February 6, 2024

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

Re: Fourth Submission Review – Green Valley Ranch Master Plan Amendment No 2
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 September 6, 2023. The following is a response to comments.

Fourth Submission Review

PLANNING DEPARTMENT COMMENTS
1. Zoning and Land Use Comments

1A. Format the Comprehensive Plan Amendment and Zoning Map Amendment request as a letter.
RESPONSE: Format revised to more of a letter format per comments.

1B. Reorganize the request per the redline suggestions. Try to eliminate redundant statements.
RESPONSE: Redlines addressed

1C. Describe the acreage of the areas rezoned without additional acreage references. It is very confusing. RESPONSE: Acreage reference revised

1D. Reference "residential" with Active Adult. RESPONSE: Reference revised accordingly

1E. Add exhibit references to the maps and include the references in your discussion. RESPONSE: Exhibit references added to the discussion

1F. Revise the map exhibits per the redlines. Increase the size of the street labels so they add context to the written discussion. RESPONSE: Map exhibits revised.

2. Completeness and Clarity of the Application Tab #1 Letter of Introduction
Tab #1 Letter of Introduction

2A. Revise two minor edits. RESPONSE: Edits addressed

Tab #3 Context Map

2B. There is a statement that 12.3 acres west of E-470 is being removed from the Master Plan. This is not itemized in other narratives. Please clarify if it is the area taken for E-470 right-of-way.
RESPONSE: This is the area ARTA acquired for E470. Narrative revised.

Tab #4 Site Analysis

2C. Provide more detail about the location(s) of wet ponds and the location of the existing spring.

RESPONSE: Description revised

2D. Address minor edits. RESPONSE: Revised

Tab #6 Narrative

2E. See redlines for comments and suggestions to clarify statements. Revise accordingly. RESPONSE: Revised

2F. Item 7 references street cross sections in Tab 10. Please review all sections in Tab 10 and the Public Improvement Plan (PIP) for consistency in dimensions and labels. RESPONSE: Sections revised to match PIP

Tab #7 Public Art

2G. Show the locations of already provided public art. RESPONSE: Existing public art now shown

Tab #8 Land Use Map, Matrix, and Standard Notes

2H. List the proposed uses within the Mixed-Use areas. Reference the categories provided in the Master Plan Manual. RESPONSE: Proposed uses now listed.

2I. Identify all Active Adult Planning Areas. The residential in PAs 47-48 is included in the Active Adult section of the Land Use Summary. RESPONSE: Active adult areas identified.

Tab #9 Open Space, Circulation, and Neighborhood Plan

2J. No Comments at this time. RESPONSE: Noted

Tab #10 Urban Design Standards

2K. The street sections should be consistent with the Public Improvements Plan. Revise so the names, dimensions and right-of-way widths match. RESPONSE: Street sections revised so Tab 10 and PIP match

2L. Revise tree lawn references to "landscape" in the street sections. RESPONSE: Revised

2M. Address miscellaneous redline comments and questions. RESPONSE: Revised

Tab #11 Landscape Standards

2N. Revise the curbside landscape section as noted. All new Site Plans will have to conform to the UDO and water-wise landscape design. RESPONSE: Noted

2O. Include urban streetscape design standards in Item 6. This will be applicable to the Main Street area. Add an illustration for the urban design that includes a section that identifies the zones. RESPONSE:

2P. Verify the location of the E-470 Multi-Use easement is accurate north of 38th Avenue. RESPONSE: The MUE is accurate as shown. The remaining portion of the MUE is within the ARTA portion of ROW.

Tab #12 Architecture Standards

2Q. Revise one minor spelling error. RESPONSE: Revised

Public Improvement Plan

2R. Street sections in Tab 10 should be consistent with the sections in the PIP. Review right-of-way

width, angle of parking, names of sections, etc. RESPONSE: Both the roadway sections along with the PIP sections have been revised to more closely reflect those found in the roadway manual.

2S. Revise the urban street section to identify the frontage zones. RESPONSE: Frontage zones added

2T. Confirm with Traffic that the 56th Avenue street section is consistent with current plans. RESPONSE: Section for 56th Ave has been sent to the city and no further comments have been received. This section matches the one given to us to match Windler's property.

2U. Explain why the 52nd Avenue section is for reference only. Green Valley Ranch is ultimately responsible for the construction of the full section. RESPONSE: Language revised to reflect responsibility of GVRE development.

2V. Revise tree lawn references to landscape in the street sections. RESPONSE: Sections revised.

REFERRAL COMMENTS FROM OTHER DEPARTMENTS AND AGENCIES

3. Civil Engineering (Kristin Tanabe / 303-739-7306 / ktanabe@auroragov.org / Comments in green)
Public Improvement Plan

3A. The Master Plan Amendment will not be approved by Public Works until the Master Drainage Amendment is approved. RESPONSE: Noted

3B. Add language that states additional roadway improvements may be required for planning areas to meet life safety and traffic needs. This was supposed to be in the roadway section and not drainage improvements. RESPONSE: Language added to roadway improvement section and removed form drainage improvements

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

4A. Verify the intersection configuration/control with PIP. RESPONSE: This has been addressed in the PIP.

4B. Provide intersection LOS/delay summary tables for all intersections, existing, short-term, and long-term, background, and total traffic volumes. This can be included in the Appendix. RESPONSE: Addressed in TIS

4C. Verify 2025 Background traffic volumes. Update volumes and analyses. RESPONSE: Background volumes on Tibet road on this leg were still accounted for in previous TIS, just not shown as it was assumed that the development would build this leg of Tibet, but upon being built would be used by other traffic.

4D. Provide discussion for auxiliary lane needs. Should be based on SHAC. RESPONSE: Addressed in report.

4E. Northbound vehicle queues from intersection 22 would extend past upstream intersections. Mitigation or upstream intersections will need to be restricted movement. RESPONSE: NBR at intersection 22 is recommended to be a channelized right in order to mitigate spillback, but text has been added to address restricted movements if spillback occurs.

4F. See comments throughout the report. RESPONSE: Comments in report have been addressed.

Public Improvement Plan

4G. The intersection on Tibet, south of 56th Avenue, is shown as full movement signalized in TIS.
RESPONSE: PIP revised to match TIS.

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

5A. The formulas used for calculating are outdated. I am attaching the 2023 Guidelines for Developers where these new numbers are documented. Please use the numbers below to recalculate to total public art requirement, and then also recalculate the budget breakdown for the Professional Art, Application Fee, Maintenance/Repairs, and Project Coordinator. Residential Rate is $381.13 per acre. Mixed-use is 586.35 per acre. $540 for non-residential acreage is correct.
RESPONSE: Revised

5B. In the narrative on 7.2 it mentions several different kinds of possible public art locations and included in the list is "as part of a neighborhood park." Please explain if this neighborhood park is ultimately going to stay with the Metro District or if the property is going to be returned to the city. If the sculpture is going to be placed in a neighborhood park that is going to become city property, then COA will collect the entire budget and manage the art selection process. If the public art is to be located on property that remains with the Metro District, then the City of Aurora Public Art will only collect the Public Art Fee, and the Developer or Metro District will be responsible for implementing the public art plan. RESPONSE: These parks may be a mix of City and District owned so it is difficult to determine the ultimate process. A note will be added to reflect the commentary and future process.

5C. Please resubmit with the corrected budget information and clarify the nature of the public art location. RESPONSE: Budget and description revised.

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

Tab #9 Open Space

6A. Not all northern parks can omit a playground. Please determine which of the three can be a formalized playground. Identify differences in key amenities between these three spaces noting items like a dog park in one, a community garden or other older adult-focused use in another, and a more traditional park/playground in third. PROS recommends PA-62 to be the 'traditional' since it's central in the northern area. RESPONSE: Parks will be further broken down in Form J. We prefer to not have a playground in the AA Neighborhood Park so that programming will be different. PA-62 is more likely to be the traditional park as mentioned.

6B. PA-61 needs to be pulled out or further specified. Areas that are adjacent to roadways should be wider than the 30' standard. The precedent has been set by other projects that a 40' minimum is acceptable. Note this should also have at least an 8' walk meandering in lieu of a sidewalk.
RESPONSE: PA-61 will be 40' min in width and include a 8' meandering trail. Form J will be modified accordingly.

6C. Nothing is specifically calling out floodplain areas. If you are requesting any floodplain for open space credit, the total must be noted of what acreage is being requested from the floodplain.
RESPONSE: Note has been added to Form J and Tab 8 Land Use Matrix in regards to open space credit within the floodplain.

6D. The Windler property was dedicated for floodplain purposes. Please state that clearly so it's known that this was not intended for PROS purposes. RESPONSE: Form J revised

6E. The Community Park note should apply to any planning areas within the previous 310 area. Please expand to include PAs-45-54. RESPONSE: Community Park note revised

Tab #8 Land Use Plan

6F. Revise Line 22 per the comments on Form J. RESPONSE: Revised

7. **Aurora Public Schools** (Joshua Hensley / jdhensley@aurorak12.org)

7A. The third submittal of this development application increases the number of mixed-use planning areas that include residential land uses. The total school land requirement for the non-active adult portion of Green Valley Ranch East, including the planned housing in the mixed-use areas, is approximately 35 acres. The development plan includes an 18-acre P-8 school site. This school site is sufficient for the district to construct a P-8 school with the 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. The land value for cash-in-lieu will be based on the market value of zoned land with infrastructure in place. RESPONSE: Understood. Additional fee in lieu will be needed as residential is incorporated in the mixed use parcels. Fees will be paid with each site plan.

END OF RESPONSES

3

CONTEXT MAP

- Context Map Narrative 3.1
- Regional Location Map 3.2
- Context Map 3.3
- Existing Zoning Map 3.4
- Proposed Zoning Map 3.5

3.1 CONTEXT MAP

The Green Valley Ranch MP (Formerly Framework Development Plan) was approved in November of 2008 for 2,500 acres. The MP was amended in 2018 to modify the land uses and open spaced on 588 acres located west of E-470 (Amendment 1). Amendment 2 proposes modified planning areas and open space on 301 acres located between Picadilly Road and E-470; and 56th avenue and 52nd avenue. Wi endment, we are also revising the overall MP area to removed all of the Planni east of E-470. This Second Amendment revises the total A approximately 2,500 acres to 884.1 acres. The location relation to the Green Valley Ranch MP can be found in well as Tab 4 – Site Analysis. 12.3 Acres of land west of E- east of E-470 to be removed from Green Valley Ranch MP as represented on Tab 3.2

revised

Last sentence revised to "Land has been removed from the Green Valley Ranch MP as represented in yellow on Tab 3.2. This includes 12.3 acres west of E470 that was acquired by ARTA for right of way and the construction of E470."

What is this? is it ROW for E-470? please clarify

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 was 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.

4

SITE ANALYSIS

- Form A 4.1
- Existing Easements Plan 4.2
- Waterbodies Map A 4.3
- Airport Noise Impact Map 4.4
- Soils Map A 4.5
- Boundaries Map 4.6
- Natural Features Map 4.7

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 Green Valley Ranch MP approved in 2008, consisted of 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, 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.

The proposed amendment to the Green Valley Ranch MP is for an 884-acre portion of the approved 2,510-acre Green Valley Ranch MP. The amendment area 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. Refer to Tab 3.2 for the revised Green Valley Ranch MP map. The following analysis of the site describes the Green Valley Ranch MP. The remaining portions of the original Green Valley MP located East of E-470 are no longer part of the Green Valley Ranch MP and are now part of the neighboring Aurora Highlands MP.

Existing Land Use

Existing development within the Green Valley Ranch MP is located between 52nd Ave. to the north, 38th Ave to the south, Picadilly Road to the west and E-470 to the east. Green Valley Ranch to the south of 48th Ave consists of mainly single-family residential areas that contains a P-8 school site. North of 48th Ave the site provides Active Adult residential. Pocket parks, neighborhood parks, and open spaces are provided throughout the entire MP area with connection points and pedestrian corridors that enable access for residents throughout. This area of Green Valley Ranch is currently under construction.

Surrounding Land Uses

Surrounding land uses include Green Valley Ranch in the City and County of Denver to the west of Picadilly Rd. which encompasses single-family residences, parks, open space, a new public golf course, and a number of schools.

North of E. 56th Ave and west of Picadilly Rd., is the Painted Prairie development. Skydance and Fulenwider MP's are also located north of 56th avenue, located between Picadilly Rd and E-470. These three Master planned areas will include a mix of development that include residential, commercial, and mixed uses. A fourteen acre outparcel, owned by the City of Aurora, exists near the site on 48th Ave holding a lift station, and a future fire station. Majestic Commercenter is located south of 38th Avenue, where there is one existing distribution center. Located to the East of Tibet Road, south of 52nd Avenue is the Windler MP area, which will include industrial and residential development, as well as, neighborhood parks and open spaces. Located to the east of E-470 and south of 48th Avenue is the Aurora Highlands Master Plan, which includes mixed use, and residential development.

revisions made

There is a

located south where there is

site for

The Context Map and Zoning Subarea Map, Tabs 3.3 - 3.5 show existing and planned land uses, zoning, streets, parks, and open space within ½ mile of the site's perimeter.

Topography and Landform

The landform and topography consist 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 sixty 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 northwesterly from the southeast portion of the property, beginning at 38th Avenue, and drains into Tributary T, an intermittent stream west of Picadilly Road that is tributary to First Creek.

Another minor drainage flows 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

Water is drawn from an aquifer to assist with filling 2 wet ponds north of 48th Ave. as necessary.

is this more than one wet pond? is it/they located north of 48th Ave?

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 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 4.7, "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 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 along Smoky Hill Road.

Existing Utilities

An Alta Survey has been prepared and is included in Tab 14 which identifies existing easements on the site. Also See Tab 4.2 for more information.

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 located from 48th Ave

to 56th Ave, 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 4.6. 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

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

Vegetation / Drainage

The topography gradually slopes down to the west from multiple high points that are located east along the Green Valley Ranch property boundary. These highpoints and slope directions are better shown on Tab 4.3. The slopes move from the south and east (higher) to the northwest (lower), eventually collecting into a main drainage known as Tributary T, 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 or water flows except after a major storm. Most of the drainages are flat, and the slow water flow leaves no discernible channel. The sites do not have enough surface water flow to maintain wetlands along the drainage and on flatter bottom areas.

Southeast corner of E. 38th Ave. and E-470 looking west towards Front Range

Existing Structures:

The Active Adult Clubhouse in Green Valley Ranch East located near Picadilly Road and 48th Ave is the only significant community structure that has been constructed. Individual homes have been constructed across the Green Valley Ranch MP along Picadilly Road between 38th Ave and 52nd Ave.

Wildlife:

The site was historically 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 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 proposed MP area west of E-470 between 52nd Avenue and 38th Avenue is within the R-2 (Medium Density Residential) zone district. The area north of 52nd Ave and south of 56th Ave is currently zoned mixed-use MU-A (Mixed-Use Airport) and MU-R (Mixed-Use Regional). A Zone Map Amendment is proposed with this MP Amendment to rezone 78.8 acres from MU-A to R-2 and 28.3 acres 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 consist 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; several 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

- A high pressure gas line exists within the CIG easement which will limit development within that area. Refer to Master Utility Report section titles Existing Water and Sanitary Sewer infrastructure for more information on existing utilities surrounding the development.

3. Site Restrictions

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.

- As indicated above, the site has few physical constraints, other than the existence of E- 470, the proposed and existing arterials, low-flow drainages across the site and various PSCO easements surrounding the

property. The site is predominantly developable.

- Road and utilities infrastructure will need to be extended to serve the site from the southwest at 52nd Avenue and Picadilly to the northeast at 56th Avenue and to the site boundary near E-470 as the project progresses in a phased manner. 52nd Avenue will need to be constructed first to fluidly continue the project progression.
- Tibet Road will be constructed in a phased manner to connect Tibet Road from 38th Avenue to 56th Avenue.

Existing/Planned Streets

- The E-470 Tollway is complete to the east of the site and includes an interchange at 56th Avenue, with additional interchanges planned at 48th Avenue, and 38th Avenue. Picadilly Road consists of a paved two-lane roadway but will ultimately be a 6-lane arterial. 56th Avenue and 48th Avenue, are proposed six lane arterials, and 38th Avenue, a proposed four lane arterial, are in various stages of construction between Picadilly Road and Tibet Road. 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 being planned as three-lane collector. Tibet Road is being 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 constructed 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 Ranch 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 will 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 which connect to off-site open space areas South of 38th Avenue and east of Picadilly Road 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 in Green Valley Ranch to the greatest extent possible.

Highway and Airport Noise

Setbacks per code 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 twenty-five 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 as any kind of structures will not be allowed over gas easements to keep these areas at a minimum for grading.

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 Ranch MP will change the existing rural/agricultural character of the land to that of a master 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.
- The development of the Green Valley Ranch MP, which lies within the City of Aurora Water Zones 3 and 4, will occur in phases to meet housing demand as the economy fluctuates. Water utilities will be looped to service each phase of the project by connecting to the adjacent, existing water mains within 38th Avenue, in Picadilly Road, 56th Avenue,

and 48th Avenue. Storm and sanitary networks will be extended within the community to service the phases and will connect to the existing infrastructure

- The Site is located within three separate tributaries as identified within the Green Valley Ranch East Master Utility Report. That Report identified 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 Basins 310-3 and 310-4, which are 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, Fulenwider, 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 proposed Green Valley Ranch MP Amendment effluent. Please refer to the Appendix for correspondence within Aurora Water on this topic. Consistent with this direction, Fulenwider has designed Phase 1 of the 20-inch sanitary trunk main from the Second Creek lift station north of Possum Gully running south towards E-470. Phase I is under construction at the time of this report. Phase 2 of this trunk main which extends from the terminus of Phase 1 west to the future intersection of 60th Avenue and Tibet Road is being processed with the city at the time of this report. Future Phases of this trunk main will be extended west under E-470 and 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 proposed Green Valley Ranch MP 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.

6

FORM B – MP NARRATIVE

Form B: MP Narrative

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?

In 2008 a 2,500 Ac. Master Plan (MP), formerly Framework Development Plan (FDP), for Green Valley Ranch was approved. This MP included a variety of uses including residential, commercial, mixed use and a variety of parks and open space throughout. The MP was amended for 588 acres west of E-470 known as Amendment 1 and received approval in 2018. Amendment 1 modified planning areas and open space for the 588-acre area, however, there were no other changes made to the MP. The second amendment proposes to modify the 301 acres North and east of 52nd Ave. The Master Plan area is also being revised to remove all the area from the original MP approval located east of E-470.

The proposed Green Valley Ranch MP Amendment is to revise the land uses for the 301 acres north and east of 52nd Avenue, update land use maps to better align with current site plans, to remove the area east of E-470 from the MP and amend the property boundary due to E-470 purchasing a portion of the property. The proposed amendment also includes the addition [revised] Design, Landscape and Architectural Standards, and Commercial/Retail uses.

should this say "for" to read right?

Also included with this Green Valley Ranch MP amendment ~~proposes R-2 and Mixed Use zoning to be modified~~. We are proposing to rezone parcels north of 52nd Avenue, between [revised] ~~Valley MP from~~ Picadilly Road to the CIG Gas Easement east of Tibet Road ~~and 52nd Ave along the south to 54th Ave along the north.~~ 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). The Active Adult neighborhood located between 48th Ave and 52nd Ave between Picadilly Road and E Tibet Road will be expanded to the north. This community is focused on the 5[revised], while residential uses south of 48th Ave are focused on all age [illegible]cent to 56th Avenue and East of Picadilly Road the land uses will be commercial/retail uses to serve this community and other surrounding communities near E-470.

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 developments in your area?

Green Valley Ranch MP will be 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 a variety of housing types: single-family detached homes, motorcourts with single-family detached, front loaded single-family attached duplex homes, and may include Single-Family Attached and multifamily homes within the mixed-use planning areas. 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.

The commercial planning areas will include a variety of land uses, including office, institutional and retail. A component of the commercial development is a Main Street per the Mixed-Use Regional District (MU-R) Aurora standards. These main street standards are further described in Tab 10. Due to close proximity to E470 and the interchange at 56th, the commercial center is positioned to attract a variety of commercial uses which may include large scale retail, office or warehouse retail. Commercial uses may include 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.

3. Zoning Conformance

Does the MP accurately reflect adopted zone district boundaries?

The Green Valley Ranch MP Amendment area is located within R-2, MU-A and MU-R zone districts. Located from 54th avenue to the north, 38th avenue

What is located within this area?

R-2. Section revised

to the south, and Tibet Road to the east. The Mixed Use Airport (MU-A) and Mixed Use Regional District(MU-R) is located from the 54th avenue to the south to 56th avenue to the north, and east of Tibet Road to E-470. A Zone Map Amendment is concurrently being proposed with this MP Amendment to rezone 78.8 Acres of MU-A north of 52nd Ave to R-2 zone designation in order to extend the active adult community. We're also proposing to rezone 28.3 Acres of the current MU-R east of Tibet Road to MU-A. Refer to the Rezone exhibits that are provided as part of that submittal.

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 park and school 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:

<u>Public Facilities</u>

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

- Land dedicated to city for future fire station along 48th Ave.

<u>Schools</u>

<u>P-8 School:</u>
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
- Additional School dedication requirements will be met for all residential uses once future site plans exceed the original dedications.

<u>High School:</u>
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)

Green Valley Ranch Master Plan:
Neighborhood Park: (3 AC. Per 1000 Residents)
Required: 31.2 acres
Provided: 31.2 acres

Community Park: (1.1 AC. Per 1000 Residents)
Required: 10.5 acres
Provided: 6.6 acre cash-in-lieu payment made as part of amendment 1.
Remaining payment to be made by first residential plat of either PA45-48.

Open Space: (7.8 AC. Per 1000 Residents)
Required: 81.0 acres
Provided: 82.7 acres

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 being requested in the MP.

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 fund or construct these facilities?

- As part of this Master Plan, the developer will be responsible for the construction of and/or funding of the roads and services prior to dedication to the City of Aurora. The City of Aurora will provide sewer and water services, police, fire, and library services. The City will also 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.

7. Vehicular Circulation

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.

- West of Picadilly, all roadways are within the City and County of Denver. The east half of Picadilly road and all roads to the east are within Aurora. 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 have been aligned to match existing roads within Denver.

See Street Cross Sections on Tab 10.14-10.15.

see Tab 10 and PIP. Sections do not match.

sections revised and coordinated with the PIP

8. Pedestrian Circulation

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

- Off-street trails within Green Valley Ranch MP are aligned to connect with trails to the west in Green Valley Ranch Denver, including the one along the First Creek Drainage and along Tributary T near 48th Avenue. A community trail from the PA-16 open space will cross 52nd Ave via a grade separated crossing and extend north into PA-62 and the proposed active adult community. This will link the parks and amenities being provided to this community.

- Trail sections in Green Valley Ranch MP 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. Six (6) foot wide minimum neighborhood trails will also be incorporated into the trail network. These trail locations will be determined at Site Plan.

- The proposed Main Street in the commercial area will have a strong pedestrian connection across Tibet Road into the active adult community.

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 drainage corridors. 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 off-site from 38th Avenue and E-470 extending diagonally, towards 48th Avenue and Picadilly Road, within Green Valley Ranch. 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 corridors. 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?

The Green Valley Ranch Master Plan will be unified community. The architecture is defined by a mix of product types, which vary by location and quantity throughout the entire development which is split into Active Adult north of 48th Ave and a more Traditional neighborhood south of 48th Ave. 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 Ranch 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 Ranch Master Plan.

7

PUBLIC ART PROGRAM

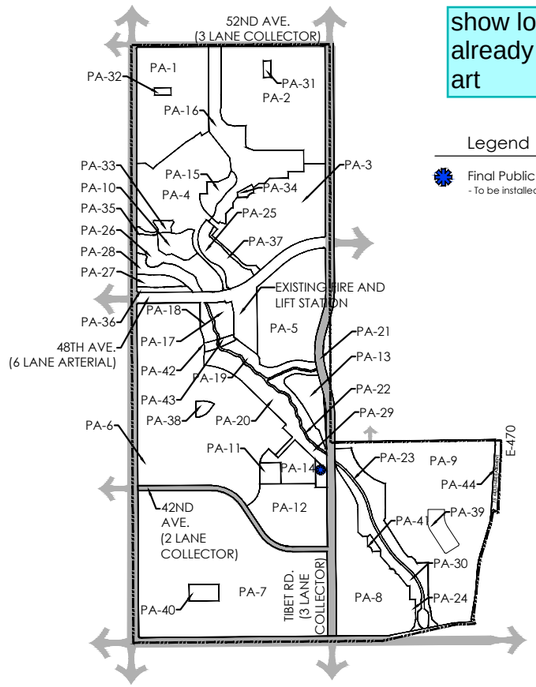
TAB 7.1

PUBLIC ART CHARACTER

Public art installations in GV Amend 1 should complement the Colorado theme and should also be reactionary to windy weather conditions which are frequent in the area. Sculptures that have kinetic responses to the wind or create pleasing auditory responses should be considered. Public art can also be a combination of gates with sculptural elements.

PROPOSED PUBLIC ART LOCATIONS

As part of GV Amendment 1, potential public art locations were shown per the requirements at that time. We have worked with the Public Art Program to locate, choose an artist, and construct the art piece as part of this community. Refer to the map below for the timing and final location of public art required as part of Amendment 1.



shown

show locations of already provided art

Legend

Final Public Art Location
- To be installed in 2022

Sculpture

Sculpture

Ornamental Fencing

Note: Imagery is intended to depict the general character and quality of the art proposed and not any final design.

PUBLIC ART BUDGET

573.4 ac x $313.59/ac =	$179,812.51
75% Professional Artist Budget	$134,859.38
5% Application Fee	$8,990.63
10% Future Maintenance and Repairs	$17,981.25
10% Project Coordinator	$17,981.25

*Refer to Tab 8.2 for Land Use Summary and Tab 8.3 within GV Amendment 1 for Land Use Map for acreages

Sheet Title:
ART CONCEPT & LOCATION
Public Art Program
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

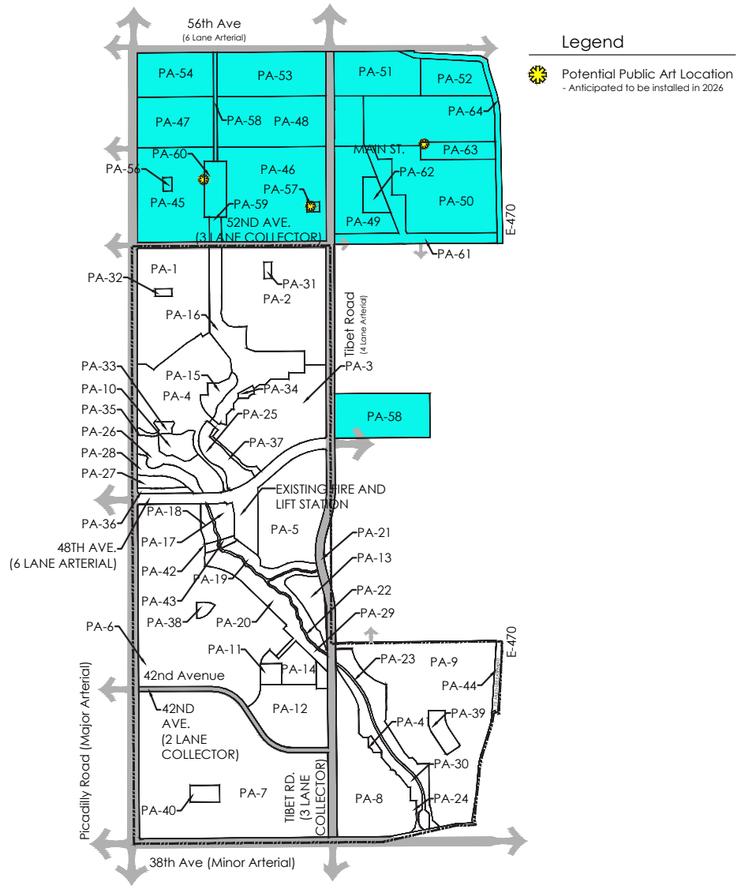
TAB 7.2

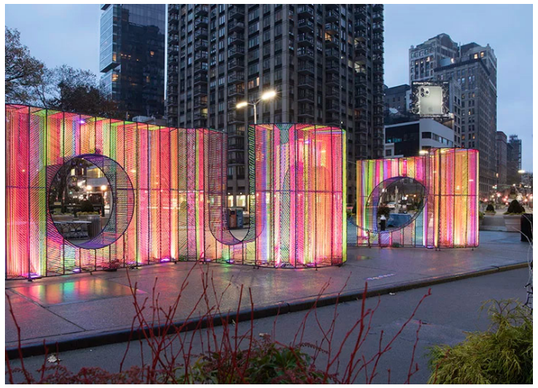
PUBLIC ART CHARACTER

Public Art within the commercial parcels could be spread out along Main Street as an integrated street scene, concentrated in the plaza as a main focal element or placed within the residential community as part of the neighborhood park. The sculpture should be placed so it is experienced by pedestrians, cyclists, or from a vehicle. It should enhance the setting by creating a 'sense of place'. It is also encouraged that the sculpture be a destination within the community. Artists are encouraged to incorporate colors, textures, different materials and lighting while still maintaining the overall Colorado Theme.

PROPOSED PUBLIC ART LOCATIONS

Public art installations to be located near the propsed locations shown on the map below. The timing of the art selection processes and installations will be tied to the build out of the different phases based on market demand. Site plans and developing the concept for public art will be updated in conjunction with the public art process. Public art to be installed concurrently with surrounding development as market demands.





Note: Imagery is intended to depict the general character and quality of the art proposed and not any final design.

PUBLIC ART BUDGET

103.4 ac Residential x $330.77/ac =	$34,201.62
118.8 ac Mixed Use x $508.88/ac =	$60,454.94
68.4 ac Non-Residential ac x $540.00/ac =	$36,936.00
Total:	$131,592.56
75% Professional Artist Budget	$98,694.42
5% Application Fee	$6,579.63
10% Future Maintenance and Repairs	$13,159.26
10% Project Coordinator	$13,159.26

*Refer to Tab 8.2 for Land Use Summary and Tab 8.3 for Land Use Map for acreages. Budget based on additional residential and commercial acerage in Amendment 2. Amendmenet 1 requirements have been met.

Sheet Title:
ART CONCEPT & LOCATION
Public Art Program
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

8

MP LAND USE MAP MATRIX AND STANDARD NOTES

- Land Use Plan Narrative 8.1
- Land Use Summary 8.2
- 470-RMED Spreadsheet 8.3
- Land Use Plan 8.4
- Neighborhood Plan 8.5
- Fire Exhibit 8.6
- Standard MP Notes 8.7

8.1 Land Use Plan Narrative

The Master Plan for Green Valley Ranch consists of 884.1 acres. Proposed land use is Residential Medium Density, Multi-Family Residential, Commercial/Retail and Mixed-Use.

A total of approximately 4,509 dwelling units are planned, ranging in density from 5.0 to 11.0 dwellings per acre. A broad range of housing types will be offered, including single -family detached homes, motorcourts with single-family detached homes, front loaded single-family attached duplex homes, and multi-family homes.

A total of 7 Neighborhood Parks on 31.2 acres, along with 5.9 acres of pocket parks and 82.7 gross acres of open space make up the parks and open space system that are interconnected by a network of trails along the Open Space Corridor and greenways that follow the drainage corridors. 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 during the site plan process.

8.2 Land Use Summary

GREEN VALLEY RANCH MASTER PLAN[1]

TOTAL PROJECT

LAND USE	ACRES	DENSITY	DU	% OF RES DU
Active Adult Residential	232.1	5.3	1240	27.5%
Single Family Residential	290.2	5.7	1662	36.9%
Mixed Use	152.1	10.6	1607	35.6%
Sub Total	674.4		4509	100.0%
Neighborhood Activity Center / Clubhouse	5.3			
P-8 School	18.0			
Neighborhood Parks	31.2			
Pocket Parks & Credited Open Space	82.7			
Detention	14.3			
Floodway Channel	7.7			
Easements	8.8			
Right of Way	41.8			
Sub Total	209.7			
TOTAL	884.1			

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

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 Credited towards public land dedication requirement.	
	PA-29	CHANNEL	2.0				Storm flow conveyance. Not Credited towards public land dedication requirement.	
	PA-30	CHANNEL	2.3				Storm flow conveyance. Not Credited 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	6.2	3.0 ACRES PER 1,000 RESIDENTS			6.2	AC net Credited toward neighborhood park requirement.
	PA-14	NEIGHBORHOOD PARK	5.7	3.0 ACRES PER 1,000 RESIDENTS			5.7	AC net Credited toward neighborhood park requirement.
	PA-15	NEIGHBORHOOD PARK	3.0	3.0 ACRES PER 1,000 RESIDENTS			3.0	AC net Credited toward neighborhood park requirement.
	PA-16	OS-D	18.1	7.8 ACRES PER 1,000 RESIDENTS			18.1	AC net Credited toward open space requirement.
	PA-17	OS-D(Corridor)	2.8	7.8 ACRES PER 1,000 RESIDENTS			2.8	AC net Credited toward open space requirement.
	PA-18	OS-D(Corridor)	1.7	7.8 ACRES PER 1,000 RESIDENTS			1.7	AC net Credited toward open space requirement.
	PA-19	OS-D (Corridor)	3.8	7.8 ACRES PER 1,000 RESIDENTS			3.8	AC net Credited toward open space requirement.
	PA-20	OS-D(Corridor)	10.6	7.8 ACRES PER 1,000 RESIDENTS			10.6	AC net Credited toward open space requirement.
	PA-21	OS-D(Corridor)	1.6	7.8 ACRES PER 1,000 RESIDENTS			1.6	AC net Credited toward open space requirement.
	PA-22	OS-D(Corridor)	3.9	7.8 ACRES PER 1,000 RESIDENTS			3.9	AC net Credited toward open space requirement.
	PA-23	OS-D(Corridor)	9.8	7.8 ACRES PER 1,000 RESIDENTS			9.8	AC net Credited toward open space requirement.
	PA-24	OS-D(Corridor)	6.5	7.8 ACRES PER 1,000 RESIDENTS			6.5	AC net Credited toward open space requirement.
	PA-25	DETENTION	5.4				0	AC net Credited toward open space requirement.
	PA-26	DETENTION	6.8				0	AC net Credited toward open space requirement.
	PA-27	DETENTION	2.1				0	AC net Credited toward open space requirement.
	PA-31	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.
	PA-32	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes

Master Plan

Project Title:

Green Valley Ranch Master Plan 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-33	OS-D	0.8	7.8 ACRES PER 1,000 RESIDENTS			0.8	AC net Credited toward open space requirement.
	PA-34	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.
	PA-35	OS-D	0.4	7.8 ACRES PER 1,000 RESIDENTS			0.4	AC net Credited toward open space requirement.
	PA-36	OS-D	1.1	7.8 ACRES PER 1,000 RESIDENTS			1.1	AC net Credited toward open space requirement.
	PA-37	OS-D	1.0	7.8 ACRES PER 1,000 RESIDENTS			1.0	AC net Credited toward open space requirement.
	PA-38	OS-POCKET PARK	0.9	7.8 ACRES PER 1,000 RESIDENTS			0.9	AC net Credited toward open space requirement.
	PA-39	NEIGHBORHOOD PARK	3.0	3.0 ACRES PER 1,000 RESIDENTS			3.0	AC net Credited toward neighborhood park requirement.
	PA-40	OS-POCKET PARK	2.0	7.8 ACRES PER 1,000 RESIDENTS			2.0	AC net Credited toward open space requirement.
	PA-41	OS-POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.
	PA-42	EASEMENT (UTILITY)	0.5				0	AC net Credited toward open space requirement.
	PA-43	EASEMENT (UTILITY)	0.5				0	AC net Credited toward open space requirement.
	PA-44	EASEMENT (MULTI-USE)	1.7				0	AC net Credited toward open space requirement.
	PA-56	OS- POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.
	PA-57	OS- POCKET PARK	0.5	7.8 ACRES PER 1,000 RESIDENTS			0.5	AC net Credited toward open space requirement.
	PA-58	OS-D(Corridor)	1.7	7.8 ACRES PER 1,000 RESIDENTS			1.7	AC net Credited toward open space requirement.
	PA-59	OS-D(Corridor)	1.2	7.8 ACRES PER 1,000 RESIDENTS			1.2	AC net Credited toward neighborhood park requirement.
	PA-60	NEIGHBORHOOD PARK	5.0	7.8 ACRES PER 1,000 RESIDENTS			5.0	AC net Credited toward open space requirement.
	PA-61	OS-D(Corridor)	11.8	7.8 ACRES PER 1,000 RESIDENTS			11.8	AC net Credited toward open space requirement.
	PA-62	NEIGHBORHOOD PARK	3.0	3.0 ACRES PER 1,000 RESIDENTS			3.0	AC net Credited toward neighborhood park requirement.
	PA-63	NEIGHBORHOOD PARK	5.3	3.0 ACRES PER 1,000 RESIDENTS			5.3	AC net Credited toward neighborhood park requirement.
	PA-64	EASEMENT (MULTI-USE)	6.1				0	AC net Credited toward open space requirement.
Subtotal			160.2					

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Ranch Master Plan 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**
3a. Development Areas Subzone: R-2 Subarea-C	PA-1	AA, SFD STAND, SFD SMALL	30.2	5.2 DU/AC	241	**157**	Max. Potential Density is 8 DU/AC
	PA-2	AA, SFD STAND, SFD SMALL, SFA DUPLEX	42.2	5.6 DU/AC	338	**236**	Max. Potential Density is 8 DU/AC
	PA-3	AA, SFD STAND, SFD SMALL	30.0	5.0 DU/AC	240	**150**	Max. Potential Density is 8 DU/AC
	PA-4	AA, SFD STAND, SFD SMALL	26.3	4.0 DU/AC	210	**105**	Max. Potential Density is 8 DU/AC
	PA-5	SFD STAND, SFD SMALL	26.4	4.1 DU/AC	211	**108**	Max. Potential Density is 8 DU/AC
	PA-6	SFD STAND, SFD SMALL	78.9	5.3 DU/AC	631	**418**	Max. Potential Density is 8 DU/AC
	PA-7	SFD STAND, SFD SMALL	91.9	5.9 DU/AC	735	**542**	Max. Potential Density is 8 DU/AC
	PA-8	SFD STAND, SFD SMALL	30.1	6.2 DU/AC	241	**186**	Max. Potential Density is 8 DU/AC
	PA-9	SFD STAND, SFD SMALL	62.9	6.5 DU/AC	503	**408**	Max. Potential Density is 8 DU/AC
	PA-45	AA, SFD STAND, SFD SMALL, SFA DUPLEX	26.3	5.0 DU/AC	210	**131**	Max. Potential Density by code is 5 DU/AC
	PA-46	AA, SFD STAND, SFD SMALL, SFA DUPLEX	39.0	5.0 DU/AC	312	**195**	Max. Potential Density by code is 5 DU/AC
		RIGHT-OF-WAY	41.8				
Subtotal			526.0				
	PA-47	MIXED USE	15.6	7.0 DU/AC	125	**109**	Max. Potential Density by Code is 40 DU/AC
	PA-48	MIXED USE	22.5	7.0 DU/AC	180	**157**	Max. Potential Density by Code is 40 DU/AC
	PA-49	MIXED USE	19.7	10.0 DU/AC	394	**197**	Max. Potential Density by Code is 40 DU/AC
	PA-50	MIXED USE	57.0	10.0 DU/AC	1026	**570**	Max. Potential Density by Code is 40 DU/AC
	PA-51	MIXED USE	15.3	10.0 DU/AC	275	**153**	Max. Potential Density by Code is 40 DU/AC
	PA-52	MIXED USE	9.6	10.0 DU/AC	173	**96**	Max. Potential Density by Code is 40 DU/AC
	PA-53	MIXED USE	19.6	10.0 DU/AC	353	**196**	Max. Potential Density by Code is 40 DU/AC
	PA-54	MIXED USE	13.7	10.0 DU/AC	247	**137**	Max. Potential Density by Code is 40 DU/AC
	PA-55	MIXED USE	17.2	15.0 DU/AC	310	**258**	Max. Potential Density by Code is 40 DU/AC
Subtotal			190.2				
SUB AREA TOTAL			**884.1**		**6955**	**4509**	

Revised

Add land use category of residential type per list in the Master Plan Manual.
Add AA for active adult if applicable

All Mixed use needs to be more specific per categories. Identify what type of residential is anticipated?

