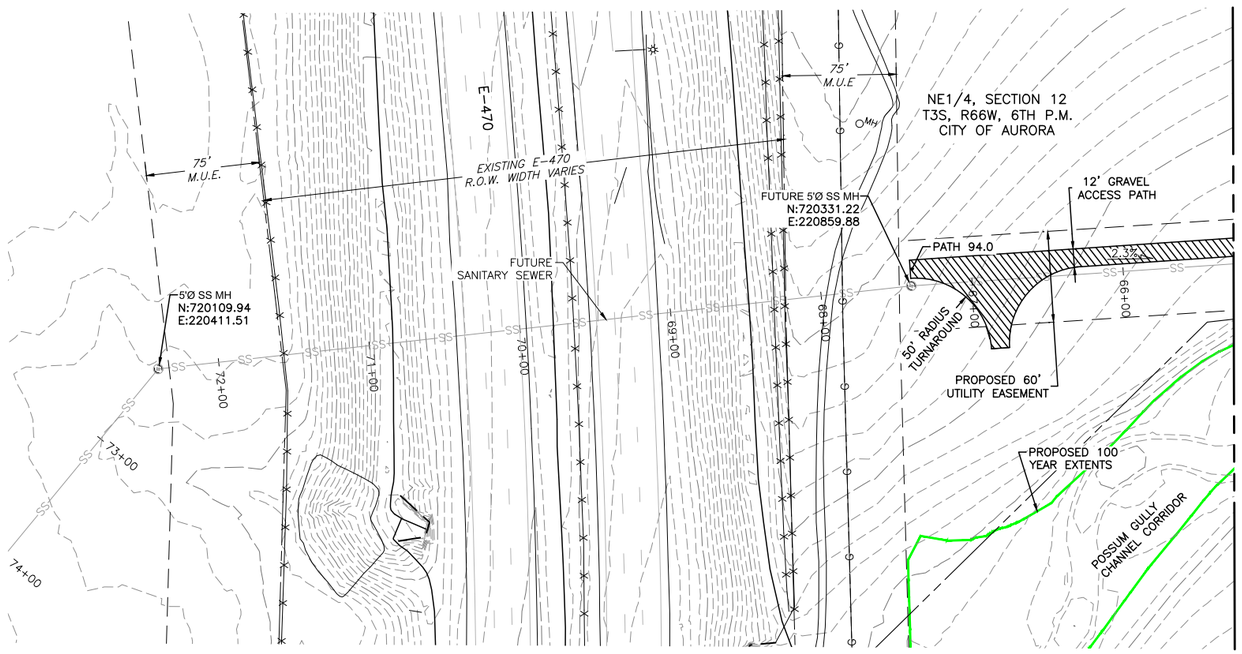
Project No./Code

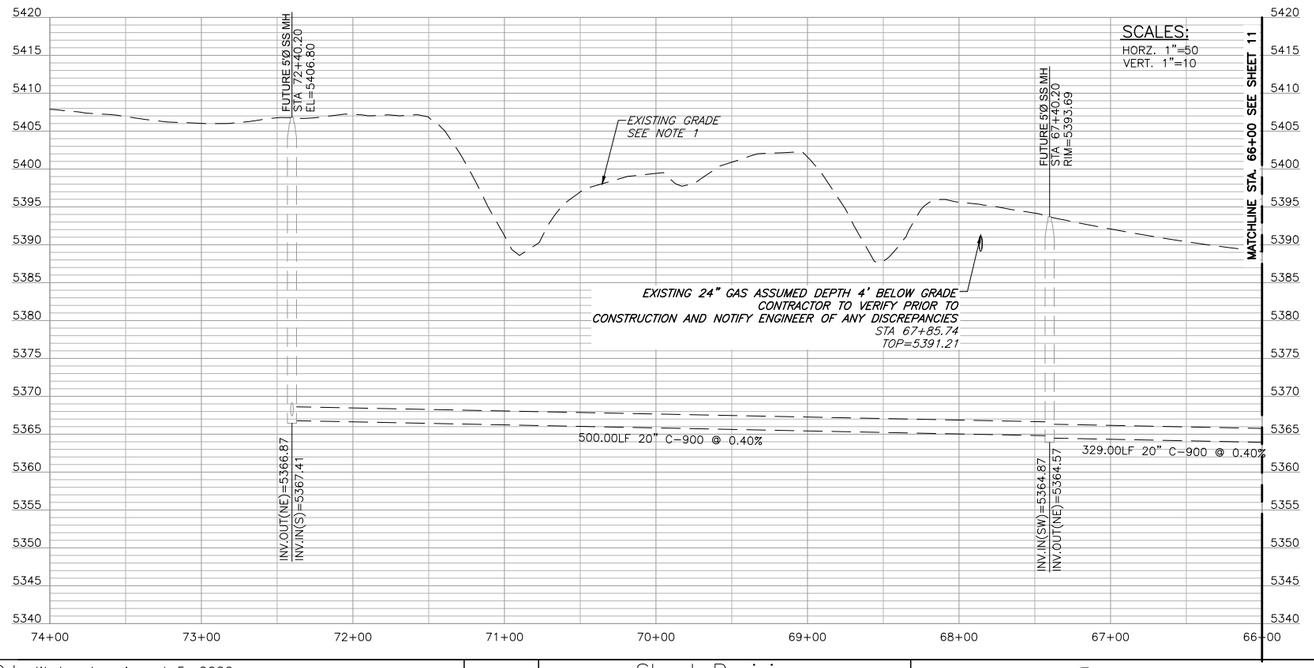
11

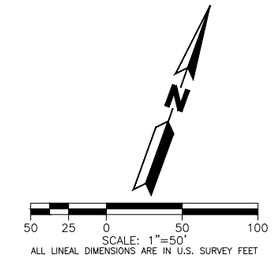
APPROVED ON 08/07/2020

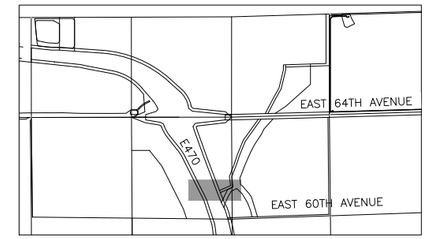
12

220136









KEYMAP
SCALE: 1"=2000'

NOTES:

1. EXISTING CONTOURS SHOWN ARE ANTICIPATED GRADES THAT WILL BE PRESENT AT TIME OF SANITARY SEWER MAIN INSTALLATION BASED ON CURRENT OVERLOT GRADING OPERATIONS AND PLANNED IMPROVEMENTS
2. CONTRACTOR TO RESTORE DISTURBED AREA BACK TO EXISTING GRADE AND VEGETATION TO EXISTING CONDITION PRIOR TO CONSTRUCTION.
3. MAINTENANCE PATH FROM STATION 17+00 TO 68+00 TO BE GRADED SO THERE IS A MAXIMUM LONGITUDINAL SLOPE OF 5.0% AND A CROSS SLOPE OF 2.0%.

LEGEND

EXISTING		PROPOSED
——— – – ———	PROPERTY LINE	——— – – ———
——— – – – ———	RIGHT-OF-WAY LINE	——— – – – ———
——— ———	SECTION LINE	
— — — — —	EASEMENT	— — — — —
– – – – SS – – – –	SANITARY SEWER	——— SS ———
(SS)	SANITARY MANHOLE	○
D.W.	MONITOR WELL	
DRIVE	DESCRIPTIONS	DRIVE

CALL 811 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE OR EXCAVATE FOR
MARKING OF UNDERGROUND MEMBER UTILITIES

MARTIN/MARTIN ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM (PROVIDED) ASCE (38) UTILITY QUALITY LEVEL D (Q_D) AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE SIZE, MATERIAL, HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES (DEPICTED OR NOT DEPICTED) PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.

BASIS OF BEARINGS:

BEARINGS ARE BASED ON AN ASSUMED BEARING OF S00°33'21"E ALONG THE EASTERLY LINE OF THE SOUTHWEST QUARTER OF SECTION 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST OF THE 6TH P.M. BEING MONUMENTED AS A FOUND 3 1/4" ALUMINUM CAP PLS # 25379 IN RANGEBOX AT THE CENTER QUARTER CORNER AND A FOUND 2 1/2" ALUMINUM CAP PLS # 28285 AT THE SOUTH QUARTER CORNER.

BENCHMARK:

COA ID: 3S6508NW001

ELEVATIONS ARE BASED ON THE CITY OF AURORA AND COUNTY OF ADAMS BENCHMARK #3S6508NW001 A CITY OF AURORA AND COUNTY OF ADAMS 3-1/4" ALUMINUM CAP STAMPED (CITY OF AURORA B.M., 3S6508NW001, 2007.) ON A 5' #6 REBAR, IN A 8" PVC PIPE WITH A CAP, LOCATED SOUTHEAST OF THE SECTION CORNER TO SECTIONS 6, 5, 8, 7, TOWNSHIP 3 SOUTH, RANGE 65 WEST, SOUTHEAST OF YELLOW STEEL CONCRETE POST, SOUTH OF THE CENTERLINE OF A DIRT ROAD (64TH AVENUE) AND EAST OF THE INTERSECTION OF E-470 AND 64TH AVENUE.

ELEVATION = 5394.58 (NAVD 1988) DATUM.

FACSIMILE

THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF PLAN

(PE SIGNATURE) DATE 08/05/2020

DAVID M. LE
(PRINTED NAME)

Print Date: Wednesday, August 5, 2020		Sheet Revisions			As Constructed
File Name: SANITARY 69+50 – 72+86		Date:	Comments	Init.	No Revisions:
Horiz. Scale:	Vert. Scale:	08/05/20	FOR COA APPROVAL		Revised:
Unit Information	Unit Leader				Void:

MARTIN/MARTIN
CONSULTING ENGINEERS
12499 WEST COLFAX AVENUE,
LAKEWOOD, COLORADO 80215
MAIN 303.431.6100
MARTINMARTIN.COM

M/M JOB NO.: 19.0281

SANITARY PLAN & PROFILE 66+00 - 73+00

Project No./Code:

Designer: DL/GP
Detailer: DB
Sheet Subset:
Subset Sheet: 12

APPROVED ON 08/07/2020

1

218184

APPROVED ONE YEAR FROM THIS DATE
10.24.18

AURORA WATER	10/12/2018 DATE
CITY ENGINEER	10/23/2018 DATE
NW Fire Department	10/23/2018 DATE

BASIN DESIGNATION — 1 — BASIN FLOW (GPM)
AREA / NO. OF UNITS — 97 — 67.7 / 200.2 — ROUTED FLOW AT DESIGN POINT (GPM)

OFFSITE BASIN DESIGNATION — OS-1 — 673 — BASIN FLOW (GPM)

PROPOSED DEMAND BASIN BOUNDARY
EXISTING DEMAND BASIN BOUNDARY
MAJOR DRAINAGE BASIN BOUNDARY
DESIGN POINT
8"/10" PIPE SIZE/PIPE SIZE WITH 310-1 AND/OR 310-2 (OPTION 2)

WINDLER
TAH 8,000
E-470
PA-9 RESIDENTIAL 70.4 AC 6.3 DU / AC
5 — 443 — 238 / 238
EX. 100-YR FLOODPLAIN
310-1 — 1.31 — 453 / 453
OPTION 1: TO SECOND CREEK LIFT STATION
OPTION 2: FLOWS ARE LIFTED TO GRAVITY LINE IN TIBET AND FIRST CREEK LIFT STATION
Second Creek Watershed
First Creek Watershed
OS-4 635
310-4 — 18.5 — 64 / 64
OS-5 344
OS-6 320
OS-12 451
PA-8 RESIDENTIAL 28.5 AC 6.3 DU / AC
TIBET ROAD
6 — 104 — 56 / 56
PA-5 RESIDENTIAL 25.6 AC 4.1 DU / AC
CONTRACTOR TO REMOVE AND RELAY EX. 24" PVC TO GRADES AND ELEVATIONS SHOWN WITH FILING 1
1 — 276 — 134 / 134
PA-2 ACTIVE ADULT RESIDENTIAL 47.6 AC 5.8 DU / AC
PA-3 ACTIVE ADULT RESIDENTIAL 29.3 AC 5.8 DU / AC
3 — 169 — 82 / 1144
310-2 — 59 — 155 / 155
310-3 — 77 — 189 / 189
E 52ND AVENUE
FIRST CREEK LIFT STATION
ROME ST.
48TH AVENUE
42ND AVENUE
E 38TH AVENUE
PA-14 NEIGHBORHOOD PARK / SCHOOL SITE 6.1 AC
PA-12 18.0 AC
8 — 18 — 62 / 608
7 — 179 — 96 / 547
OS-13 5,157*
*OFFSITE BASIN 13 FLOWS TAKEN FROM HDR FIRST CREEK INTERCEPTOR TECHNICAL MEMORANDUM
PROPOSED GRAVITY FEED TO FIRST CREEK LIFT STATION FROM PROLOGIS LIFT STATION WET WELL BY CITY OF AURORA
PA-1 ACTIVE ADULT RESIDENTIAL 32.6 AC 5.8 DU / AC
2 — 189 — 91 / 225
PA-4 ACTIVE ADULT RESIDENTIAL 27.5 AC 5.8 DU / AC
4 — 159 — 77 / 421
PA-7 RESIDENTIAL 90.9 AC 6.3 DU / AC
9 — 572 — 307 / 5,464
9.1 — 212 — 114 / 5,577
10 — 297 — 159 / 702
PA-6 RESIDENTIAL 60.8 AC 6.3 DU / AC
OPTION 1: GRAVITY OUTFALL NORTHWEST
OPTION 2: FLOWS ARE LIFTED TO FIRST CREEK LIFT STATION THROUGH GVRE
Adams County
Denver County
PICADILLY ROAD
30" BY COA
24" BY COA
NORTH

DIBC 56th & E-470, LLC C/O LC FULLENWIDER, INC

PATH: P:\OAKWOOD GVRE DD\CAD\EXHIBITS\X-FDP_SS1.DWG
PLOTTED BY: MICHAEL LOPES PLOT DATE: 10/4/2018 10:56 AM
XREFS: 20WPUT, 30PUT, W-Lotting Plan, 20Base, X-PIP Exhibits-PA, 30BASE, W-floodplain, 00EUT, 00EMA,

DATE	REVISION DESCRIPTION

Drawing Name	X-FDP_SS1.dwg
Job Number	Oakwood GVRE FDP F1&2
Prepared For	CITY OF AURORA

0 200 400 800
1 inch = 400 ft. Horizontal

Designer	Drafter	Checked
LMA	LMA	TAJ

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Highlands Ranch, CO 80129 (303) 730-0434
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Construction Management Civil Engineering Surveying

GREEN VALLEY - AMENDMENT 1
MASTER UTILITY REPORT
OVERALL MAP

Sheet SS1 1 of 2
Date SEPTEMBER 2018

APPROVED ON 10.24.18

2

218184

APPROVED ONE YEAR FROM THIS DATE
10.24.18

AURORA WATER — 10/12/2018 DATE

CITY ENGINEER — 10/23/2018 DATE

NW Fire Department — 10/23/2018 DATE

BASIN DESIGNATION — 1 — BASIN FLOW (GPM) 67.7 — AREA / NO. OF UNITS 97 — ROUTED FLOW AT DESIGN POINT (GPM) 200.2

OFFSITE BASIN DESIGNATION — OS-1 — BASIN FLOW (GPM) 673

PROPOSED DEMAND BASIN BOUNDARY

EXISTING DEMAND BASIN BOUNDARY

DESIGN POINT

8"/10" PIPE SIZE/PIPE SIZE WITH 310-1 AND/OR 310-2 (OPTION 2)

WINDLER

TAH 8,000

E-470

310-1 | 1.31 | 453 | 453

OPTION 1: TO SECOND CREEK LIFT STATION
OPTION 2: FLOWS ARE LIFTED TO GRAVITY LINE IN TIBET AND FIRST CREEK LIFT STATION

Second Creek Watershed

First Creek Watershed

OS-4 635

310-4 | 18.5 | 64 | 64

OS-5 344

OS-6 320

Fire Department

5 | 443 | 238 | 238

EX. 100-YR FLOODPLAIN

OS-12 451

TIBET ROAD

6 | 104 | 56 | 56

EX. 36"

CONTRACTOR TO REMOVE AND RELAY EX. 24" PVC TO GRADES AND ELEVATIONS SHOWN WITH FILING 1

EX. 42"

8 | 18 | 62 | 608

7 | 179 | 96 | 547

1 | 276 | 134 | 134

3 | 169 | 82 | 1144

310-2 | 59 | 155 | 155

310-3 | 77 | 189 | 189

E 52ND AVENUE

FIRST CREEK LIFT STATION

ROME ST.

E 38TH AVENUE

OS-13 5,157*

*OFFSITE BASIN 13 FLOWS TAKEN FROM HDR FIRST CREEK INTERCEPTOR TECHNICAL MEMORANDUM

PROPOSED GRAVITY FEED TO FIRST CREEK LIFT STATION FROM PROLOGIS LIFT STATION WET WELL BY CITY OF AURORA

2 | 189 | 91 | 225

4 | 159 | 77 | 421

9.1 | 212 | 114 | 5,577

10 | 297 | 159 | 702

9 | 572 | 307 | 5,464

48TH AVENUE

42ND AVENUE

30" BY COA

24" BY COA

PICADILLY ROAD

OPTION 1: GRAVITY OUTFALL NORTHWEST
OPTION 2: FLOWS ARE LIFTED TO FIRST CREEK LIFT STATION THROUGH GVRE

Adams County

Denver County

DIBC 56th & E-470, LLC C/O LC FULLENWIDER, INC

NORTH

PATH: P:\OAKWOOD GVRE DD\CADD\EXHIBITS\X-FDP_SS2.DWG
PLOTTED BY: MICHAEL LOPES PLOT DATE: 10/4/2018 11:00 AM
XREFS: 20WPUT, 30PUT, W-Lotting Plan, 20Base, X-PIP Exhibits-PA, 30BASE, W-floodplain, 00EUT, 0DEMA,

DATE	REVISION DESCRIPTION

Drawing Name: X-FDP_SS2.dwg
Job Number: Oakwood GVRE FDP F1&2
Prepared For: CITY OF AURORA
Designer: LMA | Drafter: LMA | Checked: TAJ

0 200 400 800
1 inch = 400 ft. Horizontal

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GREEN VALLEY - AMENDMENT 1

MASTER UTILITY REPORT

SCHEMATIC MAP

Sheet SS2 2 of 2

Date SEPTEMBER 2018

APPROVED ON 10.24.18

3

218184

APPROVED ONE YEAR FROM THIS DATE
10.24.18

AURORA WATER	10/12/2018 DATE
CITY ENGINEER	10/23/2018 DATE
NW Fire Department	10/23/2018 DATE

6/72 BASIN
NO. OF UNITS/ACRES
DEMAND BASIN BOUNDARY

Color Coding Legend
Pipe: Diameter (in)

<=	8.0
<=	12.0
<=	16.0
<=	24.0
	Other

Color Coding Legend
Junction: Pressure (psi)

<=	40.0
<=	60.0
<=	80.0
<=	100.0
<=	120.0
	Other

E-470

PA-9 RESIDENTIAL 70.4 AC 6.3 DU / AC — 9/443

PA-39 NEIGHBORHOOD PARK 3.0 AC — 39/3.0

PA-8 RESIDENTIAL 28.5 AC 6.3 DU / AC — 8/179

PA-41 POCKET PARK 0.5 AC — 41/0.5

PA-12 SCHOOL SITE 18.0 AC — 10/18

PA-14 NEIGHBORHOOD PARK 5.8 AC — 14/5.8

PA-13 NEIGHBORHOOD PARK 5.0 AC — 13/5.0

PA-11 CLUBHOUSE 1.5 AC — 11/1.5

PA-5 RESIDENTIAL 25.6 AC 4.1 DU / AC — 5/104

PA-2 ACTIVE ADULT RESIDENTIAL 47.6 AC 5.8 DU / AC — 2/276

PA-3 ACTIVE ADULT RESIDENTIAL 29.3 AC 5.8 DU / AC — 3/169

PA-4 ACTIVE ADULT RESIDENTIAL 27.5 AC 5.8 DU / AC — 4/159

PA-1 ACTIVE ADULT RES. 32.6 AC 5.8 DU / AC — 1/189

PA-15 NEIGHBORHOOD PARK 4.5 AC — 15/4.5

PA-10 CLUBHOUSE 3.5 AC — 12/3.5

PA-31 POCKET PARK 0.5 AC — 31/0.5

PA-32 POCKET PARK 0.5 AC — 32/0.5

PA-38 POCKET PARK 0.9 AC — 6/509

PA-6 RESIDENTIAL 80.8 AC 6.3 DU / AC

PA-7 RESIDENTIAL 90.9 AC 6.3 DU / AC — 7/572

PA-40 POCKET PARK 3.0 AC — 40/3.0

WINDLER

TIBET ROAD

ROME ST.