Revised

Sheet Title:

LAND USE MATRIX

Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Ranch Master Plan 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)			884.1					
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)			867.8					
7. Total Floodplain Acreage			7.7					
8. Total Adjusted Gross MP Acreage (Line 4 minus Line 7)			876.4					
9. Total Active Adult Planning Areas			232.1	1.58 PERSONS PER UNIT	1856	1240	1960	Estimated Residents
10. Total Single Family Planning Areas			290.2	2.65 PERSONS PER UNIT	2322	1662	4405	Estimated Residents
12. Total Mixed Use Planning Areas			152.1	2.5 PERSONS PER UNIT	2777	1607	4018	Estimated Residents
12. Total Residential			**674.4**		**6955**	**4509**	**10383**	**Estimated Residents**
13. Check for avg. residential density in subzone				5 DU's/AC TIMES LINE 8	4382	4509		
14. Small Lot Total				50% of TOTAL UNITS	3478	2255		
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			190.2					
20. Total Commercial			**190.2**					
21. Total Neighborhood Parks			31.2	3.0 AC / 1000 RESIDENTS			Required Land Dedication = 31.2 AC. Provided Land Dedication = 31.2 AC.	
22. Total Community Parks			0.0	1.1 AC / 1000 RESIDENTS			Requirement of 11.4 AC will be met by applicant cash-in-lieu payment (6.6 AC. Cash-in-lieu payment made as part of Amendment 1) Remaining payment to be made by first residential plat of either PA45-48	
23. Total other Credited Open Space including trail corridors, greenbelts, and special rec. sites			82.7	7.8 AC / 1000 RESIDENTS			Required Land Dedication = 81.0 AC. Provided Land Dedication = 82.7 AC. update per form j comments	
24. Total Open Space			**113.9**				**Required Land Dedication = 123.6 AC.** **Provided Land Dedication = 113.9 AC.** **Provided Cash-In-Lieu Payment = 11.4 AC.** Revised	

Sheet Title:

LAND USE MATRIX

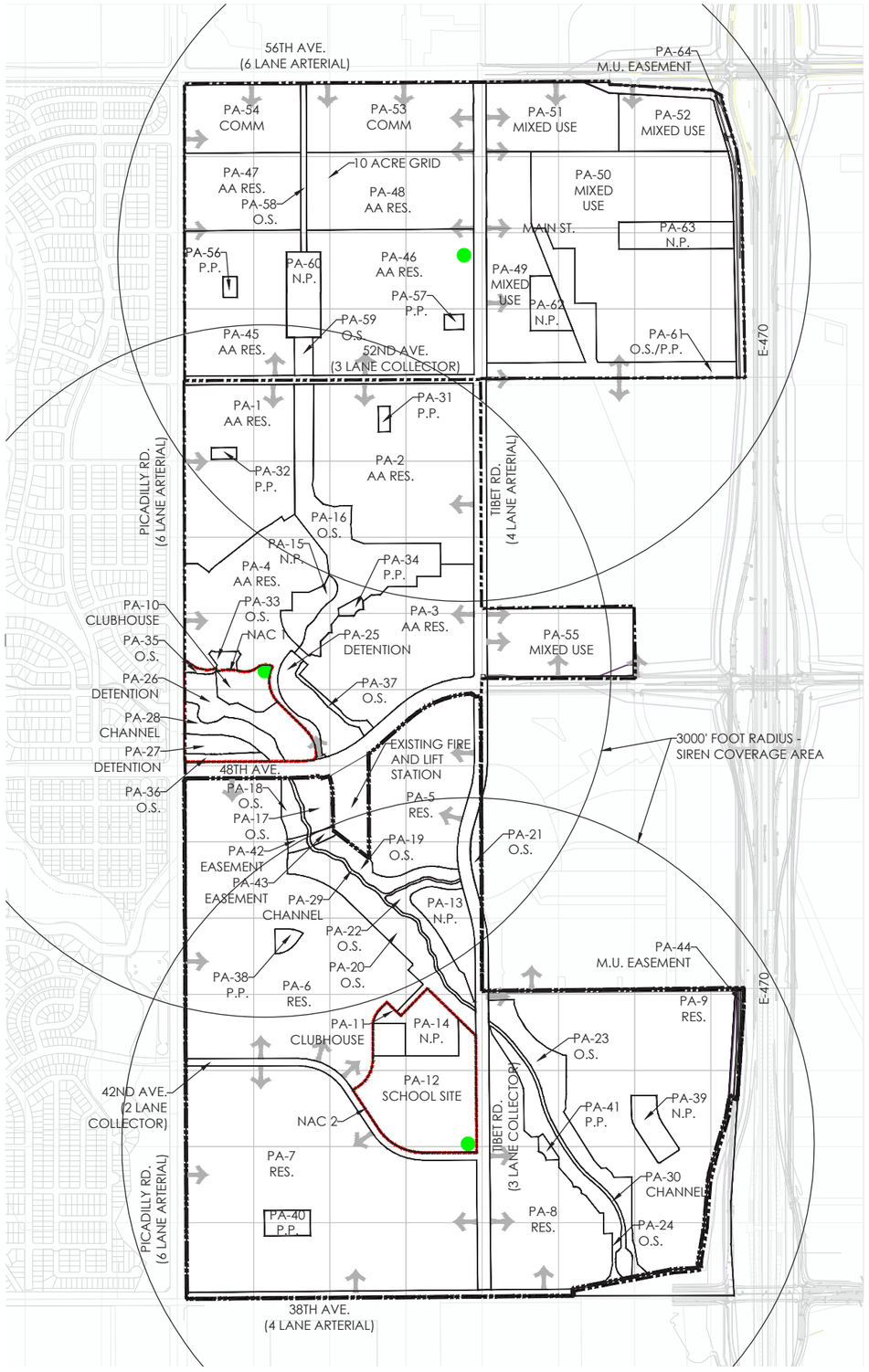
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 8.6



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.

Revised

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 Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

July 24, 2023 Tab 8.6

8.7 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 separate and approved 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 standards. 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 9.1
- Form J 9.2
- OS Neighborhood Map 9.3

9.1 Open Space/ Circulation/ Neighborhood Map

1. Open Space

The parks and open space system for Green Valley Ranch is extensive and includes 31.2 acres in 7 Neighborhood Parks and over 82.7 net gross acres of open space. The open space includes a 200 to 400 foot wide open space known as the Grand Park Corridor, runs northwest to southeast along the Tributary T Drainageway 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.

2. Connectivity

In concert with the Zone District requirements, all subdivisions and developments within Green Valley Ranch 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 Ranch community to and from adjacent streets, developments and uses.

3. Pedestrian and Bicycle Circulation System

The pedestrian circulation system at Green Valley Ranch 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 Ranch MP 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, neighborhoods, and activity nodes. 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.

- 6-foot neighborhood trails will be provided within each neighborhood.

4. Primary Access

One principal Arterial, 48th Avenue, traverses Green Valley Ranch in an east/west direction; this is planned to eventually accommodate 6-lanes. 56th Avenue along the northern boundary is also a planned 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 10.14-10.15, Street Standards, show the cross sections for these streets.

5. Public Land Dedication Requirements

The City's parks/open space dedication requirements under the current City Code, when applied to the MP site, would require approximately 31.2 acres of neighborhood parks, 10.5 acres of community parks, and 81.0 acres of further open space/parks, resulting in an aggregate public land dedication requirement of approximately 123.6 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 (PLD) calculations should be inclusive of the entire MP area. Any PLD shortfalls for community park requirement will be provided with a cash in-lieu payment to the City accordance with City Code Section 147-48(b)(4).

Under this MP Amendment, the applicant will dedicate 31.2 acres for neighborhood parks, 10.5 acres Cash-In-Lieu payments for Community Parks, and another 82.7 acres to credited open space. As a part of the 82.7 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 Ranch, 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 Ranch 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 101.6 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 Ranch 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 6-foot community and neighborhood trails will be dedicated to and maintained by one or more of the metropolitan districts.

Neighborhood parks and the improvements therein (including irrigation) that are dedicated to and maintained by the city will be designed and constructed by the applicable Metropolitan districts(s). The following is a list of program elements that may be provided within a city neighborhood park in Green Valley Ranch. Additional items may be provided at the discretion of the applicable Metropolitan District(s).

Potential Play Features may include:

- Accessible Swings
- Accessible slides
- Sensory play equipment
- Separate play areas for ages 2-5- and 5–12-year-olds

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 and the improvements therein (including irrigation) that are dedicated to and maintained by the city will be designed and constructed by the applicable Metropolitan districts(s). The following is a list of program elements that may be provided within a Metropolitan District neighborhood park. Additional items may be provided at the discretion of the applicable Metropolitan District(s).

Potential Play Features may include:

- Accessible Swings
- Accessible slides
- Sensory play equipment
- Separate play areas for ages 2-5- and 5–12-year-olds
- Bench Swings

Loop Trail System

Picnic Pavilion

Picnic Tables

Grills

Benches

- Community Garden
- Trash
- Parking Lot
- Landscape
- Activity Systems

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.	B.	C.	D.	E.	F.
Planning Area Designation (Or feature in an area)	**Description and Inventory of Facilities**	**Total Acreage**	**Parks Dept. Credited Acreage**	**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	6.2	Metro District to construct and the City of Aurora to own/maintain.	Dedication concurrent with adjacent planning area final plats. Construction shall be complete by the issuance of the 300th certificate of occupancy within Planning Areas 5 and 6 combined or within 6 months of completion of infrastructure including adjacent roads and water service extension to the site, whichever is later.
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 concurrent with adjacent planning area final plats. Construction of the park shall be phased. The first phase including all programmatic elements of the park, except the multi-purpose playfield and a section of the internal park trail loop, shall be complete by the issuance of the 300th C.O. within planning areas 6 and 7 combined or within 6 months of completion of infrastructure including adjacent roads and water service extension 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, whichever is later.
PA-39	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. Separate play areas to be provided for age groups 2-5 and 5-12 year olds.	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 service extension to the site, whichever is later.
PA-60	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 103.5 acres and 593 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. Separate play areas to be provided for age groups 2-5 and 5-12 year olds.	5.0	5.0	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 45, 46, 47 and 48 combined or within 6 months of completion of infrastructure including adjacent roads and water service extension to the site, whichever is later.

Revised

rthern parks can omit a playground. Please
which of the three can be a formalized playground.
fferences in key amenities between these three
oting items like a dog park in one, community garden
lder adult focused use in another and more
park/playground in third. PROS recommends PA62
traditional' since it's central in the northern area.
ider some key community gathering/event spaces
large picnic pavilion or other that can be
ned by the community. This was requested
times by the public in the ongoing Our Parks, Our
aster plan process.

Sheet Title:

FORM J

Open Space, Circulation & Neighborhood Plan

Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

July 24, 2023 Tab 9.2

TAB 9.2

PA-62, 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 46,48-52, which total 163.1 acres and 1,284 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. Separate play areas to be provided for age groups 2-5 and 5-12 year olds.	8.3	8.3	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 49, 50, 51 and 52 combined or within 6 months of completion of infrastructure including adjacent roads and water service extension to the site, whichever is later.
PA 16, 33, 35-37, 58, 59, 61	Open Space in minimum 30' wide Corridors with minimum 6' 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. PA 59 will be required a 30' wide corridor and 6' wide trail Min. PA 58 will be required 30' wide corridor and 8' trail Min. PA 61 will provide a 30' minimum wide corridor with 8' trails. Activiy nodes and parks will be provided along the trails.	36.1	36.1	Metro District to construct, own, and maintain.	Dedication concurrent with final plats adjacent to the site dedication. Improvements and landscaping to be completed with construction of associated drainage improvements.
A: 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.	39.1	39.1	Metro District to construct, own, and maintain.	Dedication concurrent with final plats adjacent to the site or approval of the CLOMR/LOMR and construction of drainage improvements, whichever is later. Improvements and landscaping to be completed with construction of associated drainageway.
mestead			1.6	City of Aurora to own and maintain. Metro District 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, 56, 57	Pocket parks will be typically located on a local street and uses, including primarily residential lots. Open turf lawns su 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 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		**113.9**	**113.9**		113.9 acres of neighborhood park and open space provided.
Director of Parks, Recreation, and Open Space Date:_____ Signature:					

*Community Park defecit to be made up thru cash in lieu at time of first plat within PA45-46. 6.6 AC. of the required 11.4 Ac. have been paid to date.

All Revised

61 needs to be pulled out from this or further specified. Areas that are adjacent to roadways should be wider than the 30' standard. Precedent has been set by other projects that a 40' minimum is acceptable. Note this should also have at least an 8' walk meandering in lieu of a sidewalk.

This was dedicated for floodplain purposes. Please state that clearly so it's known that this was not intended for PROS purposes.

Nothing is specifically calling out floodplain areas. If you are requesting any floodplain for open space credit, the total must be noted of what acreage is being requested from floodplain.

This note should apply to any planning areas within the previous 310 area. Please expand to include 45-54.

Sheet Title:

FORM J

Open Space, Circulation & Neighborhood Plan

Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2

Aurora, Colorado

GREEN VALLEY RANCH

MP URBAN DESIGN

10

- Form F-1: Urban Design Standards Matrix 10.1-10.2
- Form F-2 Neighborhood Character Matrix 10.3
- Overall Monument Plan 10.4
- Residential Primary Entry Monument 10.5
- Residential Secondary and Tertiary Entry 10.6
- Residential Gated Entries 10.7
- Residential Walls and Fencing 10.8
- Residential Lighting Standards 10.9
- Residential Paving Standards 10.10
- Residential Site Furnishings 10.11
- Residential Specialty Structures 10.12
- Residential Signage Standards 10.13
- Street Standards 10.14-10.15
- Commercial Design Standards 10.16
- Main Street Design 10.17
- Commercial Paving 10.18
- Commercial Plazas 10.19
- Commercial/Mixed Use Signage 10.20-10.21
- Office Signage 10.22
- Multi Family Signage 10.23
- Commercial Site Furnishings 10.24

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	**RESIDENTIAL** 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 ACRYLIC PANELS TRIMMED IN METAL TO SUGGEST THE APPEARANCE OF LIGHTED GLASS PANES. SIGN LETTERING SHALL FOLLOW THE STANDARD LOGO STYLE SHOWN IN THE SIGNAGE STANDARDS. **COMMERCIAL/ RETAIL** / **MIXED-USE** / **OFFICE COMPLEX** THE MAJOR MONUMENTS LOCATED ALONG ARTERIAL AND COLLECTORS SHOULD BE THE PRIMARY SIGN FOR THE DEVELOPMENT. THESE SIGNS SHOULD KEEP WITH THE COLORADO THEME, BUT COULD BECOME CONTEMPORARY RUSTIC, ALLOWING BOLDER FONTS, COLORS AND MATERIALS. WITH THE ESTABLISHED GVR TOWER, THE MAJOR SIGNS SHOULD COMPLEMENT THE VERTICAL COLUMN AND CURVILINEAR WALLS. THE MINOR MONUMENTS AND SIGNS SHOULD BE SMALLER THAN THE MAJOR SIGN BUT LARGER THAN THE WAYFINDING AND BUILDING SIGNS. MULTI TENANT SIGNS SHOULD BE USED WHERE APPLICABLE FOR NON-RESIDENTIAL USES, SHOPPING CENTERS, OR BUSINESS PARKS. THESE SIGNS ARE ALSO SIMPLIFIED FROM THE PRIMARY MONUMENTS. TYPICALLY, ONLY USING ONE OR TWO MATERIALS. THIS SIGN TYPE'S PURPOSE IS TO PROVIDE BUSINESS DIRECTION FOR VISITORS.	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. RAILING OR BARRIER IS REQUIRED ON ALL WALLS GREATER THAN 30".	10.8
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 COMPOSITE WOOD WITH MASONRY COLUMNS, OR COMPOSITE WOOD 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 60 FEET MIN.	10.8
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. STREET LIGHTS IN PUBLIC RIGHT OF WAY WILL BE OWNED AND MAINTAINED BY THE CITY OF AURORA AND MUST MEET COA STANDARDS.	10.9
5. 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 MOTOR COURT DRIVEWAYS AS A STANDARD TREATMENT. STANDARD PAVEMENT SHALL BE USED IN ALL PUBLIC RIGHT OF WAY	10.10
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.	10.11 & 10.22

The design standards listed in this matrix implement the design themes of the MP and are intended to complement and exceed E-470 (or Northeast Plains) and other ordinance standards. Unless a waiver has been specifically requested and granted, 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 concepts as shown, and will be at the same or higher level of design quality, extent, and detail.

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

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.2

SPECIAL URBAN DESIGN FEATURE	BRIEF DESCRIPTION OF THE FEATURE	LOCATION IN APPLICATION PACKAGE
7. SIGNAGE STANDARDS	STANDARDIZED TYPE FACE, LOGO, AND A SERIES OF THEMATIC COLORS SHALL BE USED THROUGHOUT THE COMMUNITY'S SIGNAGE. WITHIN COMMERCIAL DEVELOPMENTS, SIGNAGE STANDARDS SHOULD HAVE A HIERARCHY OF COLORS AND FONT TYPES, FROM THE MAIN MONUMENT TO THE BUILDING SIGNS.	10.13
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 FURTHER SOUTH AND BE OPEN TO ALL RESIDENTS OF Green Valley MP.	10.12
10. STREET STANDARDS	60' LOCAL, 64' LOCAL, 80' COLLECTOR, 80' MAIN STREET, 110' FOUR LANE MINOR ARTERIAL, 116' MINOR ARTERIAL WITH RAISED MEDIAN, 144' ROW SIX LANE ARTERIAL, AND 168' ROW SIX LANE ARTERIAL FOR 56TH, WITH RAISED MEDIAN PER CITY OF AURORA STANDARDS.	10.14 &10.15
11. COMMERCIAL STANDARDS	ALONG WITH DESIGN STANDARDS FOR COMMERCIAL PARCELS, THE MAIN FEATURE OF THE GREEN VALLEY EAST COMMERCIAL DEVELOPMENT WILL BE THE MAIN STREET DISTRICT. 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	10.16 & 10.17

The design standards listed in this matrix implement the design themes of the MP and are intended to complement and exceed E-470 (or Northeast Plains) and other ordinance standards. Unless a waiver has been specifically requested and granted, 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 concepts as shown, and will be at the same or higher level of design quality, extent, and detail.

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

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.3

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 54th 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 between Picadilly Road and E-470.	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.

Sheet Title:
NEIGHBORHOOD CHARACTER MATRIX
Urban Design Standards
Master Plan

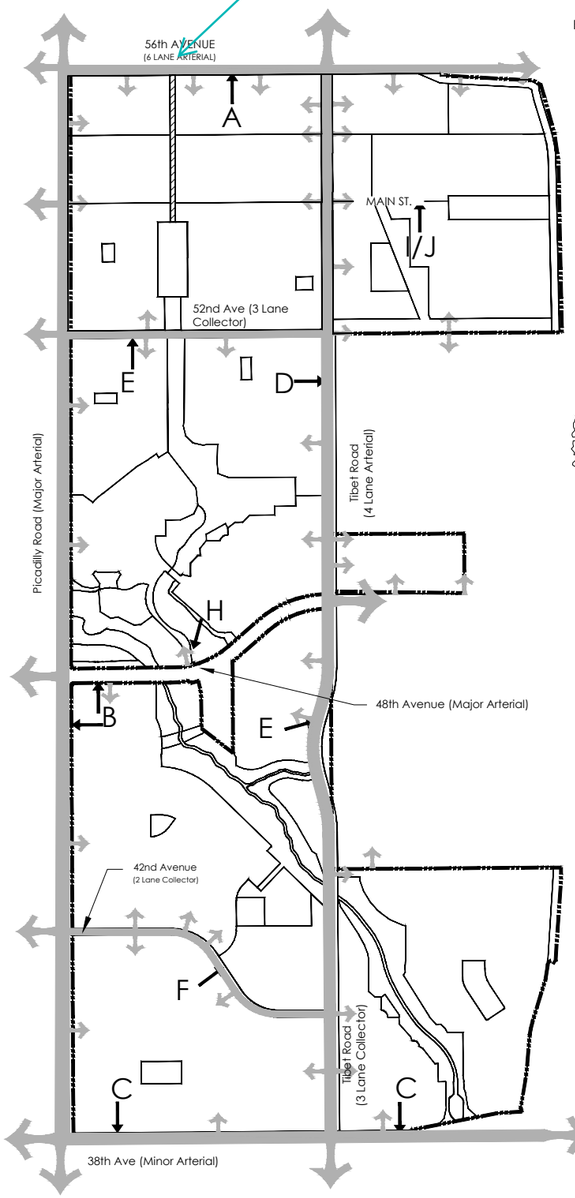
Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 10.14

major or minor?

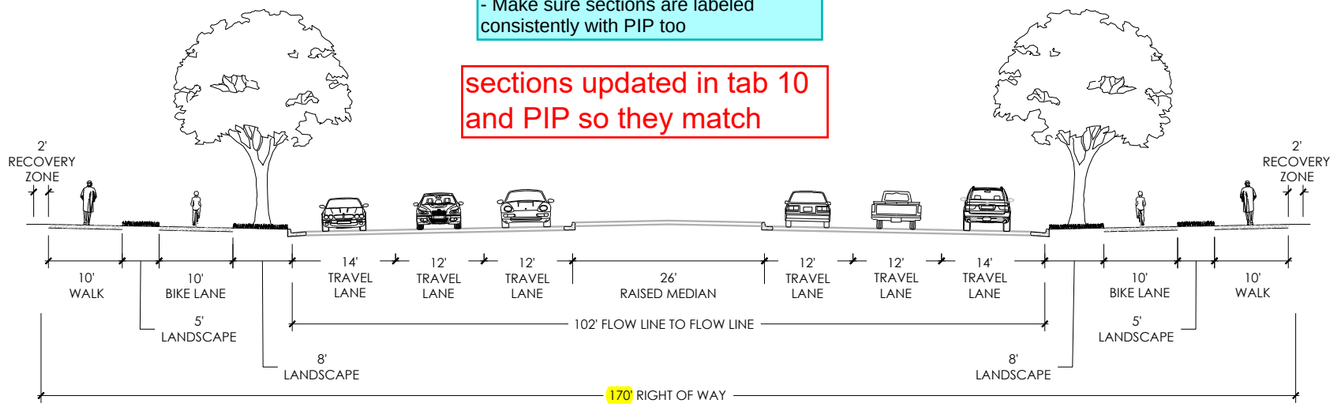
major



Street Key Map

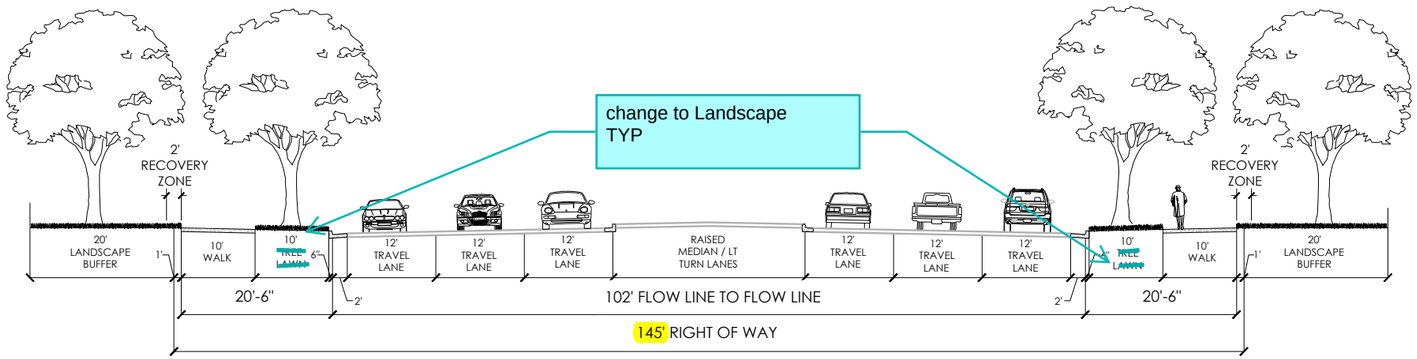
- Sections should match PIP sections
- Make sure sections are labeled consistently with PIP too

sections updated in tab 10 and PIP so they match

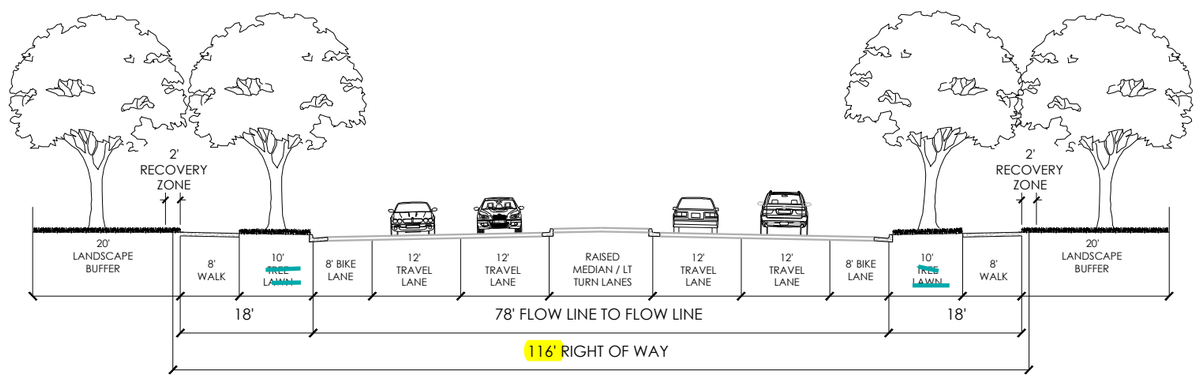


A. MAJOR SIX LANE ARTERIAL W/ PROTECTED BIKE LANES

change to Landscape TYP



B. MAJOR SIX LANE ARTERIAL



C. MINOR FOUR LANE ARTERIAL (RAISED MEDIAN)

STREET INFORMATION

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

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.

Sheet Title:

STREET STANDARDS

Urban Design Standards
Master Plan

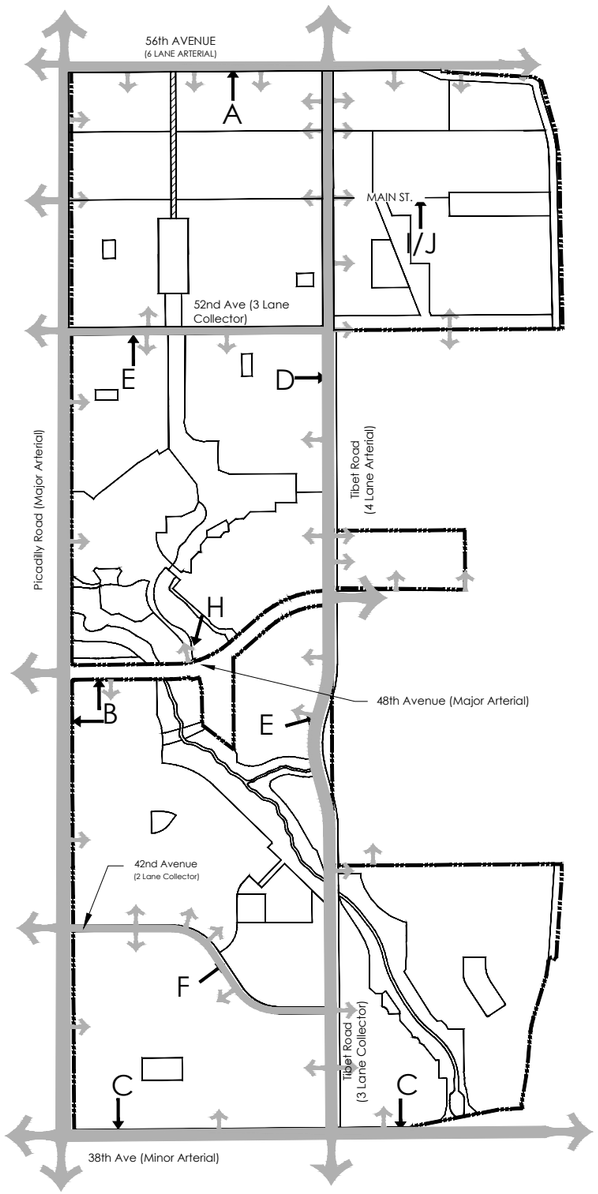
Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

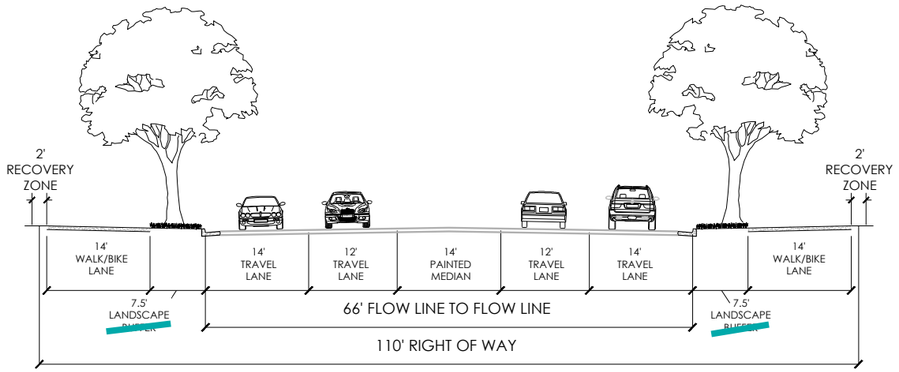
GREEN VALLEY RANCH

July 24, 2023 Tab 10.14

TAB 10.15



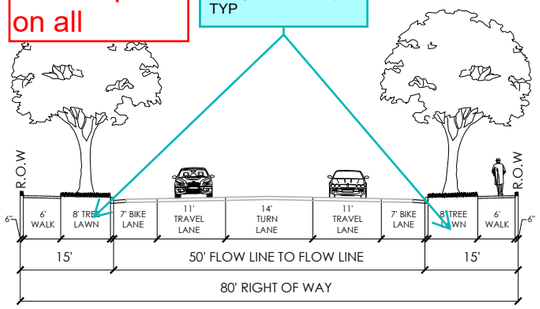
Street Key Map



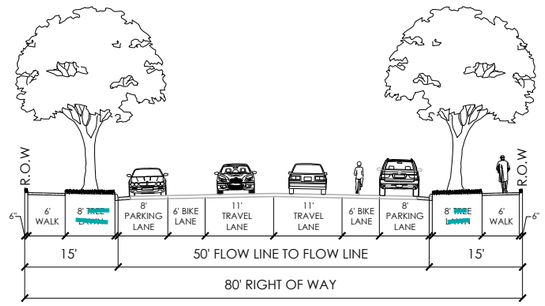
D. MINOR FOUR LANE ARTERIAL (PAINTED MEDIAN)

revised to landscape on all

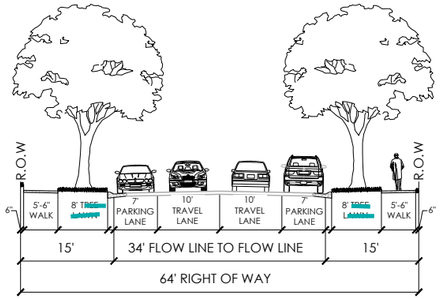
change to Landscape TYP



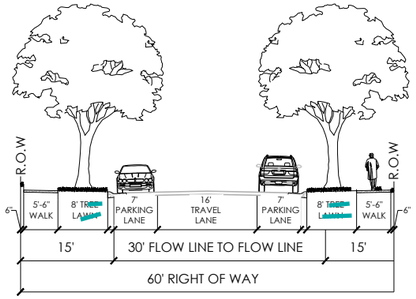
E. THREE LANE COLLECTOR



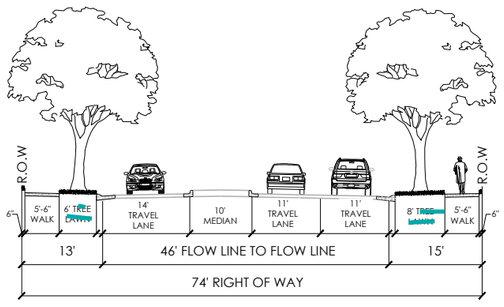
F. TWO LANE COLLECTOR



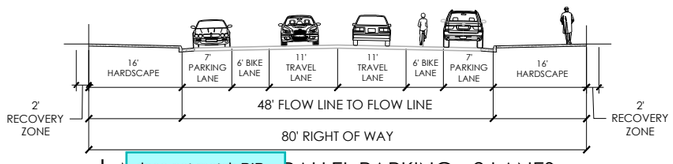
G. LOCAL STREET #1



G.1. LOCAL STREET #2

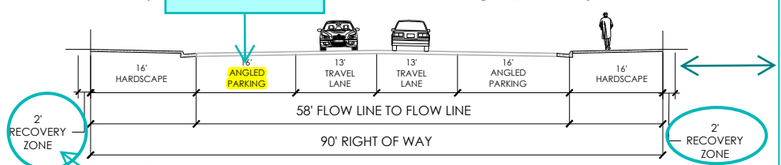


H. LOCAL STREET #1 INTERSECTION W/ ARTERIAL
Note: License Agreement required for median island in right of way



I. PARALLEL PARKING - 2 LANES

does not match PIP



J. MAIN ST

main street section updated

not typically required for an urban setting

STREET INFORMATION

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

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

aster

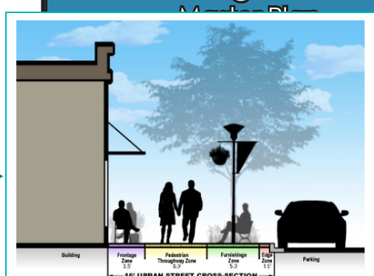


Figure 4.7-10: Urban Street Frontage Zones With Parallel Parking

MP LANDSCAPE STANDARDS

- Form G 11.1
- Plant Materials 11.2
- Entry Monument Landscape 11.3
- Streetscape Standards 11.4
- Clubhouse 11.5
- Neighborhood Parks 11.6
- Pocket Parks 11.7
- Detention and Drainage Channel Standards 11.8
- Open Space Landscape 11.9
- Commercial Landscape 11.10
- E470 Landscape Buffer 11.11
- Commercial Landscape 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: 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 ALTA 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: ARTERIAL AND COLLECTOR ROADS	THE PICADILLY ROAD, TIBET ROAD, 56TH AVENUE, 42ND AVENUE, 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. RIGHT OF WAY LANDSCAPE WITHIN ARTERIALS WILL ESTABLISH A MINIMUM 10' WIDTH CURBSIDE LANDSCAPE. COLLECTORS WILL ESTABLISH A MINIMUM 8' WIDTH CURBSIDE LANDSCAPE. ALL ~~OTHER~~ CURBSIDE LANDSCAPES ~~LESS THAN 6' WIDTH~~ WILL MAINTAIN 1 TREE PER 40 LINEAR FEET PLUS A COMBINATION OF SHRUBS, ORNAMENTAL GRASSES, AND NATIVE SEED.	11.5
5. LANDSCAPE STANDARDS: 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 CURBSIDE LANDSCAPE AND PLANTED WITH XERISCAPE PLANTING AT THE RATE OF 1 SHRUB EVERY 40 SF. WITH A COMBINATION OF SHRUBS AND GRASSES TO MEET THOSE REQUIREMENTS.	11.5
6. LANDSCAPE STANDARDS IN COMMERCIAL AND PUBLIC GATHERING AREAS. (TREE GRATES & PROTECTORS, PLANTERS, FLOWER BEDS, SCREENING AT PARKING LOTS, ETC.)	THE LANDSCAPE AREAS FOR THE MAIN STREET DISTRICT WILL CONCENTRATE ON CONNECTIONS BETWEEN THE STREET FRONTAGE, FURNISHING ZONES, 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 OPENINGS, WHILE PROVIDING SHADE AND A LOW MAINTENANCE PLANT MATERIAL. PEDESTRIAN LINKAGE IS ALSO ENCOURAGED BETWEEN COMMERCIAL, MIXED-USE, OFFICE, RETAIL AND RESIDENTIAL, PROMOTING NEIGHBORHOOD FRIENDLY CONNECTIONS. All LANDSCAPE AREAS WILL BE COMPLEMENTARY TO THE SURROUNDING AREAS,PROMOTING THE USE OF WATERWISE PLANT MATERIAL.	N/A

All new development is required to provide water wise landscape per the Water Ordinance approved in 10/2022.
Non-functional turf is no longer permitted

per the standards in the UDO.

revised

revised

see Section 146-4.7.5.C.4 for Urban Street Frontages. Include detail to illustrate.

Sheet Title:
LANDSCAPE STANDARDS
Landscape Standards
Master Plan

Project Title:
Green Valley Ranch Master Plan 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 SECTION 146-4.7.5.F TABLE 4.7-2. WHERE RESIDENTIAL LOTS WITHIN THE DEVELOPMENT ABUT A NEIGHBORING RESIDENTIAL PARCEL, BUFFERS SHALL MEET THE STANDARDS IN THE AURORA UNIFIED DEVELOPMENT ORDINANCE. BUFFERS ADJACENT TO PUBLIC OPEN SPACE AND PUBLIC PARKS SHALL FOLLOW THE LANDSCAPE REQUIREMENTS SET FORTH IN SECTION 146-4.7.5.H PER CITY OF AURORA STANDARDS. BUFFERS SHALL INCLUDE 1 TREE AND 10 SHRUBS PER 40 LINEAR FEET OF BUFFER. LANDSCAPE STANDARDS WITHIN POCKET PARKS WILL BE 1 TREE AND 10 SHRUBS PER 4000 S.F.	11.9 and 11.10
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 MEET THE REQUIREMENTS PER CITY OF AURORA UNIFIED DEVELOPMENT ORDINANCE. EACH WALL SHALL BE SEPERATED AT A MINIMUM OF 36 INCHES PER WALL ALLOWING FOR LANDSCAPING. sp revised	N/A
11. LANDSCAPE STANDARDS AT SPECIAL FACILITIES	LANDSCAPE FEATURES WILL BE PROVIDED AT THE TIME OF FUTURE SITE PLAN.	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.

Sheet Title:
LANDSCAPE STANDARDS
Landscape Standards
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.2

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 MASTER PLAN. ALL LANDSCAPE DESIGN AND MATERIALS SHALL COMPLY WITH THE CITY OF AURORA LANDSCAPE.

DECIDOUS CANOPY TREES

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

DECIDUOUS ORNAMENTAL TREES

- BIGTOOTH MAPLE
- FLAME AMUR MAPLE
- HOT WINGS MAPLE
- PATTERN PERFECT MAPLE
- COCKSPUR THORNLESS HAWTHORN
- GOLDENRAIN TREE
- PRAIRIE FIRE CRABAPPLE
- ROYAL RAINDROPS CRABAPPLE
- SRING SNOW CRABAPPLE
- SUCKER PUNCH CHOKECHERRY
- SCHUBERT/CANADA RED CHOKECHERRY
- JAPANESE TREE LILAC

EVERGREEN TREES

- PINON PINE
- BOSNIAN PINE
- AUSTRIAN PINE
- PONDEROSA PINE

EVERGREEN SHRUBS

- ARMSTRONG JUNIPER
- ALPINE CARPET JUNIPER
- SPARTAN JUNIPER
- BAR HARBOUR JUNIPER
- HUGHES JUNIPER
- WILTON CARPET JUNIPER
- ANDORRA YOUNGSTOWN JUNIPER
- ARCADIA JUNIPER
- BROADMOOR JUNIPER
- GRAY GLEAM JUNIPER
- MEDORA JUNIPER
- BLUE ARROW JUNIPER
- MOONGLOW JUNIPER
- WICHITA BLUE JUNIPER
- OLD GOLD JUNIPER
- SAYBROOK GOLD JUNIPER
- SHERWOOD MUGO PINE
- TANNENBAUM MUGO PINE
- WHITE BUD MUGO PINE
- DWARF MUGO PINE

Sheet Title:

PLANT MATERIALS

Landscape Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.2

DECIDOUS SHRUBS

- BAGATELLE JAPANESE
- ROSE GLOW JAPANESE
- BURGUNDY CAROUSEL JAPANESE BARBERRY
- PURPLE BUTTERFLY BUSH
- BLUE MIST SPIREA
- DARK KNIGHT BLUE MIST SPIREA
- TALL BLUE RABBITBRUSH
- RUSSIAN SAGE
- RUSSIAN 'LITTLE SPIRE' SAGE
- CREEPING WESTERN SAND CHERRY
- PURPLE LEAF PLUM
- CHEYENNE MOCKORANGE
- GOLD DROP POTENTILLA
- MCKAY'S WHITE POTENTILLA
- PINK BEAUTY POTENTILLA
- MANGO TANGO POTENTILLA
- DWARF FRAGRANT SUMAC
- SMOOTH SUMAC
- THREE LEAF SUMAC
- CREEPING THREE LEAF SUMAC
- RED LAKE CURRANT
- DOUBLE KNOCK OUT ROSE
- SUNNY KNOCK OUT ROSE
- FIRE MEIDILAND ROSE
- CORAL MEIDILAND ROSE
- FUCHSIA MEIDILAND ROSE
- SILVER BUFFALOBERRY

ORNAMENTAL GRASSES

- BIG BLUESTEM GRASS
- SIDEOATS GRAMA GRASS
- BLUE GRAMA GRASS
- BLOND AMBITION GRAMA GRASS
- FEATHER REED GRASS
- SWITCHGRASS
- LITTLE BLUESTEM GRASS
- GIANT SACATON GRASS

PERENNIALS

- COMMON RED YARROW
- MOONSHINE YARROW
- DOUBLE BUBBLEMINT HYSSOP
- KUDOS GOLD HYSSOP
- SUNSET HYSSOP
- DWARF DOUBLE COREOPSIS
- LIMEROCK RUBY COREOPSIS
- MOONBEAM COREOPSIS
- RED VALERIAN
- PURPLE CONEFLOWER
- ORANGE CONEFLOWER
- TOMATO SOUP CONEFLOWER
- RED WHIRLING BUTTERFLIES
- WHIRLING BUTTERFLIES
- VARIOUS DAYLILY
- BLACK EYED SUSAN
- MAY NIGHT PURPLE SALVIA
- HUMMINGBIRD FLOWER

Sheet Title:

PLANT MATERIALS

Landscape Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

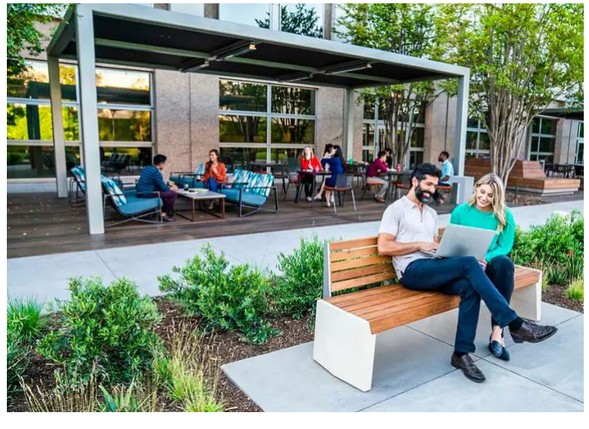
TAB 11.10

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.

Include urban streetscape. discuss zones, planter areas. This will be applicable to Main St.
See Section 146-4.7.5.C for zone discussion

revised



Sheet Title:

COMMERCIAL LANDSCAPE

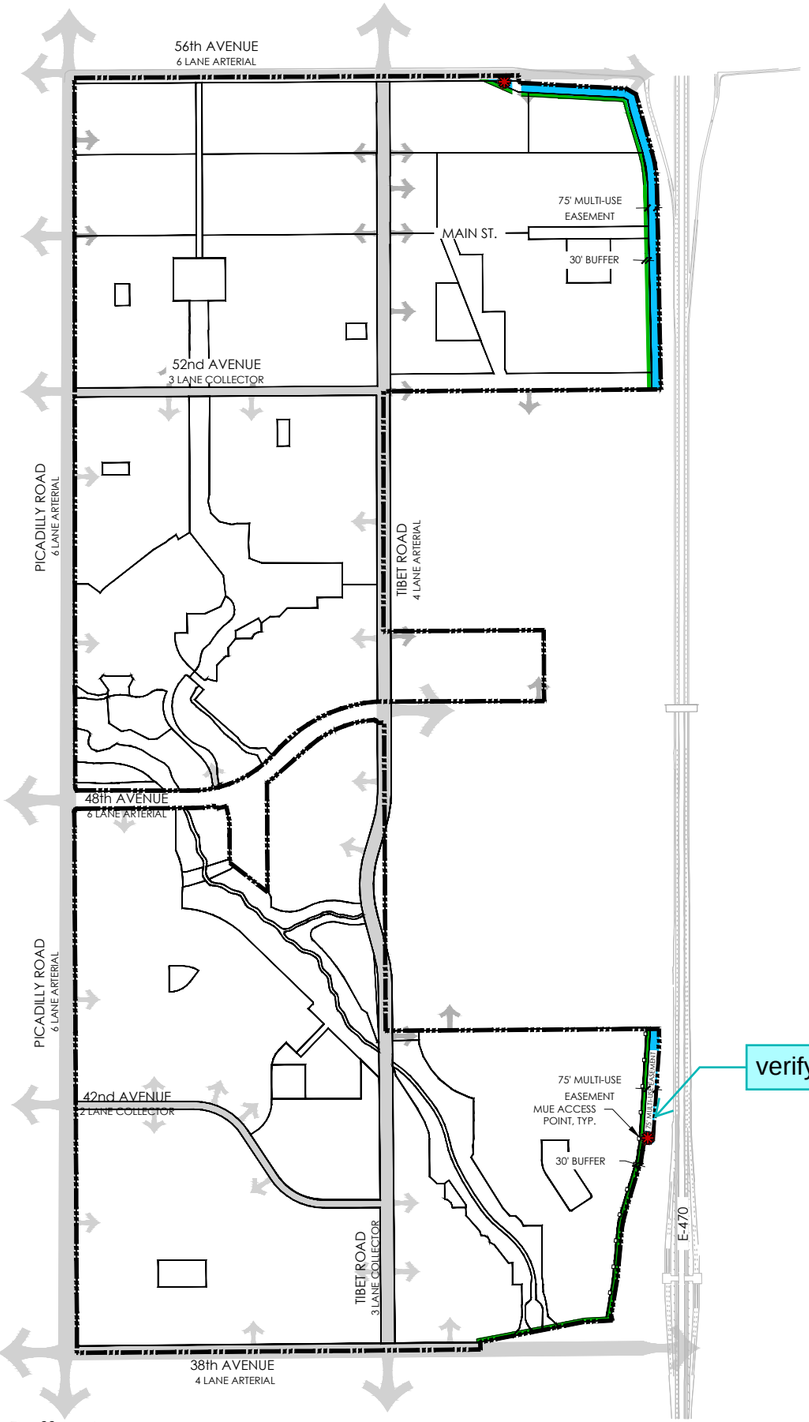
Landscape Standards
Master Plan

Project Title:

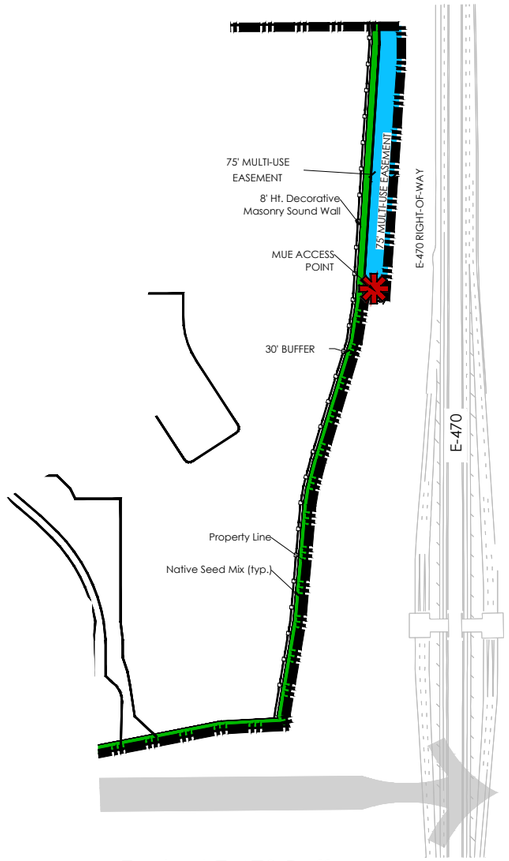
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 11.11



E-470 Buffer Areas



Typical E-470 Buffer

verify location

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 provided through a gate/wall opening or offset walls. Location may vary per site conditions.

Sheet Title:

E-470 BUFFER

Landscape Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

July 24, 2023 Tab 11.11

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
- Commercial Office 12.14
- Institutional 12.15

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

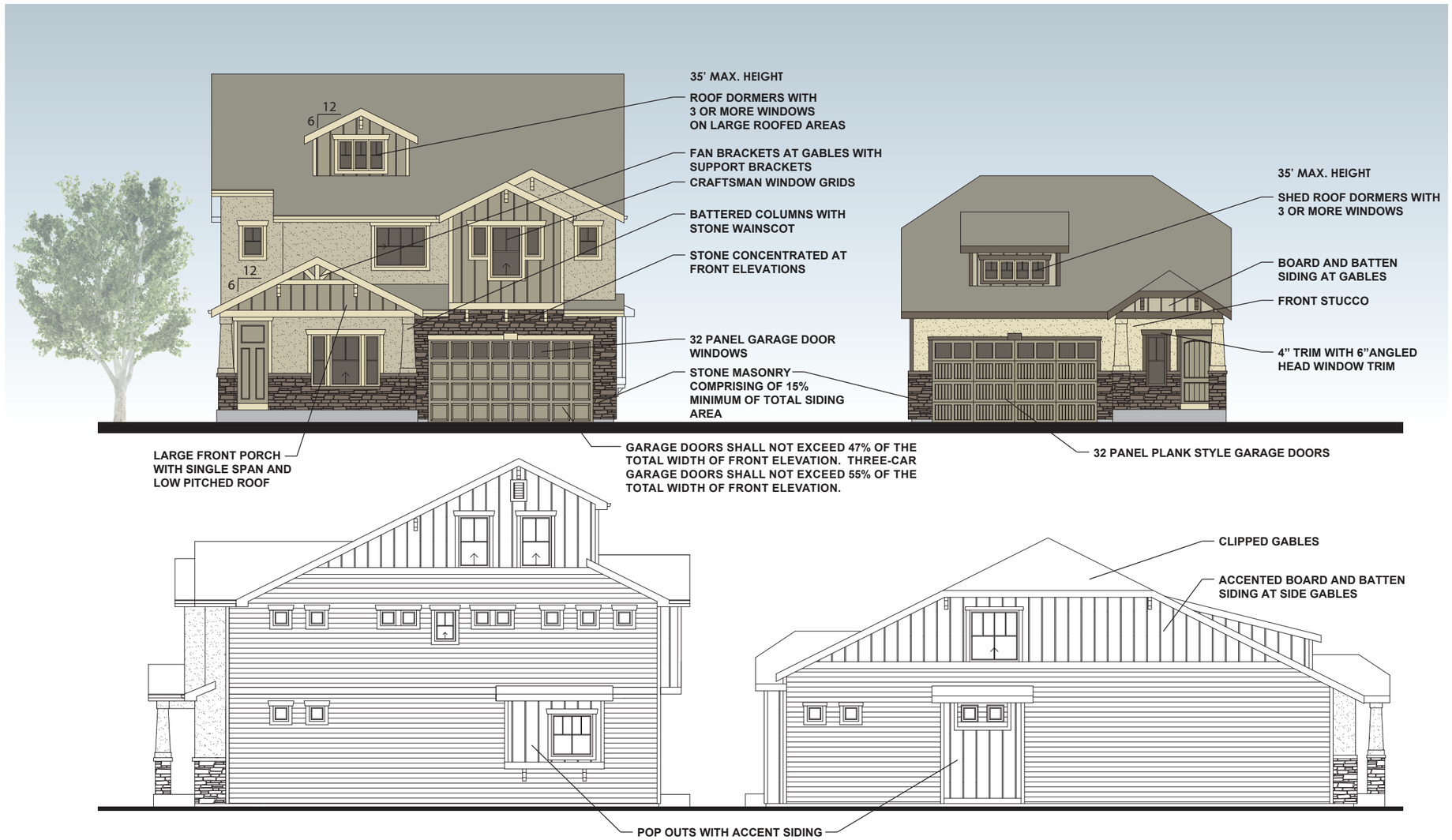
Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan 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
- 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 GARAGES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
CRAFTSMAN DESIGN STYLES

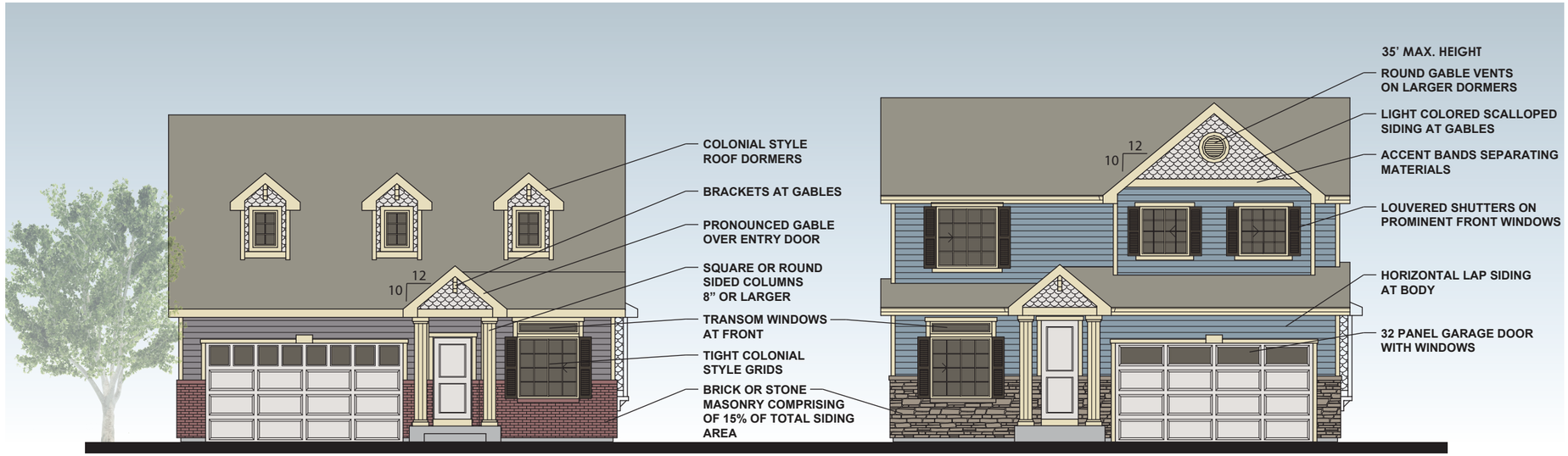
Architectural Standards
Master Plan

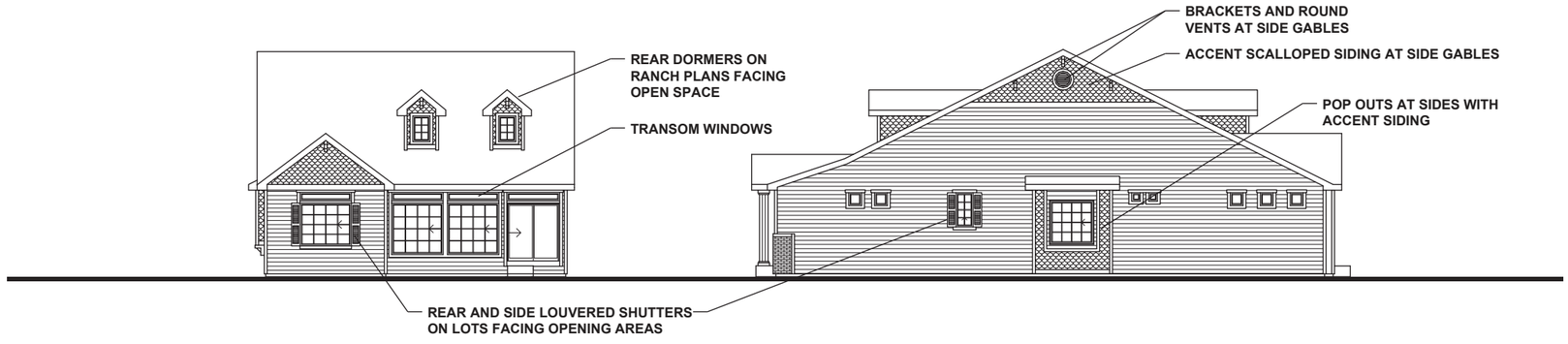
Project Title:

Green Valley Ranch Master Plan 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 or
  - o Horizontal siding in gables
- 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 PERCENTAGES ON THE FRONT FACADE DOES NOT APPLY IF GARAGES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
CLASSIC DESIGN STYLES

Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.4

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 PERCENTAGES ON THE FRONT FACADE DOES NOT APPLY IF GARAGES FACE THE MOTOR COURT.

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

Sheet Title:

SINGLE FAMILY
HOMESTEAD DESIGN STYLES

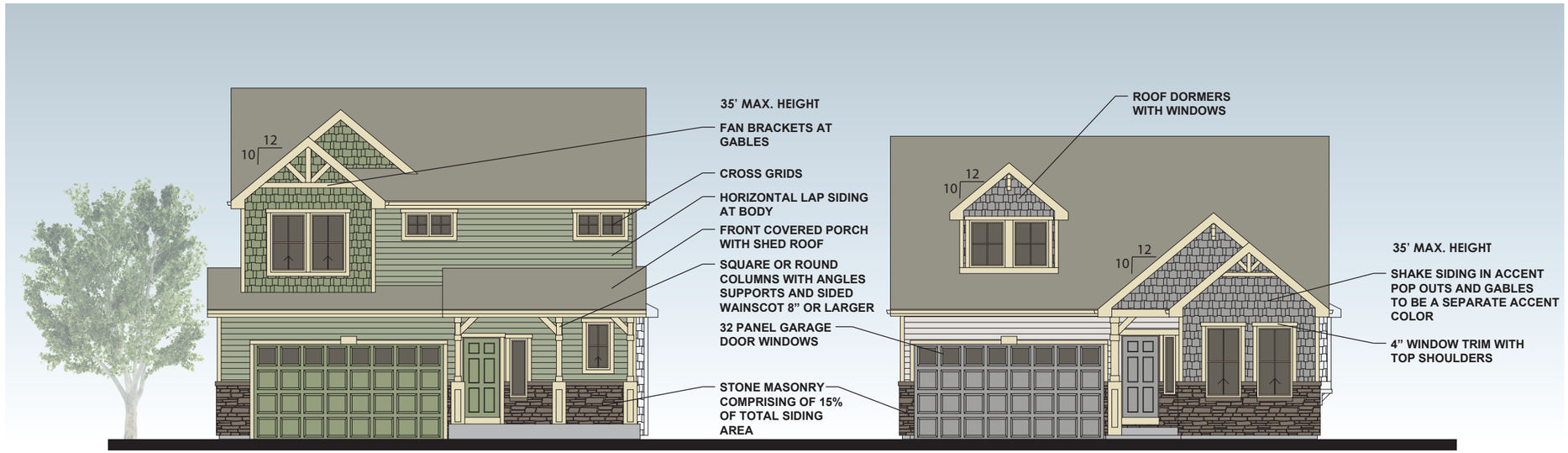
Architectural Standards
Master Plan

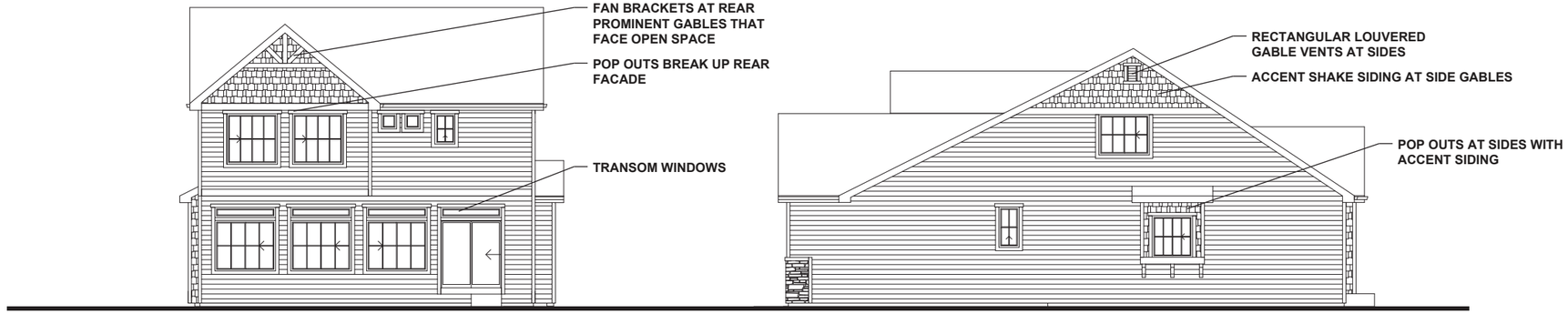
Project Title:

Green Valley Ranch Master Plan 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 PERCENTAGES ON THE FRONT FACADE DOES NOT APPLY IF GARAGES FACE THE MOTOR COURT.

Sheet Title:

SINGLE FAMILY
VICTORIAN DESIGN STYLES

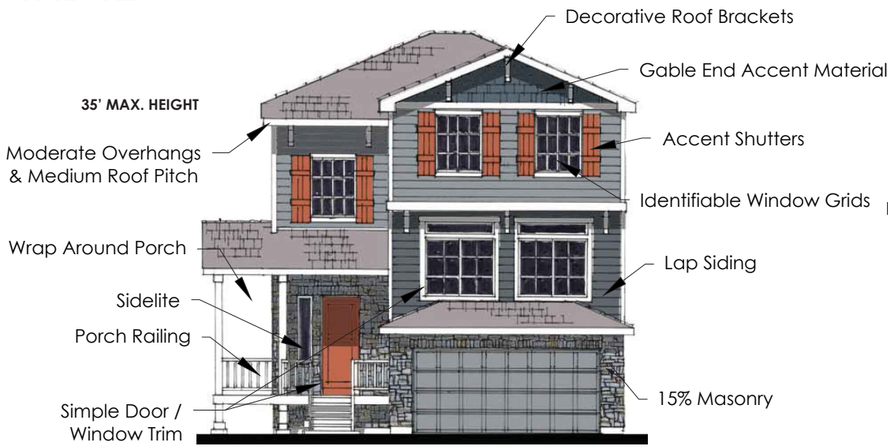
Architectural Standards
Master Plan

Project Title:

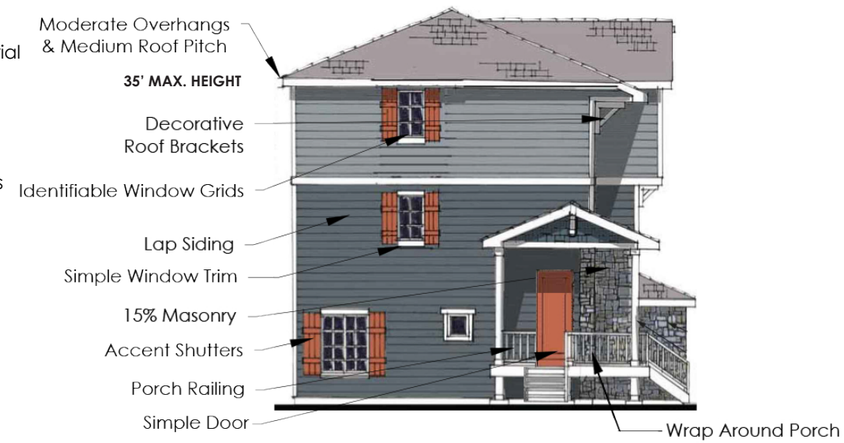
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

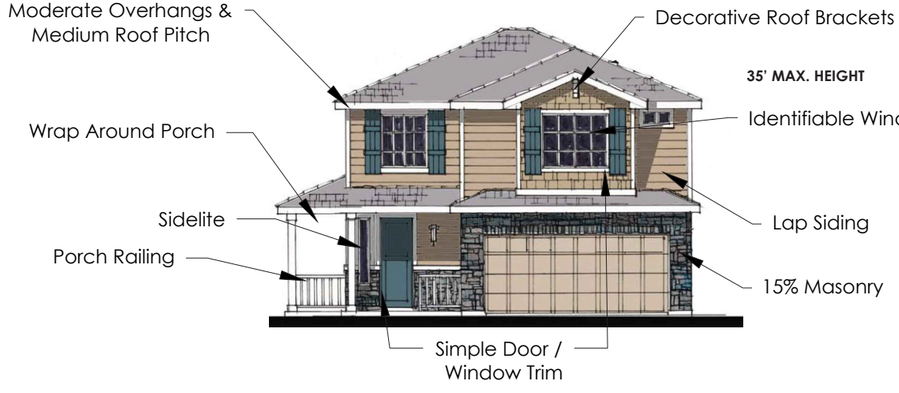
TAB 12.6



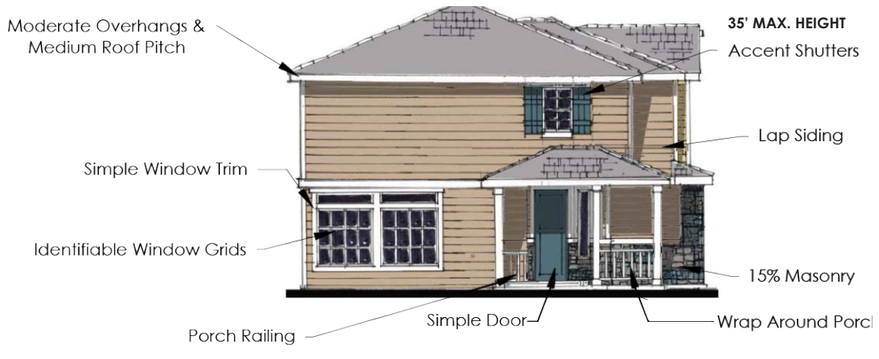
3 STORY FRONT ELEVATION B
CARRIAGE HOUSE



3 STORY SIDE ON STREET ELEVATION B
CARRIAGE HOUSE



2 STORY FRONT ELEVATION B
CARRIAGE HOUSE



2 STORY SIDE ON STREET ELEVATION B
CARRIAGE HOUSE

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 PERCENTAGES ON THE FRONT FACADE DOES NOT APPLY IF GARAGES FACE THE MOTOR COURT.

CARRIAGE HOUSE (ON MOTOR COURTS)

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.

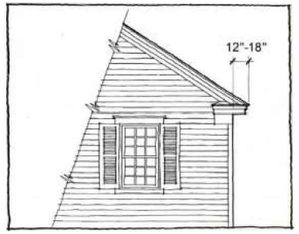
THE COLORS ARE PRIMARILY EARTH TONED WITH ACCENT COLORS TO EMPHASIZE THE UPPER STORY AND ARCHITECTURAL FEATURES. FRONT LOTS ON MOTOR COURT ARE REQUIRED TO HAVE DOOR FACING THE STREET.