PICADILLY ROAD

E 52ND AVENUE

48TH AVENUE

42ND AVENUE

E 38TH AVENUE

EX. 24" WATER

Adams County

Denver County

10.24.18

NORTH

PATH: P:\OAKWOOD GVRE DD\UTILITY\WATER\GVRE WATER MODEL\GVRE WATER MODEL.DWG
PLOTTED BY: MICHAEL LOPES PLOT DATE: 10/4/2018 10:57 AM
XREFS: 00eut, 00ema, 00LandPlan, 20put, 20base, 30base, W-Lotting Plan,

DATE	REVISION DESCRIPTION

Drawing Name	GVRE Water Model.dwg
Job Number	Oakwood GVRE FDP F1&2
Prepared For	CITY OF AURORA
Designer	LMA
Drafter	LMA
Checked	TAJ

0 150 300 600
1 inch = 300 ft. Horizontal

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GREEN VALLEY - AMENDMENT 1
MASTER UTILITY REPORT
WATER EXHIBIT

Sheet WT1 1 of 2

Date AUGUST 2018

APPROVED ON 10.24.18

4

218184

APPROVED ONE YEAR FROM THIS DATE
10.24.18

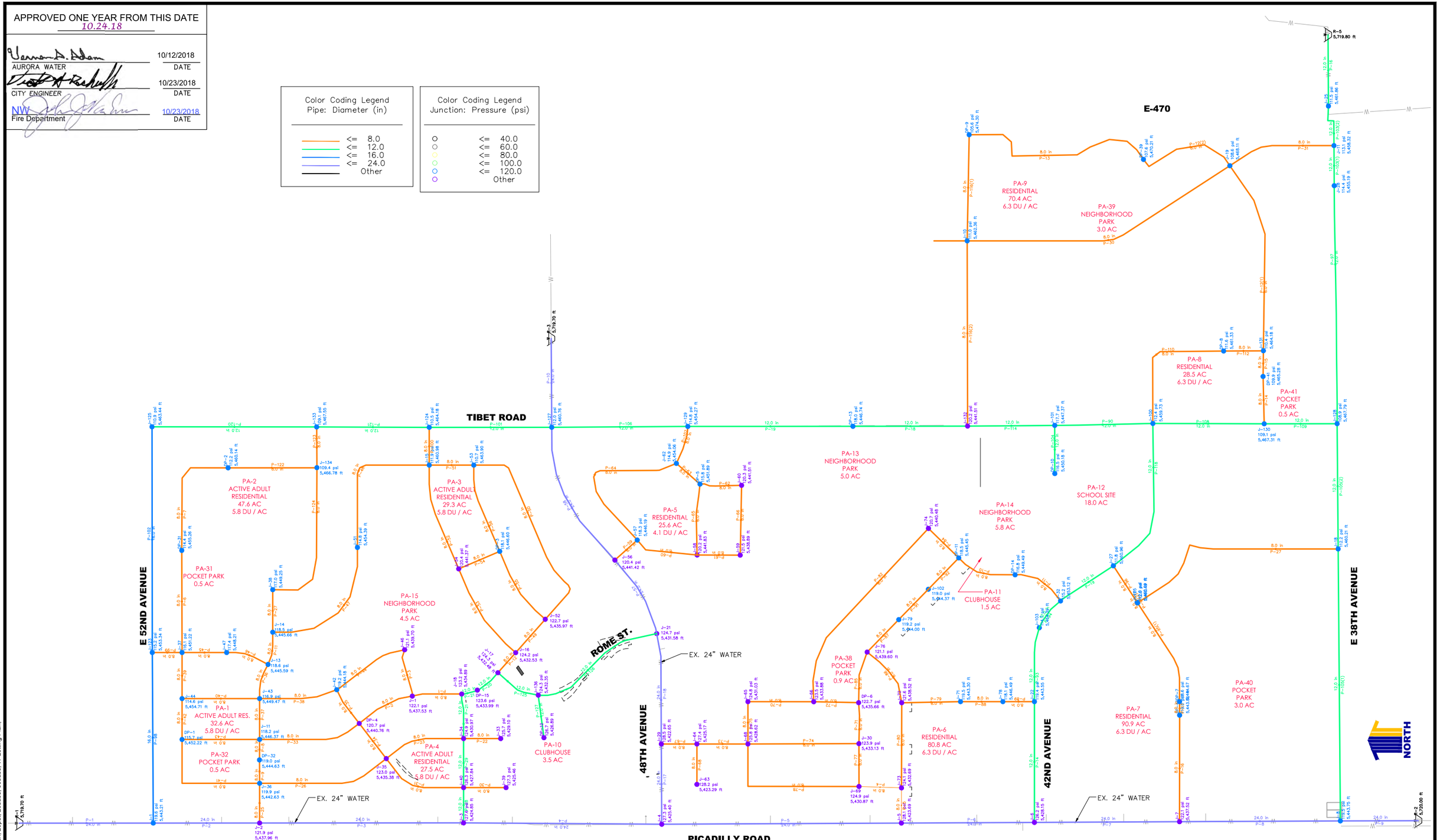
AURORA WATER	10/12/2018 DATE
CITY ENGINEER	10/23/2018 DATE
NW Fire Department	10/23/2018 DATE

Color Coding Legend
Pipe: Diameter (in)

<=	8.0
<=	12.0
<=	16.0
<=	24.0
	Other

Color Coding Legend
Junction: Pressure (psi)

<=	40.0
<=	60.0
<=	80.0
<=	100.0
<=	120.0
	Other



PATH: P:\OAKWOOD GVRE DD\UTILITY\WATER\GVRE WATER MODEL\GVRE WATER MODEL.DWG
PLOTTED BY: MICHAEL LOPES PLOT DATE: 10/4/2018 10:57 AM
XREFS: 00out, 00ema, 00LandPlan, 20put, 20base, 30base, W-Lotting Plan,

DATE	REVISION DESCRIPTION

Drawing Name: GVRE Water Model.dwg
Job Number: Oakwood GVRE FDP F1&2
Prepared For: CITY OF AURORA

0 150 300 600
1 inch = 300 ft. Horizontal

Designer	Drafter	Checked
LMA	LMA	TAJ

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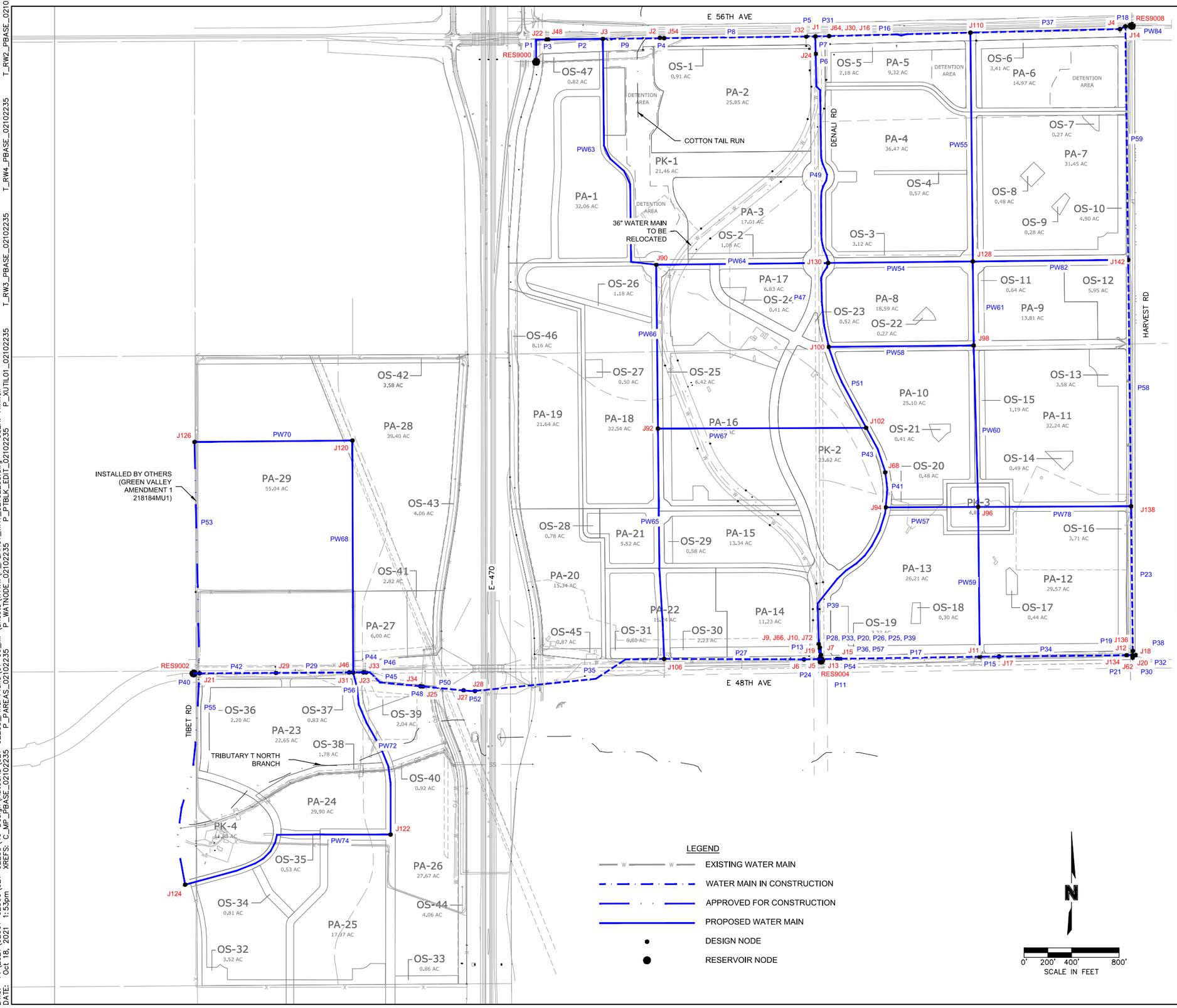
GREEN VALLEY - AMENDMENT 1
MASTER UTILITY REPORT
WATER EXHIBIT

Sheet WT2 1 of 2
Date AUGUST 2018

APPROVED ON 10.24.18



Pipe ID	Diameter (in)	Pipe ID	Diameter (in)
P1	24	P44	24
P10	24	P45	24
P11	24	P46	24
P12	24	P47	36
P13	30	P48	24
P14	24	P49	36
P15	24	P5	24
P16	24	P50	24
P17	24	P51	36
P18	24	P52	24
P19	24	P53	12
P2	24	P54	24
P20	6	P55	12
P21	24	P56	24
P22	6	P57	36
P23	24	P58	24
P24	24	P59	24
P25	36	P6	36
P26	6	P7	36
P27	24	P8	24
P28	36	P9	24
P29	24	PW54	8
P3	36	PW55	8
P30	24	PW57	8
P31	24	PW58	8
P32	24	PW59	8
P33	36	PW60	8
P34	24	PW61	8
P35	24	PW63	8
P36	36	PW64	8
P37	24	PW65	8
P38	24	PW66	8
P39	36	PW67	8
P4	24	PW68	12
P40	24	PW70	12
P41	36	PW72	12
P42	24	PW74	12
P43	36	PW78	8
		PW82	12
		PW84	24

NOTES:
1. SAMPLING STATIONS WILL BE REQUIRED. THE LOCATIONS WILL BE DETERMINED DURING DESIGN.

Approved For One Year From This Date

City Engineer — Date

Fire Department — Date

Water Department — Date

olsson
1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072
www.olsson.com

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REV. NO.	DATE	REVISIONS DESCRIPTION
		REVISIONS

WATER MASTER PLAN

WINDLER MIXED USE DEVELOPMENT
MASTER UTILITY PLAN

2021

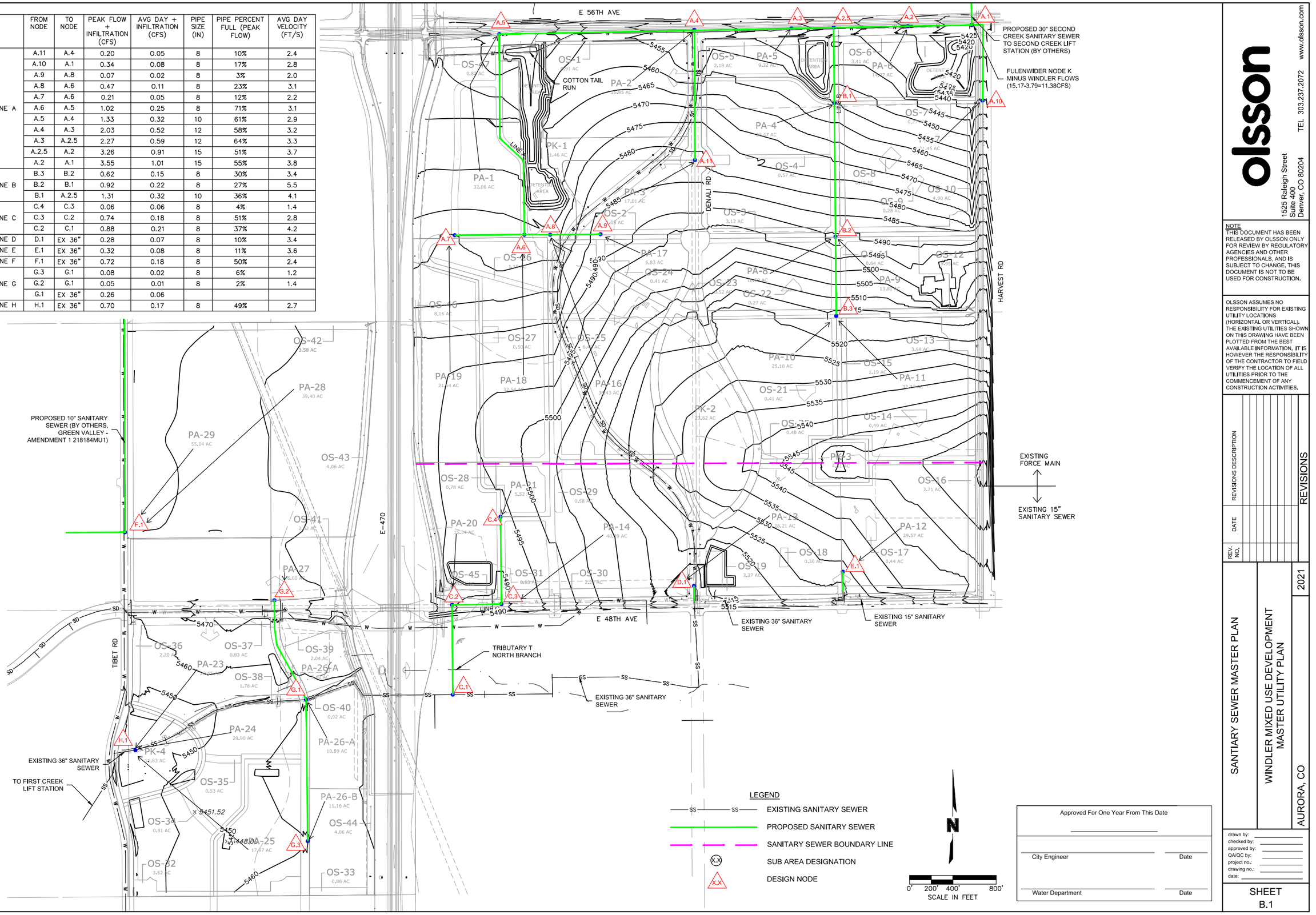
AURORA, CO

drawn by:
checked by:
approved by:
QA/QC by:
project no.:
drawing no.:
date:

SHEET
A.1

DWG: F:\2021\02001-02500\021-02235\40-Design\AutoCAD\021-02235_Final Plans\01-06_MP\Sheets\WTWW\P_PLAN01_WAT_02102235.dwg USER: rfinnell
DATE: Oct 18, 2021 1:53pm XREFS: C_MP_PBASE_02102235 P_PAREAS_02102235 P_WATNODE_02102235 P_PTBLK_EDIT_02102235 P_XUTIL01_02102235 T_RW3_PBASE_02102235 T_RW4_PBASE_02102235 T_RW2_PBASE_02102235

		FROM NODE	TO NODE	PEAK FLOW + INFILTRATION (CFS)	AVG DAY + INFILTRATION (CFS)	PIPE SIZE (IN)	PIPE PERCENT FULL (PEAK FLOW)	AVG DAY VELOCITY (FT/S)
SECOND CREEK	LINE A	A.11	A.4	0.20	0.05	8	10%	2.4
		A.10	A.1	0.34	0.08	8	17%	2.8
		A.9	A.8	0.07	0.02	8	3%	2.0
		A.8	A.6	0.47	0.11	8	23%	3.1
		A.7	A.6	0.21	0.05	8	12%	2.2
		A.6	A.5	1.02	0.25	8	71%	3.1
		A.5	A.4	1.33	0.32	10	61%	2.9
		A.4	A.3	2.03	0.52	12	58%	3.2
		A.3	A.2.5	2.27	0.59	12	64%	3.3
		A.2.5	A.2	3.26	0.91	15	51%	3.7
		A.2	A.1	3.55	1.01	15	55%	3.8
	LINE B	B.3	B.2	0.62	0.15	8	30%	3.4
		B.2	B.1	0.92	0.22	8	27%	5.5
		B.1	A.2.5	1.31	0.32	10	36%	4.1
FIRST CREEK	LINE C	C.4	C.3	0.06	0.06	8	4%	1.4
		C.3	C.2	0.74	0.18	8	51%	2.8
		C.2	C.1	0.88	0.21	8	37%	4.2
	LINE D	D.1	EX 36"	0.28	0.07	8	10%	3.4
	LINE E	E.1	EX 36"	0.32	0.08	8	11%	3.6
	LINE F	F.1	EX 36"	0.72	0.18	8	50%	2.4
	LINE G	G.3	G.1	0.08	0.02	8	6%	1.2
		G.2	G.1	0.05	0.01	8	2%	1.4
		G.1	EX 36"	0.26	0.06			
	LINE H	H.1	EX 36"	0.70	0.17	8	49%	2.7



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REV. NO.	DATE	REVISIONS DESCRIPTION
		REVISIONS

Approved For One Year From This Date

City Engineer — Date

Water Department — Date

drawn by:
checked by:
approved by:
QA/QC by:
project no.:
drawing no.:
date:

SANTIARY SEWER MASTER PLAN

WINDLER MIXED USE DEVELOPMENT
MASTER UTILITY PLAN

AURORA, CO

2021

SHEET
B.1

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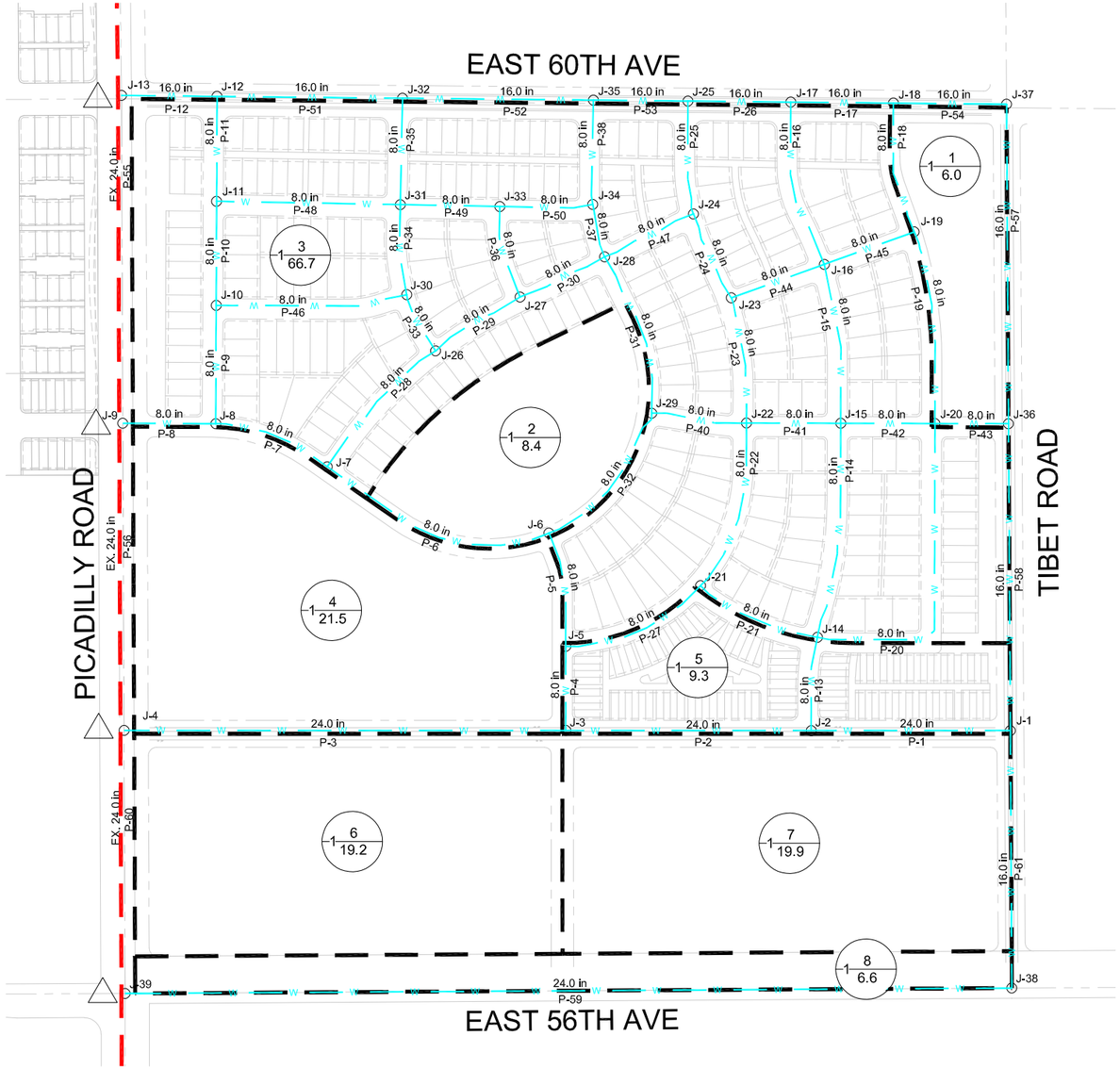
DATE: Oct 15, 2021 9:57am XREFS: P_MP_PUTIL01_02102235 P_XUTIL01_02102235 C_MP_PBASE_02102235 P_PAREAS_02102235 P_PTBLK_EDIT_02102235 T_RW3_PBASE_02102235 T_RW4_PBASE_02102235 T_RW2_PBASE_02102235