Sheet Title:
CARRIAGE HOUSE ELEVATIONS
Architectural Standards
Master Plan

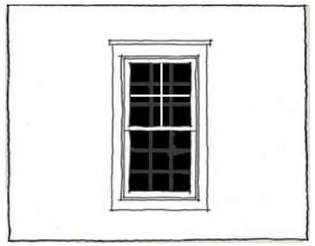
Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

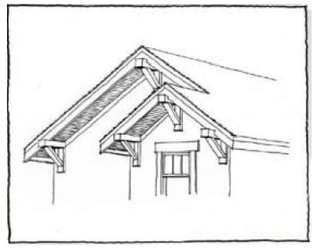
TAB 12.7



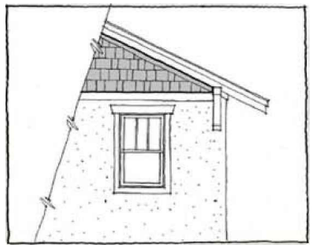
1. Moderate Roof Overhangs & Medium Roof Pitches



2. Window Grids

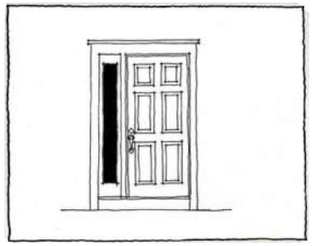


3.Decorative Brackets

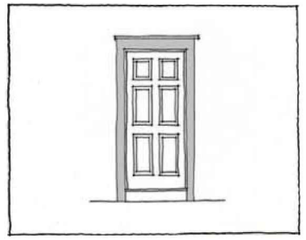


4. Gable End Accent Material

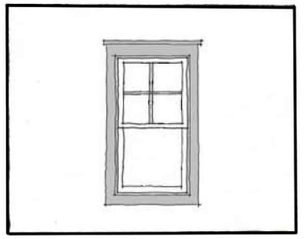
5. Accent Shutters



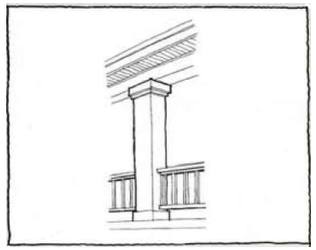
6. Sidelites



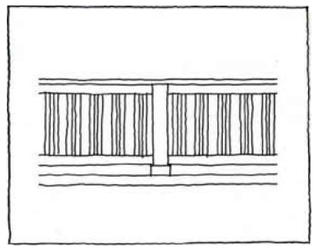
7. Simple Door Trim



8. Simple Window Trim

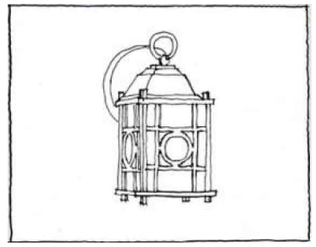


9. Square Porch Columns

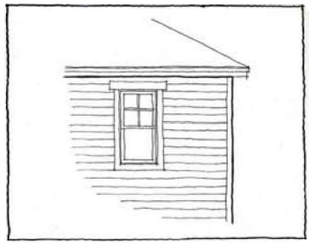


10. Porch Railing

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

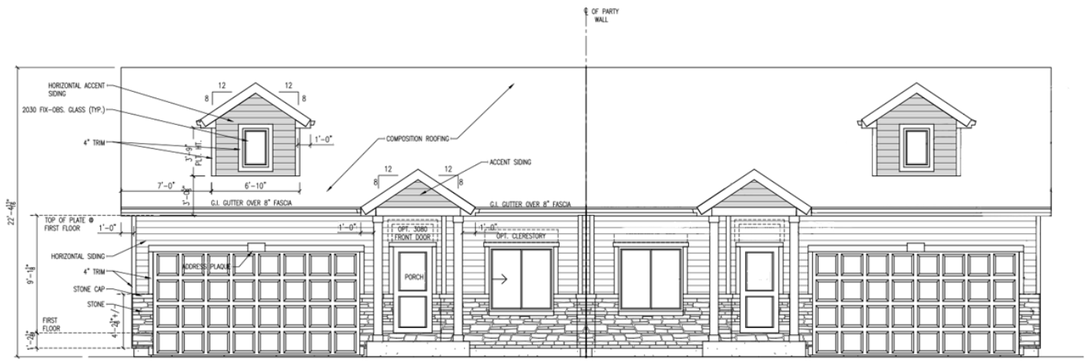
Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

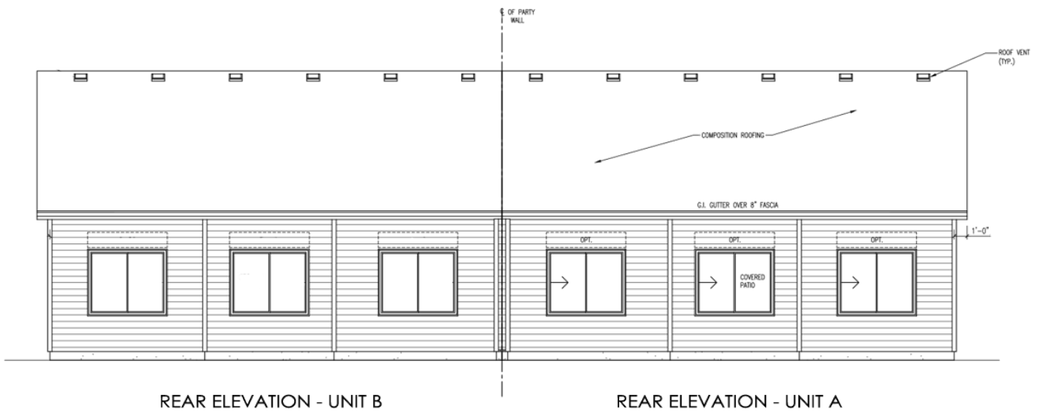
TAB 12.8

MODEL 1901 - ELEVATION



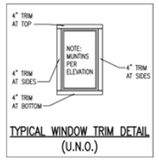
FRONT ELEVATION - UNIT A

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:
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.
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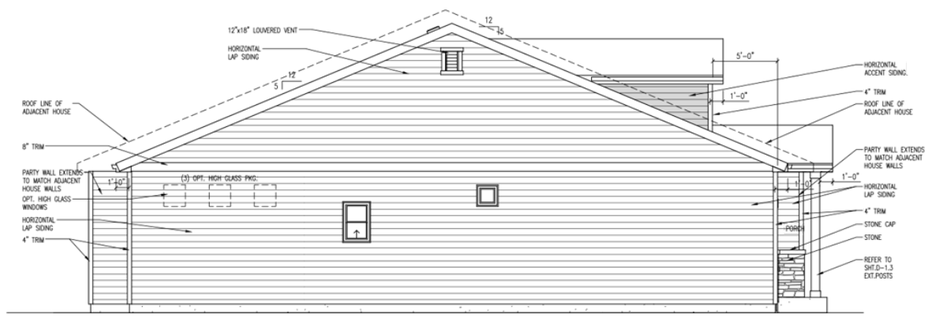
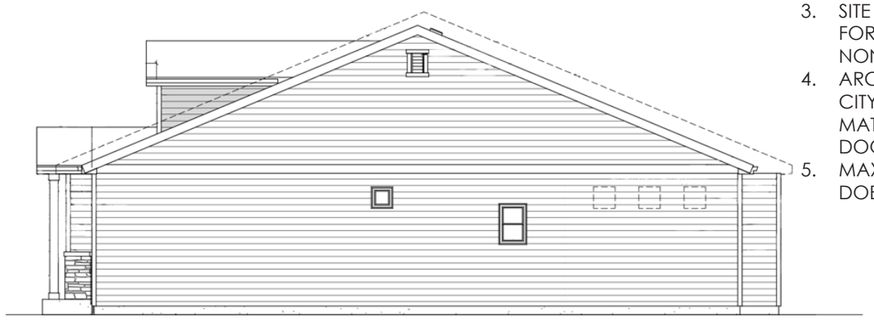
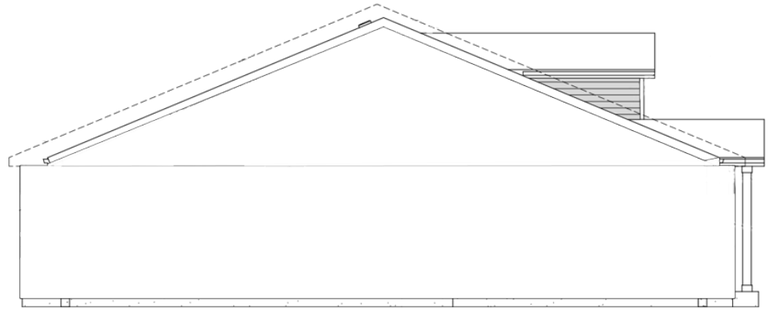


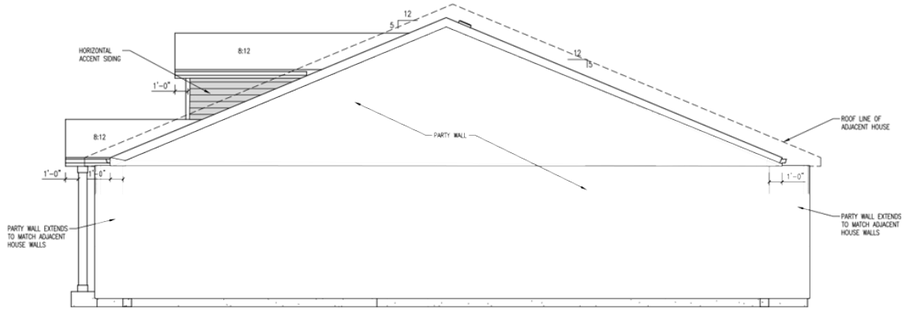
SIDE ELEVATION - UNIT A



SIDE ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT A

Sheet Title:

DUPLEX ELEVATIONS

Architectural Standards
Master Plan

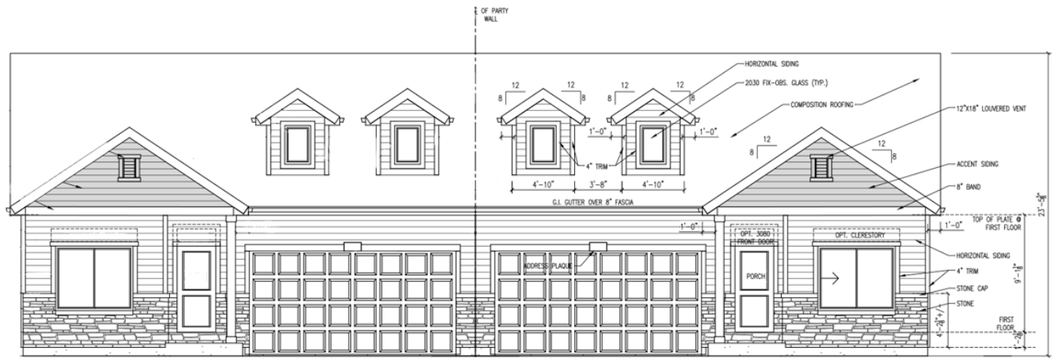
Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

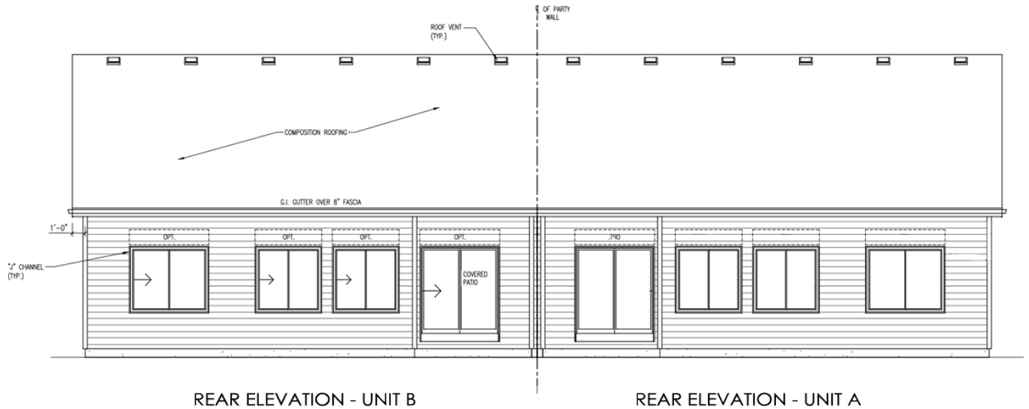
TAB 12.9

MODEL 1902 - ELEVATION



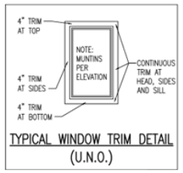
FRONT ELEVATION - UNIT A

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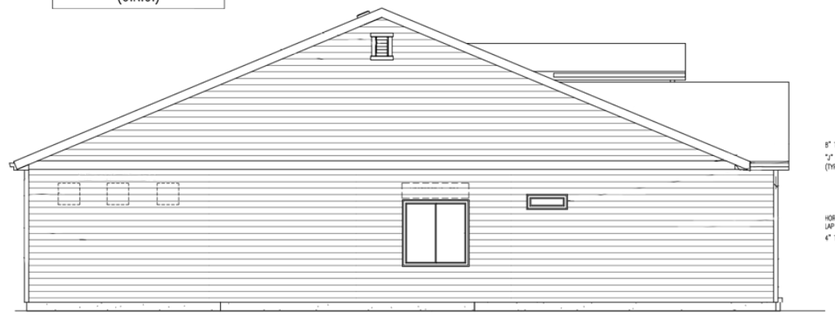
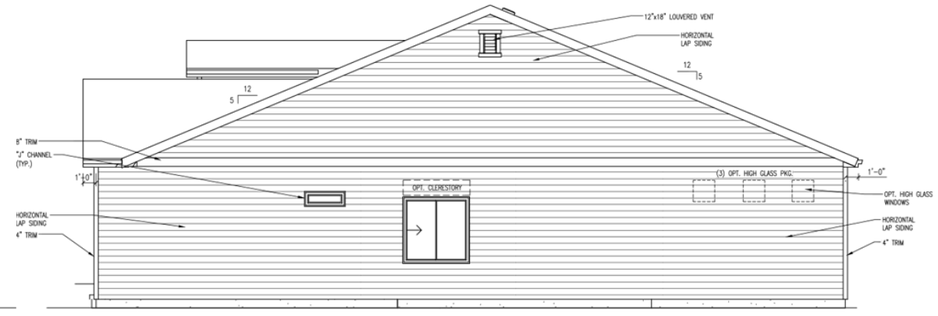
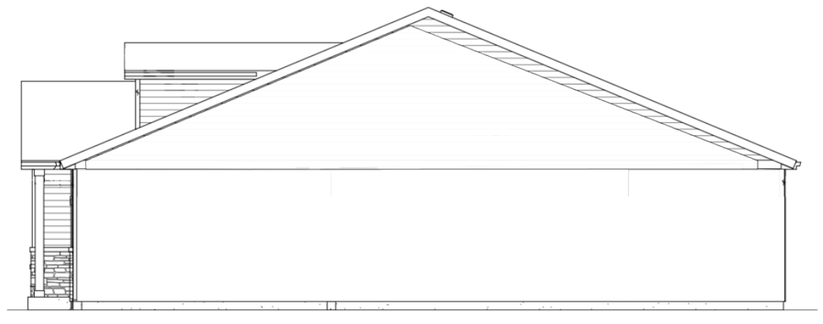
*CONTINUOUS SOFFIT VENTS AT TRUSS OR RAFTER BAYS ADJACENT TO LIVING SPACE
*DOWNSPOUTS TO HAVE 48" ADJ. EXTENDERS TYP.



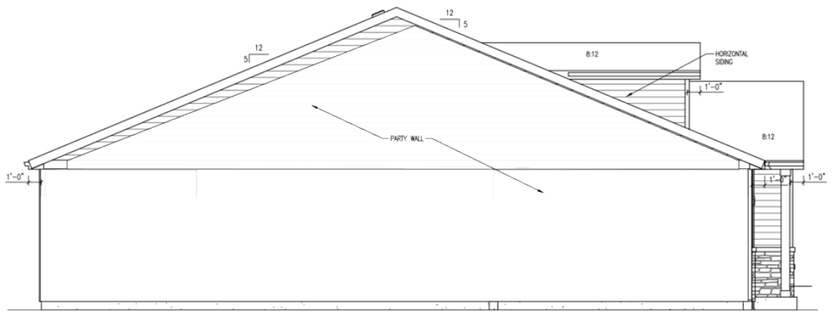
SIDE ELEVATION - UNIT A



SIDE ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT B



PARTY WALL ELEVATION - UNIT A

NOTE:

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5. MAXIMUM GARAGE PERCENTAGES ON THE FRONT FACADE DOES NOT APPLY IF GARAGES FACE THE MOTOR COURT.

Sheet Title:

DUPLEX ELEVATIONS

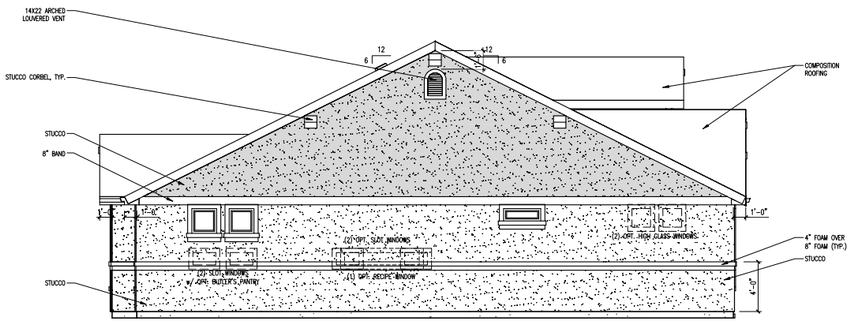
Architectural Standards
Master Plan

Project Title:

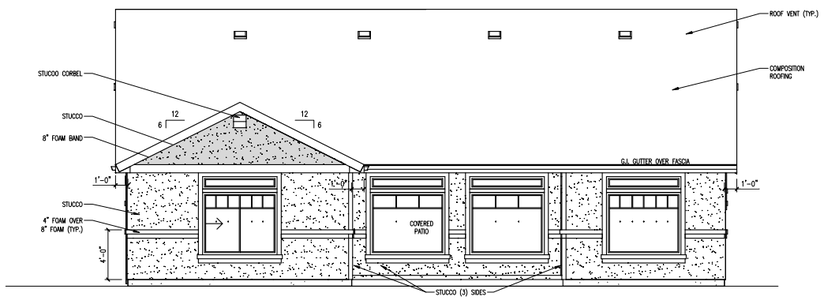
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.10



RIGHT SIDE ELEVATION



REAR ELEVATION

BUNGALOW ELEVATIONS (ON MOTOR COURT LOTS)

NOTE:

1. THESE ELEVATIONS ARE CONCEPTUAL IN NATURE TO DEMONSTRATE THE ARCHITECTURAL STYLES. ADDITIONAL MODELS AND DETAILS WILL BE PROVIDED WITH MASTER ARCHITECTURE REVIEW.
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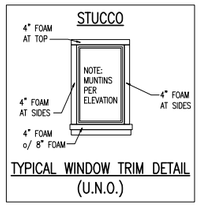
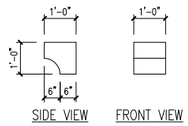
6. FRONT LOTS ON MOTOR COURT ARE REQUIRED TO HAVE DOOR FACING THE STREET.



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



12" X 12" STUCCO CORBEL DETAIL

NOTE:
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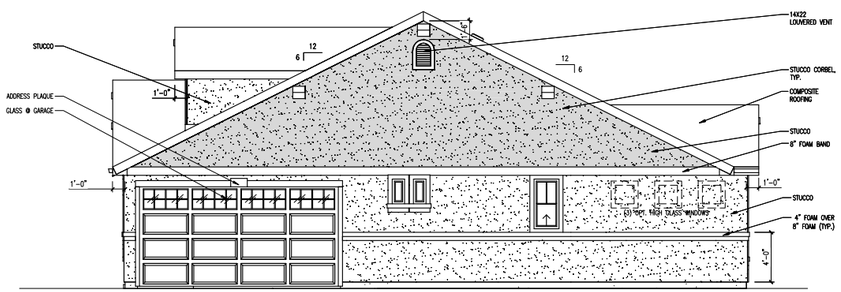
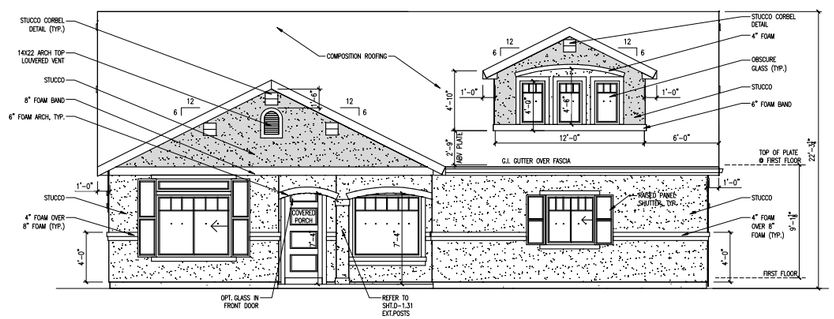
*DOWNSPOUTS TO HAVE 48" ADJ. EXTENDERS TYP.



LEFT SIDE ELEVATION



FRONT ELEVATION

Sheet Title:

BUNGALOW ELEVATIONS

Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.11

BUNGALOW ELEVATIONS (ON MOTOR COURT LOTS)

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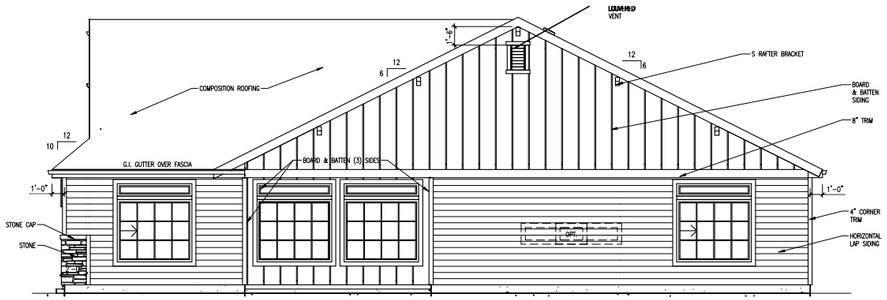
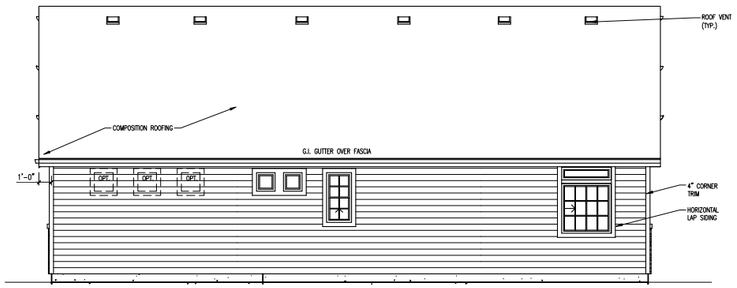
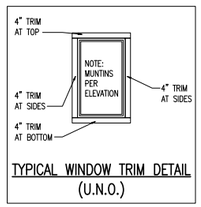
6. FRONT LOTS ON MOTOR COURT ARE REQUIRED TO HAVE DOOR FACING THE STREET.



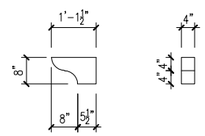
RIGHT SIDE ELEVATION



REAR ELEVATION



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

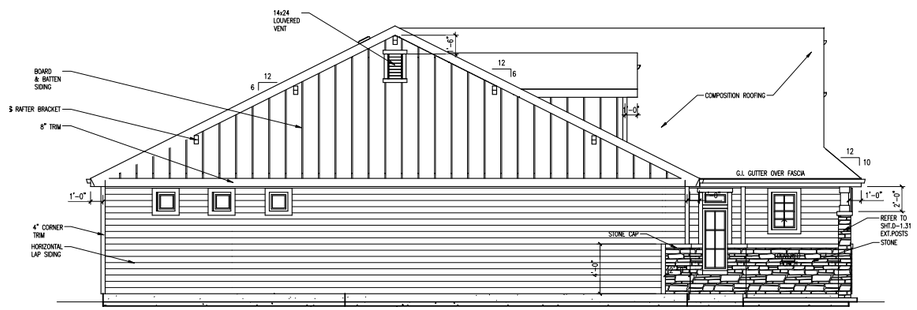


SIDE VIEW FRONT VIEW
'S' RAFTER CORBEL DETAIL

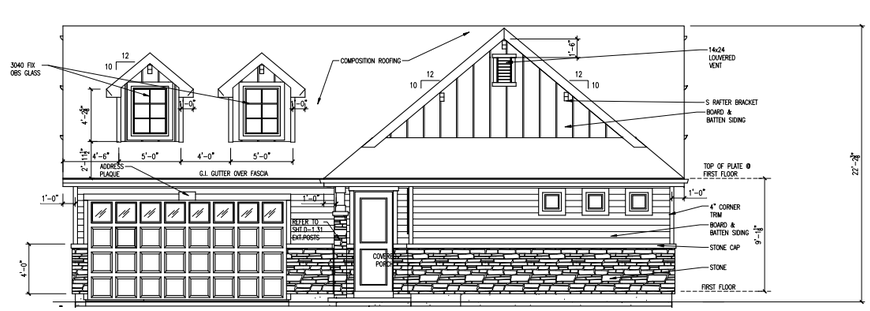
NOTE:
*REFER TO ROOF PLAN FOR DOWNSPOUT LOCATIONS

*CONTINUOUS SOFFIT VENTS AT TRUSS OR RAFTER BAYS ADJACENT TO LIVING SPACE

*DOWNSPOUTS TO HAVE 48" ADJ. EXTENDERS TYP.



LEFT SIDE ELEVATION



FRONT ELEVATION

Sheet Title:

BUNGALOW ELEVATIONS

Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.12

DESIGN INTENT
Multifamily Architecture Design Guidelines will be provided at time of development site application submittal.

The multifamily architectural style should be selected to complement and support the overall Colorado theme within Green Valley following the broad prairie environment.

Elevations of a multi-family building visible from streets or common open space shall display a similar level of quality and architectural detailing. Depending on its location within the project, multi-family architecture could be used as a transitional zone between two different products or us to buffer adjacent uses. The majority of a building's architectural features and treatments shall be used on these visible elevations.

ARCHITECTURAL FEATURES
Building Facades can vary depending on the community location, from traditional to urban townhomes. Per the UDO Building façades shall contain architectural design elements that enhance the pedestrian environment and surrounding properties, including pedestrian-scaled fenestration, wall plane and parapet variation, entrance designs, lighting and variation in building materials. Use shaped, sloped, and pitched roof forms, or a combination of these roof forms.

ROOF AND BUILDING FORM
Architectural design shall comply with all applicable city codes and adopted standards for elevation materials, windows and prominence of garage doors.

MATERIALS
Use of distinct variations in materials between individual buildings primary building materials.

COLOR PALETTE
A use of distinct color between individual buildings to create variation.

Sheet Title:

MULTI FAMILY

Architectural Standards
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.13

DESIGN INTENT

The commercial architecture should be complementary to the overall Colorado theme of Green Valley MP. Commercial buildings should also encourage the indoor outdoor lifestyle by incorporating outdoor patio spaces, roll up doors, or street facing windows. When possible, This may include seating areas, employee lunch zones or depending on the building use, small plazas with firepits and creative urban seating that hold various floor heights that mimic Green Valleys grading contours.

The commercial areas may include a variety of shops, optimal commercial usage through the usage of seamless vehicular access. This especially should be considered when planning for the Main Street district as this will also attract others from surrounding communities as the destination retail center.

ARCHITECTURAL FEATURES

Main facade elements of Green Valley are transparency, color, and massing. To create night time interests, surfaces and internally lit transparent components will be key for a light element within the area. Per the UDO Building façades shall contain architectural design elements that enhance the pedestrian environment and surrounding properties, including pedestrian-scaled fenestration, wall plane and parapet variation, entrance designs, lighting and variation in building materials.

ROOF AND BUILDING FORM

Rooftop vents and equipment shall match the dominant colors and textures of the adjacent building materials. Buildings may be clustered to create centralized gathering spaces and shared use areas. Use shaped, sloped, and pitched roof forms, or a combination of these roof forms.

MATERIALS

Commercial architectural materials will be provided at time of site plan submittal. Masonry materials including integral colored and textured materials are encourage.

COLOR PALETTE

Accents of primary and secondary colors may be imposed on a primary field of natural colors and textures. Color is encouraged as a form giving element for feature components.

BUILDING ORIENTATION

Buildings are encouraged to be oriented towards the street without intervening parking areas. Per the UDO, drive-thrus are not permitted to be street side.

sp Revised

Sheet Title:
COMMERCIAL RETAIL
Architectural Standards
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

July 24, 2023 Tab 12.13

DESIGN INTENT

Business parks and office buildings should be complementary to the overall Colorado theme of Green Valley MP 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 provide linkage along the commercial district. Open space programs for visitors and employees will reinforce the public spaces and streets. The vision for architecture should compliment surrounding land uses while following a sustainable aspect in nature through durable materials.

ARCHITECTURAL FEATURES

Main facade elements of Green Valley are transparency, color, and massing. To create night time interests, surfaces and internally lit transparent components will be key for a light element within the area. Per the UDO, building facades shall contain architectural design elements that enhance the pedestrian environment and surrounding properties including: pedestrian-scaled fenestration, wall plane and parapet variation, entrance designs, lighting and variation in building materials.

ROOF AND BUILDING FORM

Massing and articulation of buildings to surround service functions are integral as venting or other commercial building equipment shall be blended and covered with architectural grilles. Use shaped, sloped, and pitched roof forms, or a combination of these roof forms.

MATERIALS

Commercial architectural materials will be provided at time of site plan submittal. At the same time durable materials such as masonry materials, painted colored and textured materials shall be integrated as well as inclusions of troweled and painted products may be considered to create variation.

COLOR PALETTE

Accents of primary and secondary colors may be imposed on a primary field of natural colors and textures. Color is encouraged as a form giving element for feature components.

BUILDING ORIENTATION

Buildings are encouraged to be oriented towards the street with parking towards the rear in either parking garages or surface parking.

Sheet Title:

COMMERCIAL OFFICE

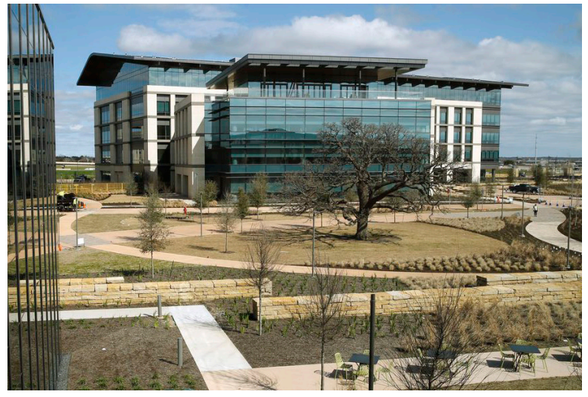
Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

TAB 12.15



DESIGN INTENT

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

ARCHITECTURAL FEATURES

Main facade elements of Green Valley architecture are transparency, color, and massing. To create night time interests, surfaces and internally lit transparent components will be key for a light element within the area.

ROOF AND BUILDING FORM

Massing and articulation of buildings to surround service functions are integral as venting or other commercial building equipment shall be blended and covered with architectural grilles.

MATERIALS

Architectural materials will be provided at time of site plan submittal. Masonry materials, including colored and textured materials are encouraged. Inclusions of troweled and painted products may be considered to create variation.

COLOR PALETTE

Accents of primary and secondary colors may be imposed on a primary field of natural colors and textures. Color is encouraged as a form giving element for feature components.

BUILDING ORIENTATION

Encourage building orientation toward street structured parking or parking in rear of building.

Sheet Title:

INSTITUTIONAL

Architectural Standards
Master Plan

Project Title:

Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

MASTER UTILITY REPORT
FOR
Green Valley Master Plan Amendment 2

December 22, 2021
March 1, 2022
May 24, 2022
December 22, 2022
April 14,2023

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 1
II. GENERAL LOCATION AND DESCRIPTION 2
- **A. Location of Property** 2
- **B. Description of the Proposed Project** 2
- **C. Adjacent Areas** 2

III. EXISTING WATER AND SANITARY SEWER INFRASTRUCTURE 2
- **A. References** 3
- **B. Domestic Water Design Criteria** 4
  - **b. Water Peaking Factors and Demand Calculations** 4
  - **c. Water Transmission Lines Requirements** 4
  - **d. Fire Flow Demand Requirements** 5
  - **e. Minimum Pressure Requirements** 5
- **C. Sanitary Sewer Design Criteria** 5
  - **a. Sewage Loading Criteria** 5
  - **b. Pipe Sizing Criteria and Sanitary Sewer Routing** 5

WATER SYSTEM PLAN 6
- **A. General Concept** 6
- **B. Specific Details** 6

SANITARY SYSTEM PLAN 7
- **A. General Concept** 7
- **B. Specific Details** 7

IV. CONCLUSIONS 9
V. REFERENCES 9

APPENDIX A – FIGURES and SUPPORTING DOCUMENTS

Vicinity Map
Planning Area Map
Amendment 1 and Amendment 2 Exhibit
City of Aurora A310 Effluent Email
City of Aurora Sanitary Sewer Email
Fulenwider Master Utility Maps
Fulenwider Trunk Main (Phase 1)
Fulenwider Trunk Main (Phase 2)
GVRE Master Utility Maps
Windler Master Utility Maps
Skydance Master Utility Maps
Skydance Referenced Reports

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

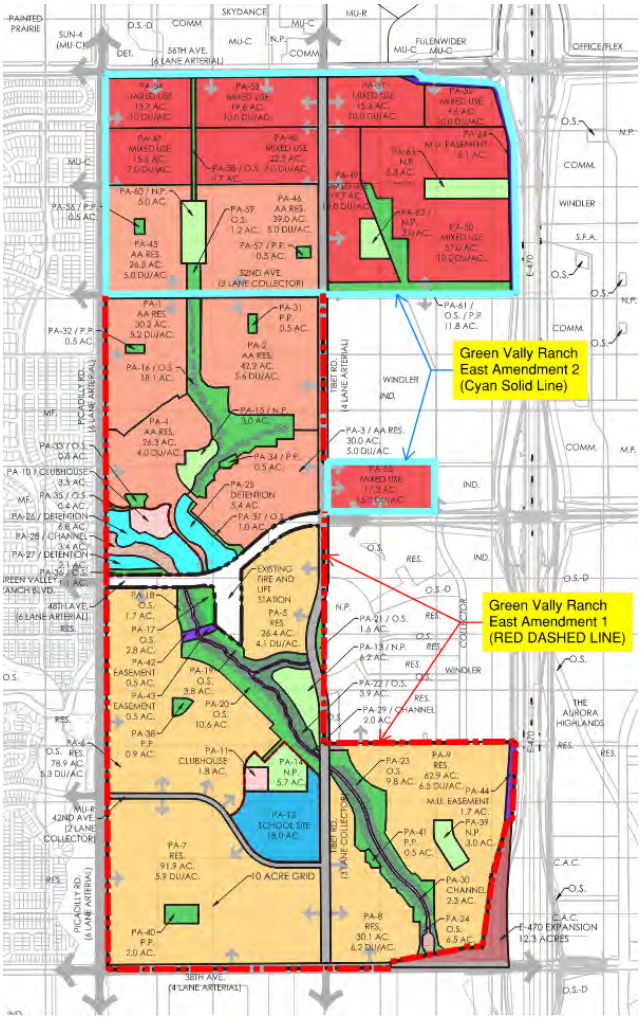
Sanitary Sewer Design Flows
Sanitary Sewer Routing
Sanitary Routing Schematic
Sanitary Sewer FlowMaster Calculations
2nd Creek Sanitary Sewer Routing
2nd Creek Sanitary Sewer Schematic
2nd Creek Sewer FlowMaster Calculations

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 proposed Green Valley Master Plan Amendment 2 Development. 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.

The Site is an extension of the Green Valley Ranch East (GVRE) development generally located north of 38th Avenue, west of E-470 and the Windler Development, south of 52nd Avenue and east of Picadilly Road. An overall exhibit, which is an elaboration of Tab 8.4 of the Master Plan document depicting the GVRE development (Amendment 1) within the red dash line and this Project (Green Valley Ranch East Amendment 2) within the cyan solid line, is provided within the Appendix of this Report for reference with a snippet located to the right. A Master Utility Report (MUR) was completed as a portion of the Master Planning process for Amendment 1 and portions of that MUR are included within the Appendix for reference. The portions of the Site tributary to the improvements within the Amendment 1 were anticipated and specifically, the sanitary sewer impacts of sub-basins 310-1 through 310-4 of the Report. Most of the planning areas within Amendment 1 are constructed, under construction, or in-process with the City of Aurora at the time of this Report and therefore, the infrastructure requirements with those planning areas are assumed to be existing. Brief discussion has been provided within this Report pertaining this Site (Amendment 2) and the impacts to the Amendment 1 infrastructure, if any. Should any assumed existing Amendment 1 infrastructure not be existing and is needed for the development of the specific Planning Area and basins herein, the Site Planning Area would be responsible for the development of the infrastructure consistent with the Amendment 2 PIP.



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 Project comprises approximately 289.1 acres with a mix of proposed uses including residential, mixed-use, and commercial with associated amenities, parks and open spaces. The residential uses east of Tibet Road 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 housing types. 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 up to 48 are a residential use, PAs from 49 to 52 are mixed-use, while PAs 53 and 54 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 subdivision 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 west of Tibet Road. The Windler development is south of the Project along the projected 52nd Avenue alignment and the half section 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 northeast 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 to the Tibet Road and 52nd Avenue intersection 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.

As a portion of the Green Valley Ranch East development two sanitary sewer connection points were planned to provide outfall locations for the Site. An 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.

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 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 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 east side of 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. The 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 benefiting. Please see the additional discussion within the Sanitary System Plan Section.

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/Skydance Master Utility Report*, approval date of February 7, 2023, by Westwood (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, amended August 4, 2022, 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 residential planning areas and at 1,500 gallon per acreage 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 proposed 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 were 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 at the proposed 12-inch diameter main within Tibet Road and at 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, two water distribution options are presented within the Mixed-Use areas to ensure serviceability. Option 1 will utilize a 12-inch main. Option 2 would utilize a 12-inch main along the south end of the area with 8-inch mains bisecting the remaining area. The remainder of the on-site distribution mains will be 8-inch diameters. The water system utilities were modeled 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 scenarios 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, pressures, velocities, and head loss 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 perimeter 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 generally running 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. Modeled output of the scenarios is presented within the Appendix for review. Since all surrounding, regional water mains are existing or being constructed by

adjacent developments, it is assumed 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	86 psi (Junction J-15, Fire Flow)
Peak Hour Maximum Pipe Velocity (8-12 inches)	1.92 fps, 1 ft/1000 ft Head loss, Pipe P-53; (alternate 2.57 fps, 3 ft/1000 ft, Pipe P-54)
Peak Hour Maximum Pipe Velocity (16-24 inches)	0.85 fps, 0 ft/1000 ft Head loss, Pipe P-32; (alternate 0.84 fps, 0 ft/1000 ft, Pipe P-34)

SANITARY SYSTEM PLAN

A. General Concept

The proposed Site sanitary sewer infrastructure 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. The 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 Watershed portion of the Site west of proposed Tibet Road will be serviced via this connection. About 35% of the mixed-use 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 exceeds the contributing flow from PA-49.