200 100 0 200 400

SCALE: 1" = 200'

LEGEND

- Z: XX / XX — SERVICE AREA ACRES, Z= PHASE
- POINT OF WATER CONNECTION TO CITY OF AURORA SERVICE
- PROPOSED WATER LINE
- EXISTING WATER LINE
- SERVICE AREA BOUNDARY
- JUNCTION
- EXISTING WATER LINE TO BE REMOVED

No.	Revisions	Date	Init.	Appr.	Date

CVL CONSULTANTS
10333 E. Dry Creek Rd
Suite 240
Englewood, CO 80112
Tel: 720-482-9526
CVLINC.NET

LENNAR CORPORATION
9781 S. MERIDIAN BLVD., SUITE 120
ENGLEWOOD, CO 80112
TEL: (303)-754-0600

MOFFIT TOWN CENTER
MASTER UTILITY REPORT
WATER MODEL LAYOUT

PREPARED UNDER THE SUPERVISION OF

JOSEPH F. FERRIS
COLORADO P.E. 55846

APPROVED ONE YEAR FROM THIS DATE

CITY ENGINEER — DATE

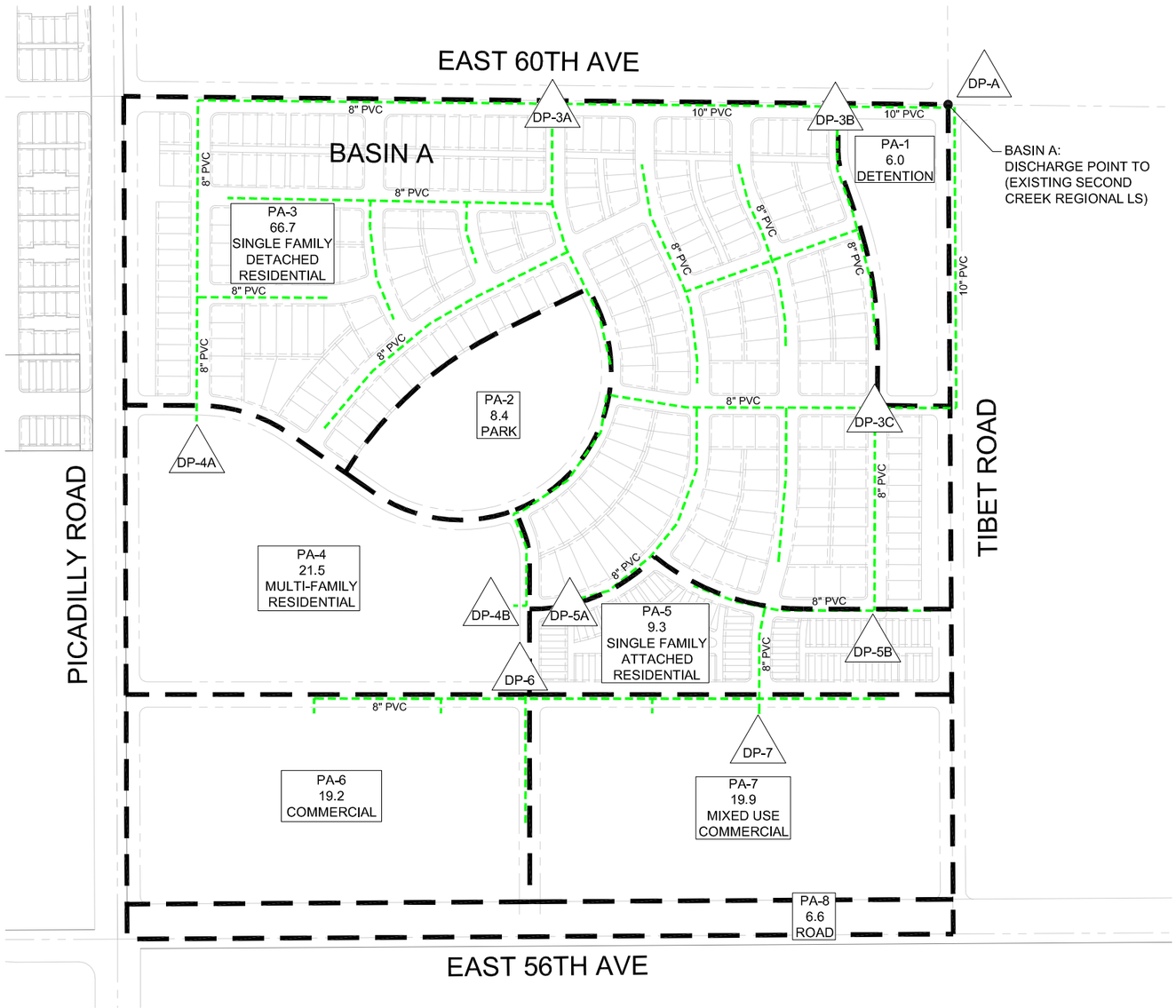
WATER DEPARTMENT — DATE

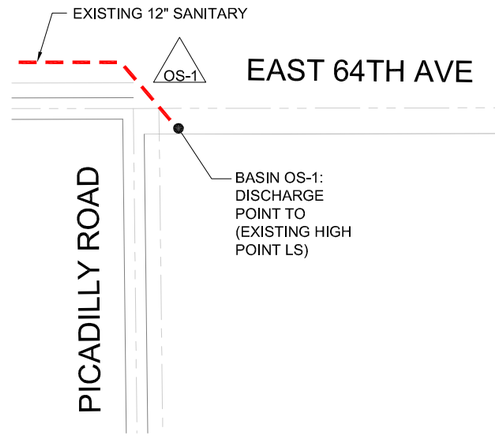
FIRE DEPARTMENT — DATE

SCALE:	FILE NO:
AS SHOWN	8130323701

DRAWN BY:	CHECKED BY:	DATE:
SMG	SJK	JULY 2021

SHEET NUMBER WL1





BASIN A	ADF (GPD)	PEAK DAY FLOW WITH INFILTRATION (CFS)
MOFFIT	205,006	1.30
310 WEST	76,349	0.48
AVELON (NORTH)	61,876	0.39

BASIN OS-1	ADF (GPD)	PEAK DAY FLOW WITH INFILTRATION (CFS)
AVELON (NORTH)	37,810	0.24

200 100 0 200 400

SCALE: 1" = 200'

LEGEND

XX / XX — COLLECTION BASIN ACRES LAND USE

XX — DESIGN POINT

PROPOSED SANITARY LINE

EXISTING SANITARY LINE

BASIN BOUNDARY

No.	Revisions	Date	Init.	Appr.	Date

CVL CONSULTANTS
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9781 S. MERIDIAN BLVD., SUITE 120
ENGLEWOOD, CO 80112
TEL: (303)-754-0600

MOFFIT TOWN CENTER
MASTER UTILITY REPORT
SANITARY MODEL LAYOUT

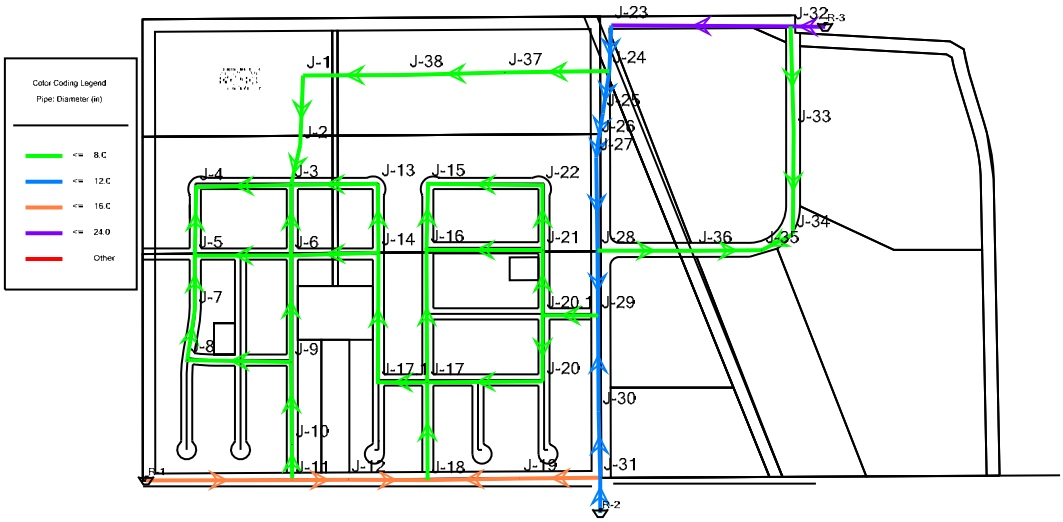
SCALE: AS SHOWN
FILE NO: 8130323701
DRAWN BY: SMG
CHECKED BY: SJK
DATE: JULY 2021

SHEET NUMBER SS1

APPENDIX B – Water System Calculations

TABLE 1: ON-SITE WATER DEMANDS													
Planning Area	Max # of SFD/SFD Units	Residential People/Units	Total People	Non-residential Acreage	Use	Demand (GPD/Acre)	Avg. Daily Demand (GPD)	Avg. Daily Demand (GPM)	Max. Daily Demand (GPD)	Max. Daily Demand (GPM)	Max. Hour Demand (GPD)	Max. Hour Demand (GPM)	Node(s)
PA-45							49146.00	34.13	137608.80	95.56	193617.00	134.46	J-5, J-6, J-8, J-9
	154	2.77	426		AA Residential		43026.00	29.88	120472.80	83.66	193617.00	134.46	
				3.4	PA-59 & 1/2 of PA-62 & PA-63	1800	6120.00	4.25	17136.00	11.90	N/A	N/A	
PA-46							69750.00	48.44	195300.00	135.63	286335.00	198.84	J-16, J-17, J-20, J-21
	227	2.77	630		AA Residential		63630.00	44.19	178164.00	123.73	286335.00	198.84	
				3.4	PA-60 & 1/2 of PA-62 & PA-63	1800	6120.00	4.25	17136.00	11.90	N/A	N/A	
PA-47							31457.00	21.85	88079.60	61.17	139531.50	96.90	J-3, J-4, J-5, J-6
	111	2.77	307		AA Residential		31007.00	21.53	86819.60	60.29	139531.50	96.90	
				0.25	1/4 of PA-61	1800	450.00	0.31	1260.00	0.88	N/A	N/A	
PA-48							44587.00	30.96	124843.60	86.70	198616.50	137.93	J-13, J-14, J-15, J-22
	158	2.77	437		AA Residential		44137.00	30.65	123583.60	85.82	198616.50	137.93	
				0.25	1/4 of PA-61	1800	450.00	0.31	1260.00	0.88	N/A	N/A	
PA-49	192	2.77	532		MF Residential		53732.00	37.31	150449.60	104.48	241794.00	167.91	J-30, J-31
PA-50				9.6	Commercial	1500	14400.00	10.00	40320.00	28.00	64800.00	45.00	J-28, J-29
PA-51				4.0	Commercial	1500	6000.00	4.17	16800.00	11.67	27000.00	18.75	J-26, J-28
PA-52				22.0	Commercial	1500	33000.00	22.92	92400.00	64.17	148500.00	103.13	J-24, J-33, J-36
PA-53				14.1	Commercial	1500	21150.00	14.69	59220.00	41.13	95175.00	66.09	J-36, J-35
PA-54				29.7	Commercial	1500	44550.00	30.94	124740.00	86.63	200475.00	139.22	J-34, J-35
PA-55				24.5	Commercial	1500	36750.00	25.52	102900.00	71.46	165375.00	114.84	J-32, J-33
PA-56							30750.00	21.35	86100.00	59.79	136350.00	94.69	J-1, J-24, J-26
				20.2	Commercial	1500	30300.00	21.04	84840.00	58.92	136350.00	94.69	
				0.25	1/4 of PA-61	1800	450.00	0.31	1260.00	0.88	N/A	N/A	
PA-57							21600.00	15.00	60480.00	42.00	95175.00	66.09	J-1, J-2
				14.1	Commercial	1500	21150.00	14.69	59220.00	41.13	95175.00	66.09	
				0.25	1/4 of PA-61	1800	450.00	0.31	1260.00	0.88	N/A	N/A	

Green Valley Master Plan Amendment 2



Average Daily

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-27	5,451.53	<Collection: 0 items>	0	5,719.98	116
J-25	5,448.23	<Collection: 0 items>	0	5,719.98	118
J-24	5,446.24	<Collection: 0 items>	0	5,719.98	118
J-34	5,450.49	<Collection: 1 item>	15	5,719.96	117
J-28	5,459.37	<Collection: 2 items>	7	5,719.97	113
J-16	5,460.94	<Collection: 1 item>	24	5,719.89	112
J-6	5,460.06	<Collection: 2 items>	28	5,719.85	112
J-3	5,450.53	<Collection: 1 item>	11	5,719.85	117
J-26	5,450.58	<Collection: 1 item>	2	5,719.98	117
J-2	5,449.35	<Collection: 1 item>	15	5,719.85	117
J-10	5,457.17	<Collection: 0 items>	0	5,719.96	114
J-33	5,443.60	<Collection: 2 items>	24	5,719.97	120
J-12	5,457.77	<Collection: 0 items>	0	5,719.99	113
J-29	5,464.77	<Collection: 1 item>	5	5,719.97	110
J-30	5,467.49	<Collection: 1 item>	19	5,719.98	109
J-19	5,461.89	<Collection: 0 items>	0	5,719.99	112
J-9	5,452.08	<Collection: 1 item>	17	5,719.88	116
J-8	5,457.91	<Collection: 1 item>	17	5,719.86	113
J-7	5,461.52	<Collection: 0 items>	0	5,719.85	112
J-5	5,453.98	<Collection: 2 items>	28	5,719.85	115
J-21	5,467.57	<Collection: 1 item>	24	5,719.90	109
J-20	5,457.66	<Collection: 1 item>	24	5,719.91	113
J-17	5,451.08	<Collection: 1 item>	24	5,719.91	116
J-1	5,446.52	<Collection: 1 item>	15	5,719.86	118
J-32	5,437.32	<Collection: 1 item>	13	5,720.00	122
J-23	5,442.87	<Collection: 0 items>	0	5,720.00	120
J-15	5,456.01	<Collection: 1 item>	15	5,719.89	114
J-22	5,462.94	<Collection: 1 item>	15	5,719.89	111
J-4	5,445.33	<Collection: 1 item>	11	5,719.85	119
J-13	5,455.47	<Collection: 1 item>	15	5,719.85	114
J-14	5,459.83	<Collection: 1 item>	15	5,719.86	113
J-11	5,460.00	<Collection: 0 items>	0	5,719.99	112
J-18	5,458.80	<Collection: 0 items>	0	5,719.99	113
J-31	5,464.96	<Collection: 1 item>	19	5,719.99	110
J-20.1	5,461.46	<Collection: 0 items>	0	5,719.92	112
J-17.1	5,448.26	<Collection: 0 items>	0	5,719.89	118
J-35	5,453.31	<Collection: 3 items>	34	5,719.96	115
J-36	5,461.70	<Collection: 1 item>	7	5,719.96	112
J-37	5,453.87	<Collection: 1 item>	21	5,719.91	115
J-38	5,451.88	<Collection: 1 item>	21	5,719.87	116

Average Daily

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-5	247	J-25	J-24	12.0	PVC	150.0	-62	0.18	0.000
P-3(2)	534	J-28	J-27	12.0	PVC	150.0	-60	0.17	0.000
P-25	405	J-6	J-3	8.0	PVC	150.0	11	0.07	0.000
P-4(1)	101	J-27	J-26	12.0	PVC	150.0	-60	0.17	0.000
P-4(2)	154	J-26	J-25	12.0	PVC	150.0	-62	0.18	0.000
P-29	235	J-3	J-2	8.0	PVC	150.0	-4	0.03	0.000
P-21(2)	598	J-33	J-34	8.0	PVC	150.0	26	0.17	0.000
P-3(1)(2)	372	J-29	J-28	12.0	PVC	150.0	-23	0.06	0.000
P-3(1)(1)(2)	553	J-30	J-29	12.0	PVC	150.0	72	0.21	0.000
P-24(2)(1)	473	J-10	J-9	8.0	PVC	150.0	92	0.59	0.000
P-24(2)(2)	611	J-9	J-6	8.0	PVC	150.0	39	0.25	0.000
P-31	597	J-9	J-8	8.0	PVC	150.0	36	0.23	0.000
P-32	290	J-8	J-7	8.0	PVC	150.0	19	0.12	0.000
P-33	313	J-7	J-5	8.0	PVC	150.0	19	0.12	0.000
P-34	554	J-5	J-6	8.0	PVC	150.0	-12	0.08	0.000
P-22(2)	669	J-21	J-16	8.0	PVC	150.0	11	0.07	0.000
P-23(1)	760	J-16	J-17	8.0	PVC	150.0	-25	0.16	0.000
P-36	665	J-20	J-17	8.0	PVC	150.0	12	0.08	0.000
P-27(2)	399	J-1	J-2	8.0	PVC	150.0	19	0.12	0.000
P-37	199	R-3	J-32	24.0	Steel	140.0	203	0.14	0.000
P-38	1,032	J-32	J-23	24.0	Steel	140.0	139	0.10	0.000
P-39	262	J-23	J-24	12.0	PVC	150.0	139	0.40	0.000
P-40	595	J-32	J-33	8.0	PVC	150.0	51	0.32	0.000
P-42	379	J-16	J-15	8.0	PVC	150.0	12	0.08	0.000
P-43	658	J-15	J-22	8.0	PVC	150.0	-3	0.02	0.000
P-44	373	J-22	J-21	8.0	PVC	150.0	-19	0.12	0.000
P-45	393	J-5	J-4	8.0	PVC	150.0	3	0.02	0.000
P-46	547	J-4	J-3	8.0	PVC	150.0	-8	0.05	0.000
P-47	499	J-3	J-13	8.0	PVC	150.0	-3	0.02	0.000
P-28(2)	504	J-14	J-6	8.0	PVC	150.0	13	0.08	0.000
P-48	395	J-13	J-14	8.0	PVC	150.0	-19	0.12	0.000
P-49	205	J-10	J-11	8.0	PVC	150.0	-92	0.59	0.000
P-50	324	J-11	J-12	16.0	PVC	150.0	49	0.08	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	141	0.22	0.000
P-52	456	J-12	J-18	16.0	PVC	150.0	49	0.08	0.000
P-53	531	J-18	J-19	16.0	PVC	150.0	-36	0.06	0.000
P-54	561	J-17	J-18	8.0	PVC	150.0	-85	0.54	0.000
P-55	462	J-19	J-31	16.0	PVC	150.0	-36	0.06	0.000
P-57	378	J-30	J-31	12.0	PVC	150.0	-91	0.26	0.000
P-58	203	R-2	J-31	12.0	PVC	150.0	145	0.41	0.000
P-35(1)	374	J-21	J-20.1	8.0	PVC	150.0	-54	0.34	0.000
P-35(2)	379	J-20.1	J-20	8.0	PVC	150.0	36	0.23	0.000
P-59	318	J-29	J-20.1	8.0	PVC	150.0	90	0.57	0.000
P-60	284	J-17	J-17.1	8.0	PVC	150.0	47	0.30	0.000

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-61	743	J-17.1	J-14	8.0	PVC	150.0	47	0.30	0.000
P-8(1)	202	J-34	J-35	8.0	PVC	150.0	11	0.07	0.000
P-8(2)(1)	384	J-35	J-36	8.0	PVC	150.0	-23	0.15	0.000
P-8(2)(2)	561	J-36	J-28	8.0	PVC	150.0	-31	0.20	0.000
P-41(1)	602	J-24	J-37	8.0	PVC	150.0	77	0.49	0.000
P-41(2)(1)	569	J-37	J-38	8.0	PVC	150.0	56	0.35	0.000
P-41(2)(2)	593	J-38	J-1	8.0	PVC	150.0	34	0.22	0.000