The northwest corner of the Site identified within Reference 3 is to outfall to the Painted Prairie subdivision (Option 1 of that Report). However, through conversations with Aurora Water, it has been determined Painted Prairie did not extend a sanitary main to provide for the outfall. As such, Aurora Water determined the preferred solution for the basin identified as 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 downstream, off-site, gravity system is anticipated to be designed and constructed

by others. Based upon the understood pipe size of 12-inches (Reference 2) and the potential minimum slope of 0.4%, the pipe would not have sufficient capacity for the 2.80 cfs calculated flows based on the criterion and direction of Aurora Water. The 12-inch pipe laid at 0.4% slope would have a pipe flow depth of 88% which is in excess of the Aurora Water criterion. The minimum slope for a 12-inch pipe to meet the 75% pipe flow depth requirement is a 0.6% slope having a flow depth of 72%. It is requested that Aurora water ensure adequate pipe size, depth, and slope to service the Green Valley Ranch Amendment 2 site and proposed uses. In the event downstream developments have not completed the off-Site gravity sanitary sewer main within the Second Creek Tributary to service the Project, the Developer will reasonably endeavor to design and construct the necessary outfall. If successful, reimbursement for this transmission main (Option 1) may be requested under the guidelines of the City of Aurora Municipal Code.

At the request of city officials regarding the 310-2 basin with the recent changes to the proposed planning area uses within the basin, an analysis of the proposed and existing downstream 2nd Creek Sanitary Sewer infrastructure was completed utilizing the Moffit/Skydance MUR (Reference 2) and the reports referenced therein. The results of the analysis indicate the downstream system from 60th Ave. & Tibet to the 2nd Creek Lift Station as designed by Martin/Martin (Reference 5) has sufficient capacity for the changes in planning area uses. However within Tibet Road from 56th Ave to 60th Ave. the 12" line from our outfall point (DP-10) to Skydance's DP-16 will need to be a 15" and likewise from Skydance's DP-13 to DP-7 will need to be an 18" instead of the 15" within their report, unless it is laid at a 0.50% slope which would then have sufficient capacity.

Remove sanitary service option 2 from the master utility report.

Removed option 2

The timing for the extension of this sani the Tibet Road and 56th Avenue intersection (Phase 2) has yet to b anticipated by others and is in progress. However, and in the event t mpleted in advance of the development of the planning areas with tary to Second Creek, and consistent with Option 2 previously presented v rence 3, the areas tributary to the Second Creek lift station may be lifted, via ry lift station within the Site to the gravity sanitary sewer system within Tibet Road at the Green Valley Ranch East boundary. In the event the temporary lift station is required to service the parcel, there will be limitations to the development due to the capacity of the existing 10-inch main within Tibet Road south of 52nd Avenue. Specifically, the existing 10-inch main capacity evaluated at 75% and 95% pipe flow depths are 1.49 cfs and 1.75 cfs, respectively laid at a 0.4% slope. The anticipated peak flow to be generated by the Site outfalling at this location in the interim condition is 2.91 cfs. Therefore, approximately 46% to 54% (for the respective pipe flow depths) of the Site may be developed in the interim condition until the northern downstream gravity outfall is available.

Two sanitary sewer servicing options were evaluated for Planning Areas 47 and 48 to provide flexibility of service. Specifically, PA-47and PA-48 were evaluated to be routed directly to the main within Tibet Road to minimize impact to the mixed-use PA-53 and PA-54 areas north of PA-47 & PA-48. This solution would minimize the encumbrance to the mixed-use planning areas (53, 54) in the event PA-47 and PA-48 are developed first. The second option routes the two planning areas (47, 48) through the mixed-use areas PA-53 and PA-54, which provides the developer the option should PA-53 and PA-54 areas be phased ahead of PA-47 and PA-48, potentially providing cost savings, if

selected. Both routing options are presented within the Appendix and the selected routing will be determined at the time of site plan for the impacted planning areas.

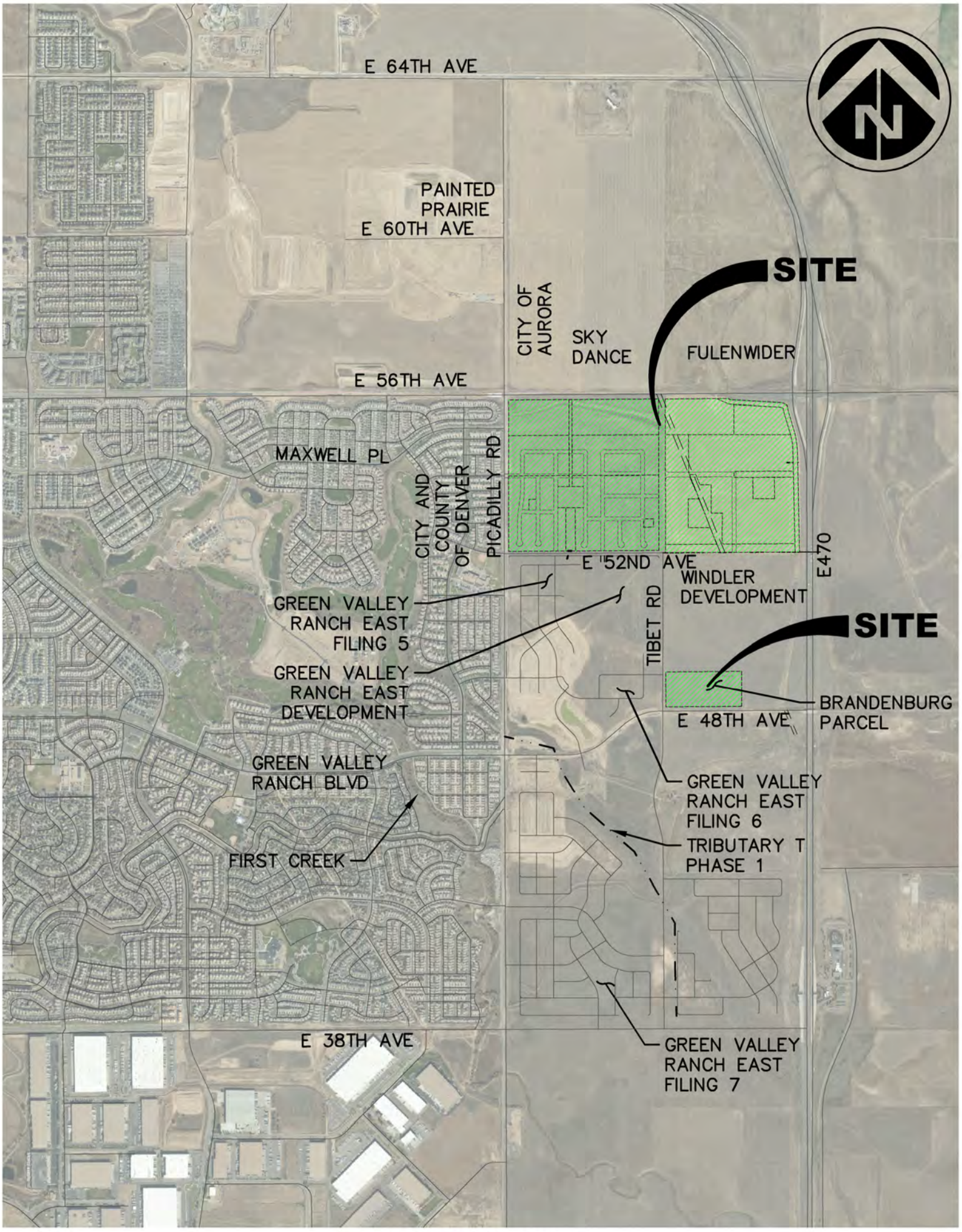
IV. CONCLUSIONS

The utility plan provided in this report generally complies with the *Standards and Specifications 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/Skydance Master Utility Report, approved February 7, 2023, by* Westwood
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, amended August 4, 2022, 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*

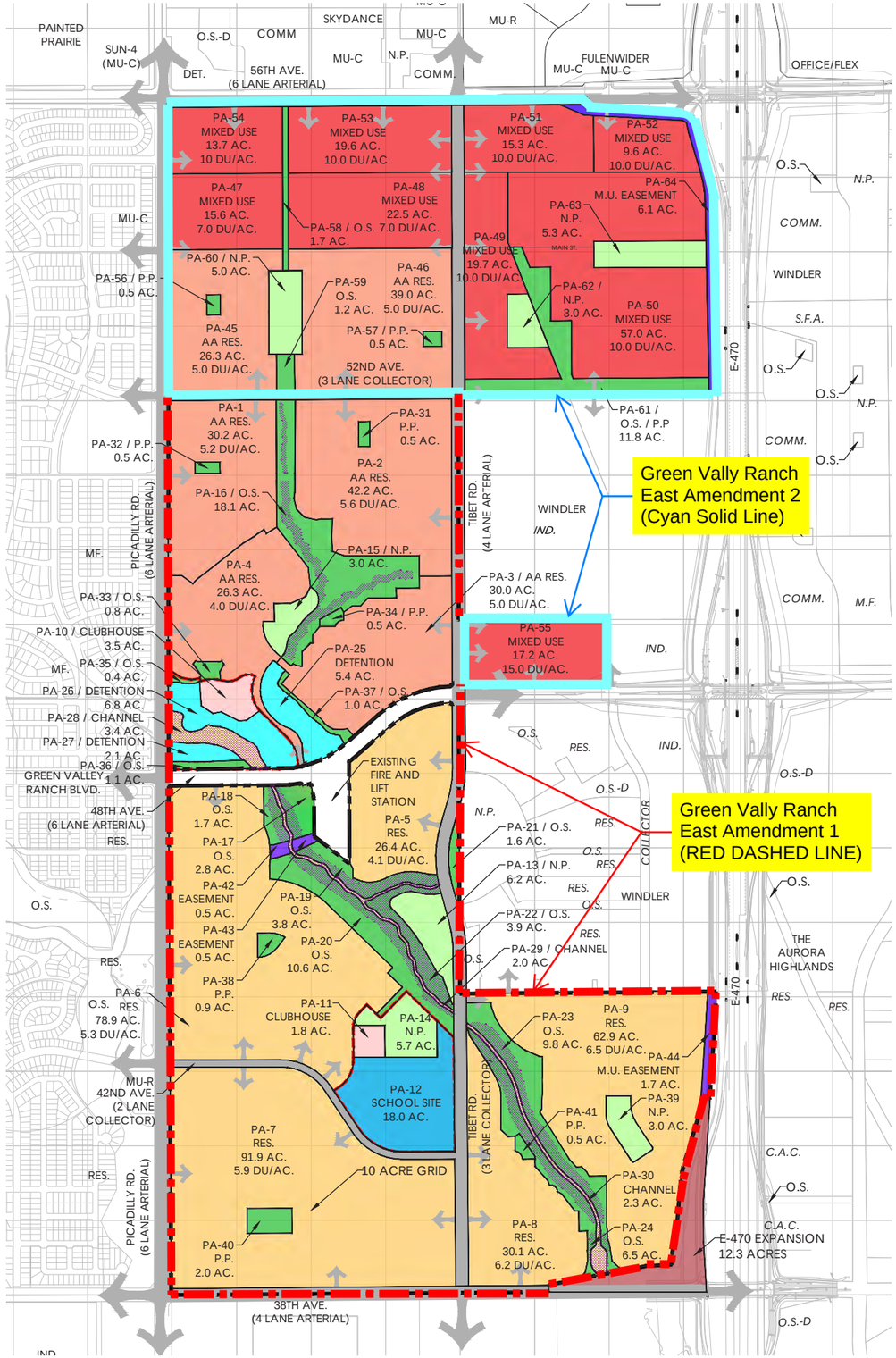
APPENDIX A – Figures and Supporting Documents



VICINITY MAP

SCALE: 1"=2000'

TAB 8.4



LEGEND

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

IND = INDUSTRIAL
COMM. = COMMERCIAL
C.A.C. = COMMUNITY ACTIVITY CENTER
MU-C = MULTI USE COMMERCIAL
O.S. = OPEN SPACE
N.P. = NEIGHBORHOOD PARK
P.P. = POCKET PARK
RES. = RESIDENTIAL
M.F. = MULTI FAMILY
S.F.A. = SINGLE FAMILY ATTACHED
S.F.D. = SINGLE FAMILY DETACHED

SCALE
0 300 600 1200 2400

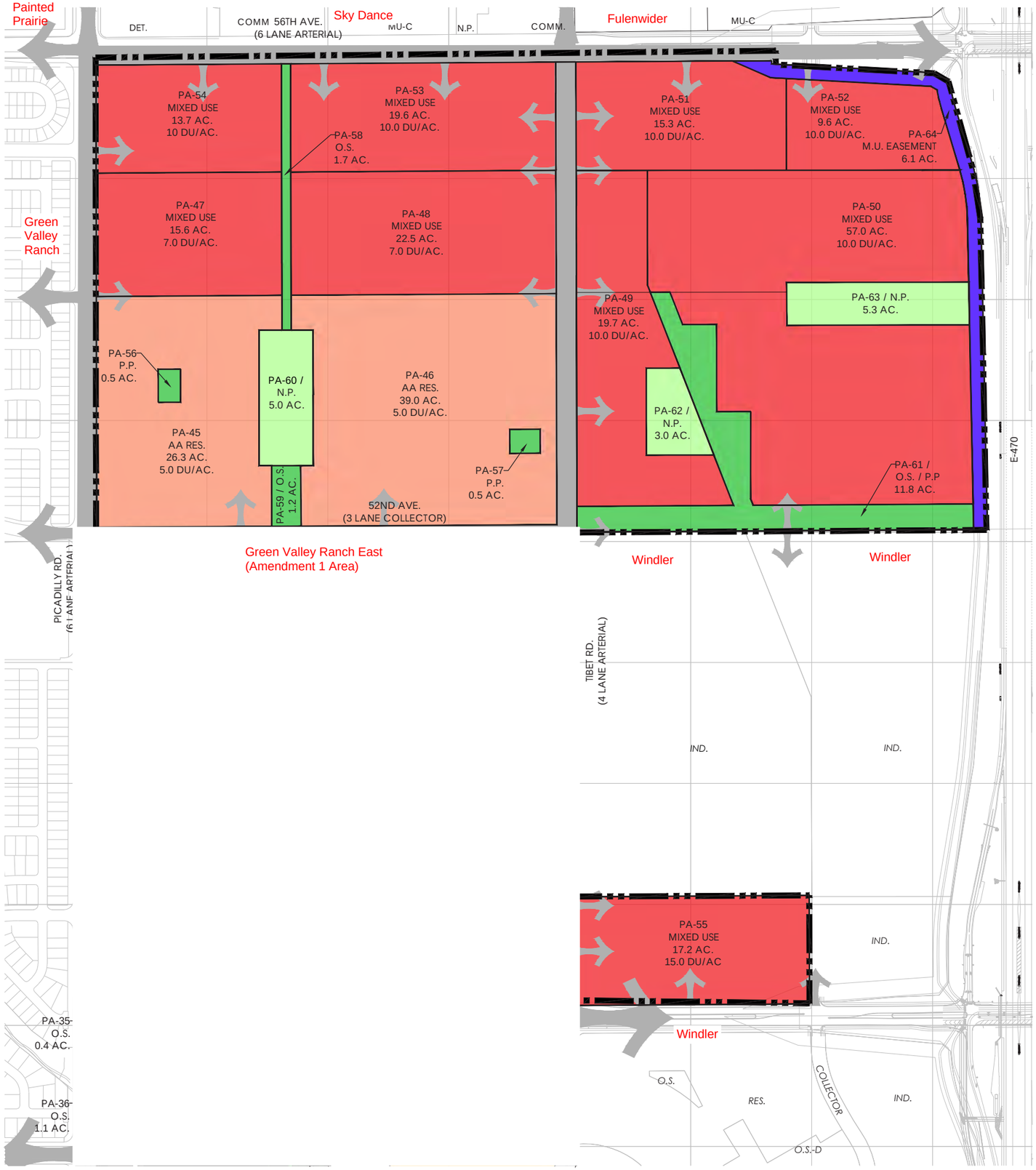
Sheet Title:
LAND USE PLAN OVERALL
Land Use Map, Matrix and Standard Notes
Master Plan

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

December 21, 2022 Tab 8.4

TAB 8.4



LEGEND

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- ACTIVE ADULT RES.
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- DETENTION POND
- FLOODWAY CHANNEL
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- NEIGHBORHOOD PARK
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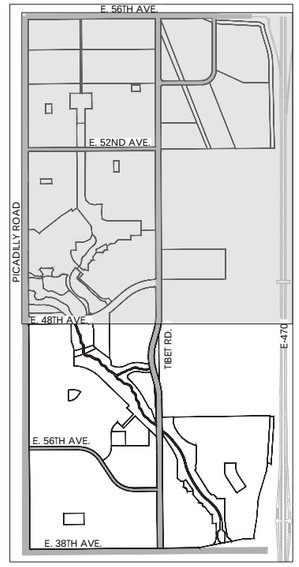
S.F.A. = SINGLE FAMILY ATTACHED
S.F.D. = SINGLE FAMILY DETACHED

KEY MAP



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

Project Title:
Green Valley Ranch Master Plan Amendment 2
Aurora, Colorado

GREEN VALLEY RANCH

December 21, 2022 Tab 8.4

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

Facebook | Twitter | Nextdoor | AuroraTV.org

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

Facebook | Twitter | Nextdoor | AuroraTV.org

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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

Dewberry

www.dewberry.com

Visit Dewberry's website at www.dewberry.com If you've received this email even though it's intended for someone else, then please delete the email, don't share its contents with others, and don't read its attachments. Thank you.

1

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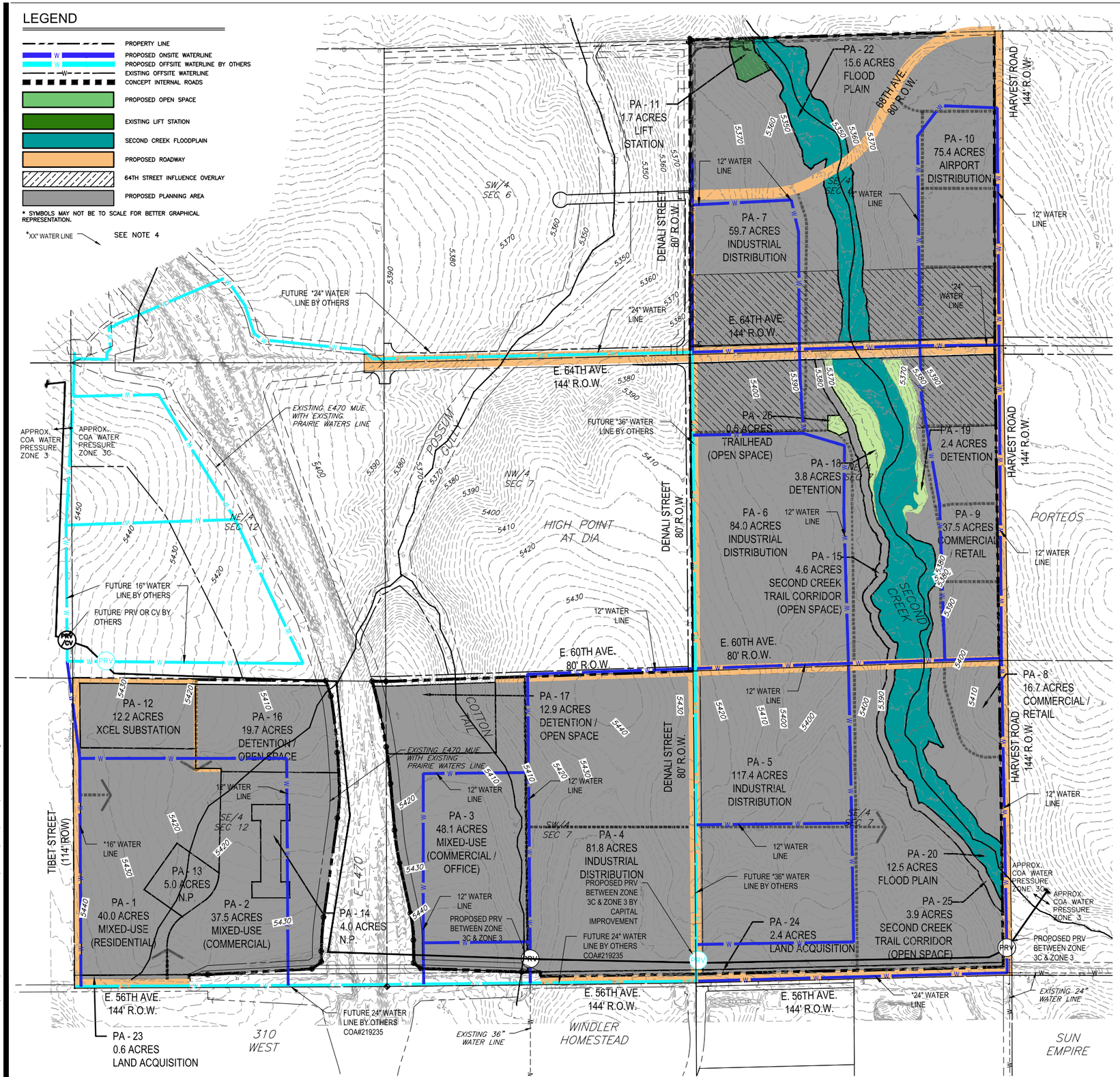
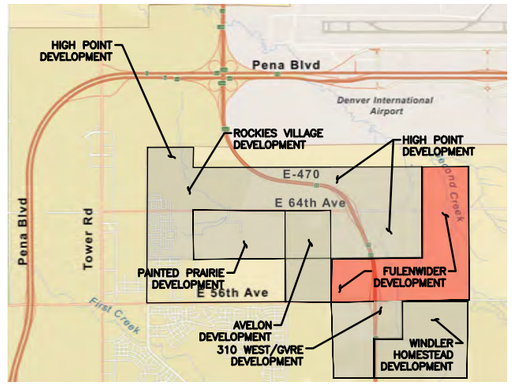
LEGEND

- 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

THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF PLAN

(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.

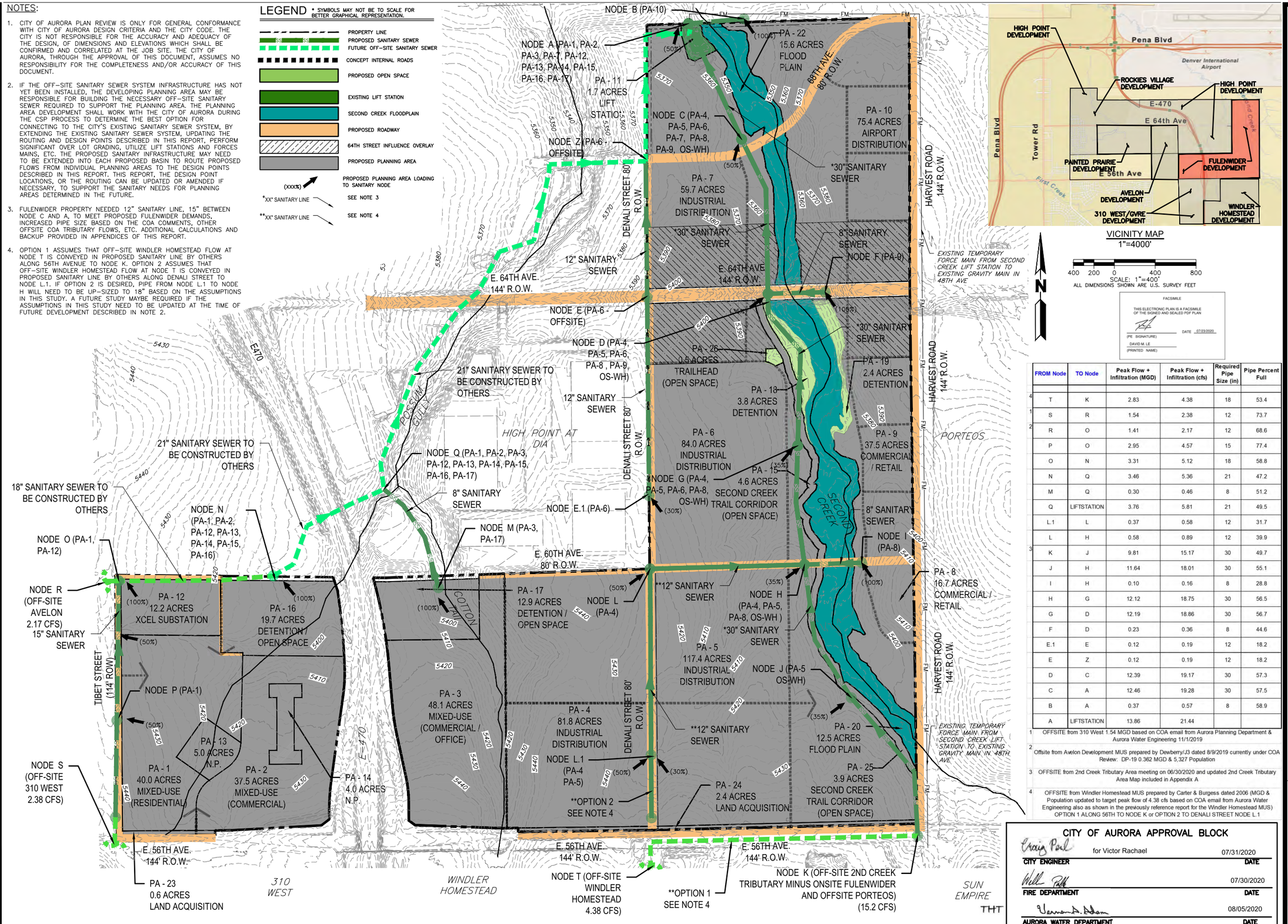
2. IF THE OFF-SITE SANITARY SEWER SYSTEM INFRASTRUCTURE HAS NOT YET BEEN INSTALLED, THE DEVELOPING PLANNING AREA MAY BE RESPONSIBLE FOR BUILDING THE NECESSARY OFF-SITE SANITARY SEWER REQUIRED TO SUPPORT THE PLANNING AREA. THE PLANNING AREA DEVELOPMENT SHALL WORK WITH THE CITY OF AURORA DURING THE CSP 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 Pate 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 (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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Sheet Number:

MUS-S

PLOT DATE: Wednesday, July 22, 2020 1:10 PM LAST SAVED BY: GPROULX
DRAWING LOCATION: G:\HORN\19.0001-Harvest Mile FDP\PLANS\FDP\SANITARY\FDP SANITARY.dwg

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

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.

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

THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF PLAN

(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

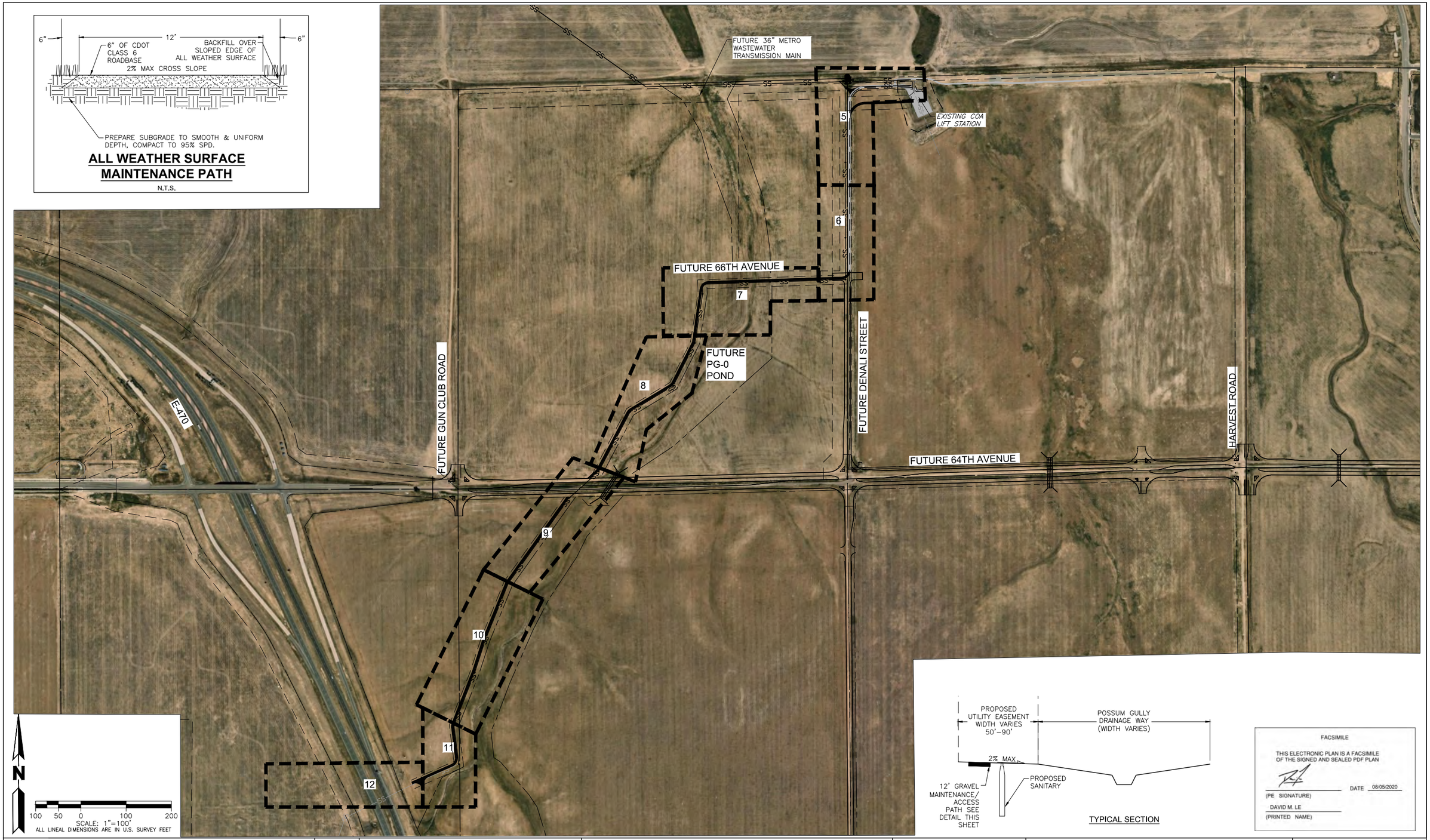
APPROVED ON 08/07/2020

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
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LAKEWOOD, COLORADO 80215
MAIN 303.431.6100
MARTINMARTIN.COM

M/M JOB NO.: 19.0281

As Constructed

No Revisions:

Revised:

Void:

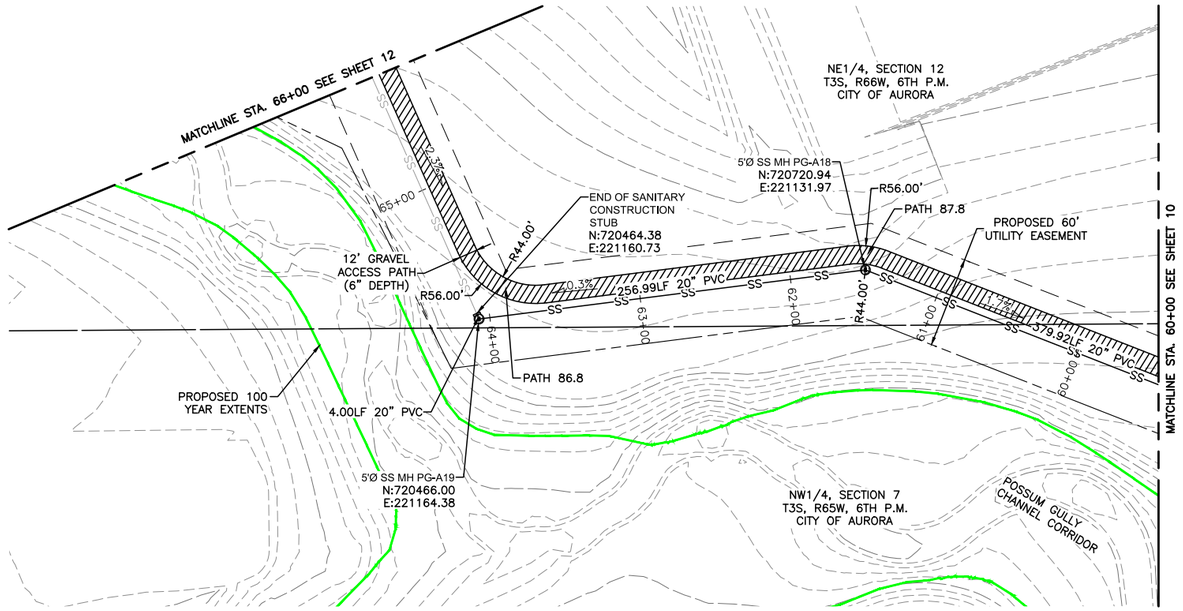
OVERALL UTILITY PLAN

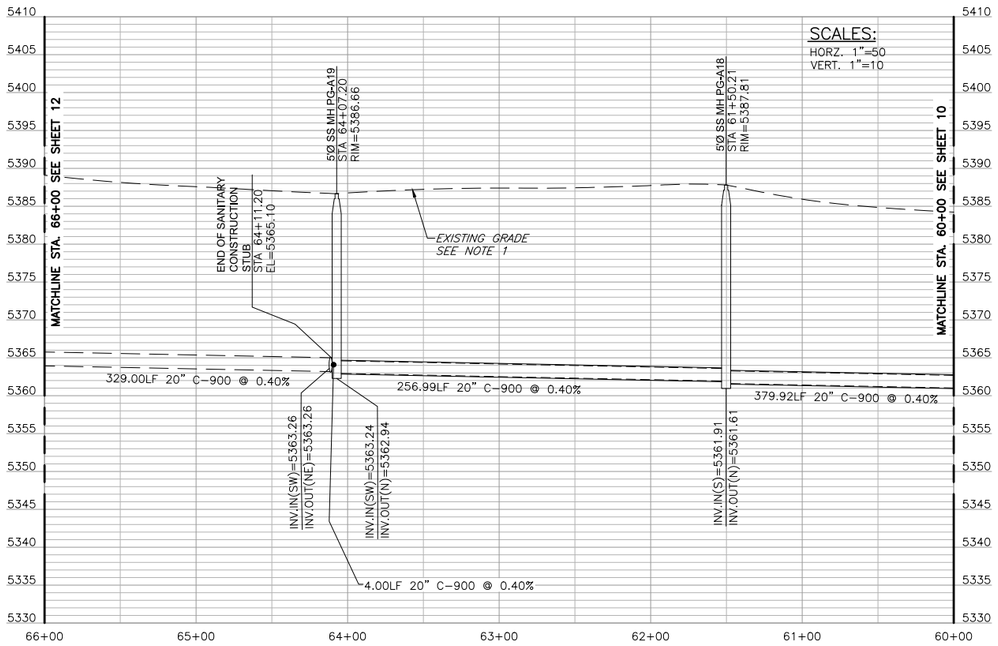
Designer:	DL/GP		
Detailer:	DB		
Sheet Subset:		Subset Sheet:	

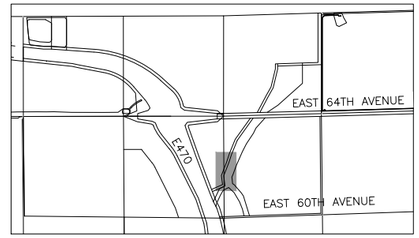
Project No./Code

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	
(O.W)	MONITOR WELL	
DRIVE	DESCRIPTIONS	DRIVE

BASIS OF BEARINGS:
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BENCHMARK:

COA ID: 3S6508NW001

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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

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_{LD}) 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.

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
File Name: SANITARY 62+50 - 69+50
Horiz. Scale: Vert. Scale:
Unit Information Unit Leader

Sheet Revisions		
Date:	Comments	Init.
08/05/20	FOR COA APPROVAL	

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

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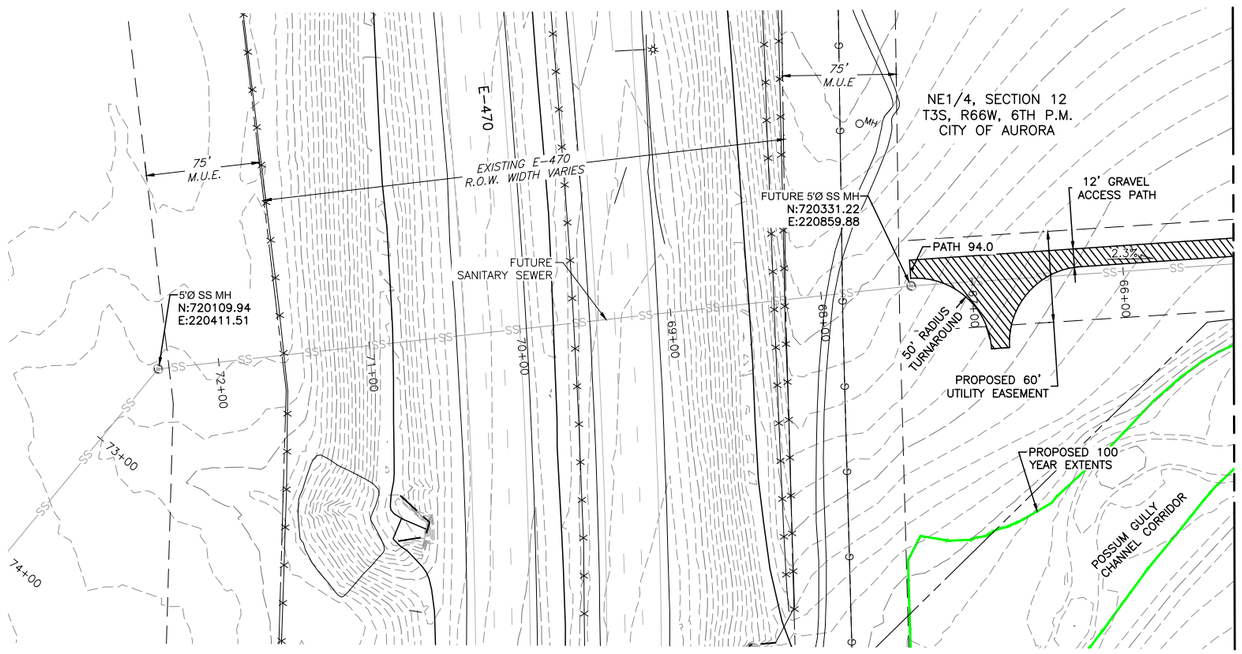
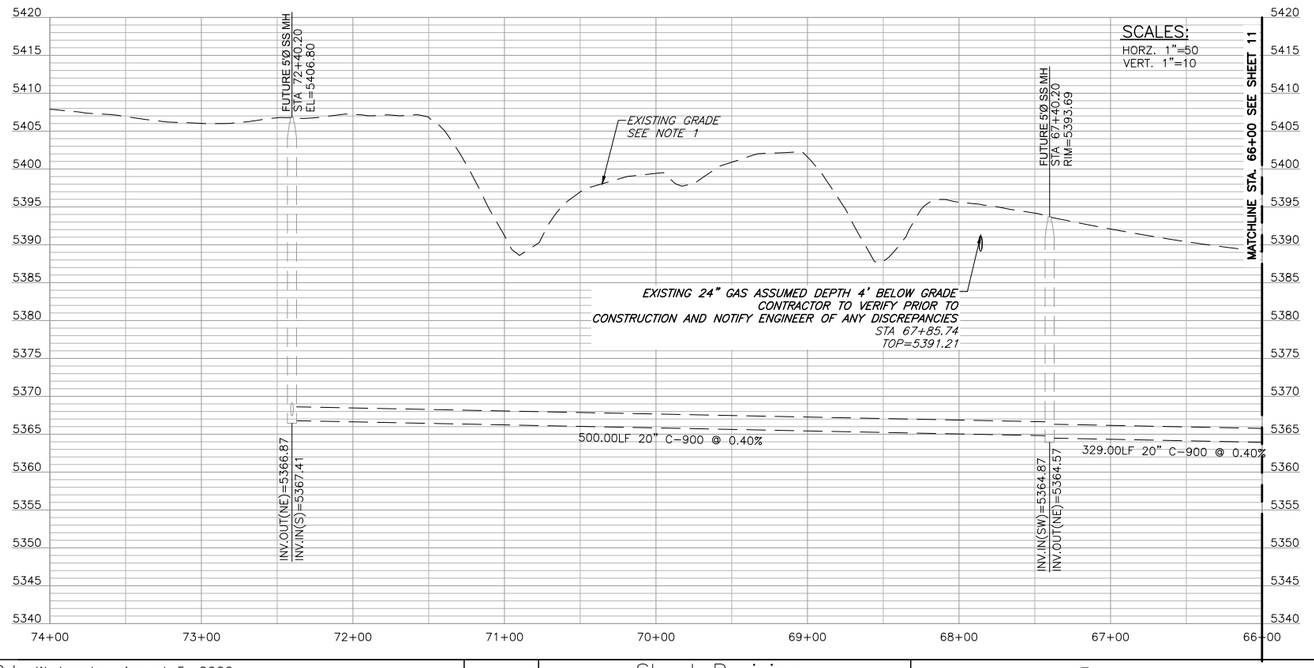
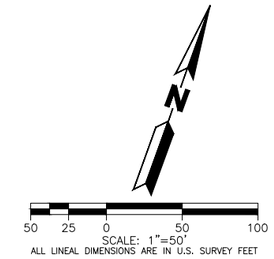
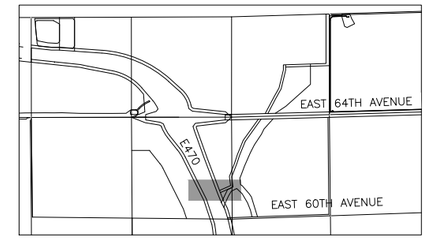
12

220136









KEYMAP
SCALE: 1"=2000'

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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

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FACSIMILE

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(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

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'

GEOTECHNICAL BASELINE REPORT NOTE:

1. THE CONTRACTOR IS TO COMPLETE THE CONSTRUCTION AND INSTALLATION OF THE CASING AND CARRIER PIPE UNDER E-470 AND UNDER THE EXISTING 60" WATER MAIN PER THE RECOMMENDATIONS AND REQUIREMENTS OF THE GEOTECHNICAL BASELINE REPORT (GBR) PREPARED BY LITHOS ENGINEERING DATED **02/24/2022** AND PER ALL SUPPORTING DOCUMENTS AND SPECIFICATIONS.
2. THE CONTRACTOR IS TO COMPLETE THE CONSTRUCTION AND INSTALLATION OF ALL REQUIRED INSTRUMENTATION AND MONITORING ELEMENTS PER THE PLANS PREPARED BY LITHOS ENGINEERING DATED **02/24/2022**

SUBSURFACE UTILITY ENGINEERING NOTE:

THE EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON INFORMATION PROVIDED BY A SUBSURFACE UTILITY ENGINEERING (SUE) SURVEY PROVIDED BY **T2 UTILITY ENGINEERS**, DATED **02/02/2022** THIS STAMPED/SIGNED SUE SURVEY IS AVAILABLE BY REQUEST AS A SEPARATE DOCUMENT. MARTIN/MARTIN RELIED UPON PROVIDED EXISTING UTILITY INFORMATION TO COMPLETE THE DESIGN AND ASSUMES NO RESPONSIBILITY FOR THE UTILITY LOCATIONS, SIZES, MATERIALS, OR COMPLETENESS OF THE SUE SURVEY. THE CONTRACTOR IS REQUIRED TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION, INCLUDING COMPLIANCE WITH PROVISIONS OF COLORADO REVISED STATUTE, TITLE 9 AND CALLING THE COLORADO 811 UTILITY LOCATE SERVICE TO PROVIDE UTILITY LOCATES BEFORE DIGGING.

1

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.

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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.

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 – 20+00
7	SANITARY PLAN & PROFILE 20+00 – 30+00
8	SANITARY PLAN & PROFILE 30+00 – 40+00
9	SANITARY PLAN & PROFILE 40+00 – 50+00
10	SANITARY PLAN & PROFILE 50+00 – 60+00
11	SANITARY PLAN & PROFILE 60+00 – 66+00
12	SANITARY PLAN & PROFILE 66+00 – 73+00
13	SANITARY PLAN & PROFILE 73+00 – 82+00
14	SANITARY PLAN & PROFILE 82+00 – 89+00
15	SANITARY PLAN & PROFILE 89+00 – 97+43.13
16	EROSION CONTROL PLAN

1

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 INFORMATION PROVIDED BY THE PROJECT'S SUE CONSULTANT. THE ASCE (38) UTILITY QUALITY LEVEL IS AS INDICATED ON THE STAMPED/SIGNED SUE PLANS PREPARED BY THE PROJECT'S SUE CONSULTANT. IT IS, HOWEVER, THE CONTRACTOR'S 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.

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

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: DAVID LE, P.E.
12499 WEST COLFAX AVENUE
LAKEWOOD, COLORADO 80215
PH: (720) 544-5490
DLE@MARTINMARTIN.COM

COLORADO REGISTERED PATRICK FRANK WEBER 28764 APRIL 25, 2022 PROFESSIONAL ENGINEER

Approved for One Year From this Date

City Engineer — Date

Water Department — Date

Fire Department — Date

Traffic Manager — Date

Print Date: Monday, April 25, 2022		Sheet Revisions			
File Name: COVER		Date:	Comments	Init.	
Horiz. Scale:	Vert. Scale:	08/05/20	FOR COA APPROVAL		
Unit Information	Unit Leader	1 04/25/22	PLAN AMENDMENT		

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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:

COVER

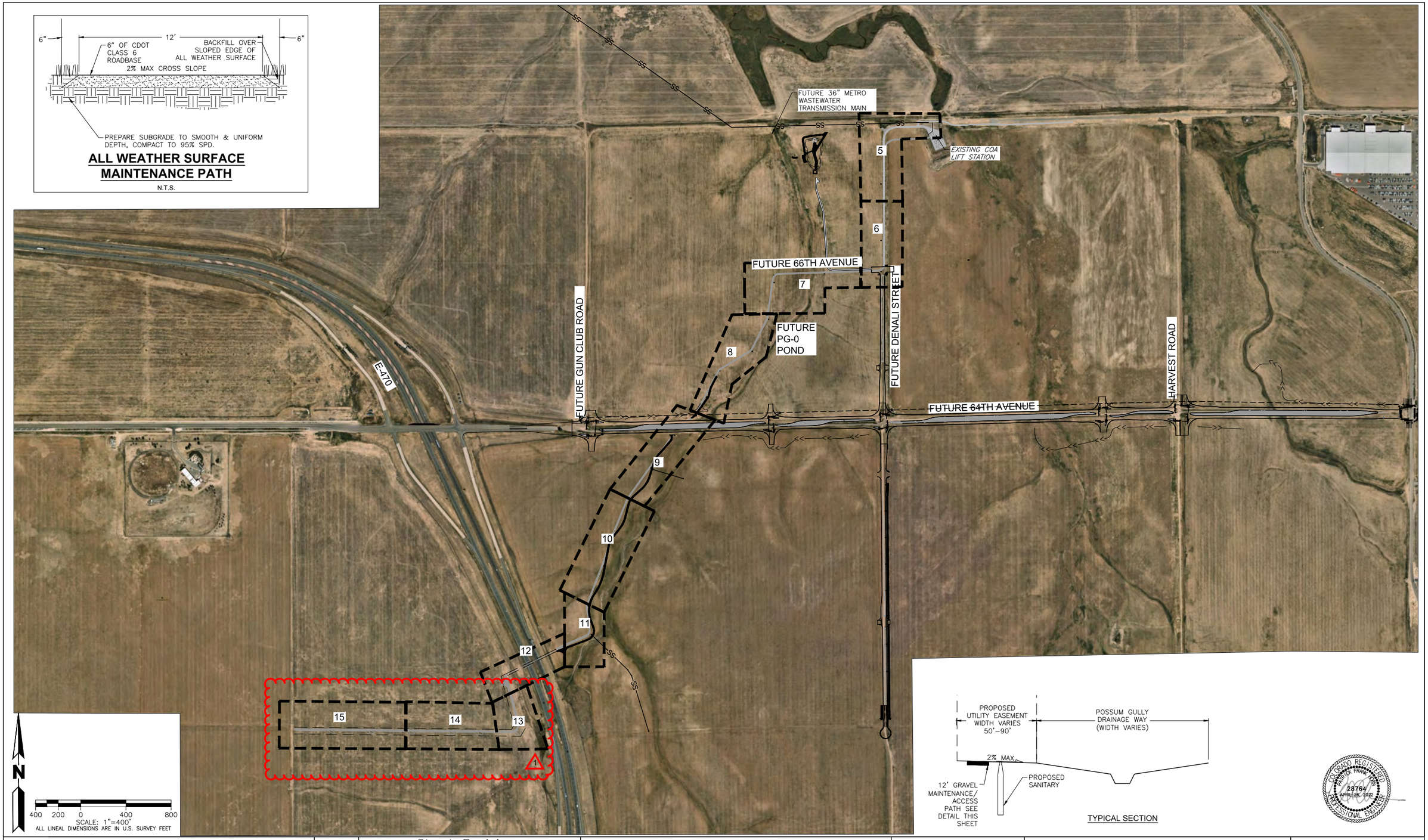
Designer: DL/GP
Detailer: FJ/DB
Sheet Subset:
Subset Sheet:

Project No./Code

1

ALL WEATHER SURFACE MAINTENANCE PATH

N.T.S.



TYPICAL SECTION

COLORADO REGISTERED GEOFF THOMAS 28764 APRIL 25, 2022 PROFESSIONAL ENGINEER

Print Date: Monday, April 25, 2022		Sheet Revisions	
File Name: AERIAL		Date: / Comments / Init.	
Horiz. Scale:	Vert. Scale:	08/05/20 FOR COA APPROVAL	
Unit Information	Unit Leader	1 04/25/22 PLAN AMENDMENT	

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Void:

OVERALL UTILITY PLAN

Designer: DL/GP
Detailer: FJ/DB
Sheet Subset:
Subset Sheet:

Project No./Code

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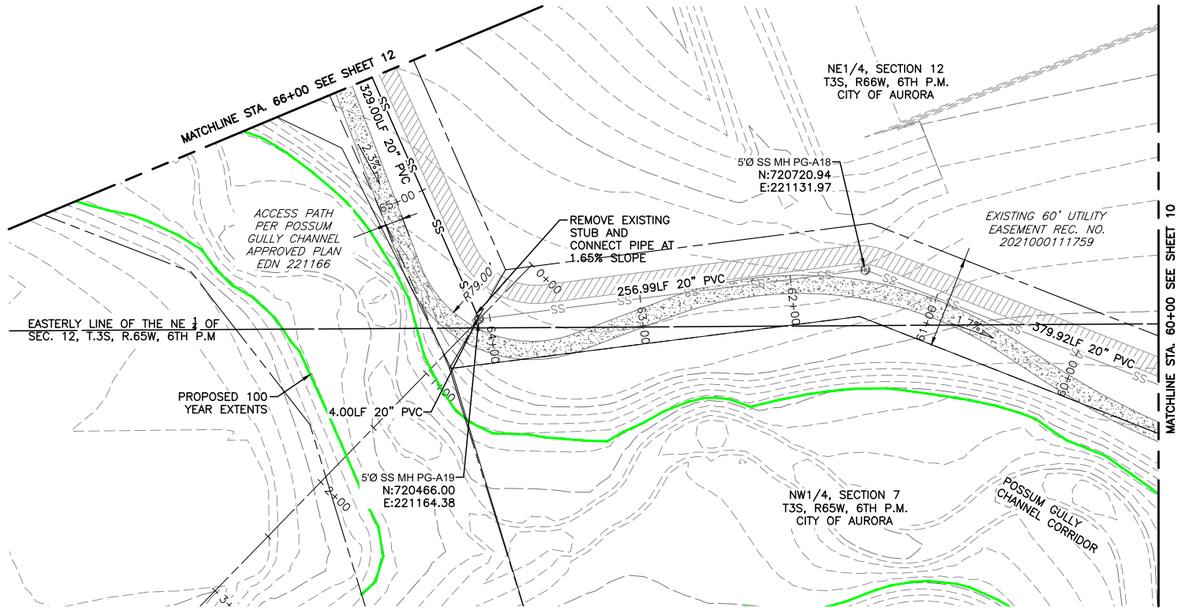

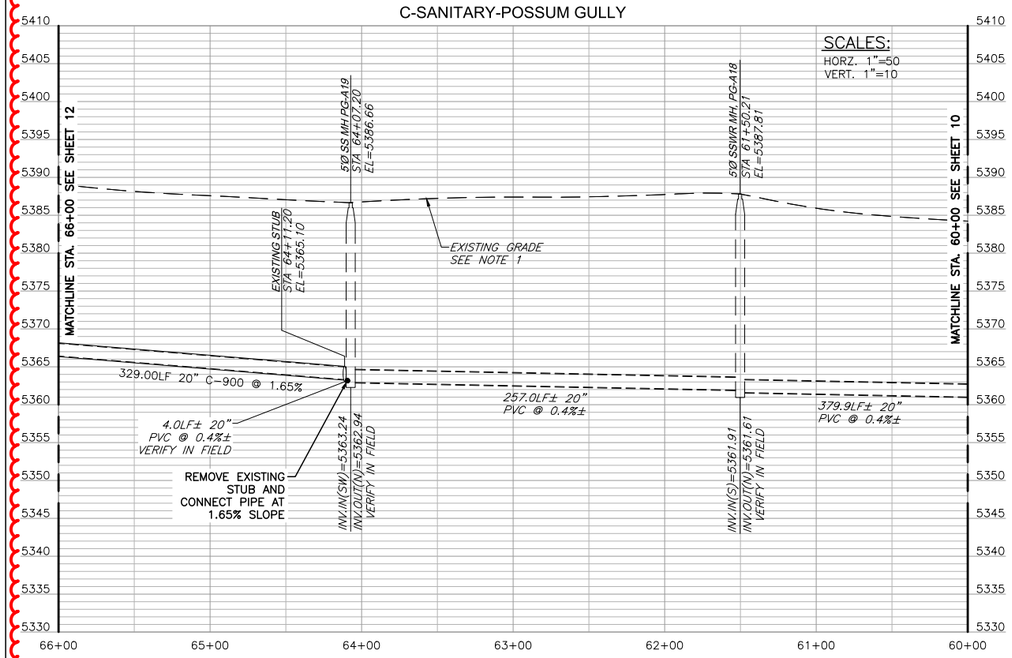

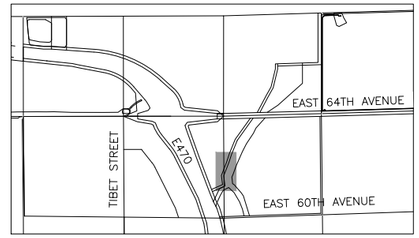

KEYMAP
SCALE: 1"=2000'

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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ELEVATION = 5394.58 (NAVD 1988) DATUM.

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Print Date: Monday, April 25, 2022
File Name: SANITARY PLAN & PROFILE 60+00 – 66+00
Horiz. Scale: Vert. Scale:
Unit Information Unit Leader

Sheet Revisions

	Date:	Comments	Init.
	08/05/20	FOR COA APPROVAL	
1	04/25/22	PLAN AMENDMENT	

MARTIN/MARTIN
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MARTINMARTIN.COM

M/M JOB NO.: 19.0281

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Revised:
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SANITARY PLAN & PROFILE 60+00 - 66+00

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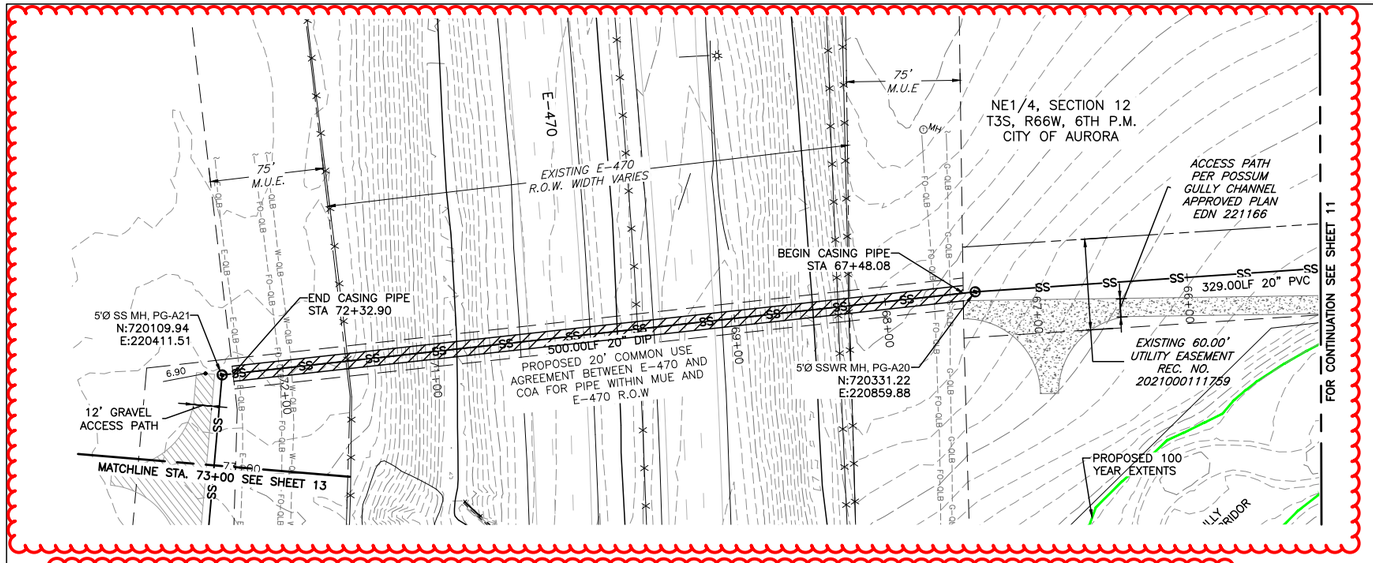
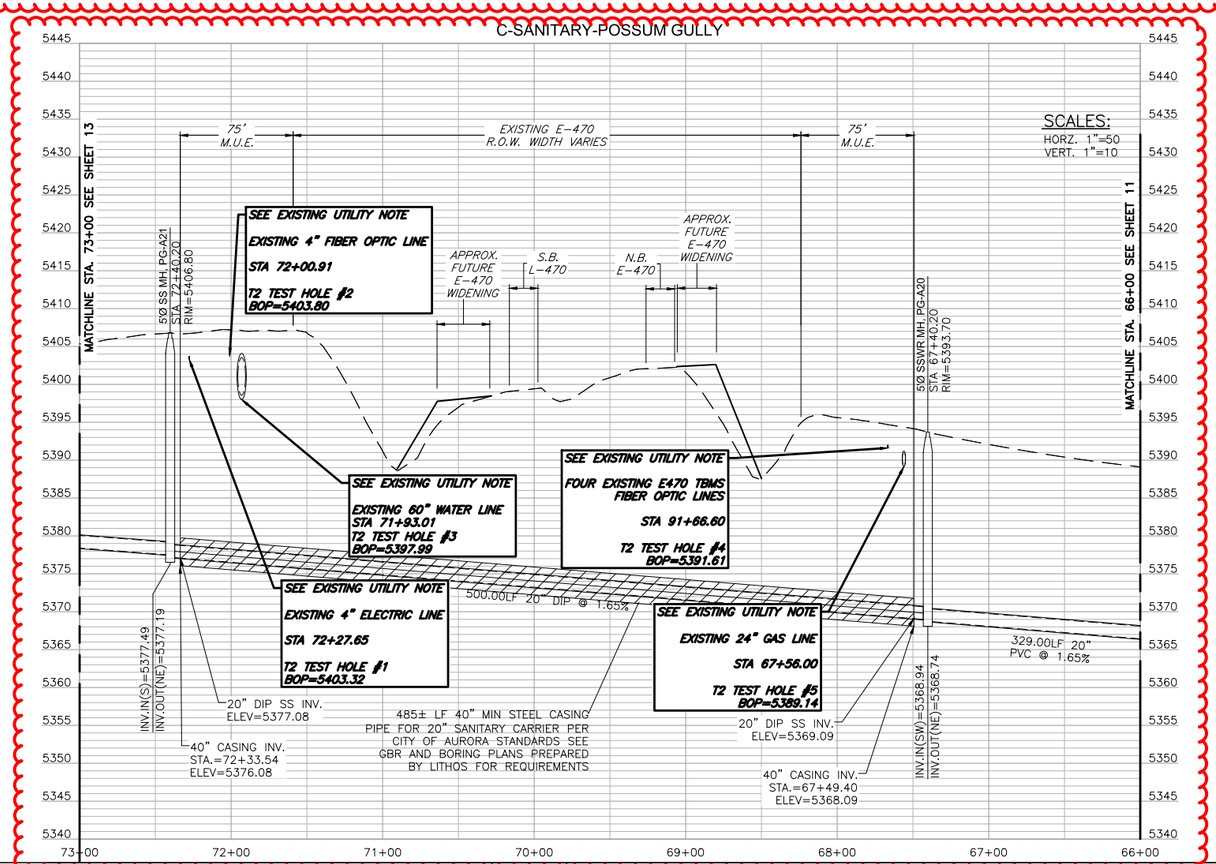
Detailer: FJ/DB
Sheet Subset:
Subset Sheet:

Project No./Code

11





1

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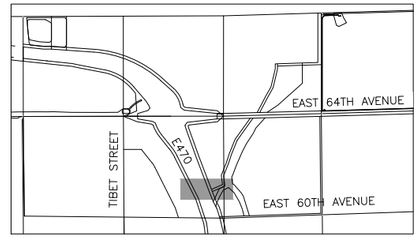
2. CONTRACTOR TO RESTORE DISTURBED AREA BACK TO EXISTING GRADE AND VEGETATION TO EXISTING CONDITION PRIOR TO CONSTRUCTION.
3. MAINTENANCE PATH FROM STATION 17+00 TO 68+00 TO BE GRADED SO THERE IS A MAXIMUM LONGITUDINAL SLOPE OF 5.0% AND A CROSS SLOPE OF 2.0%.
4. DUCTILE IRON PIPE TO BE LINED WITH PROTECTIVE 401 CERAMIC EPOXY LINING OR APPROVED EQUAL WITH JOINT RESTRAINTS PER COA CRITERIA.
5. BORE CONTRACTOR TO PROVIDE PLAN PRIOR TO START OF CONSTRUCTION SHOWING LAYOUT OF BORE PITS WITH ANY ENCROACHMENT INTO THE E-470.



KEYMAP
SCALE: 1"=2000'

E-470 REQUIRED NOTES:

1. OCCUPYING SPACE FOR UTILITY WORK, ACCESS, AND ANY CONSTRUCTION WITHIN THE E-470 ROW, MUE, AND PROPERTY OWNED IN FEE 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 $75,000 PER ACRE FOR CONSTRUCTION, AND THE PERMIT FEE IS $750.
2. SURVEY MONUMENT ALONG AND WITHIN THE E-470 ROW/MUE WHICH ARE DISTURBED SHALL BE RESET AND CONFORM TO THE E-470 COORDINATE SYSTEM.
3. DISTURBED AREA SHALL BE RESTORED TO CONDITION SIMILAR TO PRE-CONSTRUCTION UNLESS OTHERWISE AGREED UPON.
4. NO ACCESS IS ALLOWED FROM E-470 MAINLINE.
5. REVEGETATION OF DISTURBED AREAS WITHIN THE E-470 PROPERTY WILL NEED TO MEET E-470 SEED MIX SPECIFICATIONS.

1

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	RIGHT-OF-WAY LINE	
	SECTION LINE	
	EASEMENT	
SS	SANITARY SEWER	SS
(SS)	SANITARY MANHOLE	
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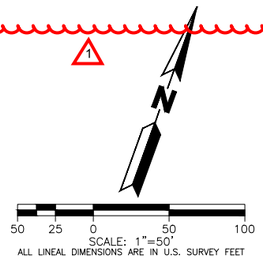
EXISTING UTILITY NOTE:
EXISTING UTILITY TO REMAIN AND BE PROTECTED. CONTRACTOR TO VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES. CONTRACTOR TO COORDINATE WITH UTILITY PROVIDER ON CROSSING AND ANY OTHER REQUIREMENTS.

1



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ELEVATION = 5394.58 (NAVD 1988) DATUM.

COLORADO REGISTERED PROFESSIONAL ENGINEER 28764 APRIL 26, 2022

Print Date: Monday, April 25, 2022		Sheet Revisions			
File Name: SANITARY 69+50 – 72+86		Date:	Comments	Init.	
Horiz. Scale:	Vert. Scale:	08/05/20	FOR COA APPROVAL		
Unit Information	Unit Leader	1 04/25/22	PLAN AMENDMENT		

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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

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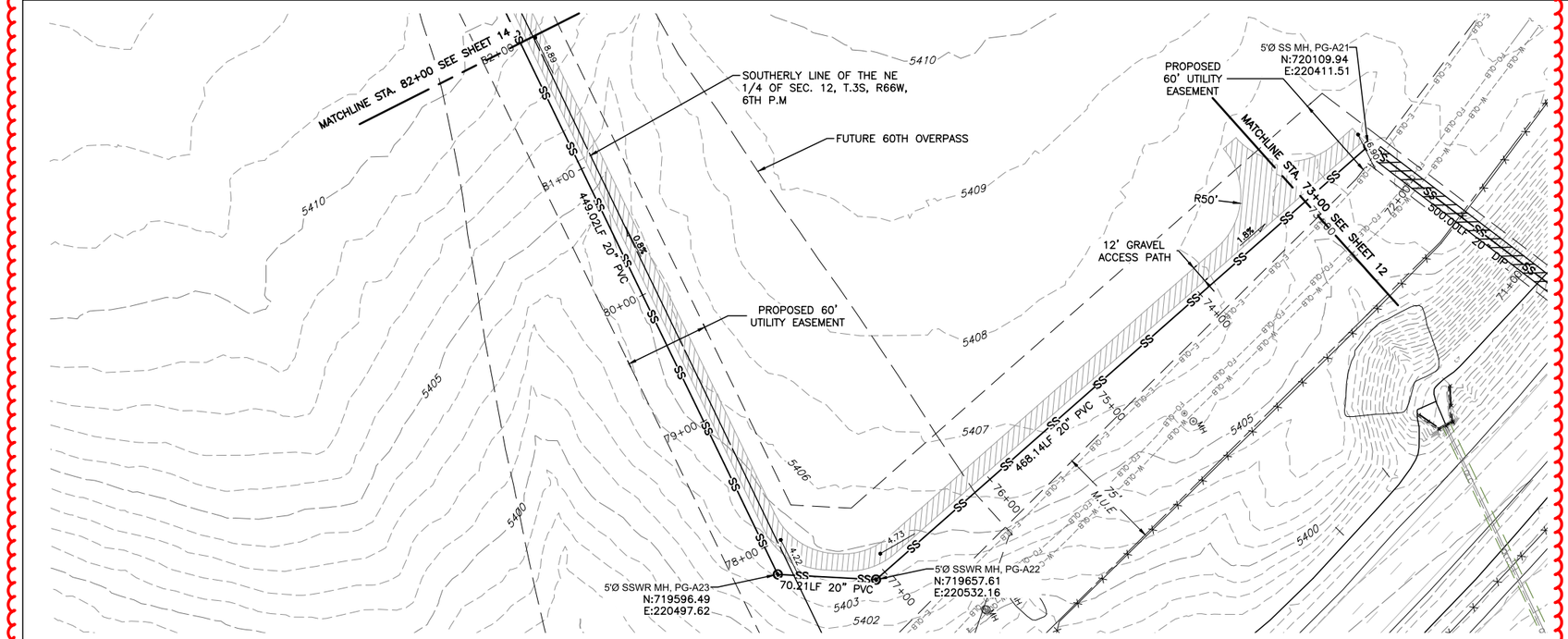
Revised:
Void:

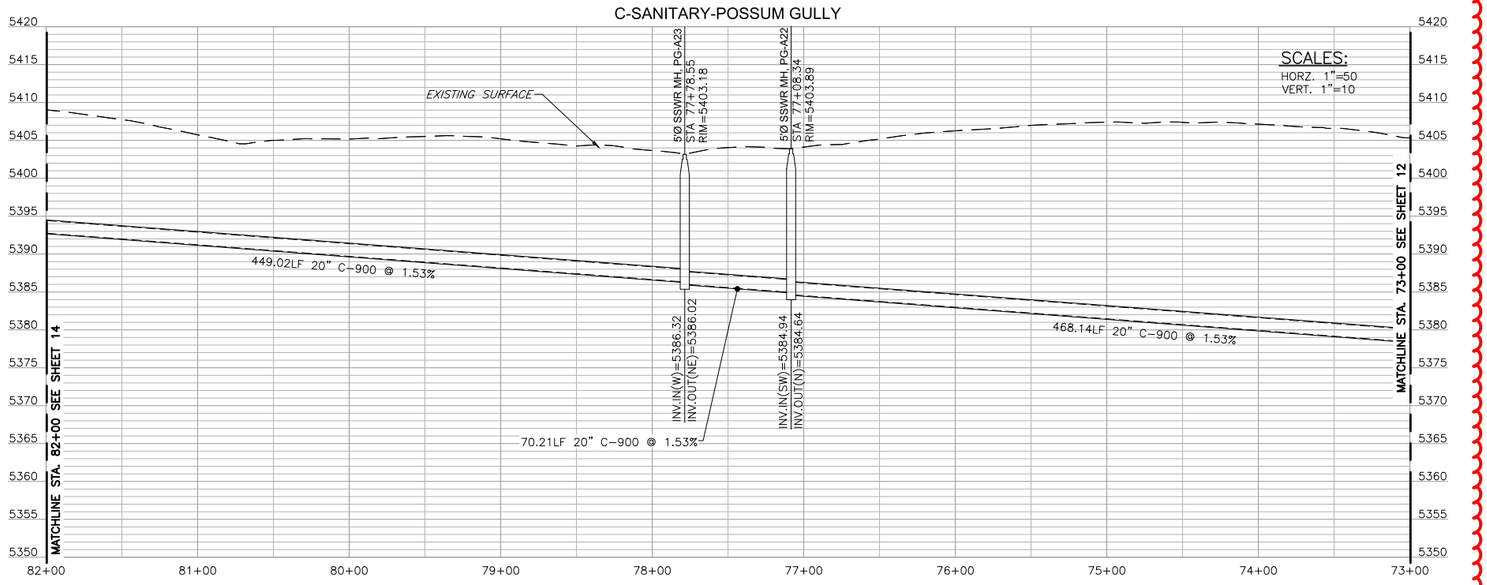
SANITARY PLAN & PROFILE 66+00 - 73+00

Designer:	DL/GP		
Detailer:	FJ/DB		
Sheet Subset:		Subset Sheet:	

Project No./Code

12





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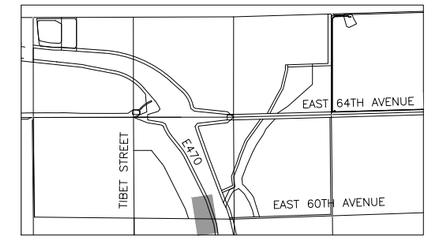

KEYMAP
SCALE: 1"=2000'

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LEGEND

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	PROPERTY LINE	
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D.W.	MONITOR WELL	
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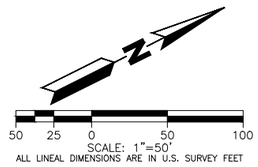

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1

1 New Sheet Added

Print Date:	Monday, April 25, 2022
File Name:	SANITARY 73+00 - 82+00
Horiz. Scale:	Vert. Scale:
Unit Information	Unit Leader

Sheet Revisions		
Date:	Comments	Init.
08/05/20	FOR COA APPROVAL	
04/25/22	PLAN AMENDMENT	

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MARTINMARTIN.COM
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As Constructed	SANITARY PLAN & PROFILE 73+00 - 82+00		Project No./Code
No Revisions:			
Revised:	Designer: DL/GP		
Void:	Detailer: FJ/DB		
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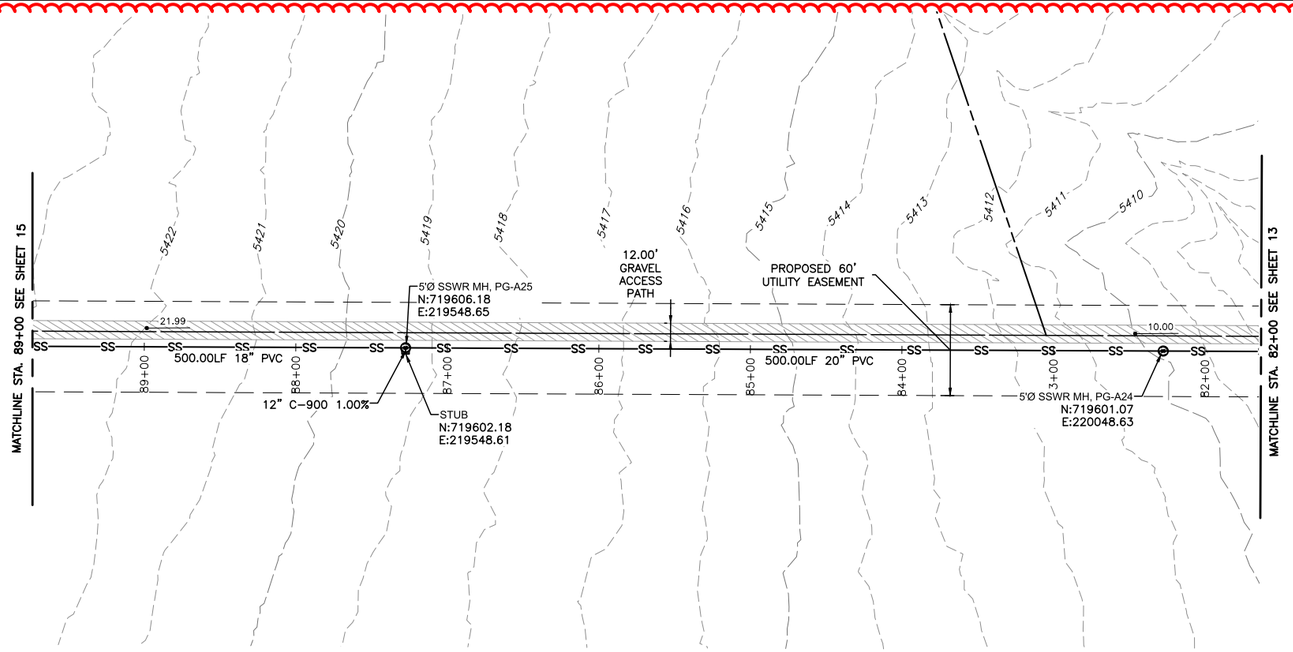

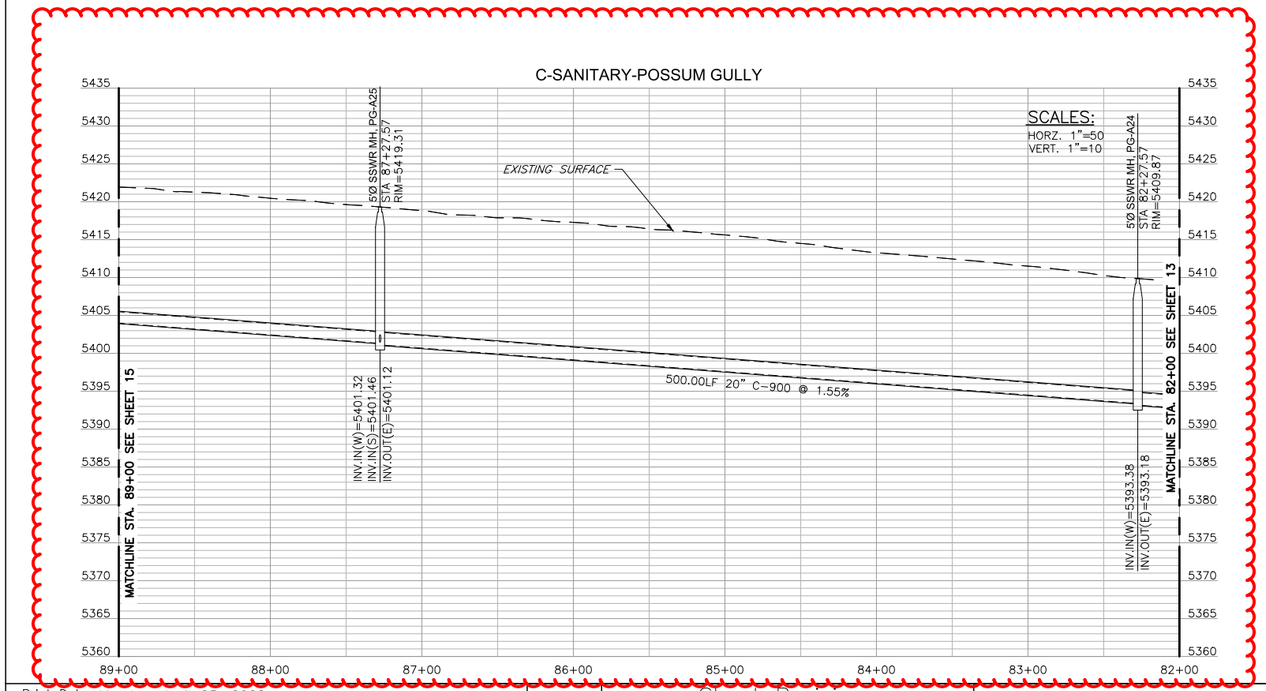

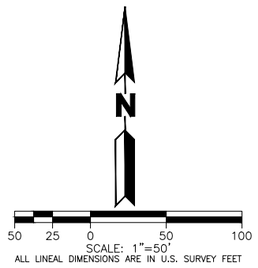

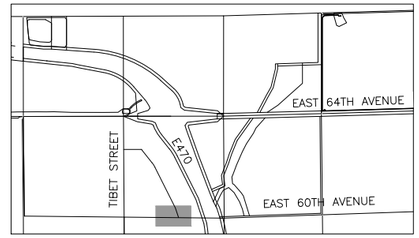

KEYMAP
SCALE: 1"=2000'

NOTES:

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2. CONTRACTOR TO RESTORE DISTURBED AREA BACK TO EXISTING GRADE AND VEGETATION TO EXISTING CONDITION PRIOR TO CONSTRUCTION.
3. MAINTENANCE PATH FROM STATION 72+40 TO 97+40 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

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
MARTIN/MARTIN ASSUMES NO RESPONSIBILITY FOR UTILITY LOCATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM INFORMATION PROVIDED BY THE PROJECT'S SUE CONSULTANT. THE ASCE (38) UTILITY QUALITY LEVEL IS AS INDICATED ON THE STAMPED/SIGNED SUE PLANS PREPARED BY THE PROJECT'S SUE CONSULTANT. IT IS, HOWEVER, THE CONTRACTOR'S 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:
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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.