Max Daily

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-27	5,451.53	<Collection: 0 items>	0	5,719.85	116
J-25	5,448.23	<Collection: 0 items>	0	5,719.87	118
J-24	5,446.24	<Collection: 0 items>	0	5,719.89	118
J-34	5,450.49	<Collection: 1 item>	43	5,719.70	116
J-28	5,459.37	<Collection: 2 items>	20	5,719.82	113
J-16	5,460.94	<Collection: 1 item>	68	5,719.29	112
J-6	5,460.06	<Collection: 2 items>	78	5,719.02	112
J-3	5,450.53	<Collection: 1 item>	31	5,719.01	116
J-26	5,450.58	<Collection: 1 item>	6	5,719.86	117
J-2	5,449.35	<Collection: 1 item>	42	5,719.01	117
J-10	5,457.17	<Collection: 0 items>	0	5,719.70	114
J-33	5,443.60	<Collection: 2 items>	68	5,719.77	119
J-12	5,457.77	<Collection: 0 items>	0	5,719.92	113
J-29	5,464.77	<Collection: 1 item>	14	5,719.81	110
J-30	5,467.49	<Collection: 1 item>	52	5,719.87	109
J-19	5,461.89	<Collection: 0 items>	0	5,719.92	112
J-9	5,452.08	<Collection: 1 item>	48	5,719.16	116
J-8	5,457.91	<Collection: 1 item>	48	5,719.04	113
J-7	5,461.52	<Collection: 0 items>	0	5,719.02	111
J-5	5,453.98	<Collection: 2 items>	78	5,719.01	115
J-21	5,467.57	<Collection: 1 item>	68	5,719.31	109
J-20	5,457.66	<Collection: 1 item>	68	5,719.39	113
J-17	5,451.08	<Collection: 1 item>	68	5,719.37	116
J-1	5,446.52	<Collection: 1 item>	42	5,719.04	118
J-32	5,437.32	<Collection: 1 item>	36	5,719.99	122
J-23	5,442.87	<Collection: 0 items>	0	5,719.98	120
J-15	5,456.01	<Collection: 1 item>	43	5,719.28	114
J-22	5,462.94	<Collection: 1 item>	43	5,719.28	111
J-4	5,445.33	<Collection: 1 item>	31	5,719.00	118
J-13	5,455.47	<Collection: 1 item>	43	5,719.01	114
J-14	5,459.83	<Collection: 1 item>	43	5,719.04	112
J-11	5,460.00	<Collection: 0 items>	0	5,719.93	112
J-18	5,458.80	<Collection: 0 items>	0	5,719.92	113
J-31	5,464.96	<Collection: 1 item>	52	5,719.93	110
J-20.1	5,461.46	<Collection: 0 items>	0	5,719.46	112
J-17.1	5,448.26	<Collection: 0 items>	0	5,719.28	117
J-35	5,453.31	<Collection: 3 items>	96	5,719.70	115
J-36	5,461.70	<Collection: 1 item>	21	5,719.73	112
J-37	5,453.87	<Collection: 1 item>	60	5,719.40	115
J-38	5,451.88	<Collection: 1 item>	60	5,719.15	116

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-5	247	J-25	J-24	12.0	PVC	150.0	-175	0.50	0.000
P-3(2)	534	J-28	J-27	12.0	PVC	150.0	-169	0.48	0.000
P-25	405	J-6	J-3	8.0	PVC	150.0	32	0.20	0.000
P-4(1)	101	J-27	J-26	12.0	PVC	150.0	-169	0.48	0.000
P-4(2)	154	J-26	J-25	12.0	PVC	150.0	-175	0.50	0.000
P-29	235	J-3	J-2	8.0	PVC	150.0	-12	0.08	0.000
P-21(2)	598	J-33	J-34	8.0	PVC	150.0	74	0.47	0.000
P-3(1)(2)	372	J-29	J-28	12.0	PVC	150.0	-63	0.18	0.000
P-3(1)(1)(2)	553	J-30	J-29	12.0	PVC	150.0	203	0.57	0.000
P-24(2)(1)	473	J-10	J-9	8.0	PVC	150.0	257	1.64	0.001
P-24(2)(2)	611	J-9	J-6	8.0	PVC	150.0	109	0.69	0.000
P-31	597	J-9	J-8	8.0	PVC	150.0	101	0.64	0.000
P-32	290	J-8	J-7	8.0	PVC	150.0	53	0.34	0.000
P-33	313	J-7	J-5	8.0	PVC	150.0	53	0.34	0.000
P-34	554	J-5	J-6	8.0	PVC	150.0	-34	0.22	0.000
P-22(2)	669	J-21	J-16	8.0	PVC	150.0	30	0.19	0.000
P-23(1)	760	J-16	J-17	8.0	PVC	150.0	-71	0.45	0.000
P-36	665	J-20	J-17	8.0	PVC	150.0	33	0.21	0.000
P-27(2)	399	J-1	J-2	8.0	PVC	150.0	54	0.34	0.000
P-37	199	R-3	J-32	24.0	Steel	140.0	568	0.40	0.000
P-38	1,032	J-32	J-23	24.0	Steel	140.0	390	0.28	0.000
P-39	262	J-23	J-24	12.0	PVC	150.0	390	1.11	0.000
P-40	595	J-32	J-33	8.0	PVC	150.0	142	0.91	0.000
P-42	379	J-16	J-15	8.0	PVC	150.0	34	0.22	0.000
P-43	658	J-15	J-22	8.0	PVC	150.0	-10	0.06	0.000
P-44	373	J-22	J-21	8.0	PVC	150.0	-53	0.34	0.000
P-45	393	J-5	J-4	8.0	PVC	150.0	9	0.06	0.000
P-46	547	J-4	J-3	8.0	PVC	150.0	-22	0.14	0.000
P-47	499	J-3	J-13	8.0	PVC	150.0	-9	0.06	0.000
P-28(2)	504	J-14	J-6	8.0	PVC	150.0	36	0.23	0.000
P-48	395	J-13	J-14	8.0	PVC	150.0	-52	0.33	0.000
P-49	205	J-10	J-11	8.0	PVC	150.0	-257	1.64	0.001
P-50	324	J-11	J-12	16.0	PVC	150.0	137	0.22	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	394	0.63	0.000
P-52	456	J-12	J-18	16.0	PVC	150.0	137	0.22	0.000
P-53	531	J-18	J-19	16.0	PVC	150.0	-100	0.16	0.000
P-54	561	J-17	J-18	8.0	PVC	150.0	-237	1.51	0.001
P-55	462	J-19	J-31	16.0	PVC	150.0	-100	0.16	0.000
P-57	378	J-30	J-31	12.0	PVC	150.0	-255	0.72	0.000
P-58	203	R-2	J-31	12.0	PVC	150.0	407	1.15	0.000
P-35(1)	374	J-21	J-20.1	8.0	PVC	150.0	-151	0.96	0.000
P-35(2)	379	J-20.1	J-20	8.0	PVC	150.0	101	0.64	0.000
P-59	318	J-29	J-20.1	8.0	PVC	150.0	252	1.61	0.001
P-60	284	J-17	J-17.1	8.0	PVC	150.0	131	0.84	0.000

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-61	743	J-17.1	J-14	8.0	PVC	150.0	131	0.84	0.000
P-8(1)	202	J-34	J-35	8.0	PVC	150.0	31	0.20	0.000
P-8(2)(1)	384	J-35	J-36	8.0	PVC	150.0	-65	0.42	0.000
P-8(2)(2)	561	J-36	J-28	8.0	PVC	150.0	-86	0.55	0.000
P-41(1)	602	J-24	J-37	8.0	PVC	150.0	216	1.38	0.001
P-41(2)(1)	569	J-37	J-38	8.0	PVC	150.0	156	0.99	0.000
P-41(2)(2)	593	J-38	J-1	8.0	PVC	150.0	96	0.61	0.000

Max Hour

Junction Table - Time: 0.00 hours

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-27	5,451.53	<Collection: 0 items>	0	5,719.67	116
J-25	5,448.23	<Collection: 0 items>	0	5,719.72	117
J-24	5,446.24	<Collection: 0 items>	0	5,719.76	118
J-34	5,450.49	<Collection: 1 item>	70	5,719.30	116
J-28	5,459.37	<Collection: 2 items>	32	5,719.59	113
J-16	5,460.94	<Collection: 1 item>	99	5,718.47	111
J-6	5,460.06	<Collection: 2 items>	116	5,717.87	112
J-3	5,450.53	<Collection: 1 item>	48	5,717.85	116
J-26	5,450.58	<Collection: 1 item>	9	5,719.69	116
J-2	5,449.35	<Collection: 1 item>	66	5,717.85	116
J-10	5,457.17	<Collection: 0 items>	0	5,719.34	113
J-33	5,443.60	<Collection: 2 items>	109	5,719.46	119
J-12	5,457.77	<Collection: 0 items>	0	5,719.83	113
J-29	5,464.77	<Collection: 1 item>	23	5,719.58	110
J-30	5,467.49	<Collection: 1 item>	84	5,719.70	109
J-19	5,461.89	<Collection: 0 items>	0	5,719.83	112
J-9	5,452.08	<Collection: 1 item>	67	5,718.19	115
J-8	5,457.91	<Collection: 1 item>	67	5,717.93	112
J-7	5,461.52	<Collection: 0 items>	0	5,717.89	111
J-5	5,453.98	<Collection: 2 items>	116	5,717.84	114
J-21	5,467.57	<Collection: 1 item>	99	5,718.50	109
J-20	5,457.66	<Collection: 1 item>	99	5,718.68	113
J-17	5,451.08	<Collection: 1 item>	99	5,718.64	116
J-1	5,446.52	<Collection: 1 item>	66	5,717.89	117
J-32	5,437.32	<Collection: 1 item>	57	5,719.99	122
J-23	5,442.87	<Collection: 0 items>	0	5,719.96	120
J-15	5,456.01	<Collection: 1 item>	69	5,718.44	114
J-22	5,462.94	<Collection: 1 item>	69	5,718.45	111
J-4	5,445.33	<Collection: 1 item>	48	5,717.84	118
J-13	5,455.47	<Collection: 1 item>	69	5,717.85	114
J-14	5,459.83	<Collection: 1 item>	69	5,717.90	112
J-11	5,460.00	<Collection: 0 items>	0	5,719.84	112
J-18	5,458.80	<Collection: 0 items>	0	5,719.82	113
J-31	5,464.96	<Collection: 1 item>	84	5,719.83	110
J-20.1	5,461.46	<Collection: 0 items>	0	5,718.84	111
J-17.1	5,448.26	<Collection: 0 items>	0	5,718.44	117
J-35	5,453.31	<Collection: 3 items>	154	5,719.29	115
J-36	5,461.70	<Collection: 1 item>	33	5,719.38	111
J-37	5,453.87	<Collection: 1 item>	95	5,718.67	115
J-38	5,451.88	<Collection: 1 item>	95	5,718.12	115

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-5	247	J-25	J-24	12.0	PVC	150.0	-271	0.77	0.000
P-3(2)	534	J-28	J-27	12.0	PVC	150.0	-261	0.74	0.000
P-25	405	J-6	J-3	8.0	PVC	150.0	54	0.35	0.000
P-4(1)	101	J-27	J-26	12.0	PVC	150.0	-261	0.74	0.000
P-4(2)	154	J-26	J-25	12.0	PVC	150.0	-271	0.77	0.000
P-29	235	J-3	J-2	8.0	PVC	150.0	-10	0.06	0.000
P-21(2)	598	J-33	J-34	8.0	PVC	150.0	117	0.74	0.000
P-3(1)(2)	372	J-29	J-28	12.0	PVC	150.0	-89	0.25	0.000
P-3(1)(1)(2)	553	J-30	J-29	12.0	PVC	150.0	312	0.88	0.000
P-24(2)(1)	473	J-10	J-9	8.0	PVC	150.0	389	2.48	0.002
P-24(2)(2)	611	J-9	J-6	8.0	PVC	150.0	169	1.08	0.001
P-31	597	J-9	J-8	8.0	PVC	150.0	153	0.98	0.000
P-32	290	J-8	J-7	8.0	PVC	150.0	86	0.55	0.000
P-33	313	J-7	J-5	8.0	PVC	150.0	86	0.55	0.000
P-34	554	J-5	J-6	8.0	PVC	150.0	-51	0.32	0.000
P-22(2)	669	J-21	J-16	8.0	PVC	150.0	46	0.29	0.000
P-23(1)	760	J-16	J-17	8.0	PVC	150.0	-109	0.69	0.000
P-36	665	J-20	J-17	8.0	PVC	150.0	51	0.33	0.000
P-27(2)	399	J-1	J-2	8.0	PVC	150.0	76	0.48	0.000
P-37	199	R-3	J-32	24.0	Steel	140.0	885	0.63	0.000
P-38	1,032	J-32	J-23	24.0	Steel	140.0	602	0.43	0.000
P-39	262	J-23	J-24	12.0	PVC	150.0	602	1.71	0.001
P-40	595	J-32	J-33	8.0	PVC	150.0	226	1.44	0.001
P-42	379	J-16	J-15	8.0	PVC	150.0	55	0.35	0.000
P-43	658	J-15	J-22	8.0	PVC	150.0	-14	0.09	0.000
P-44	373	J-22	J-21	8.0	PVC	150.0	-83	0.53	0.000
P-45	393	J-5	J-4	8.0	PVC	150.0	21	0.13	0.000
P-46	547	J-4	J-3	8.0	PVC	150.0	-27	0.18	0.000
P-47	499	J-3	J-13	8.0	PVC	150.0	-12	0.08	0.000
P-28(2)	504	J-14	J-6	8.0	PVC	150.0	52	0.33	0.000
P-48	395	J-13	J-14	8.0	PVC	150.0	-81	0.52	0.000
P-49	205	J-10	J-11	8.0	PVC	150.0	-389	2.48	0.002
P-50	324	J-11	J-12	16.0	PVC	150.0	213	0.34	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	602	0.96	0.000
P-52	456	J-12	J-18	16.0	PVC	150.0	213	0.34	0.000
P-53	531	J-18	J-19	16.0	PVC	150.0	-146	0.23	0.000
P-54	561	J-17	J-18	8.0	PVC	150.0	-359	2.29	0.002
P-55	462	J-19	J-31	16.0	PVC	150.0	-146	0.23	0.000
P-57	378	J-30	J-31	12.0	PVC	150.0	-396	1.12	0.000
P-58	203	R-2	J-31	12.0	PVC	150.0	625	1.77	0.001
P-35(1)	374	J-21	J-20.1	8.0	PVC	150.0	-228	1.46	0.001
P-35(2)	379	J-20.1	J-20	8.0	PVC	150.0	150	0.96	0.000
P-59	318	J-29	J-20.1	8.0	PVC	150.0	379	2.42	0.002
P-60	284	J-17	J-17.1	8.0	PVC	150.0	202	1.29	0.001

Pipe Table - Time: 0.00 hours

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-61	743	J-17.1	J-14	8.0	PVC	150.0	202	1.29	0.001
P-8(1)	202	J-34	J-35	8.0	PVC	150.0	47	0.30	0.000
P-8(2)(1)	384	J-35	J-36	8.0	PVC	150.0	-107	0.68	0.000
P-8(2)(2)	561	J-36	J-28	8.0	PVC	150.0	-140	0.90	0.000
P-41(1)	602	J-24	J-37	8.0	PVC	150.0	331	2.11	0.002
P-41(2)(1)	569	J-37	J-38	8.0	PVC	150.0	237	1.51	0.001
P-41(2)(2)	593	J-38	J-1	8.0	PVC	150.0	142	0.91	0.000

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-27	2,500	2,500	3,500	20	113	108	J-21	108	J-21
J-25	2,500	2,500	3,500	20	115	108	J-21	108	J-21
J-24	2,500	2,500	3,500	20	117	108	J-21	108	J-21
J-34	2,500	2,543	3,543	20	94	96	J-35	96	J-35
J-28	2,500	2,520	3,520	20	110	107	J-21	107	J-21
J-16	1,500	1,568	3,568	20	92	94	J-21	94	J-21
J-6	1,500	1,578	3,578	20	96	98	J-7	98	J-7
J-3	1,500	1,531	3,531	20	100	99	J-6	99	J-6
J-26	2,500	2,506	3,506	20	114	108	J-21	108	J-21
J-2	2,500	2,542	3,542	20	96	100	J-1	100	J-1
J-10	1,500	1,500	3,500	20	105	106	J-7	106	J-7
J-33	2,500	2,568	3,568	20	102	104	J-34	104	J-34
J-12	2,500	2,500	3,500	20	112	108	J-21	108	J-21
J-29	2,500	2,514	3,514	20	108	107	J-21	107	J-21
J-30	1,500	1,552	3,552	20	107	108	J-21	108	J-21
J-19	2,500	2,500	3,500	20	111	108	J-21	108	J-21
J-9	1,500	1,548	3,548	20	100	98	J-7	98	J-7
J-8	1,500	1,548	3,548	20	88	91	J-7	91	J-7
J-7	1,500	1,500	3,500	20	87	92	J-8	92	J-8
J-5	1,500	1,578	3,578	20	94	93	J-7	93	J-7
J-21	1,500	1,568	3,568	20	91	94	J-22	94	J-22
J-20	1,500	1,568	3,568	20	98	102	J-21	102	J-21
J-17	1,500	1,568	3,568	20	108	103	J-21	103	J-21
J-1	2,500	2,542	3,542	20	92	98	J-38	98	J-38
J-32	2,500	2,536	3,536	20	122	109	J-21	109	J-21
J-23	2,500	2,500	3,500	20	119	109	J-21	109	J-21
J-15	1,500	1,543	3,543	20	87	91	J-22	91	J-22
J-22	1,500	1,543	3,543	20	84	92	J-21	92	J-21
J-4	1,500	1,531	3,531	20	95	96	J-7	96	J-7
J-13	1,500	1,543	3,543	20	92	98	J-14	98	J-14
J-14	1,500	1,543	3,543	20	95	99	J-13	99	J-13

Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow (Needed) (gpm)	Flow (Total Needed) (gpm)	Flow (Total Available) (gpm)	Pressure (Residual Lower Limit) (psi)	Pressure (Calculated Residual) (psi)	Pressure (Calculated Zone Lower Limit) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)
J-11	2,500	2,500	3,500	20	112	108	J-21	108	J-21
J-18	2,500	2,500	3,500	20	112	108	J-21	108	J-21
J-31	2,500	2,552	3,552	20	110	108	J-21	108	J-21
J-20.1	2,500	2,500	3,500	20	102	100	J-21	100	J-21
J-17.1	2,500	2,500	3,500	20	103	104	J-21	104	J-21
J-35	2,500	2,596	3,596	20	93	98	J-34	98	J-34
J-36	2,500	2,521	3,521	20	94	101	J-35	101	J-35
J-37	2,500	2,560	3,560	20	95	100	J-38	100	J-38
J-38	2,500	2,560	3,560	20	89	100	J-1	100	J-1

APPENDIX C – Sanitary Sewer Calculations

TABLE 1: SANITARY SEWER DEMANDS											
BASIN CHARACTERISTICS			RESIDENTIAL[1]					NON-RESIDENTIAL		TOTAL
BASIN	LAND USE	AREA (ACRES)	MAXIMUM NO. UNITS	DENSITY (unit/arce)	POPULATION	AVERAGE DAILY FLOW PER UNIT (gpd)	AVERAGE FLOW (gpd)	AVERAGE DAILY FLOW PER ACRE	AVERAGE FLOW (gpd)	TOTAL AVERAGE SEWAGE FLOW (gpd)
PA-45	RESIDENTIAL	26.5	154	5.8	426	188.36	28950.93			
	TOTAL						28950.93		0.00	28950.93
PA-46	RESIDENTIAL	39.2	227	5.8	630	188.36	42833.06		0	
	TOTAL						42833.06		0.00	42833.06
PA-47	RESIDENTIAL	15.8	111	7	307	188.36	20832.62		0	
	TOTAL						20832.62		0.00	20832.62
PA-48	RESIDENTIAL	22.5	158	7	437	188.36	29666.70		0	
	TOTAL						29666.70		0.00	29666.70
PA-49	RESIDENTIAL	9.6	192	20	532	188.36	36165.12		0	
	TOTAL						36165.12		0.00	36165.12
PA-50	COMMERCIAL	9.6	0	0	0	0	0.00	1500	14400	
	TOTAL						0.00		14400.00	14400.00
PA-51	COMMERCIAL	4.0	0	0	0	0	0.00	1500	6000	
	TOTAL						0.00		6000.00	6000.00
PA-52	COMMERCIAL	22.0	0	0	0	0	0.00	1500	33000	
	TOTAL						0.00		33000.00	33000.00
PA-53	COMMERCIAL	14.1	0	0	0	0	0.00	1500	21150	
	TOTAL						0.00		21150.00	21150.00
PA-54	COMMERCIAL	29.7	0	0	0	0	0.00	1500	44550	
	TOTAL						0.00		44550.00	44550.00
PA-55	COMMERCIAL	24.5	0	0	0	0	0.00	1500	36750	
	TOTAL						0.00		36750.00	36750.00
PA-56	COMMERCIAL	20.2	0	0	0	0	0.00	1500	30300	
	TOTAL						0.00		30300.00	30300.00
PA-57	COMMERCIAL	14.1	0	0	0	0	0.00	1500	21150	
	TOTAL						0.00		21150.00	21150.00
Brandenburg Parel PA-58	COMMERCIAL	17.2	0	0	0	0	0.00	1500	25800	
	TOTAL	0					0.00		25800.00	25800.00