ELEVATION = 5394.58 (NAVD 1988) DATUM.

COLORADO REGISTERED PATRICK FRANK NEID 28764 APRIL 26, 2022 PROFESSIONAL ENGINEER

1 New Sheet Added

Print Date: Monday, April 25, 2022	
File Name: SANITARY 82+00 – 89+00	
Horiz. Scale:	Vert. Scale:
Unit Information	Unit Leader

Sheet Revisions

	Date:	Comments	Init.
	08/05/20	FOR COA APPROVAL	
1	04/25/22	PLAN AMENDMENT	

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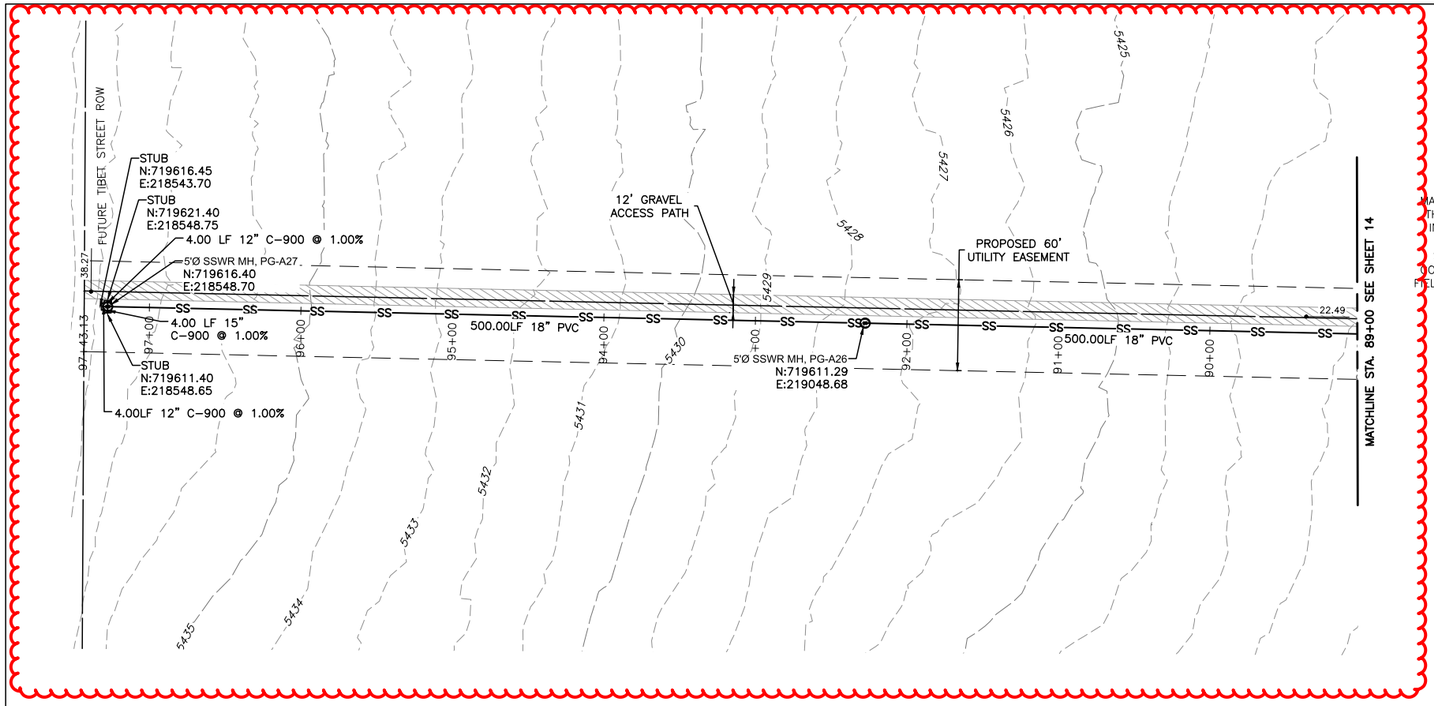
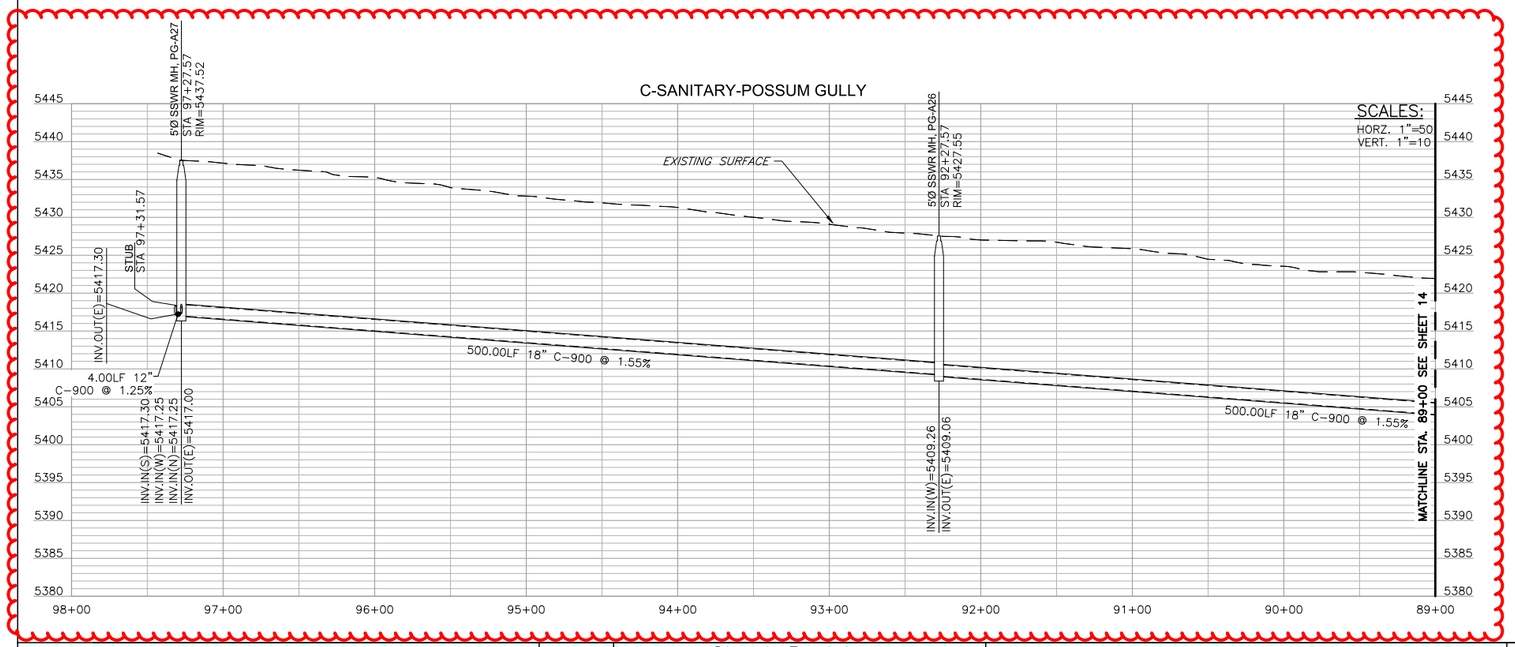
M/M JOB NO.: 19.0281

As Constructed	SANITARY PLAN & PROFILE 82+00 - 89+00		Project No./Code
No Revisions:			
Revised:	Designer: DL/GP		
Void:	Detailer: FJ/DB		
	Sheet Subset:	Subset Sheet:	14





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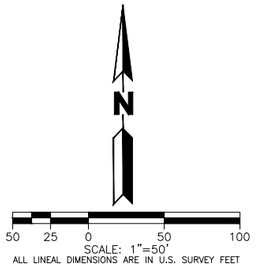
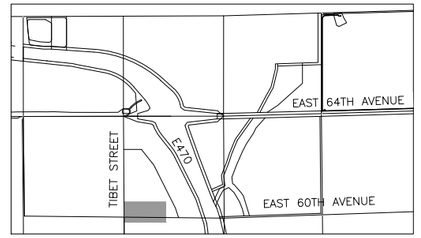


ALL LINEAL DIMENSIONS ARE IN U.S. SURVEY FEET



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— — — — —	EASEMENT	— — — — —
– – – – SS – – – –	SANITARY SEWER	——SS——
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COLORADO REGISTERED PATRICK FRANK 28764 PROFESSIONAL ENGINEER APRIL 26, 2022

1

New Sheet Added

Print Date: Monday, April 25, 2022	
File Name: SANITARY 89+00 – 90+00	
Horiz. Scale:	Vert. Scale:
Unit Information	Unit Leader

Sheet Revisions

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M/M JOB NO.: 19.0281

As Constructed	SANITARY PLAN & PROFILE 89+00 - 97+43.13		Project No./Code
No Revisions:			
Revised:	Designer: DL/GP		
Void:	Detailer: FJ/DB		
	Sheet Subset:	Subset Sheet:	15

LEGEND

—SF—SF— SILT FENCE	SF
VEHICLE TRACKING CONTROL	VTC
STABILIZED STAGING AREA	SSA
LIMITS OF CONSTRUCTION	LOC

NOTES:

1. EROSION CONTROL PLANS AND PROJECT ASSOCIATED SWMP REPORT BASED ON APPROVED PLANS DATED "HIGH POINT EAST EROSION CONTROL PLANS" DATED 02/20/20.
2. REFER TO ASSOCIATED SWMP REPORT FOR EROSION CONTROL QUANTITIES AND PHASING.

FUTURE 36" 2ND CREEK INTERCEPTOR

SECOND CREEK LIFT STATION

FUTURE 66TH AVENUE

FUTURE PG-0 POND

VTC DIMENSIONS 50' WIDTH 50' LENGTH

FUTURE DENALI STREET

PROPOSED 20" POSSUM GULLY SANITARY LINE

FUTURE GUN CLUB ROAD

E-470

HARVEST ROAD

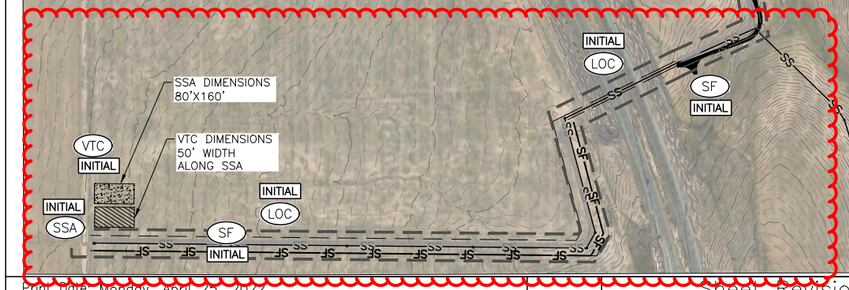
FUTURE 64TH AVENUE

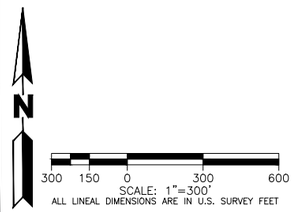
POSSUM GULLY

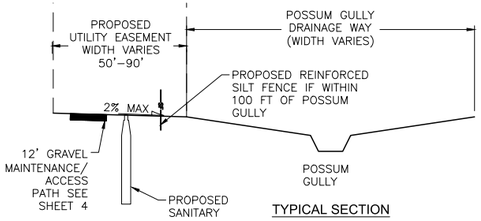
SSA DIMENSIONS 80'X160'

VTC DIMENSIONS 50' WIDTH ALONG SSA

FUTURE TIBET STREET







TYPICAL SECTION

COLORADO REGISTERED PROFESSIONAL ENGINEER 28764 APRIL 26, 2022

Print Date: Monday, April 25, 2022
File Name: 16 EROSION CONTROL PLAN
Horiz. Scale: Vert. Scale:
Unit Information Unit Leader

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EROSION CONTROL PLAN

Designer: DL/GP
Detailer: FJ/DB
Sheet Subset:
Subset Sheet:

Project No./Code

16

GREEN VALLEY - AMENDMENT 1
SANITARY SEWER GENERATION

RESIDENTIAL		
Single-Family Population Density	2.77	People per Unit
Age Restricted Population Density	2.50	People per Unit
Average Flow Generation	68	gpcpd

COMMERCIAL		
Average Flow Generation	1,500	gpd/acre
	0.0023	cfs/acre
Equivalent Population	22	capita/acre

SCHOOLS / INDUSTRIAL		
Average Flow Generation	1,200	gpd/acre
	0.0019	cfs/acre
Equivalent Population	18	capita/acre

PIPE CAPACITY (cfs) n = 0.011			
	PIPE SIZE (IN)	0.4% SLOPE	0.25% SLOPE
75 % FULL	8	0.82	0.65
	10	1.49	1.18
	12	2.43	1.92
80 % FULL	15	4.72	3.73
	18	7.67	6.07
	24	16.53	13.07
	30	29.97	23.69
	36	48.73	38.52
	42	73.50	58.11

MIXED USE
Unit density of 10 units/acre was assumed and equivalent population was calculated with the Single-Family residential population density of 2.77

PEAKING FACTOR			
PF = 5/(p^0.167)	Where p = Population in thousands		
Min. PF =	1.7	Max. PF =	4.0

DESIGN POINT	BASIN	LAND USE	TOTAL ACRES	DENSITY (UNITS/AC)	NO. OF LOTS	EQUIVALENT POPULATION	AVG. DAY FLOW (CFS)	AVG. DAY FLOW (GPD)	AVG. DAY FLOW (GPM)	INFILTRATION @ 10% (GPM)	PEAKING FACTOR	PEAK FLOW (GPM)	PEAK FLOW + INFILTRATION (GPM)	PEAK FLOW + INFILTRATION (CFS)	Estimated Size at 0.4% (IN)	Pipe Percent Full at 0.4% (%)	Existing Pipe Size (IN)	COMMENTS
1	Offsite Basin 310-1	Mixed Use	142.4		-	3,227	**0.246**	**158,994**	110	11.0	4.0	442	*453*	*1.01*	10	57		Offsite Basin 310-1
2	Offsite Basin 310-2	SF Residential	57.9	5.0	290	802	**0.084**	54,530	38	3.8	4.0	151	*155*	*0.35*	8	43		Offsite Basin 310-2
3	Offsite Basin 310-3	SF Residential	70.4	5.0	352	975	**0.103**	66,303	46	4.6	4.0	184	*189*	*0.42*	8	48		Offsite Basin 310-3
3a	**Design Point Total (Option 2 w/ 310-2)**					**1,777**	**0.187**	**120,833**	**84**	**8.4**	**4.0**	**336**	***344***	***0.77***	**8**	**71**		Offsite Basin 310-2 + 310-3 (see Notes 1 and 4)
4	Basin 1	SF Resid. (Age Restricted)	47.6	5.8	276	690	0.073	46,920	33	3.3	4.0	130	*134*	*0.30*	8	40		Basin 1
	Design Point Total					**690**	**0.073**	**46,920**	**33**	**3.3**	**4.0**	**130**	***134***	***0.30***	**8**	**40**		
5	Basin 2	SF Resid. (Age Restricted)	32.6	5.8	189	473	0.050	32,130	22	2.2	4.0	89	*91*	*0.20*	8	32		Basin 1 + 2
	Design Point Total					**1,163**	**0.122**	**79,050**	**55**	**5.5**	**4.0**	**220**	***225***	***0.50***	**8**	**53**		
6	Offsite Basin 4 (GVR D-6)	Mixed Use	106.5		-	2,785	**0.345**	**222,979**	155	15.5	4.0	619	*635*	*1.41*	10	72		Offsite Basin 4 (GVR D-6)
	Design Point Total (Option 2 w/ 310-1)					**6,012**	**0.591**	**381,973**	**265**	**26.5**	**3.7**	**983**	***1,010***	***2.25***	**12**	**71**		Offsite Basin 4 + 310-1 (see Note 2)
7	Basin 3	SF Resid. (Age Restricted)	29.3	5.8	169	423	0.044	28,730	20	2.0	4.0	80	*82*	*0.18*	8	30		Offsite Basin 4 + Basin 1 + 2 + 3
	Design Point Total					3,208	0.337	218,110	151	15.1	4.0	606	*621*	*1.38*	10	70		
	Design Point Total (Option 2 w/ 310-1)					6,435	0.677	437,546	304	30.4	3.7	1,113	*1,144*	*2.55*	15	52		
7a	**Design Point Total**					**4,370**	**0.512**	**330,759**	**230**	**23.0**	**3.9**	**898**	***921***	***2.05***	**12**	**66**		
	Design Point Total (Option 2 w/ 310-1)					**7,597**	**0.758**	**489,753**	**340**	**34.0**	**3.6**	**1,212**	***1,246***	***2.78***	**15**	**54**		Offsite Basin 4 + Basin 1 + 2 + 3
8	Basin 4	SF Resid. (Age Restricted)	27.5	5.8	159	398	0.042	27,030	19	1.9	4.0	75	*77*	*0.17*	8	29		Offsite Basin 310-3 + Basin 4 (see Note 4)
	Design Point Total					**1,373**	**0.144**	**93,333**	**65**	**6.5**	**4.0**	**259**	***266***	***0.59***	**8**	**59**		
	Design Point Total (Option 2 w/ 310-2)					**2,174**	**0.229**	**147,863**	**103**	**10.3**	**4.0**	**411**	***421***	***0.94***	**10**	**54**		Offsite Basin 310-2 + 310-3 + Basin 4 (see Notes 1 and 4)
9	**Design Point Total**					**6,905**	**0.778**	**503,142**	**349**	**34.9**	**3.6**	**1,265**	***1,300***	***2.90***	**15**	**56**		Design Point 5 + Design Point 7 + Design Point 8 (see Note 4)
	Design Point Total (Option 2 w/ 310-2)					**7,707**	**0.965**	**623,975**	**433**	**43.3**	**3.6**	**1,541**	***1,584***	***3.53***	**15**	**64**		(see Notes 1 and 4)
	Design Point Total (Option 2 w/ 310-1 & 310-2)					**10,934**	**1.211**	**782,969**	**544**	**54.4**	**3.4**	**1,823**	***1,878***	***4.18***	**15**	**72**		(see Notes 1, 2 and 4)
10	Offsite Basin 310-4	Commercial	18.5			407	**0.043**	27,676	19	1.9	4.0	77	*79*	*0.18*	8	30		Offsite Basin 310-4
11	TAH (DP 18)	Mixed Use	2,109.0			104,435	**7.425**	**4,798,903**	3333	333.3	2.3	7,667	*8,000*	*17.82*	30	55		From The Aurora Highlands (TAH) Master Utility Report
12	Offsite Basin 5 (GVR D-7)	Mixed Use	62.8			1,423	**0.187**	**120,861**	84	8.4	4.0	336	*344*	*0.77*	8	71		From Lund Green Valley Report (GVR D-7)
	Design Point Total		**2,190.3**			**106,265**	**7.655**	**4,947,440**	**3436**	**343.6**	**2.3**	**7,881**	***8,225***	***18.32***	**30**	**56**		TAH (see Note 3)
13	Basin 5	SF Residential	70.4	6.3	443	1,227	0.129	83,443	58	5.8	4.0	232	*238*	*0.53*	8	55		Basin 5
14	Offsite Basin 6 (GVR C-30)	Mixed Use	64.0			1,408	**0.174**	**112,459**	78	7.8	4.0	312	*320*	*0.71*	8	67		From Lund Green Valley Report (GVR C-30)
	Design Point Total		**134.4**			**2,635**	**0.303**	**195,903**	**136**	**13.6**	**4.0**	**544**	***558***	***1.24***	**10**	**65**		Offsite Basin 6 + Basin 5
15	**Design Point Total**		**2,324.7**			**108,900**	**7.958**	**5,143,343**	**3572**	**357.2**	**2.3**	**8,160**	***8,517***	***18.98***	**30**	**57**	**36"**	TAH + Offsite Basin 5 + 6 + Basin 5 (see Note 3)
16	Basin 6	SF Residential	25.6	4.1	104	288	0.030	19,589	14	1.4	4.0	54	*56*	*0.12*	8	25		Basin 6
	Design Point Total		**2,350.3**			**109,188**	**7.988**	**5,162,932**	**3585**	**358.5**	**2.3**	**8,187**	***8,546***	***19.04***	**30**	**57**	**42"**	TAH + Offsite Basin 5 + 6 + Basin 5 + 6 (see Note 3)
17	Offsite Basin 12 (GV OFS-12)	Mixed Use	87.4		-	**1,981**	**0.245**	**158,348**	110	11.0	4.0	440	*451*	*1.00*	**10**	**56**		Offsite Basin 12 (GV OFS-12)
18	Basin 7	SF Residential	28.5	6.3	179	496	0.052	33,716	23	2.3	4.0	94	*96*	*0.21*	8	33		Basin 7
	Design Point Total		**115.9**			**2,477**	**0.297**	**192,064**	**133**	**13.3**	**4.0**	**534**	***547***	***1.22***	**10**	**64**		Basin 7 + Offsite Basin 12
19	Basin 8	School	18.0	-	-	324	0.033	21,600	15	1.5	4.0	60	*62*	*0.14*	8	27		Basin 8
	Design Point Total		**133.9**			**2,801**	**0.331**	**213,664**	**148**	**14.8**	**4.0**	**594**	***608***	***1.36***	**10**	**70**		Basins 7+8 + Offsite Basin 12
20	Offsite Basin 13	Mixed Use		-	-								***5,157***	***11.49***	**24**	**61**	**30" @ 0.15%**	Offsite Basin 13
21	Basin 9	SF Residential	90.9	6.3	572	1,584	0.167	107,742	75	7.5	4.0	299	*307*	*0.68*	8	65		Basin 9
	Design Point Total												**5,464**	**12.17**	**24**	**63**	**30" @ 0.15%**	Basin 9 + Offsite Basin 13
21.1	Basin 9.1	SF Residential	33.6	6.3	212	587	0.062	39,932	28	2.8	4.0	111	*114*	*0.25*	8	36		Basin 9.1
	Design Point Total		**125**										**5,577**	**12.43**	**24**	**64**	**30" @ 0.15%**	
22	Basin 10	SF Residential	47.2	6.3	297	823	0.087	55,943	39	3.9	4.0	155	*159*	*0.35*	8	43		Basin 10
	Design Point Total		**297.0**			**3,624**	**0.714**	**246,399**	**171**	**17.1**	**4.0**	**684**	***702***	***1.56***	**12**	**55**		Basins 7+8+10 and Offsite Basin 12
22.1	**Design Point Total**												**6,279**	**13.99**	**24**	**69**	**30" @ 0.15%**	Basins 7+8+9+9.1+10 + Offsite Basins 12+13
LS	**Design Point Total**												**16,702**	**37.21**	**42**	**64**		All Basins
SITE TOTALS		**SF Resid. (Age Restricted)**	**137.0**		**793**	**1,983**	**0.209**	**134,810**	**94**	**9.4**	**4.0**	**374**	***384***	***0.86***				
		SF Residential	**296.3**		**1807**	**5,005**	**0.465**	**340,367**	**236**	**23.6**	**3.8**	**903**	***927***	***2.06***				
		School	**18.0**		**-**	**324**	**0.033**	**21600**	**15**	**1.5**	**4.0**	**60**	***62***	***0.14***				

NOTE 1: For analysis purposes, Option 2 requires a lift station to convey flows from Basin 310-2 along Picadilly Rd to Design Point 3a
NOTE 2: For analysis purposes, Option 2 requires a lift station to convey flows from Basin 310-1 along Tibet Rd to Design Point 6
NOTE 3: There is an existing 36" or 42" sanitary sewer main in this area
NOTE 4: Sanitary Sewer Pipe runs at 0.25% slope near and along Rome St (Design Points 7a, 8 and 9)

AVERAGE DAY FLOW for Offsite Basin 310-1 and TRIBUTARY AREA for Offsite Basins 310-2 and 310-3 taken from 310 West Master Utility Report by Calibre Engineering
AVERAGE DAY FLOW for Offsite Basins 4, 5, 6 and 12 taken from Master Utility Report for Green Valley by The Lund Partnership, Inc. (2006)
PEAK FLOW + INFILTRATION for Offsite Basin 13 taken from HDR First Creek Interceptor Technical Memorandum 3 provided by COA (Parcels 26 and Parcels 32-38) with peaking factor of 2.25
AVERAGE DAY FLOW for Offsite Basin TAH taken from Master Utility Report for The Aurora Highlands by Calibre Engineering (2018)
SITE TOTALS are flows from Green Valley - Amendment 1 only

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

Calibre Engineering, Inc.
9090 South Ridgeline Boulevard, Suite 105
Highlands Ranch, CO 80129 (303) 730-0434
www.calibre-engineering.com
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

Calibre
Calibre Engineering, Inc.
9090 South Ridgeline Boulevard, Suite 105
Highlands Ranch, CO 80129 (303) 730-0434
www.calibre-engineering.com
Construction Management Civil Engineering Surveying

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

Calibre
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9090 South Ridgeline Boulevard, Suite 105
Highlands Ranch, CO 80129 (303) 730-0434
www.calibre-engineering.com
Construction Management Civil Engineering Surveying

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

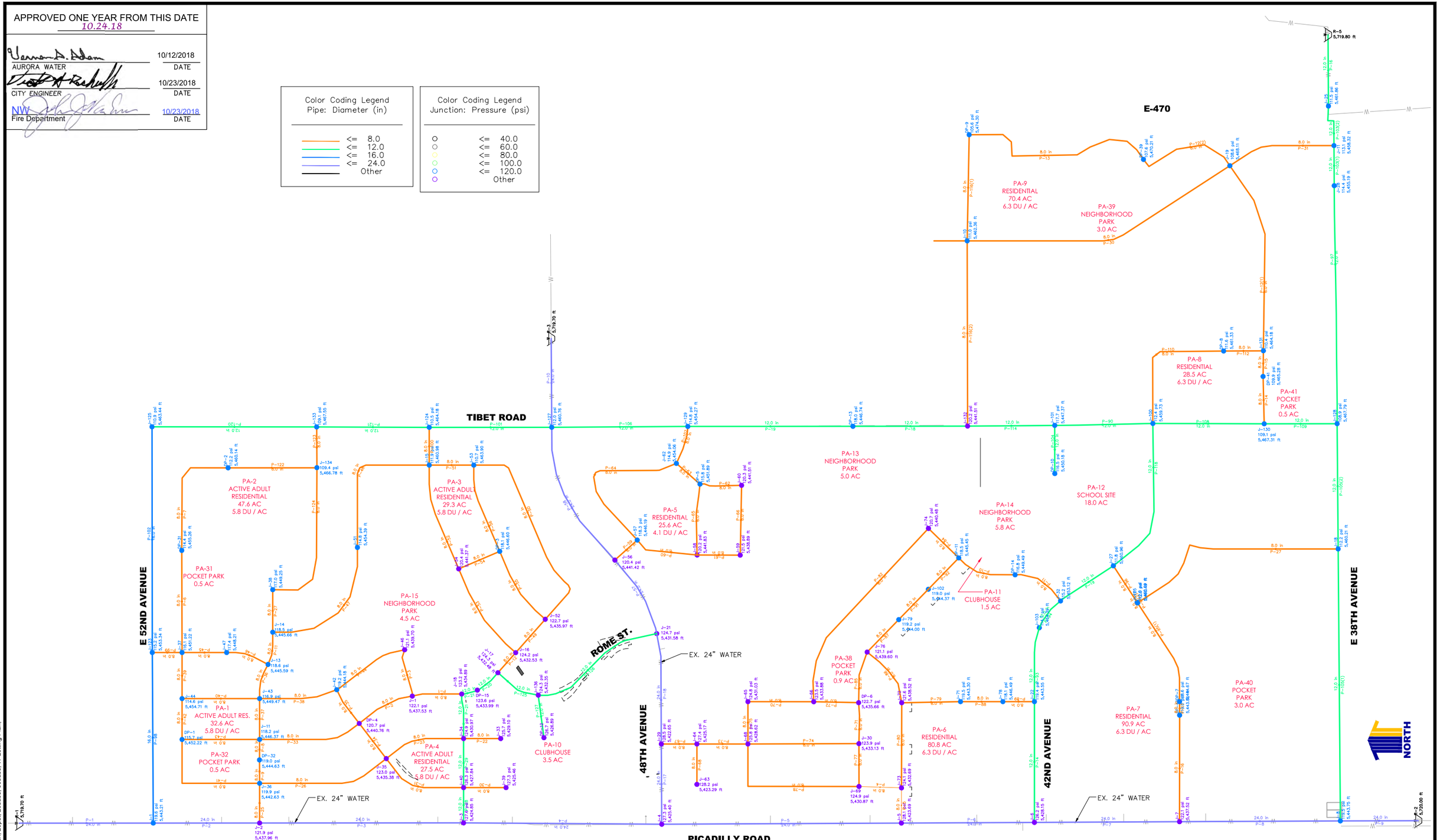
AURORA WATER	10/12/2018 DATE
CITY ENGINEER	10/23/2018 DATE
NW Fire Department	10/23/2018 DATE

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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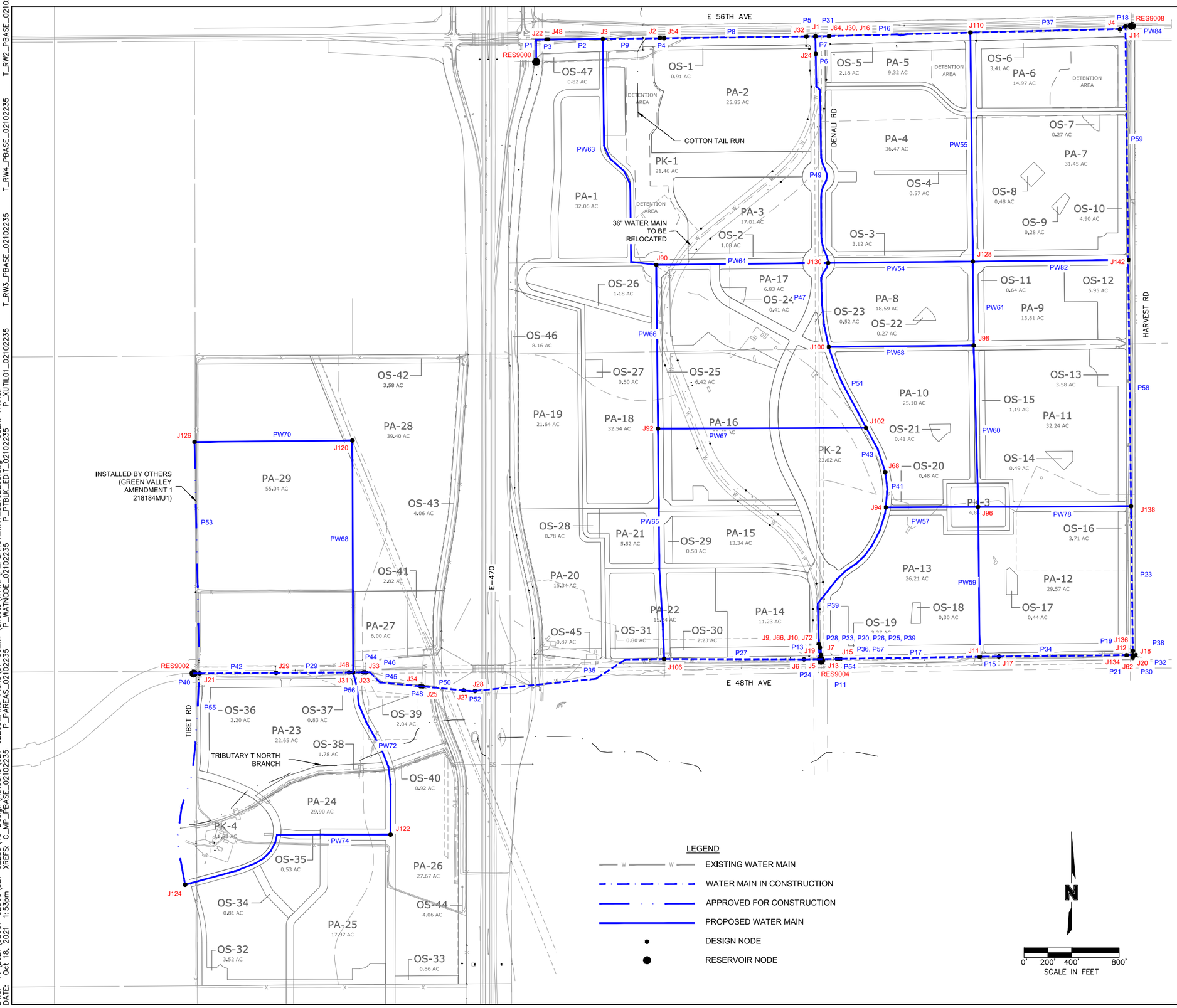
Construction Management Civil Engineering Surveying