1. Residential based on 68 gallons per capita per day, 2.77 people per residence

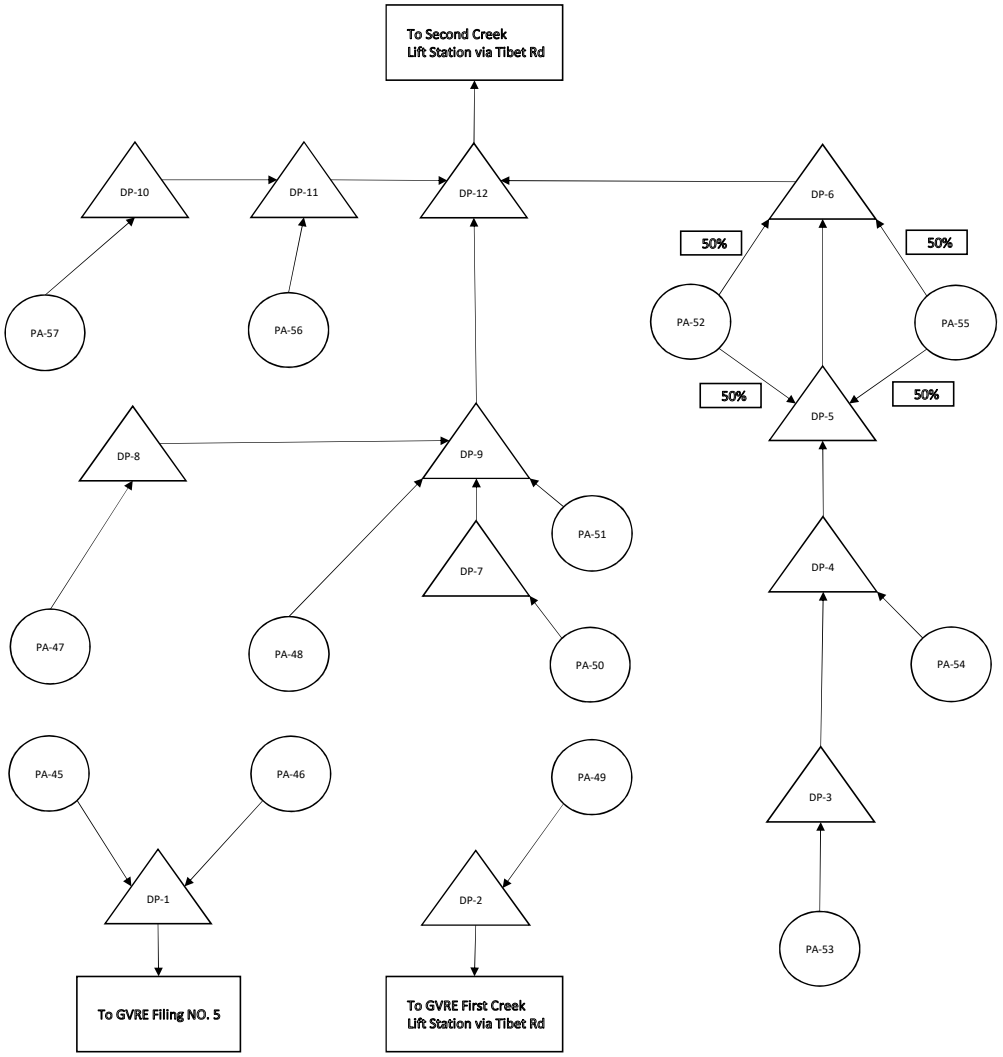
2. Windler Homestead Sanitary not tributary to Aurora 310 per Windler Master Utility Report, Revised October 2021, by Olsson

TABLE 2: SANITARY SEWER ROUTING

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop[1]		Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)	Req'd PipeSlope (Percent)	Velocity (ft/s)	Depth of Flow (in)	Depth of Ratio (Percent)
DP-1	PA-45	28950.93	425.75												
	PA-46	42833.06	629.90												
Total		**71784.00**	**1055.65**	4.95	**4.00**	**287135.98**	**7178.40**	**294314.38**	**0.29**	**0.46**	**8.00**	**0.4%**	**2.60**	**4.0**	**50%**
DP-2	PA-49	36165.12	531.84												
Total		**36165.12**	**531.84**	5.56	**4.00**	**144660.48**	**3616.51**	**148276.99**	**0.15**	**0.23**	**8.00**	**0.4%**	**2.16**	**2.8**	**35%**
DP-3	PA-53	21150.00	311.03												
Total		**21150.00**	**311.03**	6.08	**4.00**	**84600.00**	**2115.00**	**86715.00**	**0.09**	**0.13**	**8.00**	**0.6%**	**2.13**	**1.8**	**23%**
DP-4	DP-3	21150.00	311.03												
	PA-54	44550.00	655.15												
Total		**65700.00**	**966.18**	5.03	**4.00**	**262800.00**	**6570.00**	**269370.00**	**0.27**	**0.42**	**8.00**	**0.4%**	**2.54**	**3.8**	**48%**
DP-5	DP-4	65700.00	966.18												
	50% PA-52	16500.00	242.65												
	50% PA-55	18375.00	270.22												
Total		**100575.00**	**1479.04**	4.68	**4.00**	**402300.00**	**10057.50**	**412357.50**	**0.41**	**0.64**	**8.00**	**0.4%**	**2.81**	**5.0**	**63%**
DP-6	DP-5	100575.00	1479.04												
	50% PA-52	16500.00	242.65												
	50% PA-55	18375.00	270.22												
Total		**135450.00**	**1991.91**	4.46	**4.00**	**541800.00**	**13545.00**	**555345.00**	**0.56**	**0.86**	**10.00**	**0.4%**	**3.04**	**5.1**	**51%**
DP-7	PA-50	14400.00	211.76												
Total		**14400.00**	**211.76**	6.48	**4.00**	**57600.00**	**1440.00**	**59040.00**	**0.06**	**0.09**	**8.00**	**0.7%**	**2.02**	**1.5**	**19%**
DP-8	PA-47	20832.62	306.36												
Total		**20832.62**	**306.36**	6.09	**4.00**	**83330.46**	**2083.26**	**85413.73**	**0.09**	**0.13**	**8.00**	**0.6%**	**2.13**	**1.8**	**23%**
DP-9	DP-7	14400.00	211.76												
	DP-8	20832.62	306.36												
	PA-48	29666.70	436.28												
	PA-51	6000.00	88.24												
Total		**70899.32**	**1042.64**	4.97	**4.00**	**283597.26**	**7089.93**	**290687.20**	**0.29**	**0.45**	**8.00**	**0.4%**	**2.59**	**4.0**	**50%**
DP-10	PA-57	21150.00	311.03												
Total		**21150.00**	**311.03**	6.08	**4.00**	**84600.00**	**2115.00**	**86715.00**	**0.09**	**0.13**	**8.00**	**0.6%**	**2.13**	**1.8**	**23%**
DP-11	DP-10	21150.00	311.03												
	PA-56	30300.00	445.59												
Total		**51450.00**	**756.62**	5.24	**4.00**	**205800.00**	**5145.00**	**210945.00**	**0.21**	**0.33**	**8.00**	**0.4%**	**2.39**	**3.3**	**41%**
DP-12	DP-6	135450.00	1991.91												
	DP-9	70899.32	1042.64												
	DP-11	51450.00	756.62												
Total		**257799.32**	**3791.17**	4.00	**4.00**	**1031197.26**	**25779.93**	**1056977.20**	**1.06**	**1.64**	**10.00**	**0.5%**	**3.80**	**7.4**	**74%**
PA-47, PA-48 Servicing Alternative (Through Commercial PA 56 AND PA 57)															
DP-11	PA-47	20832.62	306.36												
	PA-48	29666.70	436.28												
	PA-57	21150.00	311.03												
	PA-56	30300.00	445.59												
Total		**101949.32**	**1499.25**	4.67	**4.00**	**407797.26**	**10194.93**	**417992.20**	**0.42**	**0.65**	**8.00**	**0.4%**	**2.81**	**5.0**	**63%**
Option #2 (Lift to GVRE First Creek Lift Station)															
DP-2	DP-12	257799.32	3791.17												
	PA-49	36165.12	531.84												
Total		**293964.44**	**4323.01**	3.92	**3.92**	**1151035.07**	**29396.44**	**1180431.51**	**1.18**	**1.83**	**10.00**	**0.4%**	**3.34**	**9.3**	**93%**

1. Cumulative Equivalent Population = Total Average Daily Flow at a design point ÷ 68 gallons per person per day

Green Valley Master Plan Amendment 2 Routing Schematic



A310 DP1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.46 cfs

Results	
Normal Depth	4.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	2.0 in
Top Width	0.67 ft
Critical Depth	3.8 in
Percent Full	50.5 %
Critical Slope	0.005 ft/ft
Velocity	2.60 ft/s
Velocity Head	0.11 ft
Specific Energy	0.44 ft
Froude Number	0.890
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.001 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	52.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.0 in
Critical Depth	3.8 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP1

Notes:

PA-45 & PA-46

A310 DP2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.23 cfs

Results	
Normal Depth	2.8 in
Flow Area	0.1 ft²
Wetted Perimeter	0.8 ft
Hydraulic Radius	1.5 in
Top Width	0.63 ft
Critical Depth	2.7 in
Percent Full	34.4 %
Critical Slope	0.005 ft/ft
Velocity	2.16 ft/s
Velocity Head	0.07 ft
Specific Energy	0.30 ft
Froude Number	0.929
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.000 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	32.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	2.7 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP2

Notes:

PA-49

A310 DP3

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.006	ft/ft
Diameter	8.0	in
Discharge	0.13	cfs

Results		
Normal Depth	1.8	in
Flow Area	0.1	ft²
Wetted Perimeter	0.7	ft
Hydraulic Radius	1.1	in
Top Width	0.56	ft
Critical Depth	2.0	in
Percent Full	23.1	%
Critical Slope	0.005	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	0.22	ft
Froude Number	1.138	
Maximum Discharge	1.19	cfs
Discharge Full	1.11	cfs
Slope Full	0.000	ft/ft
Flow Type	Supercritical	

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

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.0	%
Normal Depth Over Rise	23.1	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.8	in
Critical Depth	2.0	in
Channel Slope	0.006	ft/ft
Critical Slope	0.005	ft/ft

A310 DP3

Notes:

PA-53

A310 DP4

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.42 cfs

Results	
Normal Depth	3.8 in
Flow Area	0.2 ft²
Wetted Perimeter	1.0 ft
Hydraulic Radius	1.9 in
Top Width	0.67 ft
Critical Depth	3.6 in
Percent Full	47.9 %
Critical Slope	0.005 ft/ft
Velocity	2.54 ft/s
Velocity Head	0.10 ft
Specific Energy	0.42 ft
Froude Number	0.899
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.001 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	3.8 in
Critical Depth	3.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP4

Notes:

PA-53 & PA-54

A310 DP5

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.64 cfs

Results	
Normal Depth	5.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.3 in
Top Width	0.65 ft
Critical Depth	4.5 in
Percent Full	62.2 %
Critical Slope	0.005 ft/ft
Velocity	2.81 ft/s
Velocity Head	0.12 ft
Specific Energy	0.54 ft
Froude Number	0.833
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.002 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	5.0 in
Critical Depth	4.5 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP5

Notes:

PA-53, PA-54, 50% of PA-52 and 50% of PA-55

A310 DP6

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	10.0 in
Discharge	0.86 cfs

Results	
Normal Depth	5.1 in
Flow Area	0.3 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.5 in
Top Width	0.83 ft
Critical Depth	4.9 in
Percent Full	51.5 %
Critical Slope	0.005 ft/ft
Velocity	3.04 ft/s
Velocity Head	0.14 ft
Specific Energy	0.57 ft
Froude Number	0.919
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.001 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	0.0 %
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	5.1 in
Critical Depth	4.9 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP6

Notes:

PA-53, PA-54, PA-52, & PA-55

A310 DP7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.007 ft/ft
Diameter	8.0 in
Discharge	0.09 cfs

Results	
Normal Depth	1.5 in
Flow Area	0.0 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.9 in
Top Width	0.52 ft
Critical Depth	1.6 in
Percent Full	18.5 %
Critical Slope	0.005 ft/ft
Velocity	2.02 ft/s
Velocity Head	0.06 ft
Specific Energy	0.19 ft
Froude Number	1.213
Maximum Discharge	1.29 cfs
Discharge Full	1.19 cfs
Slope Full	0.000 ft/ft
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	18.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.5 in
Critical Depth	1.6 in
Channel Slope	0.007 ft/ft
Critical Slope	0.005 ft/ft

A310 DP7

Notes:

PA-50

A310 DP8

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.006	ft/ft
Diameter	8.0	in
Discharge	0.13	cfs

Results		
Normal Depth	1.8	in
Flow Area	0.1	ft²
Wetted Perimeter	0.7	ft
Hydraulic Radius	1.1	in
Top Width	0.56	ft
Critical Depth	2.0	in
Percent Full	23.1	%
Critical Slope	0.005	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	0.22	ft
Froude Number	1.138	
Maximum Discharge	1.19	cfs
Discharge Full	1.11	cfs
Slope Full	0.000	ft/ft
Flow Type	Supercritical	

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

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.0	%
Normal Depth Over Rise	23.1	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.8	in
Critical Depth	2.0	in
Channel Slope	0.006	ft/ft
Critical Slope	0.005	ft/ft

A310 DP8

Notes:

PA-47

A310 DP9

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.45 cfs

Results	
Normal Depth	4.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.0 ft
Hydraulic Radius	2.0 in
Top Width	0.67 ft
Critical Depth	3.8 in
Percent Full	49.9 %
Critical Slope	0.005 ft/ft
Velocity	2.59 ft/s
Velocity Head	0.10 ft
Specific Energy	0.44 ft
Froude Number	0.892
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.001 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	42.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.0 in
Critical Depth	3.8 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP9

Notes:

PA-47, PA-48, PA-50, & PA-51

A310 DP10

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.006	ft/ft
Diameter	8.0	in
Discharge	0.13	cfs

Results		
Normal Depth	1.8	in
Flow Area	0.1	ft²
Wetted Perimeter	0.7	ft
Hydraulic Radius	1.1	in
Top Width	0.56	ft
Critical Depth	2.0	in
Percent Full	23.1	%
Critical Slope	0.005	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	0.22	ft
Froude Number	1.138	
Maximum Discharge	1.19	cfs
Discharge Full	1.11	cfs
Slope Full	0.000	ft/ft
Flow Type	Supercritical	

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

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.0	%
Normal Depth Over Rise	23.1	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.8	in
Critical Depth	2.0	in
Channel Slope	0.006	ft/ft
Critical Slope	0.005	ft/ft

A310 DP10

Notes:

PA-57

A310 DP11

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.33 cfs

Results	
Normal Depth	3.3 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.8 in
Top Width	0.66 ft
Critical Depth	3.2 in
Percent Full	41.8 %
Critical Slope	0.005 ft/ft
Velocity	2.39 ft/s
Velocity Head	0.09 ft
Specific Energy	0.37 ft
Froude Number	0.917
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.001 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	39.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.3 in
Critical Depth	3.2 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP11

Notes:

PA-56 & PA-57

Worksheet for A310 DP12-Design

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.005 ft/ft
Diameter	10.0 in
Discharge	1.64 cfs

Results	
Normal Depth	7.4 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	3.0 in
Top Width	0.73 ft
Critical Depth	6.9 in
Percent Full	73.9 %
Critical Slope	0.006 ft/ft
Velocity	3.80 ft/s
Velocity Head	0.22 ft
Specific Energy	0.84 ft
Froude Number	0.872
Maximum Discharge	1.97 cfs
Discharge Full	1.83 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	68.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.4 in
Critical Depth	6.9 in
Channel Slope	0.005 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for A310 DP12-Design

Notes:

PA-47, PA-48, PA-50, PA-51, PA-52, PA-53, PA-54, PA-55, PA-56, & PA-57

Evaluate a potential 10" downstream sanitary sewer constructed to a design slope to maintain velocity and depth ratio.

Please provide circular worksheets at all pipe size changes to show pipe capacities.

A310 DP12-MIN

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	10.0 in
Discharge	1.64 cfs

Results	
Normal Depth	8.2 in
Flow Area	0.5 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	3.0 in
Top Width	0.64 ft
Critical Depth	6.9 in
Percent Full	82.1 %
Critical Slope	0.006 ft/ft
Velocity	3.42 ft/s
Velocity Head	0.18 ft
Specific Energy	0.87 ft
Froude Number	0.697
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	37.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.2 in
Critical Depth	6.9 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

A310 DP12-MIN

Notes:

PA-47, PA-48, PA-50, PA-51, PA-52, PA-53, PA-54, PA-55, PA-56, & PA-57

Evaluate a potential 10" sanitary sewer downstream constructed to a minimum slope of 0.4%.

A310 DP11-Alternative

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	8.0 in
Discharge	0.65 cfs

Results	
Normal Depth	5.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.3 in
Top Width	0.64 ft
Critical Depth	4.6 in
Percent Full	62.8 %
Critical Slope	0.005 ft/ft
Velocity	2.81 ft/s
Velocity Head	0.12 ft
Specific Energy	0.54 ft
Froude Number	0.829
Maximum Discharge	0.97 cfs
Discharge Full	0.90 cfs
Slope Full	0.002 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	37.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.0 in
Critical Depth	4.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

A310 DP11-Alternative

Notes:

This alternative looks at routing PA-47 and PA-48 north through the commercial planning areas of PA-56 and PA-57.

A310 DP2 First Creek LS Alt

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	10.0 in
Discharge	1.83 cfs

Results	
Normal Depth	9.3 in
Flow Area	0.5 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	2.9 in
Top Width	0.43 ft
Critical Depth	7.1 in
Percent Full	92.7 %
Critical Slope	0.006 ft/ft
Velocity	3.34 ft/s
Velocity Head	0.17 ft
Specific Energy	0.95 ft
Froude Number	0.532
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.005 ft/ft
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	37.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.3 in
Critical Depth	7.1 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

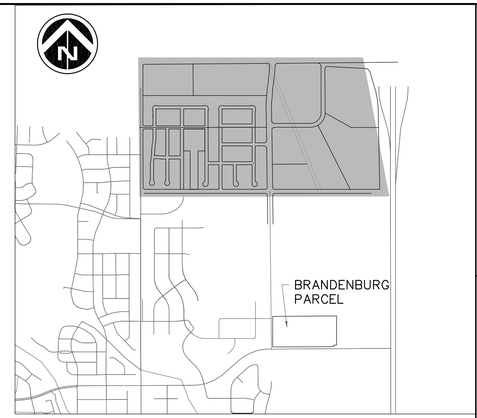
A310 DP2 First Creek LS Alt

Notes:

This alternative evaluates "Option 2", which is a temporary lift station pumping effluent to DP 2 for conveyance via the existing 10" gravity sanitary sewer main within Tibet to the First Creek Lift Station within the Green Valley Ranch Subdivision. This would be a temporary condition until the gravity main north of 56th Avenue to the Second Creek Lift Station is constructed.

A temporary lift station is not an option to serve this site development. Construction of the second creek interceptor and possum gully sanitary sewer must be coordinated and constructed with neighboring developers.

GREEN VALLEY MASTER PLAN AMENDMENT 2



KEY MAP
N.T.S.

Private lift station is not an option to serve this site. The second creek sanitary sewer interceptor is under construction and due for completion in late 2023.

OPTION 1: TO SECOND CREEK LIFT STATION
OPTION 2: FLOW ARE LIFTED TO GRAVITY LINE IN TIBET AND FIRST CREEK LIFT STATION

OPTION 1: PA-47 AND PA-48 TO DP-9
OPTION 2: PA-47 AND PA-48 TO DP-10 AND DP11 THROUGH THE COMMERCIAL PROPERTY

PICADILLY RD.
TIBET RD.
POSSUM GULLY
E. 56TH AVE.
E. 56TH AV.
E-470 (EXISTING)
MAXWELL PL
RIGHT IN/
RIGHT OUT
54TH AVE.
52ND AVE. (80' COLLECTOR)
MAIN ST. SECTION (80' ROW)
75' MUE
E-470

PR. 8" SANITARY
PR. 10" SANITARY
PR. 8" SANITARY OPTION #1
PR. 8" SANITARY
PR. 8" SANITARY
PR. 8" SANITARY
PR. 8" SANITARY
PR. 8" SANITARY
PR. 8" SANITARY
PR. 8" SANITARY

PA-57
COMMERCIAL
14.1 A.C.

PA-56
COMMERCIAL
20.2 A.C.

PA-65
M.U. EASEMENT
0.18 A.C.

PA-52
COMMERCIAL
22.0 A.C.

PA-55
COMMERCIAL
24.5 A.C.

PA-67
EASEMENT
2.5 A.C.

PA-51
COMMERCIAL
4.0 A.C.

PA-61
OPEN SPACE
1.0 A.C.

PA-47
AA RESIDENTIAL
15.8 A.C.
7.0 DU/A.C.

PA-48
AA RESIDENTIAL
22.5 A.C.
7.0 DU/A.C.

PA-64
M.U. EASEMENT
5.8 A.C.

PA-59
POCKET PARK
0.5 AC.

PA-63
NEIGHBORHOOD
PARK
3.0 A.C.

PA-60
POCKET PARK
0.5 AC.

PA-50
COMMERCIAL
9.6 A.C.

PA-53
COMMERCIAL
14.1 A.C.

PA-54
COMMERCIAL
29.7 A.C.

PA-66
EASEMENT
2.4 A.C.

PA-45
AA RESIDENTIAL
26.5 A.C.
5.8 DU/A.C.

PA-62 OPEN SPACE 2.8 A.C.

PA-46
AA RESIDENTIAL
39.2 A.C.
5.8 DU/A.C.

PA-49
MULTI FAMILY RESIDENTIAL
9.6 A.C.
20.0 DU/A.C.

DP-1
DP-2
DP-3
DP-4
DP-5
DP-6
DP-7
DP-8
DP-9
DP-10
DP-11
DP-12

400 0 200 400 800
(IN FEET)
1 inch = 400 ft.

LIST OF ABBREVIATIONS

STM.	STORM
EX.	EXISTING
PR.	PROPOSED
SFA	SINGLE FAMILY ATTACHED
SFD	SINGLE FAMILY DETACHED
DET	DETENTION

LEGEND

- EX STORM DRAIN
- PR. STORM CULVERT
- EX SANITARY
- PR SANITARY
- OFFSITE BASIN BOUNDARY
- OFFSITE ARTERIAL/ COLLECTOR ROADS PRIMARY ONSITE LOCAL ROADS
- SANITARY BASIN LABEL (PA-6 10.5 AC)
- SANITARY DESIGN POINT (DP-9)

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
MASTER UTILITY STUDY
SANITARY SEWER MODELING EXHIBIT

Client Information
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

No.	Date	Description
2	03/01/2022	FIRST SUBMITTAL - UPDATE
1	12/22/2021	FIRST SUBMITTAL

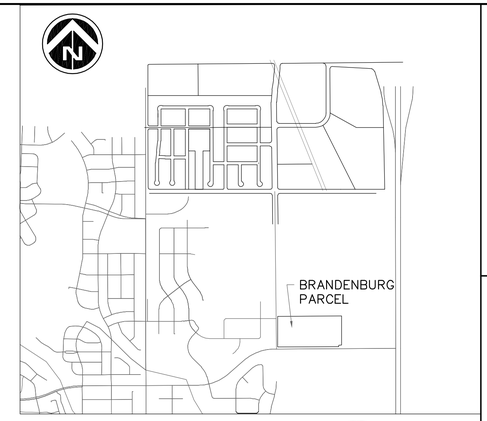
DOCUMENT AMENDMENTS

PRELIMINARY
NOT FOR
CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JDM
Checked By: JDM
Sheet Number: 1 OF 1

A:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\MASTER PLAN\MASTER UTILITY\SANITARY EXHIBIT.DWG 2/28/2022 10:06 PM MARGRAF, JASON D.

GREEN VALLEY MASTER PLAN AMENDMENT 2



KEY MAP
N.T.S.

PICADILLY RD.
TIBET RD.
POSSUM GULLY
E. 56TH AVE.
E. 56TH AV.
E-470 (EXISTING)
MAXWELL PL
RIGHT IN/
RIGHT OUT
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PA-65
M.U. EASEMENT
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PA-52
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22.0 A.C.
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PA-61
OPEN SPACE
1.0 A.C.
PA-47
AA RESIDENTIAL
15.8 A.C.
7.0 DU/A.C.
PA-48
AA RESIDENTIAL
22.5 A.C.
7.0 DU/A.C.
PA-67
EASEMENT
2.5 A.C.
PA-51
COMMERCIAL
4.0 A.C.
MAIN ST. SECTION (80' ROW)
75' MUE
54TH AVE.
PA-64
M.U. EASEMENT
5.8 A.C.
PA-60
POCKET PARK
0.5 AC.
PA-59
POCKET PARK
0.5 AC.
PA-63
NEIGHBORHOOD
PARK
3.0 A.C.
PA-50
COMMERCIAL
9.6 A.C.
PA-53
COMMERCIAL
14.1 A.C.
PA-54
COMMERCIAL
29.7 A.C.
PA-66
EASEMENT
2.4 A.C.
PA-45
AA RESIDENTIAL
26.5 A.C.
5.8 DU/A.C.
PA-62 OPEN SPACE 2.8 A.C.
PA-46
AA RESIDENTIAL
37.2 A.C.
5.8 DU/A.C.
PA-49
MULTI FAMILY RESIDENTIAL
9.6 A.C.
20.0 DU/A.C.
52ND AVE. (80' COLLECTOR)
LYONS RD.
J-1 J-2 J-3 J-4 J-5 J-6 J-7 J-8 J-9 J-10 J-11 J-12 J-13 J-14 J-15 J-16 J-17 J-18 J-19 J-20 J-21 J-22 J-23 J-24 J-25 J-26 J-27 J-28 J-29 J-30 J-31 J-32 J-33 J-34 J-35 J-36 J-37 J-38
R-1 R-2 R-3

400 0 200 400 800
(IN FEET)
1 inch = 400 ft.

WATER MAIN LEGEND
- 8-INCH PIPE
- 12-INCH PIPE
- 16-INCH PIPE
- 24-INCH PIPE
- MODEL RESERVOIR

LIST OF ABBREVIATIONS

STM.	STORM
EX.	EXISTING
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SFA	SINGLE FAMILY ATTACHED
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LEGEND
- EX STORM DRAIN
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- PR SANITARY
- OFFSITE BASIN BOUNDARY
- OFFSITE ARTERIAL/ COLLECTOR ROADS PRIMARY ONSITE LOCAL ROADS
- SANITARY BASIN LABEL
- SANITARY DESIGN POINT

All master utility exhibits must also be submitted as stand alone plans with signature approval blocks included.

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.388.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
MASTER UTILITY STUDY
WATER MAIN MODELING EXHIBIT

Client Information
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

No.	Date:	Description
2	03/01/2022	FIRST SUBMITTAL - UPDATE
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DOCUMENT AMENDMENTS

PRELIMINARY
NOT FOR
CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JDM
Checked By: JDM
Sheet Number: 1 OF 1

J:_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\MASTER PLAN\MASTER UTILITY\WATER EXHIBIT.DWG 2/28/2022 10:15 PM MARGRAF, JASON D.

Dewberry

Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111-4806

303.368.5601
www.dewberry.com

May 24, 2022

Mile High Flood District

RE: Response to Comments Aurora 310 Master Drainage Report

Dear Reviewer,

This letter responds to the comments provided for the Aurora 310 Master Drainage Report.

Second Creek Watershed Comments

1) Provide details regard the 56th Ave connection to Possum Gully when available.
2) It appears that the SWMM analysis provided accounts for local detention in Ponds A, B, & C. Please note that MHFD does not recognize local detention for regional hydrology purposes, MHFD would need to see a separate SWMM analysis that did not include the local ponds to verify the flows into S-215 are in line with the MDP.
3) How will EURV/WQCV be accounted for? Please note that the Second Creek MDP states "each new development should provide its own on-site water quality best management practices" and this area is within the airport exclusion zone, as such pond S-215 will not be able to provide EURV/WQCV for upstream sites.
4) The SWMM model shows a high storage amount (7.165 ac-ft), consider increasing the duration of the model run time to account for these flows.

First Creek Watershed Comments

1) Help us understand how this differs from the original MDR. Concerning regional detention (8503C) provided in the First Creek watershed, provide the supporting documentation that the facilities been sized to account for the drainage area and different imperviousness modifications used in this design.
2) Please note that the models are being developed with outdated UD workbooks (UD-Detention v3.07). Refer to our website for the updated versions of the design workbooks (MHFD-Detention v4.05).
3) Concerning the Blue Gramma Draw area, the drainage report states this area will drain to a regional pond (Pond 840). How will permanent EURV/WQCV be accommodated from subwatershed A?

1. The detail regarding the 56th Ave connection to Possum Gully will be provided in the PDR / FDR submittals as the design progresses.

2. A SWMM analysis excluding any detention has been provided with this submittal.

3. On site ponds will be constructed in a temporary condition based on downstream infrastructure at the time of construction.

4. The model run time has been increased.

5. Documentation comparing the MDR impervious values and the proposed impervious values has been provided. Flows to Pond 8503C are decreasing as a result of this amendment. Pond certification will be provided when available.

6. The updated version of MHFD-Detention has been provided with this submittal.

7. On site ponds will be constructed in a temporary condition based on downstream infrastructure at the time of construction.

8. Thank you for your time in review this submittal.

Sincerely,

Jason Margraf, PE
Associate Vice President, Department Manager

January 27, 2022

combine with rezone justification

justification for rezone combined with this one

references to 310 removed

310 was an internal reference. Since the application was withdrawn the reference is obsolete.

Green Valley Master Plan– Comprehensive Plan Amendment – Letter of Justification

The Green Valley MP Amendment 2 area formerly known as Aurora 310 is located south of 56th Ave, east of Picadilly Road, north of 38th Ave, and west of E-470. As seen in the attached exhibits, the site is classified as City Corridor placetype. To the north we are bordered by City Corridor placetype, Emerging Neighborhood placetype to the south in the existing MP Amendment 1 area, City corridor to the east across E-470, and City and County of Denver to the west.

describe location

explain why you need the amendment - is the use not permitted in City Corridor.....

additional justification added

This C request proposes to c amend t 79 acres from City Corridor placetype to Emerging Neighborhood placetype adjacent to the existing Emerging Neighborhood placetype to the south. This will allow for the extension of the Active Adult community north of 52nd Ave. The area being added north of 52nd Avenue is envisioned as a comprehensive planned community which acts as an extension of the approve residential development. An open space corridor will act as a link between the two active adult communities while also including a neighborhood park. there is no change proposed to the existing City Corridor placetype for the rest of the property along 56th Ave and E-470. City Corridor will include a wide range of uses, including commercial, retail, office, institutional, and multifamily residential consistent with that zoning.

to the south.

various redlines addressed

The

Placetype

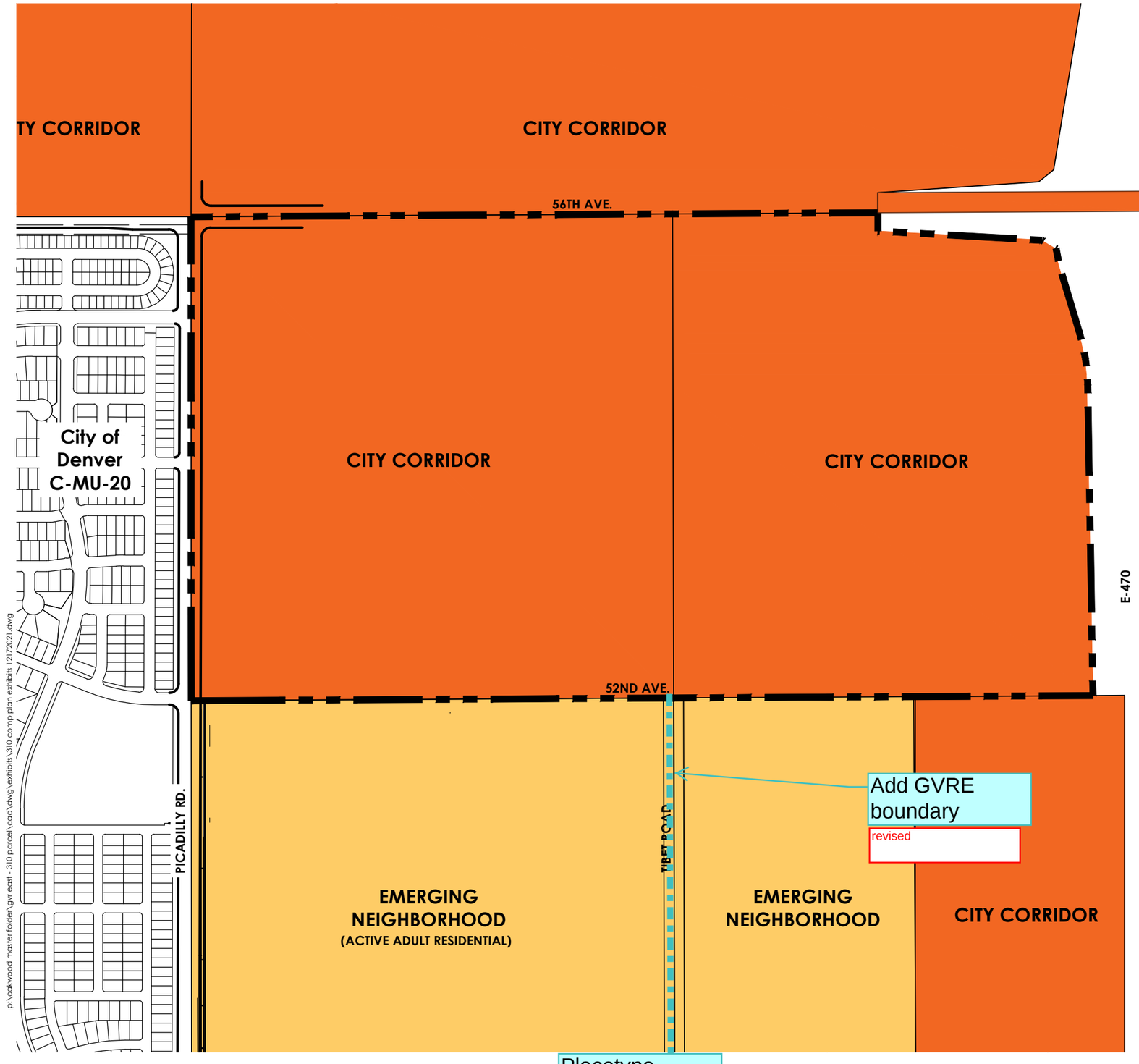
the proposed

We believe this comp plan amendment ke??s with the existing placetypes by maintaining City Corridor along 56th and E various redlines addressed nal commercial, retail and service uses. Residential single-fami would then be allowed to extend with the Emerging Neighborhood placetype. Proposed residential uses will not be in the prime commercial locations visible from 56th Ave and E-470 with this amendment. The e of Emerging Neighborhood to the north is compatible with the existing Active Adult neighborhood in Amendment 1 as well as the single-family residential neighborhoods to the west in the City of Denver.

needs context provided per above comment

more context provided

We are excited about the opportunity to continue work in this rapidly changing E-470 Corridor. It is our intent to provide the framework to expand upon the successful Green Valley Ranch master-planned community and create long lasting value, which is an important component in implementing the City of Aurora's future for this area.



CITY CORRIDOR PLACETYPE

EMERGING NEIGHBORHOOD PLACETYPE

GREEN VALLEY AMENDMENT 2

RANCH MASTER PLAN

revised to green valley master plan

Green Valley ~~Amendment 2~~

Placetype

EXISTING COMPREHENSIVE PLAN DESIGNATIONS

revised

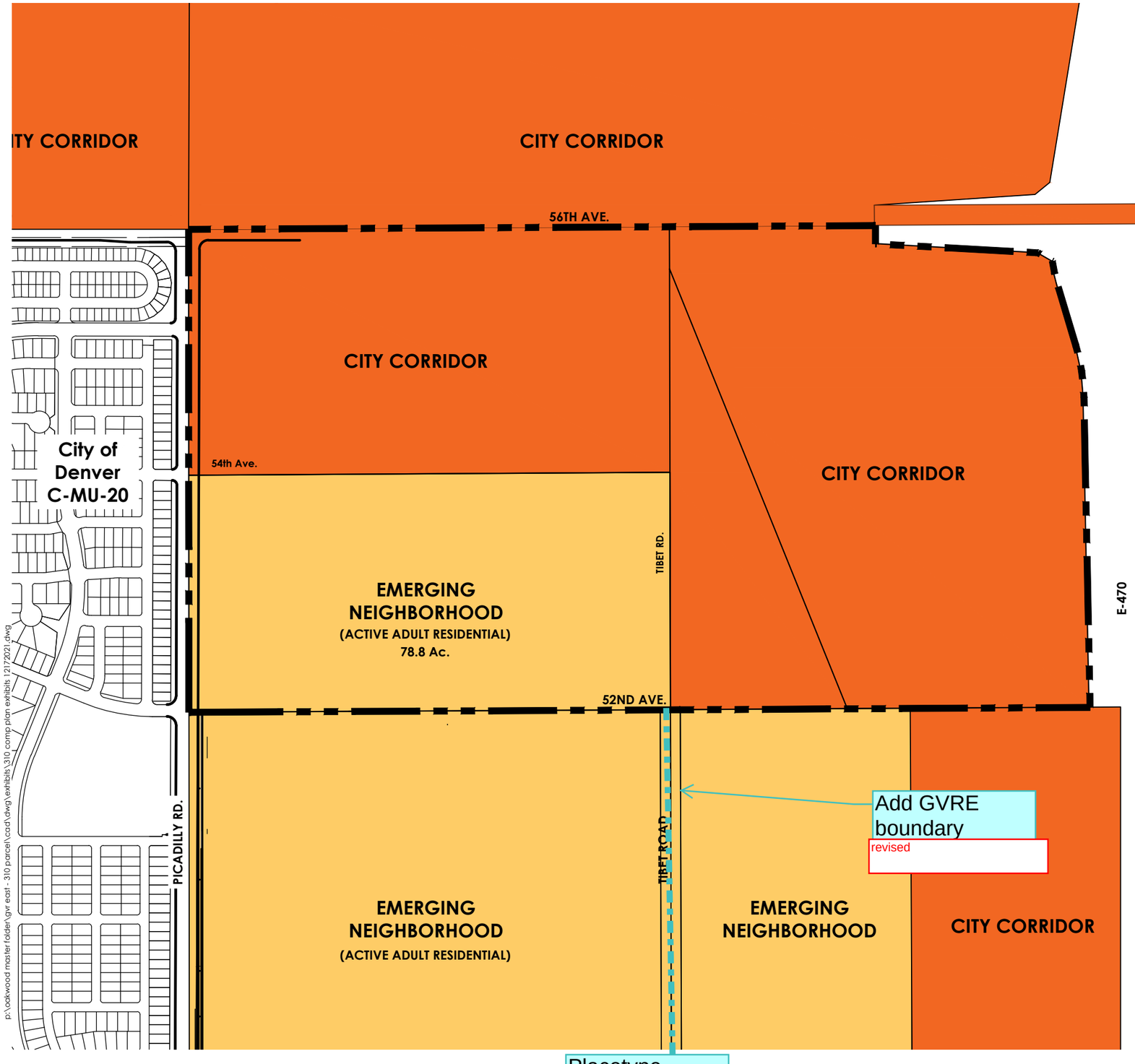
terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

N

Scale: 1"= 600'

0 300 600 1200

December 17, 2021



Green Valley ~~Amendment 2~~

PROPOSED COMPREHENSIVE PLAN DESIGNATION

terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

N

Scale: 1"= 600'

0 300 600 1200

December 17, 2021

combine comp plan and rezone letters of justifications and graphics

letters of justification combined along with graphics

January 27, 2022

streets used in description

-use streets to define area, 56th, future 52nd, Picadilly & E-470
-start with identifying existing zones

Green Valley Master Plan– Rezone Request – Letter of Justifi

As part of this submittal, we are proposing to rezone parcels north of Green Valley MP Amendment 1 formerly known as Aurora 310. The site is bordered by MU-A (Mixed Use-Airport) to the north, R-2 (Medium Density Residential) to the south, MU-R (Mixed Use-Regional) to the east (of E-470) and by residential development in the City and County of Denver to the west. This request proposes to rezone 79 acres from MU-A (Mixed Use-Airport) Districts to R-2 (Medium Density Residential) and 27 Acres of MU-R (Mixed Use-Regional) to MU-A (Mixed Use-Airport) District. We have previously submitted a zoning inquiry for this parcel and staff's response was neutral. Staff had no objection to rezoning a portion of the site from MU-A to R-2, and from MU-R to MU-A to permit residential development.

revised

move text

area to the south

The Amendment 2 area being added north of 52nd Avenue is envisioned as revised prehensive planned community which acts as an extension of the approved Amendment 1. We propose extending the ctive adult community of Green Valley Ranch East to the north along with an open space corridor. This corridor will act as a link between the two active adult communities while also including a neighborhood park. Per conversations with City staff on 52nd Ave, will be reed to p this street classified as a collector street that connects from Picadilly Road to Tibet Road which will enhance connectivity thru the site. This Amendment area will also maintain the City Corridor placetype for the rest of the property along 56th Ave and E-470. This area will include a wide range of uses, including commercial, retail, office, institutional, and multifamily residential consistent with that zoning.

We believe this rezone keeps with the existing zoning by maintaining MU-R and MU-A along 56th and E-470 which includes regional commercial, retail and service uses. Residential single-family and multi-family uses are permitted as part of the overall mix of uses in the MU-A zoning district. Proposed residential uses in MU-A and R-2 will not be in the prime commercial locations visible from 56th Ave and E-470. The extension of R-2 to the north is compatible with the existing Active Adult R-2 to the south t 1 as well as the single-family residential neighborhoods to the west in Denver.

of 52nd Ave

revised

Conformance with Rezone Criteria:

i. *The change to the Zoning Map is needed to correct an error (change in the character of surrounding areas does not constitute an error in the map);* respond: there is no error

response added

ii. *The change to the Zoning Map is required because of changed conditions or circumstances on the property or in the surrounding area and:*

- As time has gone on, we have found more and more demand for residential development and less demand for commercial and office space. This has especially been found true in these trying time of a global pandemic. This rezone request is in response to these changing demands within the region.

revised

a. *The applicant has demonstrated that the proposed initial zoning or rezoning is consistent with the spirit and intent of the Comprehensive Plan, with other policies and plans adopted by the City Council, and with the purpose statement of the proposed new zone district(s);*

- We believe this rezone keeps with the ~~existing~~ Comprehensive Plan by maintaining City Corridor Placetype ~~with~~ the MU-R and MU-A along 56th and E-470 which will promote ~~regional~~ commercial, retail and service uses. Residential single-family and ~~multi-family~~ uses are permitted as part of the overall mix of uses in the MU-A zoning district. Proposed residential uses in MU-A and R-2 will ~~not~~ be located outside of the commercial corridor, ~~visible from 56th Ave and E-470.~~ The extension revised to the north is compatible with the existing Active Adult R-2 in GVRE as well as the single-family residential neighborhoods to the west in Denver. This extension will be an Emerging Neighborhood Placetype to correlate with this change and the existing placetype of the existing R-2 zone district to the south.

be more specific that the rezone request to R-2 is accompanied by a concurrent Comp Plan amendment to Emerging Neighborhood revised

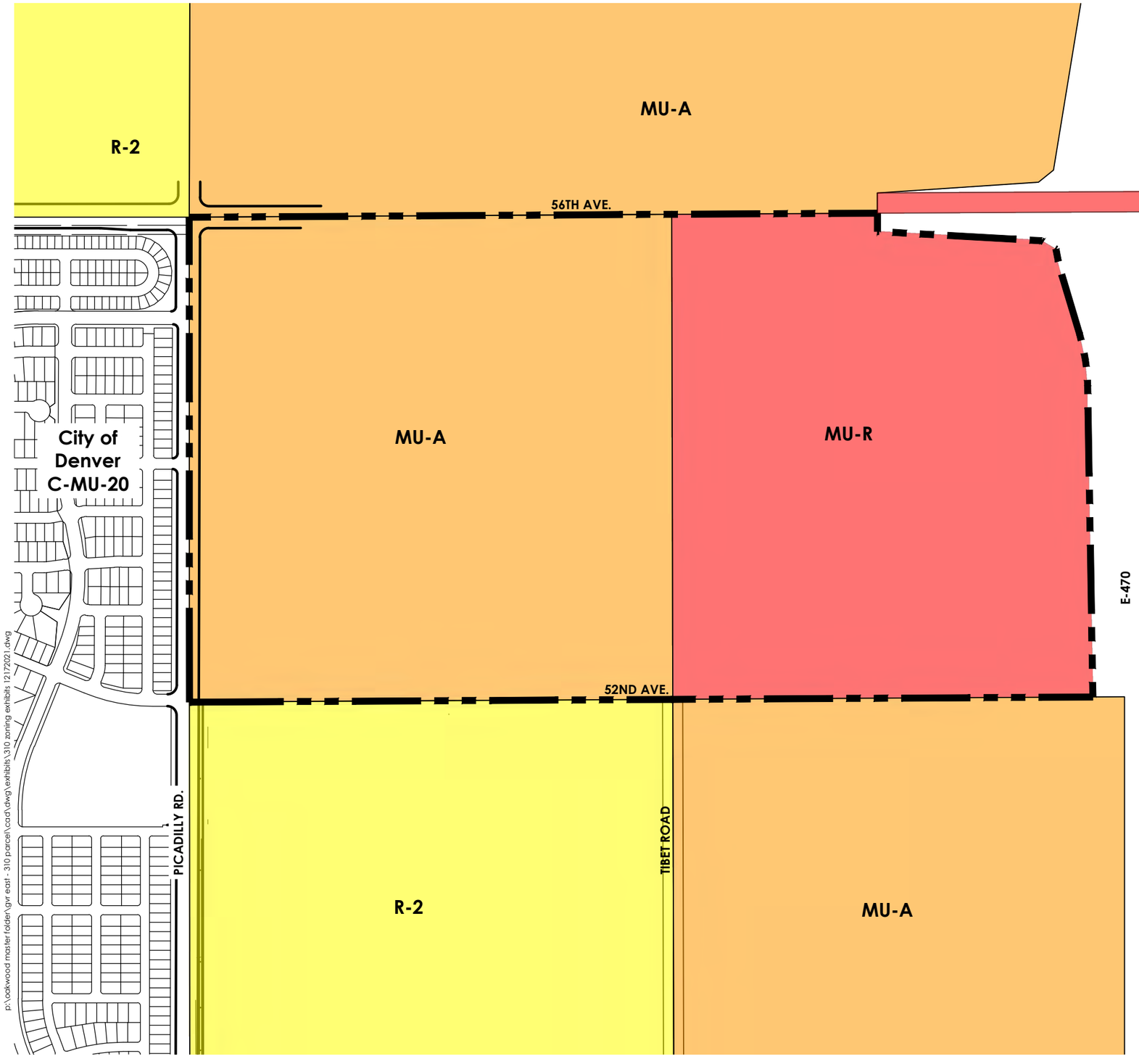
b. *The applicant has demonstrated that the size, scale, height, density, and multi-modal traffic impacts of the proposed initial zoning or rezoning are compatible with surrounding development or can be made compatible with surrounding development through approval conditions; and*

- Since the property is currently vacant and surrounding uses have not been implemented, we anticipate little to no effect on surrounding development. Expanding the gated active adult community will reduce impacts on traffic while being compatible with the residential to the south and west of the property.

c. *The application demonstrates that the change in zoning will not create significant dislocations of tenants or occupants of the property, or that any impacts are outweighed by other public benefits or progress toward other Comprehensive Plan goals that would be achieved by approval of the application.*

- The property in question is currently vacant and no dislocation of tenants or occupants will occur.

We are excited about the opportunity to continue work in this rapidly changing E-470 Corridor. It is our intent to provide the framework to expand upon the successful Green Valley Ranch master-planned community and create long lasting value, which is an important component in implementing the City of Aurora's future for this area.



R-2 (MEDIUM-DENSITY RESIDENTIAL)

MU-A (MIXED-USE AIRPORT)

MU-R (MIXED-USE REGIONAL ACTIVITY CENTER)

GREEN VALLEY AMENDMENT 2 REZONE PARCELS

Maps updated

Parcel / Area	Acres	Zone District(s)
Green Valley Amendment 2 (east 1/2)+	133.2	MU-R
Green Valley Amendment 2 (west 1/2)#	160.3	MU-A
Total	**293.5**	

* Assumes residential density of 5 DU/Acre

\+ Maximum 25% residential land use within 1/2 mile of E-470

\# Limited to 50% residential as "predominant land use"

Green Valley Amendment 2

EXISTING ZONING DESIGNATION

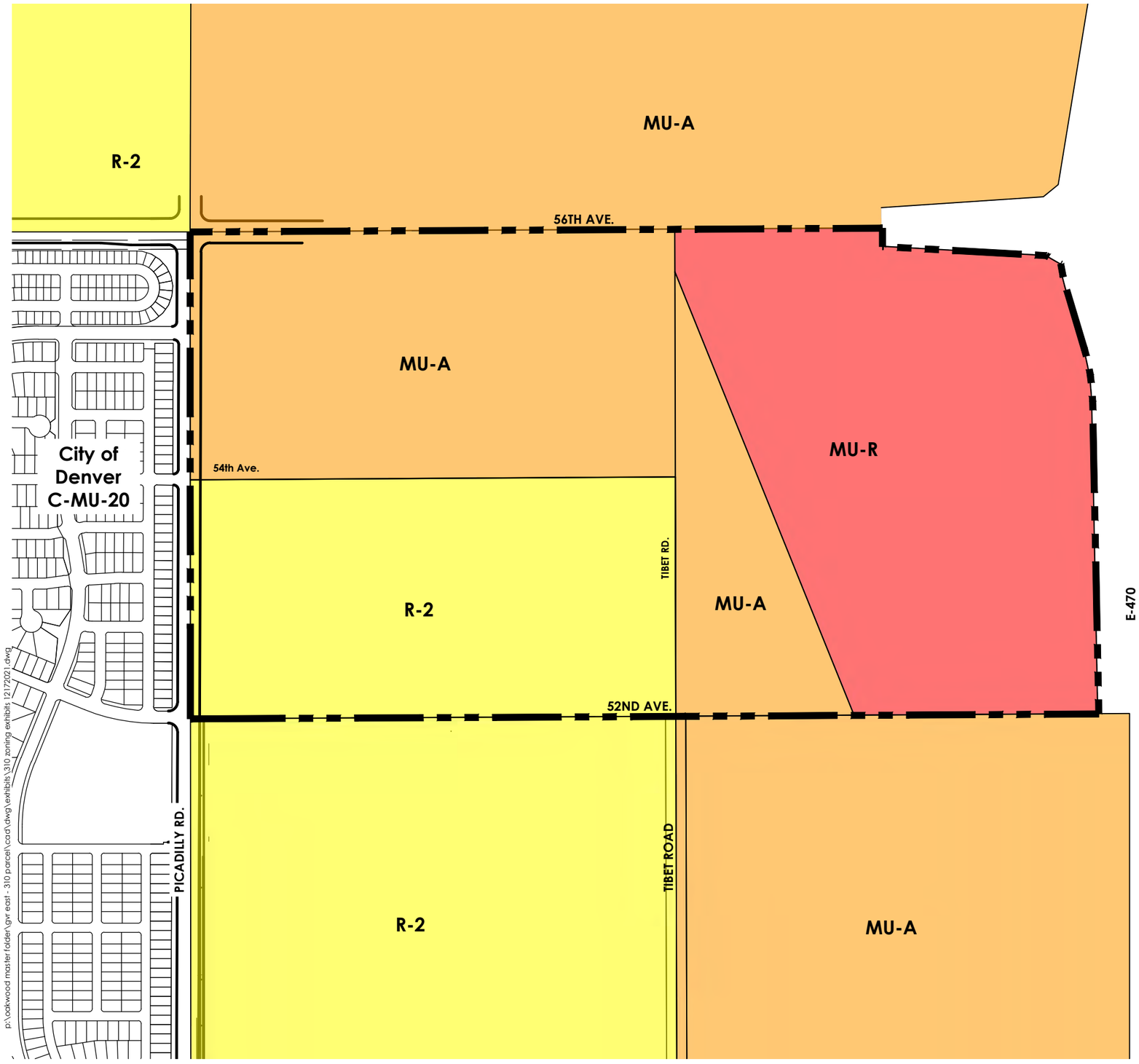
terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

N

Scale: 1"= 600'

0 300 600 1200

December 17, 2021



R-2 (MEDIUM-DENSITY RESIDENTIAL)

MU-A (MIXED-USE AIRPORT)

MU-R (MIXED-USE REGIONAL ACTIVITY CENTER)

GREEN VALLEY AMENDMENT 2 REZONE PARCELS

Maps updated

Parcel / Area	Acres	Zone District(s)
Green Valley Amendment 2 (EAST 1/2)+	106.4	MU-R
Green Valley Amendment 2 (NW 1/4)#	81.5	MU-A
Green Valley Amendment 2 (SE 1/4)	26.9	MU-A
Green Valley Amendment 2 (SW 1/4)	78.8	R-2
Total	**293.5**	

* Assumes residential density of 5 DU/Acre

\+ Maximum 25% residential land use within 1/2 mile of E-470

\# Limited to 50% residential as "predominant land use"

Green Valley Amendment 2

PROPOSED ZONING DESIGNATION

terracina design
10200 E. Girard Ave, Ste A-314
Denver, CO 80231
ph: 303.632.8867

N

Scale: 1"= 600'

0 300 600 1200

December 17, 2021

EXHIBIT A

ZONING MAP AMENDMENT

A PORTION OF THE NORTHEAST QUARTER OF SECTION 13, TOWNSHIP 3 SOUTH, RANGE 66 WEST, SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, **TO BE DESIGNATED AS MU-(A)**, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID NORTHEAST QUARTER, WHENCE THE WEST LINE OF SAID NORTHEAST QUARTER BEARS NORTH 00°07’57” WEST, WITH ALL BEARINGS REFERENCED HEREIN BEING RELATIVE THERETO;

THENCE ALONG THE WEST LINE OF SAID NORTHEAST QUARTER, NORTH 00°07'57" WEST, A DISTANCE OF 2,415.37 FEET;

THENCE DEPARTING SAID WEST LINE, SOUTH 22°00'43" EAST, A DISTANCE OF 2,599.31 FEET TO THE SOUTH LINE OF SAID NORTHEAST QUARTER;

THENCE ALONG SAID SOUTH LINE, SOUTH 89°40'22" WEST, A DISTANCE OF 968.66 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 26.855 ACRES, (1,169,823 SQUARE FEET), MORE OR LESS.

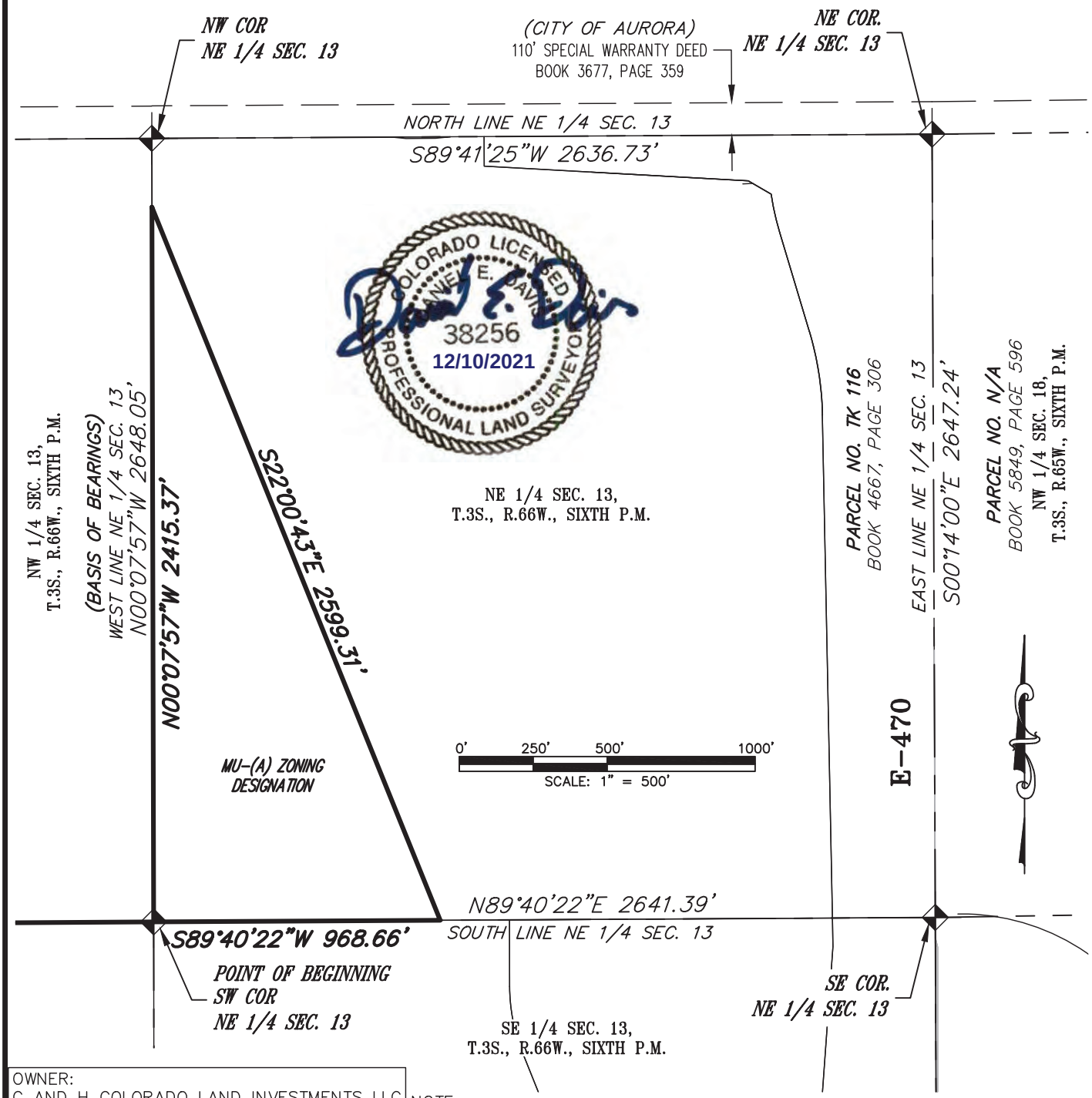
ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

ILLUSTRATION ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS, PLS 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE., SUITE 1, LITTLETON, CO 80122

ILLUSTRATION FOR EXHIBIT A

SHEET 2 OF 2



OWNER:
C AND H COLORADO LAND INVESTMENTS LLC
C/O GEORGE MCELROY & ASSOCIATES INC
10801 W CHARLESTON BLVD, SUITE 170
LAS VEGAS, NV 89135-1210

NOTE:
This illustration does not represent a monumented survey. It is intended only to depict the attached description.

PARCEL CONTAINS 1,169,823 (26.855 ACRES) MORE OR LESS

CITY OF AURORA, COLORADO

DRAWN BY: DED	SCALE: 1"=500'	R-O-W FILE NO.
CHECKED BY: JRW	DATE: 12/3/2021	JOB NO. 19319-28

A ***ZONING MAP AMENDMENT***
BEING A PART OF THE NE 1/4 OF SEC. 13
T.3S., R.66W., SIXTH P.M.
CITY OF AURORA, COUNTY OF ADAMS
STATE OF COLORADO

EXHIBIT A

ZONING MAP AMENDMENT

A PORTION OF THE NORTHWEST QUARTER OF SECTION 13, TOWNSHIP 3 SOUTH, RANGE 66 WEST, SIXTH PRINCIPAL MERIDIAN, CITY OF AURORA, COUNTY OF ADAMS, STATE OF COLORADO, **TO BE DESIGNATED AS R-2**, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID NORTHWEST QUARTER, WHENCE THE EAST LINE OF SAID NORTHWEST QUARTER BEARS NORTH 00°07’57” WEST, WITH ALL BEARINGS REFERENCED HEREIN BEING RELATIVE THERETO;

THENCE ALONG THE SOUTH LINE OF SAID NORTHWEST QUARTER, SOUTH 89°40'33" WEST, A DISTANCE OF 2,639.49 FEET TO THE SOUTHWEST CORNER THEREOF;

THENCE DEPARTING SAID SOUTH LINE ALONG THE WEST LINE OF SAID NORTHWEST QUARTER, NORTH 00°01'58" WEST, A DISTANCE OF 1,299.62 FEET;

THENCE DEPARTING SAID WEST LINE, NORTH 89°39'00" EAST, A DISTANCE OF 2,637.23 FEET TO THE EAST LINE OF SAID NORTHWEST QUARTER;

THENCE ALONG SAID EAST LINE, SOUTH 00°07'57" EAST, A DISTANCE OF 1,300.81 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 78.751 ACRES, (3,430,398 SQUARE FEET), MORE OR LESS.

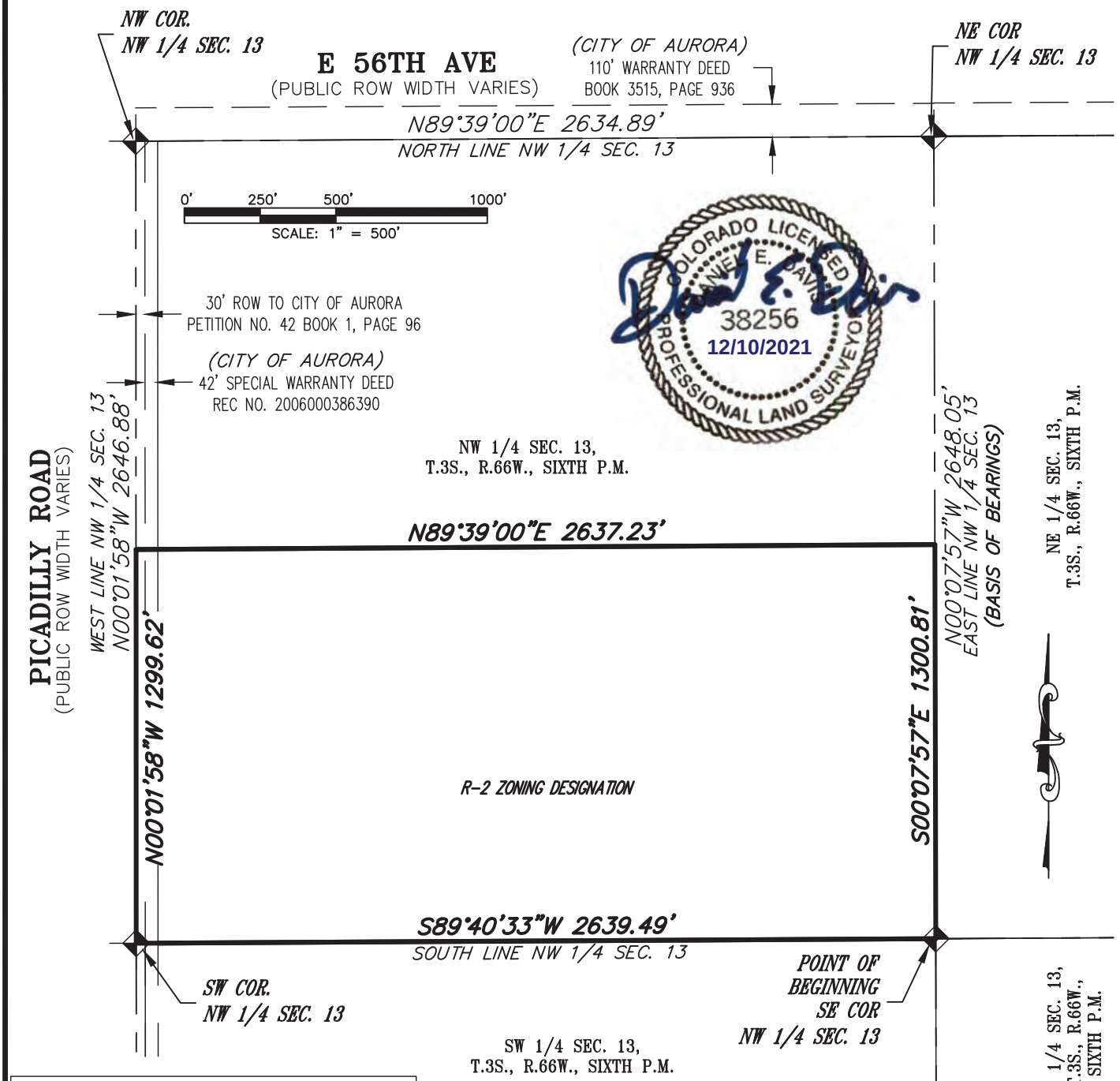
ALL LINEAL DISTANCES ARE REPRESENTED IN U.S. SURVEY FEET.

ILLUSTRATION ATTACHED AND MADE A PART HEREOF.

DANIEL E. DAVIS, PLS 38256
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.
300 EAST MINERAL AVE., SUITE 1, LITTLETON, CO 80122

ILLUSTRATION FOR EXHIBIT A

SHEET 2 OF 2



OWNER:
GREEN VALLEY AURORA LLC C/O GEORGE MCELROY & ASSOCIATES INC.
10801 W CHARLESTON BLVD, SUITE 170
LAS VEGAS, NV 89135-1210

NOTE:
This illustration does not represent a monumented survey. It is intended only to depict the attached description.

PARCEL CONTAINS 3,430,398 (78.751 ACRES) MORE OR LESS

CITY OF AURORA, COLORADO

DRAWN BY: DED	SCALE: 1"=500'	R-O-W FILE NO.
CHECKED BY: JRW	DATE: 12/3/2021	JOB NO. 19319-28

A ***ZONING MAP AMENDMENT***
BEING A PART OF THE NW 1/4 OF SEC. 13
T.3S., R.66W., SIXTH P.M.
CITY OF AURORA, COUNTY OF ADAMS
STATE OF COLORADO

Dewberry

Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111-4806

303.368.5601
www.dewberry.com

May 24, 2022

DEN Planning and Real Estate

RE: Response to Comments Aurora 310 Master Drainage Report

Dear Lisa Nguyen and Elise Brenninkmeyer,

This letter responds to the comments provided for the Aurora 310 Master Drainage Report.

MEMO

Date: March 23, 2022

To: City of Aurora
From: DEN Planning + Real Estate Through: Lisa Nguyen/Elise Brenninkmeyer

Subject: GREEN VALLEY RANCH

Denver International Airport (DEN) received your referral letter and we appreciate the opportunity to comment on the proposal. DEN provides the following comments:

- The proposed development is in the **"5-Mile 'Known - Wildlife Attractant Separation Area"** for the final build-out of future DEN Runways, as defined by the Federal Aviation Administration (FAA). The USDA Wildlife Biologists assigned to DEN (Benjamin.J.Massey@usda.gov and #dia-operations-usdawildlife@flydenver.com) assist in implementing DEN's Wildlife Hazard Management Plan and have requested coordination as this project progresses. USDA and DEN will provide assistance with the requirements outlined in the current version of FAA Advisory Circular 150/5200-33C (see link below). DEN also requests that the landscape plan include maintenance of trees and grasses to reduce attractants for wildlife such as raptor species, blackbirds/starlings, and geese. Fruit-producing trees and shrubs should be avoided. Water quality ponds/detention structures must be designed to meet a 48-hour drain time following a 100-year event.

  https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentnumber/150_5200-33

- The site is found within/under the navigable airspace associated with DEN, as promulgated and regulated by the Federal Aviation Administration (FAA) under 14 CFR Part 77, Objects Affecting the Navigable Airspace. Based on Part 77 and the development site location, the proponent is required to file notice with the FAA, via the FAA Form 7460-1 process (Notice of Proposed Construction or Alteration), of any structure or temporary construction equipment (e.g., cranes) that penetrate Part 77 surfaces. The FAA website from which the need for the 7460 process can be determined ("Notice Criteria Tool") and/or the filing can be initiated is: https://oeaaa.faa.gov/oeaaa/external/portal.jsp

1. Noted. Coordination will be ongoing as the design progresses.

2. Noted. Coordination will be ongoing as the design progresses.

Sincerely,

Jason Margraf, PE
Associate Vice President, Department Manager

Preliminary Drainage Report Review Checklist

Subdivision: GREEN VALLEY
RSN: 1611254
Date: 4/21/22
Reviewer: RO

	Complies?		
	Yes	No	N/A
Planning Process			
Pre-Application Meeting notes requirements met • Report or letter? • Full spectrum, detention and/or WQ? • Outfall location?	☐	☐	☒
Drainage Plan matches Site Plan (site layout, easements, etc.)	☐	☐	☒
Drainage design for adjacent roadways included? *Confirm on site plan what roads are being improved. P* *DR should include drainage design for all roadways being improved even if roadway construction is deferred*	☐	☒	☐
Phasing Shown *If project is to be phased then phasing must be described in PDR report text and shown on plan. Hydrologic analysis of different phases may be required and multiple plan sheets may be needed.*	☐	☐	☒
Referrals			
Confirm referrals to all relevant outside agencies have been made (UDFCD, CDOT, DEN/DIA, E-470, etc….)	☒	☐	☐
Format and General Items			
<u>Report</u>			
COA approval blocks on report cover	☒	☐	☐
Formal Subdivision name on report cover	☒	☐	☐
Required report outline/TOC/content followed (SDDTC Sect 2.30)	☒	☐	☐
Advisory note that PDR approval is required prior to Civil Plan Approval	☐	☐	☒
Variances *All requested variances must be listed with justifications in section A.2.c of the PDR and approved by Public Works Development Supervisor*	☐	☒	☐
<u>Plan</u>			
Drainage Plan uploaded as separate full-size dwg	☐	☒	☐
COA approval block on drainage plan 1st sheet	☒	☐	☐
No copyright notes on plan	☐	☐	☒
Formal Subdivision name in title block of drainage plan	☐	☒	☐
Required plan items included (SDDTC Sect 2.34). Additionally, show on the plan % Imperv for all basins.	☐	☒	☐
General Notes required on plan: 1. City of Aurora review is only for general conformance……. 2. Ref COA NAVD88 benchmark	☐	☒	☐

3. Indicate public or private maint. for all storm infrastructure 4. Design recurrence interval for storm pipe infrastructure			
Contours 2' max, 50' min beyond property line and shown for all off-site tributary areas. *Offsite trib areas may be shown on a separate 11x17 in report.*	☒	☐	☐
Building FFE's shown (commercial and multi-family)	☐	☐	☒
Retaining Walls – Locations shown. Preliminary section and material <u>not</u> required.	☐	☐	☒
Scale 1"=50' for single family. 1"=30' for multi-family and commercial	☐	☐	☒
Previous Studies and Master Plans			
City of Aurora Master Plans this study must comply with?	☒	☐	☐
UDFCD Master Plans this study must comply with?	☒	☐	☐
UDFCD MDP improvements required? *Developer generally responsible for grading, erosion protection and reveg. For MP channel improvements adjacent to site. Drops generally reimbursable by Aurora Water after construction.*	☐	☐	☒
Adjacent Subdivision Drainage Plans	☐	☒	☐
Previous studies for site	☒	☐	☐
Regional Facilities (Ponds or conveyance > 130 ac tributary)			
UDFCD review required? *UDFCD should review PD's for any Regional Facilities eligible for UDFCD maintenance Add comment not to resubmit until UDFCD comments received and addressed.*	☒	☐	☐
Aurora Water Review? *Recommended for regional facilities since Water will maintain*	☐	☐	☒
Tracks dedicated to COA for any regional ponds or channels	☐	☐	☒
Hydrologic Analysis			
<u>Basin Delineations</u>			
Basin boundaries correspond to proposed topography	☒	☐	☐
All off-site tributary areas delineated on topographic map and evaluated *In general properties must continue to accept historically tributary flows*	☐	☒	☐
Subbasins being sent offsite undetained/untreated acceptable? Receiving inlets/pipes have adequate capacity?	☐	☒	☐
<u>Rainfall/Design Events</u>			
Point Rainfall Depth per COA Criteria *Rational Method - Must use UDFCD figures RA-1 – RA-6 from previous versions of UDFCD manual (NOAA14 data may not be used for Rational Method)* *CUHP - NOAA Atlas 14 rainfall data allowed for CUHP*	☐	☒	☐
Urban Center or TOD (100yr design required)	☐	☐	☒
City Center Zone (5yr minor event)	☐	☐	☒

Rational Method			
Rational Method only for ≤ 90 acres	☐	☐	☒
NRCS soils data • Soils map included with site boundaries delineated • Imperviousness and C values reflect correct hydrologic soil group	☐	☐	☒
Imperviousness and C Values match COA SDDTC Table 1	☐	☐	☒
Tc calcs utilize COA SDDTC Eq's 5.2-5.4 and related guidance • *COA equation use required (some current UDFCD eq's differ)* • *Minimum Tc = 10 min undeveloped, 5 min urbanized* • *Max length for Ti = 500' undeveloped, 300' urbanized*	☐	☐	☒
Spot check calcs • Weighted C and % Imperv, Tc, Intensity, peak flows • Check calcs of routed/accumulated flows at critical locations (ponds, storm inlets, etc.)	☐	☐	☒
CUHP			
Depression loss values correspond to UDFCD guidance	☐	☒	☐
Infiltration method parameters correspond to UDFCD guidance	☐	☒	☐
Imperviousness calcs reflect COA required % imperv values	☐	☒	☐
DCIA Level *0 unless distributed LID measures utilized throughout watershed. For example, providing ponds, rain gardens, or other UDFCD treatment BMP's sized for the subdivision or large portions of it does not justify DCIA Level > 0.*	☐	☒	☐
Spot check calcs: • Basin areas • % Imperv • Confirm WQCV portion of pond areas to be 100% imperv.	☐	☒	☐
SWMM			
Link-node diagram included	☐	☒	☐
Pond storage rating curves match plan/calcs	☐	☒	☐
Pond discharge rating curves match calcs	☐	☒	☐
Spot check calcs: • CUHP output hydrographs input to correct nodes • Link node connectivity • Continuity error not significant	☐	☒	☐
Hydraulic Analysis			
Ponds			
Trib to City Center Pond? Fees required.	☐	☐	☒
Full Spectrum or Det + WQ or WQ only required?	☐	☒	☐
V=KA method allowed only for ≤ 90 acres	☐	☐	☒
1.2WQCV • <5 Ac Trib – 1.2 WQCV required • ≥ 5 ac Trib – 1.0 WQCV required (added 20% WQCV not required)	☐	☐	☒

Jurisdictional dams? • *Reference 2007 Office of the State Engineer (SEO) publication* • *Jurisdictional criteria differ for above and below ground impoundments* • *If potentially jurisdictional, require letter from SEO with decision*	☐	☐	☒
COA freeboard requirement • 1' min from 100yr WSEL to spillway crest) *COA considers 100yr to be 100yr+1/2EURV for full spectrum ponds, 100yr+1.2WQCV for detention + WQ ponds and WSEL reached in pond during 100yr event for EURV or WQ only ponds.*	☐	☒	☐
UDFCD Freeboard requirement • 1' min freeboard from 100yr WSEL over emergency weir up to top of embankment. • PD must include calc of 100yr WSEL over weir to determine freeboard	☐	☒	☐
Freeboard between building FFE's and emergency flow elevation over spillway. *COA recommends 1' min.*	☐	☐	☒
Total drainage area and % imperv for each pond correctly computed. • *Offsite tributary areas generally do not have to be included in detention and EURV sizing (flows may be passed through undetained)* • *Off-site tributary areas should be included in WQCV sizing to prevent wash-through of pollutants.*	☐	☒	☐
Pond release rates per COA criteria (COA SDDTC Section 6.33) *Current UDFCD release rates differ from COA and may only be used if they produce discharge rates lower than COA criteria.*	☐	☒	☐
Pond info required to be shown on the Drainage Plan • Pond volumes, WSEL's, allowable release rates • Drainage easement for pond (tract instead if regional). Note that ponds should not be located on platted lots. Ponds, underground det and WQ devices are to be contained in "Drainage Easements". Access to these from ROW is to be shown as an "Access Easement" (note this is not a public access easement). • Drive down access meeting COA SDDTC section 6.39 required for larger ponds • 4:1 max slopes • Location and direction of emergency spillway flows shown on plan	☐	☒	☐
Pond hydraulic calcs that should generally NOT be included in PDR/Master • Do not include sizing of orifices or restrictor plates for WQCV, EURV or flood events (10- and 100-yr). • Exception to this is that for WQCV or EURV only ponds (no detention), a calc determining the 100yr WSEL in the pond when this event passes through is required. For these ponds, the emergency weir is to be set 1 ft above this 100yr level.	☐	☐	☒
Proximity to Airports? • Within 10,000 ft 48hr drain time required by FAA Circ. 150/5200-33B. ~~City will also require that micropools be covered.~~ Stmt removed. • DIA has more stringent requirements: Within 10,000 ft, 40 hr drain time and no exposed micropool required. Between 10,000 ft and 5 miles, drain time should be 48 hr max and micro-pool can be exposed. DIA has also requested that all projects with ponds within 5 miles be referred to them for review.	☒	☒	☐

Emergency spillway flows onto private property • If adjacent property is already developed: A letter from the adjacent property owner agreeing to perpetuate emergency flows through their property and provide 1 ft of freeboard to all structure FFE's should be included in PDR. • If adjacent property is currently undeveloped: Add call-outs to each sump inlet stating: ***Future adjacent development to provide surface conveyance for emergency overflows.*** Plans shall clearly state emergency flows (cfs) and detained release flows from the outlet (if applicable) • City does <u>not</u> require a drainage easement be dedicated for these emergency flows unless the storm system provides less than 100yr capacity.	☐	☐	☒
Pond emergency spillway flows within the same development site • shall provide a drainage easement to ROW or approved outfall.			
<u>Proprietary WQ Devices</u>			
Acceptability of device *City does not currently have a list of acceptable devices. Basic requirement is 80% TSS removal minimum but not all devices providing this are acceptable. For example basket-type inserts may not be acceptable for new construction because of limited storage capacity, greater maintenance, etc.*	☐	☐	☒
Cut sheet for device required in PDR showing • Treatment capacity sizing for 2-yr event • Bypass capacity for Q100 if 100yr pipe system	☐	☐	☒
<u>Other Water Quality Measures (Rain Gardens, Grass Swales, Etc.)</u> Designed per UDFCD criteria and UDFCD design spreadsheets or equivalent included	☐	☐	☒
<u>Storm Sewer System</u>			
Sizing should generally not be included • Do not include calcs or sizing for inlets or pipes in PD. Just show system schematically on plan with no sizing. • Exception to this is if a significant flow is proposed to be sent to an existing storm pipe system then info from a previously approved report or new calcs should be included to show that the existing system has capacity. Reason is that if it does not it could significantly change the site layout or overall drainage scheme.	☐	☐	☒
Emergency overflows for sump inlets: • Shown on plan and discussed in text. • Confirm 1' min freeboard between all overflow WSEL's and building FFE's. For future structures, add note stating this requirement. • City does <u>not</u> require a drainage easement be dedicated for these emergency flows unless the storm system provides less than 100yr capacity.	☐	☐	☒
Easements or tracts identified for emergency overflows per criteria	☐	☐	☒
Public or private indicated for all lines on plan *Lines are generally private unless receive water from public source (ROW) or receive water from 2 or more private properties.*	☐	☐	☒
Easements and License Agreements	☐	☐	☒

• Easements shown for all public lines on private property. • License agreements for private storm on public property or easements			
Two Streets Sloping Down to an Intersection – Inlets Required • *Ref Roadway Design Manual Section 4.03.3 - Inlets required u/s of curb returns on both streets* • *General (unwritten) rule is to require this if intersection is within 300 ft (+/-) of a storm pipe. So developer could have to extend storm pipe 300' to meet this requirement.*	☐	☐	☒
Cross Pans • *Ref Roadway Design Manual Section 4.03.2 – "Cross Pans are not allowed across collector or arterial roadways, nor are they allowed on roadways with storm sewer systems."* • *On steeper roads (>4.5%) surface flows may overshoot cross pan rather than being turned by it – cross pans not recommended.*	☐	☐	☒
<u>Culverts</u>			
Required to be sized/shown in PDR if under public roads	☐	☐	☒
100yr capacity required + emergency overflow capacity per SDDTC Section 6.60 Eq 6.5	☐	☒	☐
Label emergency overflow WSEL on plans and add note stating adjacent structure FFE's will be required to be 1 ft minimum above this WSEL.	☐	☒	☐
24" min diameter. Min ht of 6ft if box width <u>> 8'</u>	☐	☒	☐
Maintenance access provided both u/s and d/s of culverts with 20' minimum access around all riprap, headwalls and wingwalls at the outlet.	☐	☐	☒
<u>Channels</u>			
COA criteria for slope, velocity, SS, freeboard, etc met (SDDTC Section 6.20)	☐	☐	☒
Prelim plan and profiles shown on plan along with drops and bank protection	☐	☐	☒
WS profiles w/ RAS not required for PDR's. If included consider adding note stating that profile and RAS modeling not approved with this PDR.	☐	☐	☒
Outfalls			
Proposed outfall corresponds to any previously proposed/planned location (MDP for larger site, previous subdivision drainage rpts, etc.)	☐	☐	☒
Outfalling undetained developed flows? • *No detention should have been directed in Pre-App notes – City Engineer approval required* • *Per SDDTC 3.64 receiving channel should be "improved", have capacity for flows and result in no adverse impact or* *Residential development w/ less than 5 du/ac discharging to public facility with no adverse impacts.*	☐	☒	☐
HGL in receiving pond or channel accounted for • *Channels w/ very large trib area – consider 10-yr rather than 100-yr* *Pond HGL – City has generally required that 100yr+1/2EURV or 100yr+1.2WQCV be used as receiving HGL.*	☐	☐	☒
Floodplains			
"Best available information" utilized	☐	☒	☐

• *Floodplain regulation is generally based on "best available information". COA website shows Effective FIRM's and LOMR's. Cases where other info sources may be considered better info:* - *UDFCD FHAD studies that are more recent or more detailed* - *"Preliminary" status maps available on the FEMA Map Service Center website.* *CLOMR's approved by the City where the project has been built but no LOMR has yet been approved.*			
Work in Floodway requires CLOMR or No Rise Certification Letter *City Floodplain Administrator review required*	☐	☐	☒
Work in 100yr Floodplain requires Floodplain Development Permit *City Floodplain Administrator review required*	☐	☐	☒
- Residential FFE's to be 2 ft min above BFE	☐	☐	☒
Non-residential FFE's to be 1' min above BFE	☐	☐	☒
Floodplain limits, BFE's and FEMA map panel # shown on plan if within 300'	☐	☐	☒
Setback requirement of SDDTC Section 4.33 met	☐	☐	☒
Residential lots cannot be platted or shown on the drainage plan, site plan or final civil plans if any portion of the lot is within an existing floodplain.	☐	☐	☒
Swales			
Min slope of 2% or provide underdrain or concrete lining	☐	☐	☒
Temporary swales < 2% slope and freeboard limit more than 10' from ROW may be permitted up to X (36- 60 months depending on the site location). Approved as a variance on case-by-case basis. If approved, add the following note to the plans: ***The private temporary swale shall be maintained by _____ and slopes less than 2% permitted for up to X months or until adjacent development occurs. Otherwise, revisions shall be submitted for swale/channel sections that meet all COA criteria for permanent infrastructure. In addition, the City reserves the right at any point to require the construction of the remedial measures should there be any issues with reduced capacity, sedimentation, erosion, ponding, flooding or other items identified by the City Engineer.*** If in airport detention pond buffer area, add: ***Due to the proximity of the airport standing water is not permitted. The owner shall take immediate action if such issues are identified.***	☐	☐	☒
Temporary swales with top of freeboard less than 10' from ROW and slopes less than 2% are discouraged but may be approved on a case-by-case basis as a variance. If approved add the following note to the plans: ***Private, temporary grass-lined swales with slopes less than 2% in cut and fill locations where the top of swale is less than 10' outside of ROW shall be designed and evaluated at the time of civil plans/final drainage report. These areas may need to be concrete lined to prevent damage to the roadway substructure.***	☐	☐	☒
1' freeboard above 100yr event required for all swales	☐	☐	☒
Easements for swales: Swales providing WQ or that have significant flows will require drainage easement dedication. Very small, conveyance-only swales may not require easements. This will be a case-by-case decision by the Development Supervisor.	☐	☐	☒
Top of Swales (with freeboard) for offsite drainage (not lot drainage) shall be a minimum of 2' from the property line to avoid disturbance by fencing			
Miscellaneous			

Pond Certification – For subdivision ponds that have had large undeveloped areas trib to them, consider requesting re-certification of the pond. Advise of this in PD review that it will be required during civil plans process.	☐	☒	☐
When draining to an existing pond or water quality device: • Confirm the I&M is signed otherwise a signed I&M is required to replace the one on file with the City. • If and I&M is missing or maintenance records are not on file, Aurora Water will require assurance pond/device has been maintained and may require inspection and or cleaning of subject pond or device. • Pond Certificate for the pond is approved and included in report • Drainage easement is in place • Access to the pond per City standards is provided • Emergency spillway is in place to City Standards • If pond is being expanded, trib area or % imperv increased or some other aspect of the pond is being changed then City may require that pond be brought up to current design standards (freeboard, EURV, access, etc). Discuss all such situations with Development Supervisor in Public Works for direction.	☐	☐	☒
Access Locations – Confirm all curb cuts and curb return access points for future development shown on PD Plan are also shown on site plan and have not been objected to be traffic. Add the following note: ***Prior to final acceptance of public improvements, if the adjacent site is not under construction, curb cuts and cross pans must be removed and replaced with sidewalk, landscaping, curb and gutter at the developer expense. The developer acknowledges the risk of constructing curb cuts and curb return access points without approved civils for the adjacent sites.***	☐	☐	☒