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

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION
		REVISIONS

WATER MASTER PLAN

WINDLER MIXED USE DEVELOPMENT
MASTER UTILITY PLAN

2021

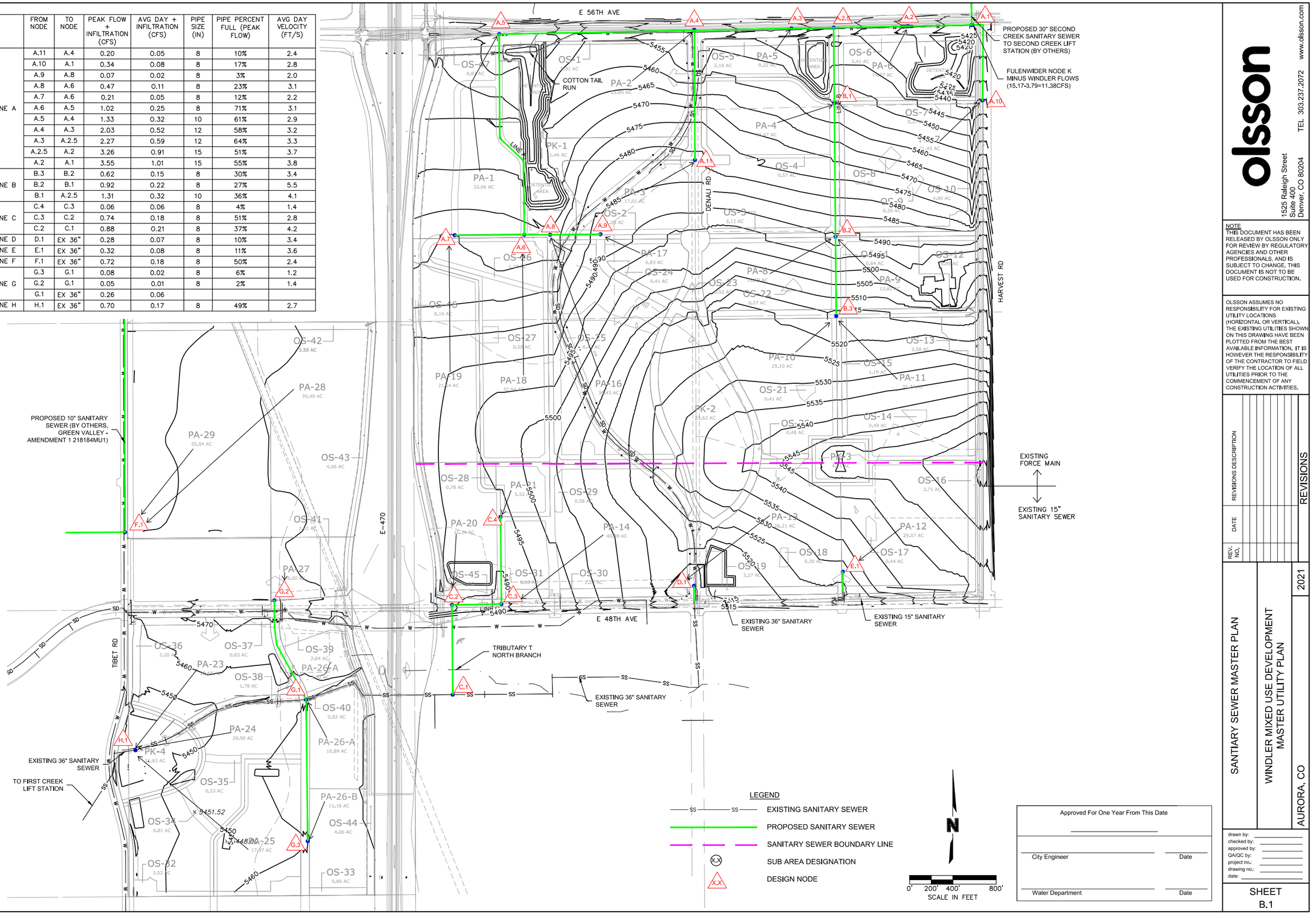
AURORA, CO

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

DWG: F:\2021\02001-02500\021-02235\40-Design\AutoCAD\021-02235_Final Plans\01-06_MP\Sheets\WTWW\P_PLAN01_SAN_02102235.dwg USER: rfinnell
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

223035MU1
1900-ADAMS
95S

Moffit/Skydance

Master Utility Report

January 24, 2023

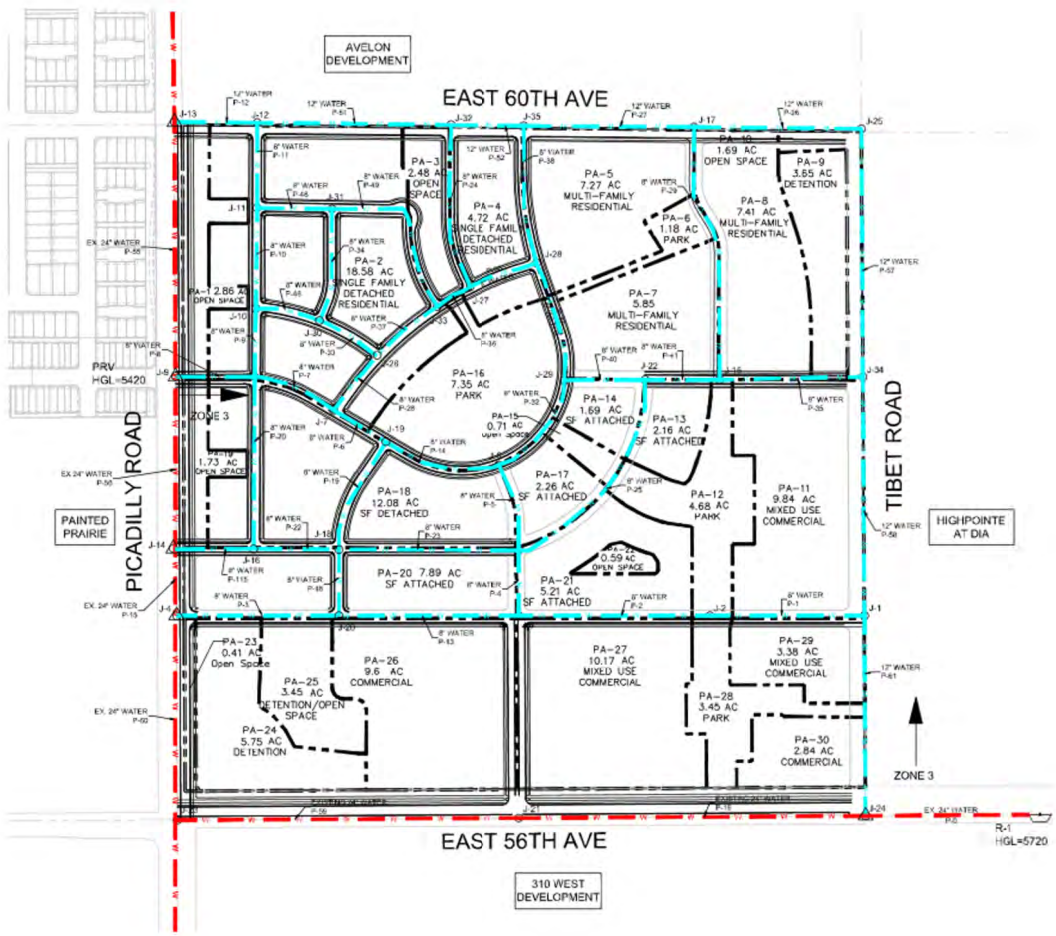
City of Aurora Approval Block 02/07/2023

Aurora Water	01/31/2023 Date
City Engineer	02/06/2023 Date
Fire Department	02/02/2023 Date

PREPARED FOR:

Westside Investment Partners, Inc.
4100 E. Mississippi Avenue, Suite 500
Denver, Colorado 80246

PREPARED BY: Westwood



LEGEND

SERVICE AREA ACRES ZI PHASE

POINT OF WATER CONNECTION TO CITY OF AURORA SERVICE

PROPOSED WATER LINE

EXISTING WATER LINE

SERVICE AREA BOUNDARY

JUNCTION

RESERVOIR

APPROVED ONE YEAR FROM THIS DATE

CITY ENGINEER	DATE
WATER DEPARTMENT	DATE
FIRE DEPARTMENT	DATE

Westwood

WESTSIDE INVESTMENT PARTNERS, INC
4100 EAST MISSISSIPPI AVENUE, SUITE 500
DENVER, CO 80246
TEL: (303) 954-9000

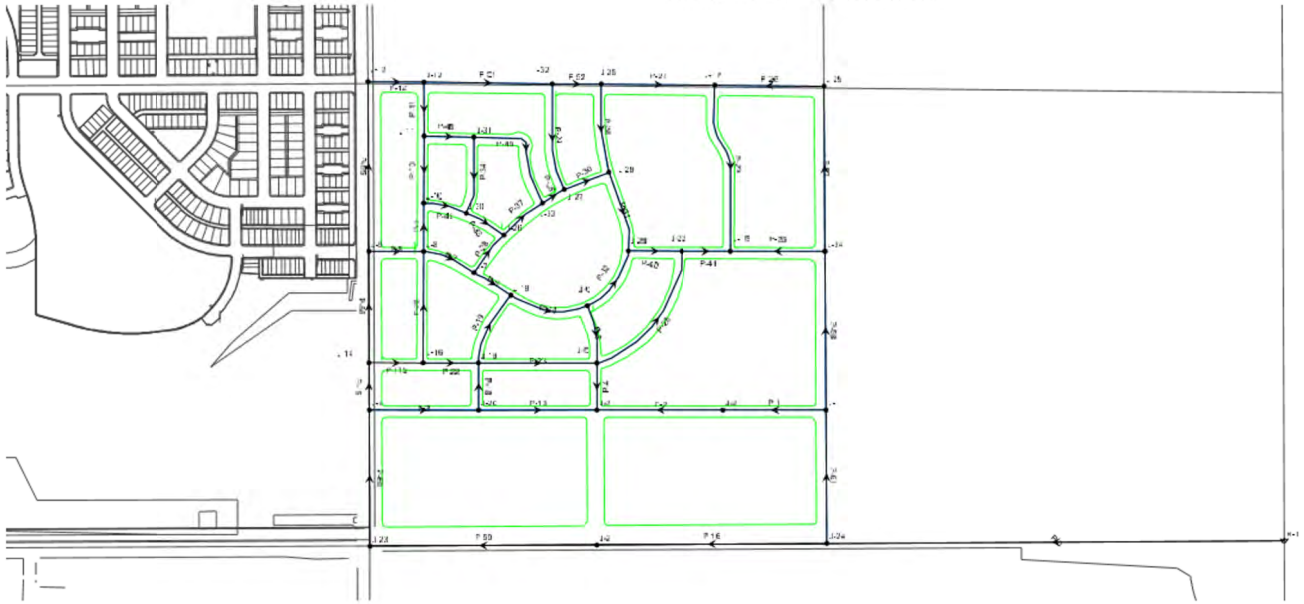
MOFIT/SKYDANCE
MASTER UTILITY REPORT
WATER LAYOUT PLAN

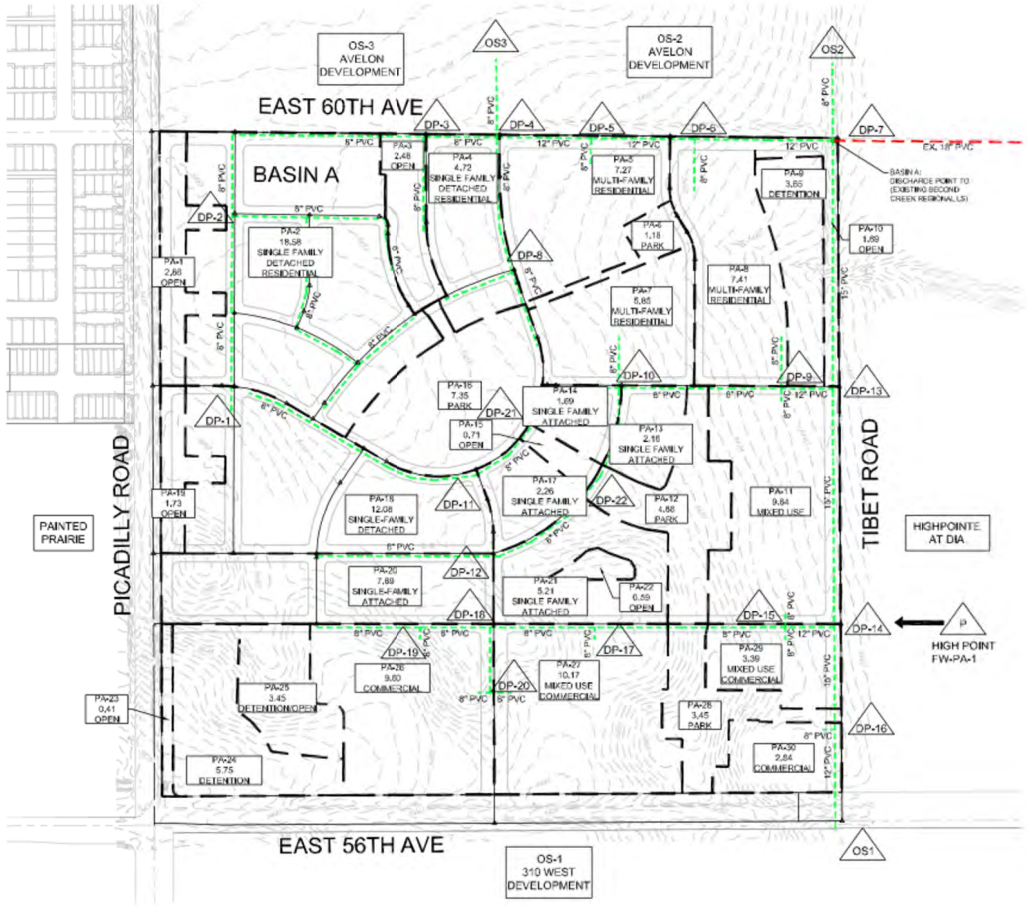
SCALE: AS SHOWN
P.E.I. NO. R0020250.00

DRAWN BY: MST
CHECKED BY: CDL
DATE: April 2025

SHEET NUMBER: WL1

MOFFIT/SKYDANCE
Scenario: AVERAGE DAY
Active Scenario: AVERAGE DAY





APPROVED ONE YEAR FROM THIS DATE

CITY ENGINEER	DATE
WATER DEPARTMENT	DATE
FIRE DEPARTMENT	DATE

Westwood

WESTSIDE INVESTMENT PARTNERS, INC
4100 EAST MISSISSIPPI AVENUE, SUITE 500
DENVER, CO 80246
TEL: (303) 3864400

MOFFITSKYDANCE
MASTER UTILITY REPORT
SANITARY MODEL LAYOUT

SCALE: AS SHOWN
PROJECT NO: R0029250.00
DRAWN BY: JMS
CHECKED BY: SCA
DATE: JULY 2022

SHEET NUMBER: SS1

MOFFIT/SKYDANCE TOWN CENTER

CITY OF AURORA

SANITARY SEWER LOADING CALCULATIONS (BY ACREAGE)

	PLANNING AREA	DESCRIPTION	AREA (AC)	MAX ALLOWABLE DENSITY (DU/AC)	MAX ALLOWABLE UNITS	PROPOSED UNITS	OCCUPANCY (PEOPLE/UNIT)	LOADING RATE (GPCD)	AVERAGE DAY (GPD/AC)	EQUIVALENT (POPULATION/AC)	AVG DAY FLOW (GPD)	POPULATION (THOUSANDS)
A			**150.94**			**1596**					**452,556**	**5.871**
A	PA-1	OPEN	2.86									
	PA-2	SFD	18.58			88	2.77	68			16,576	0.244
	PA-3	OPEN	2.48									
	PA-4	SFD	4.72			21	2.77	68			3,956	0.059
	PA-5	MF	7.27	40	291	106	2.77	68			54,775	0.806
	PA-6	PARK	1.18									
	PA-7	MF	5.85	40	234	86	2.77	68			44,076	0.649
	PA-8	MF	7.41	40	296	108	2.77	68			55,830	0.822
	PA-9	POND	3.65									
	PA-10	OPEN	1.69									
	PA-11	MF	9.84	40	394	394	2.77	68			74,138	1.091
		COMM							1500	22	14,760	
	PA-12	PARK	4.68									
	PA-13	SFA	2.16			22	2.77	68			4,144	0.061
	PA-14	SFA	1.69			15	2.77	68			2,825	0.042
	PA-15	OPEN	0.71									
	PA-16	PARK	7.35									
	PA-17	SFA	2.26			19	2.77	68			3,579	0.053
	PA-18	SFD	12.08			54	2.77	68			10,171	0.150
	PA-19	OPEN	1.73									
	PA-20	SFA	7.89			84	2.77	68			15,822	0.233
	PA-21	SFA	5.21			57	2.77	68			10,737	0.158
	PA-22	OPEN	0.59									
	PA-23	OPEN	0.41									
	PA-24	POND	5.75									
	PA-25	POND/OPEN	3.45									
	PA-26	COMM	9.60						1500	22	14,400	
	PA-27	MF	10.17	40	407	407	2.77	68			76,625	1.127
		COMM							1500	22	15,255	
	PA-28	PARK	3.45									
	PA-29	MF	3.39	40	136	135	2.77	68			25,542	0.376
		COMM							1500	22	5,085	
	PA-30	COMM	2.84						1500	22	4,260	

A			**84.50**			**556**					**119,128**	**2.18**
	AVELON*	SF	33.3			166	2.77	68			31,268	0.460
	OS-2											
	AVELON*	SF	32.0			160	2.77	68			30,138	0.443
	OS-3	COMM	9.6						1500	22	14,400	0.211
		MF	9.6	40.0	384.0	230	2.77	68			43,323	1.064

A

	FLOWS FOR 310 WEST PROVIDED TO WESTWOOD PROFESSIONAL SERVICES FROM DEWBERRY PER EMAIL ON 4/25/2022. 310 WEST DEVELOPMENT IS LOCATED AT THE SOUTH EAST CORNER OF THE PICADILLY ROAD AND E. 56TH AVENUE INTERSECTION. FLOWS WILL CROSS E. 56TH AVENUE AND FLOW ALONG TIBET ROAD AT THE SOUTHEAST CORNER OF THE PROJECT SITE.	AVG DAY FLOW (GPD)	POPULATION (THOUSANDS)
		375,000	2.449

BASIN A = Existing Second Creek Regional ES.
BASIN OS-1 = Flows from south - 310 West Development
BASIN OS-2 = Flows from north - Avelon Development

SF = Single Family. Includes Single Family attached, Single Family detached, townhomes, paired homes, and garden court homes.
MF = Multi Family. Includes condos and apartments.

COMM = Commercial.
Peaking Factor = 4.0 max, $5/P^{0.167}$ where P=population (thousands)
Sanitary Sewer loading rates, factors, and calculations based on City of Aurora Master Utility Design Criteria for Water and Sanitary Sewer
Occupancy factors were used based on City of Aurora Master Utility Design Criteria for Water and Sanitary Sewer
*Offsite flow from the Avelon (North) Development located between 64th & 60th Avenue, east of Picadilly Road provided via J3/Dewberry report(2019-never approved)

MOFFIT/SKYDANCE TOWN CENTER
CITY OF AURORA
SANITARY SEWER PEAK ROUTING CALCULATIONS

Design Point	Added Upstream Routing Planning Areas	Included Upstream Routing Design Pts	Design Point Loading (gpd)	Cumulative Loading (gpd)	Design Point Population (thousand)	Cumulative Population (thousand)	Cumulative Infiltration 10% (gpd)	Peaking Factor	Cumulative Peak Loading (gpd)	Cumulative Peak Loading (cfs)	Required Pipe Size (in)	Minimum Slope* (%)	Maximum Slope* (%)	Percentage Full (%)
DP-1	20% PA-18		2,034	2,034	0.030	0.030	203	4.00	8,341	0.01	8	0.4	500.0	7.4
DP-2	PA-2	1	16,576	18,610	0.244	0.274	1,861	4.00	76,301	0.12	8	0.4	53.9	24.6
DP-3	40% PA-4	1-2	1,582	20,192	0.024	0.298	2,019	4.00	82,788	0.13	8	0.4	48.8	25.6
DP-8	20% PA-4,40% PA-5, 40% PA-7		40,332	40,332	0.594	0.594	4,033	4.00	165,360	0.26	8	0.4	27.2	36.7
DP-4	40% PA-4, OS-3	1-3, 8	89,443	149,966	1.742	2.633	14,997	4.00	614,862	0.95	12	0.4	10.5	41.2
DP-5	60% PA-5	1-4, 8, OS-3	32,865	182,832	0.484	3.117	18,283	4.00	749,609	1.16	12	0.4	9.0	46.1
DP-6	50% PA-8	1-5, 8, OS-3	27,915	210,746	0.411	3.528	21,075	4.00	864,061	1.34	12	0.4	7.9	50.2
DP-11	40% PA-18		4,069	4,069	0.060	0.060	407	4.00	16,681	0.03	8	0.4	180.0	12.5
DP-21	50% PA-17	11	1,789	5,858	0.027	0.087	586	4.00	24,018	0.04	8	0.4	140.0	14.3
DP-12	40% PA-18, 50% PA-20		11,980	11,980	0.177	0.177	1,198	4.00	49,117	0.08	8	0.4	76.6	20.1
DP-22	50% PA-17, 50% PA-21	12	7,158	19,137	0.106	0.282	1,914	4.00	78,463	0.12	8	0.4	69.6	24.6
DP-10	PA-13, PA-14, 60% PA-7	11-12,21-22	33,415	58,410	0.471	0.840	5,841	4.00	239,483	0.37	8	0.4	20.2	44.6
DP-19	50% PA-20, 50% PA-26		15,111	15,111	0.117	0.117	1,511	4.00	61,956	0.10	8	0.4	63.4	22.5
DP-20	50% PA-26, 50% PA-27		53,140	53,140	0.564	0.564	5,314	4.00	217,874	0.34	8	0.4	21.7	42.5
DP-18		19-20		68,251		0.680	6,825	4.00	279,829	0.43	8	0.4	17.8	48.6
DP-17	50% PA-21, 50% PA-27	18-20	51,308	119,559	0.643	1.323	11,956	4.00	490,193	0.76	8	0.4	11.2	70.3
DP-OS-1	OS-1***		375,000	375,000	2.449	2.449	37,500	4.00	1,537,500	2.38	12	0.4	5.0	73.7
DP-16	PA-30	OS-1	4,260	379,260	0.000	2.449	37,926	4.00	1,554,966	2.41	15	0.4	4.9	49.9
DP-15	PA-29, 50% PA-11	17	75,076	194,635	0.922	2.244	19,464	4.00	798,004	1.23	12	0.4	8.5	47.7
DP-14	50% FW-PA-1*	15, 16	113,000	686,895	1.662	6.355	68,690	3.67	2,590,661	4.01	15	0.4	3.5	69.6
DP-9	50% PA-11, 50% PA-8	10-12,21-22	72,364	130,775	0.957	1.796	13,077	4.00	536,176	0.83	12	0.4	11.8	38.3
DP-13		9-12,14-22,OS-1		817,670		8.151	81,767	3.52	2,961,632	4.58	15	0.4	3.2	77.7
DP-7	OS-2	1-6,8-22,OS-1,3	31,268	1,059,684	0.460	12.139	105,968	3.30	3,598,082	5.57	18	0.4	2.8	62.2
OUTFALL	**TOTAL OUTFALL FROM MOFFIT SITE**								**3,598,082**	**5.57**	**18**	**0.4**	**2.8**	**62.2**
Off-Site														
HP-DP-FW1	FW PA-1(50%) & 12*	DP-7 & FW-O & P*	128,000	1,187,684	1.882	2.342	12,800	4.00	4,763,536	7.37	18	0.4	2.3	77.0
HP-DP-16	HP-B2**	HP-DP-FW1*	119,000	1,306,684	1.753	4.095	11,900	3.95	5,174,843	8.01	21	0.4	2.2	60.3
HP-DP-17	HP-B3**	HP-DP-16**	48,000	1,354,684	0.724	4.819	4,800	3.85	5,213,830	8.07	21	0.4	2.2	60.6
HP-DP-19	HP-B4**	HP-DP-17 & 18**	124,000	1,478,684	1.863	6.682	12,400	3.64	5,396,188	8.35	21	0.4	2.1	62.0
HP-DP-20	HP-B5, B6, & B7**	HP-DP-15 & 19**	563,000	2,041,684	8.371	15.053	56,300	3.18	6,547,072	10.13	21	0.4	1.8	71.2
HP-DP-25	HP-B8 & B9**	HP-DP-20 & 26**	77,000	2,118,684	1.146	16.199	7,700	3.14	6,661,235	10.31	21	0.4	1.8	72.2
HP-DP-21/LS		HP-DP-25**							**6,661,235**	**10.31**	**21**	**0.4**	**1.8**	**72.2**

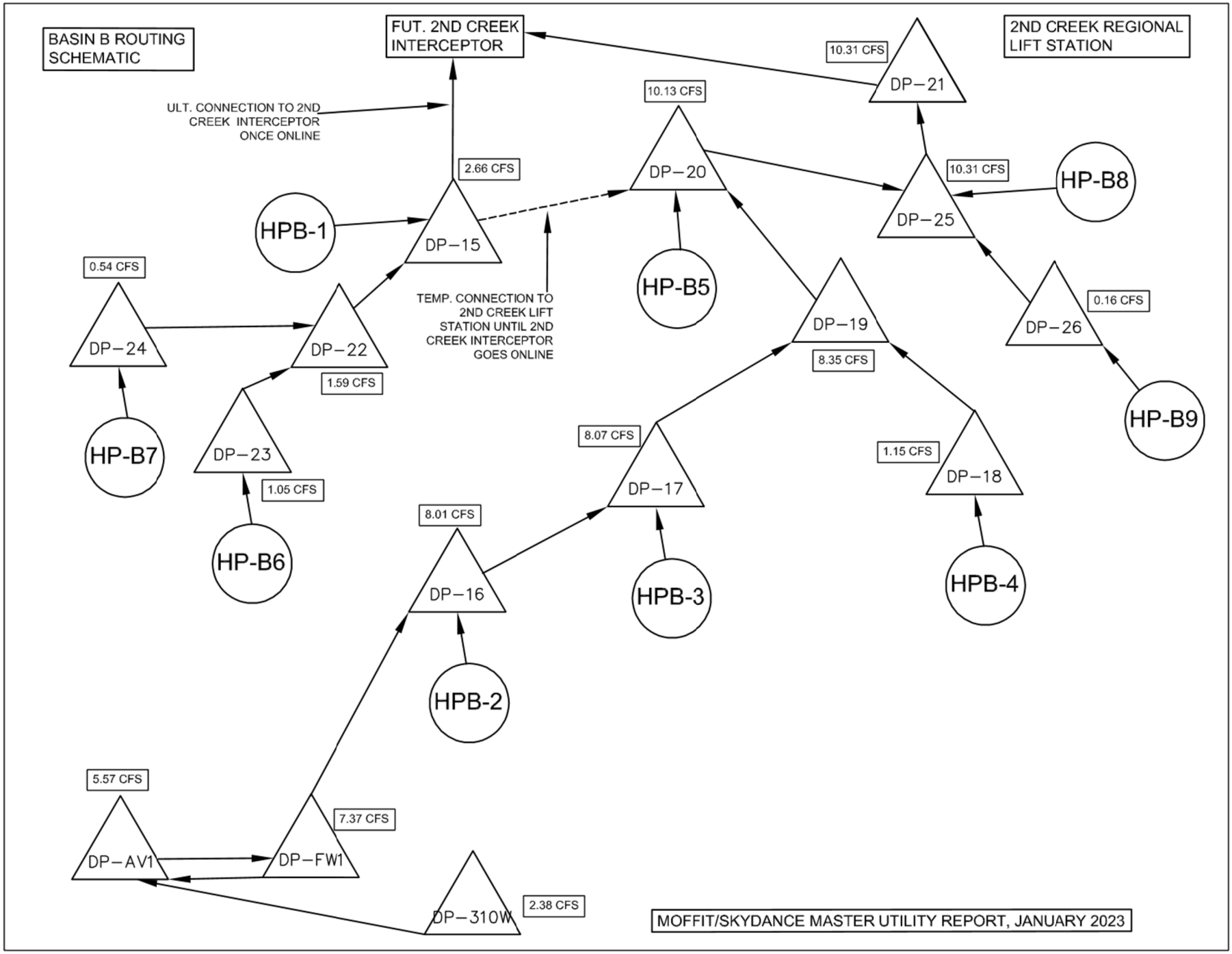
Refer to attached Flow Master analysis sheets for pipe calculations.

Achieve a minimum velocity of 2.0 ft/sec and a maximum percent full capacity of 75% for pipes 12" and smaller or 80% for pipes larger than 12"

* Fulenwider Master Utility Report by Martin/Martin, July 22, 2019 (COA #220131MU1)

** High Point at DIA-FDP Amendment No. 4-Master Utility Study Amendment

*** 310 West email from Dewberry on 4/25/22


BASIN B ROUTING SCHEMATIC
FUT. 2ND CREEK INTERCEPTOR
2ND CREEK REGIONAL LIFT STATION
ULT. CONNECTION TO 2ND CREEK INTERCEPTOR ONCE ONLINE
10.31 CFS
DP-21
10.13 CFS
DP-20
2.66 CFS
HPB-1
DP-15
10.31 CFS
DP-25
HP-B8
HP-B5
TEMP. CONNECTION TO 2ND CREEK LIFT STATION UNTIL 2ND CREEK INTERCEPTOR GOES ONLINE
0.54 CFS
DP-24
DP-22
1.59 CFS
DP-19
8.35 CFS
DP-26
0.16 CFS
HP-B9
HP-B7
DP-23
1.05 CFS
8.07 CFS
DP-17
1.15 CFS
DP-18
8.01 CFS
HP-B6
DP-16
HPB-3
HPB-4
HPB-2
5.57 CFS
7.37 CFS
DP-AV1
DP-FW1
DP-310W
2.38 CFS
MOFFIT/SKYDANCE MASTER UTILITY REPORT, JANUARY 2023

217021MU1
2004-3087
94P

MASTER UTILITY REPORT
FOR
High Point at DIA
Starwood CPG Operations, LLC

February 3, 2017

Prepared for:

Aurora Water
15151 E. Alameda Pkwy
Aurora, Colorado
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J3 ENGINEERING CONSULTANTS

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CITY OF AURORA APPROVAL BLOCK

City Engineer — Date: 03/02/2017

Aurora Water Department — Date: 2/28/2017

Aurora Fire Department — Date: 3/01/2017

Sanitary Sewer Routing - Basin B

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-21	HPB-5	120600.00								
Total		**120600.00**	**1773.53**	**4.00**	**482400.00**	**12060.00**	**494460.00**	**0.49**	**0.77**	**8.00**

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-15	HPB-5	120600.00								
	HPB-1	276600.00								
Total		**397200.00**	**5841.18**	**3.72**	**1479018.78**	**39720.00**	**1518738.78**	**1.52**	**2.35**	**12.00**

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-16	HPB-2	119487.60								
Total		**119487.60**	**1757.17**	**4.00**	**477950.40**	**11948.76**	**489899.16**	**0.49**	**0.76**	**8.00**

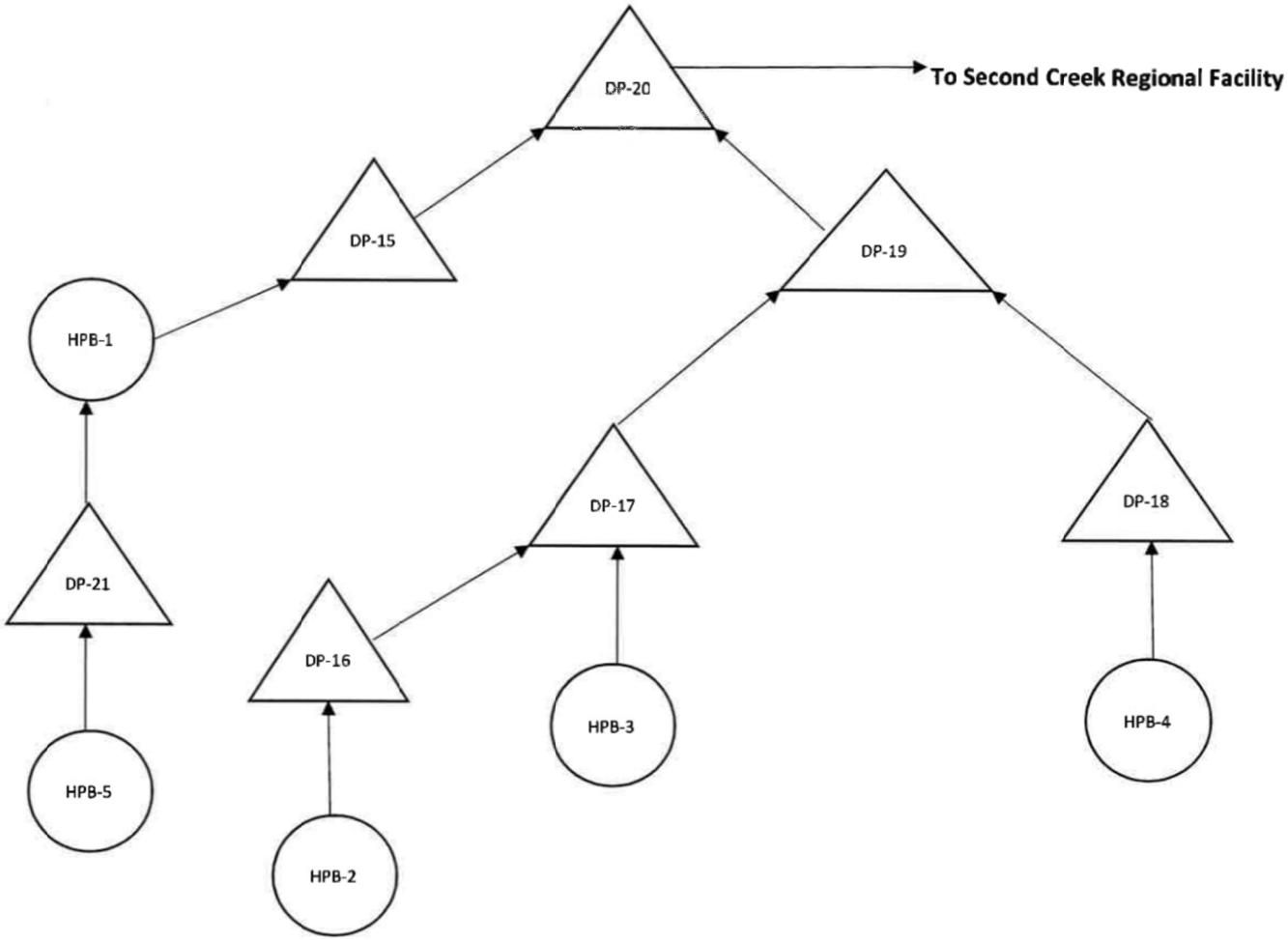
Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-17	HPB-2	119487.60								
	HPB-3	68850.00								
Total		**188337.60**	**2769.67**	**4.00**	**753350.40**	**18833.76**	**772184.16**	**0.77**	**1.19**	**12.00**

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-18	HPB-4	181950.00								
Total		**181950.00**	**2675.74**	**4.00**	**727800.00**	**18195.00**	**745995.00**	**0.75**	**1.15**	**12.00**

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-19	HPB-2	119487.60								
	HPB-3	68850.00								
	HPB-4	181950.00								
Total		**370287.60**	**5445.41**	**3.77**	**1395057.54**	**37028.76**	**1432086.30**	**1.43**	**2.22**	**12.00**

Design Point	Basin(s)	Average Daily Flow (gpd)	Cumulative Equivalent Pop	Peak Factor	Peak Flow (gpd)	Inflow and Infiltration (gpd)	Design Flow (gpd)	Design Flow (mgd)	Design Flow (cfs)	Req'd Pipe Diameter (in)
DP-20	HPB-5	120600.00								
	HPB-1	276600.00								
	HPB-2	119487.60								
	HPB-3	68850.00								
	HPB-4	181950.00								
Total		**767487.60**	**11286.58**	**3.34**	**2560138.39**	**76748.76**	**2636887.15**	**2.64**	**4.08**	**15.00**

Basin B Routing Schematic

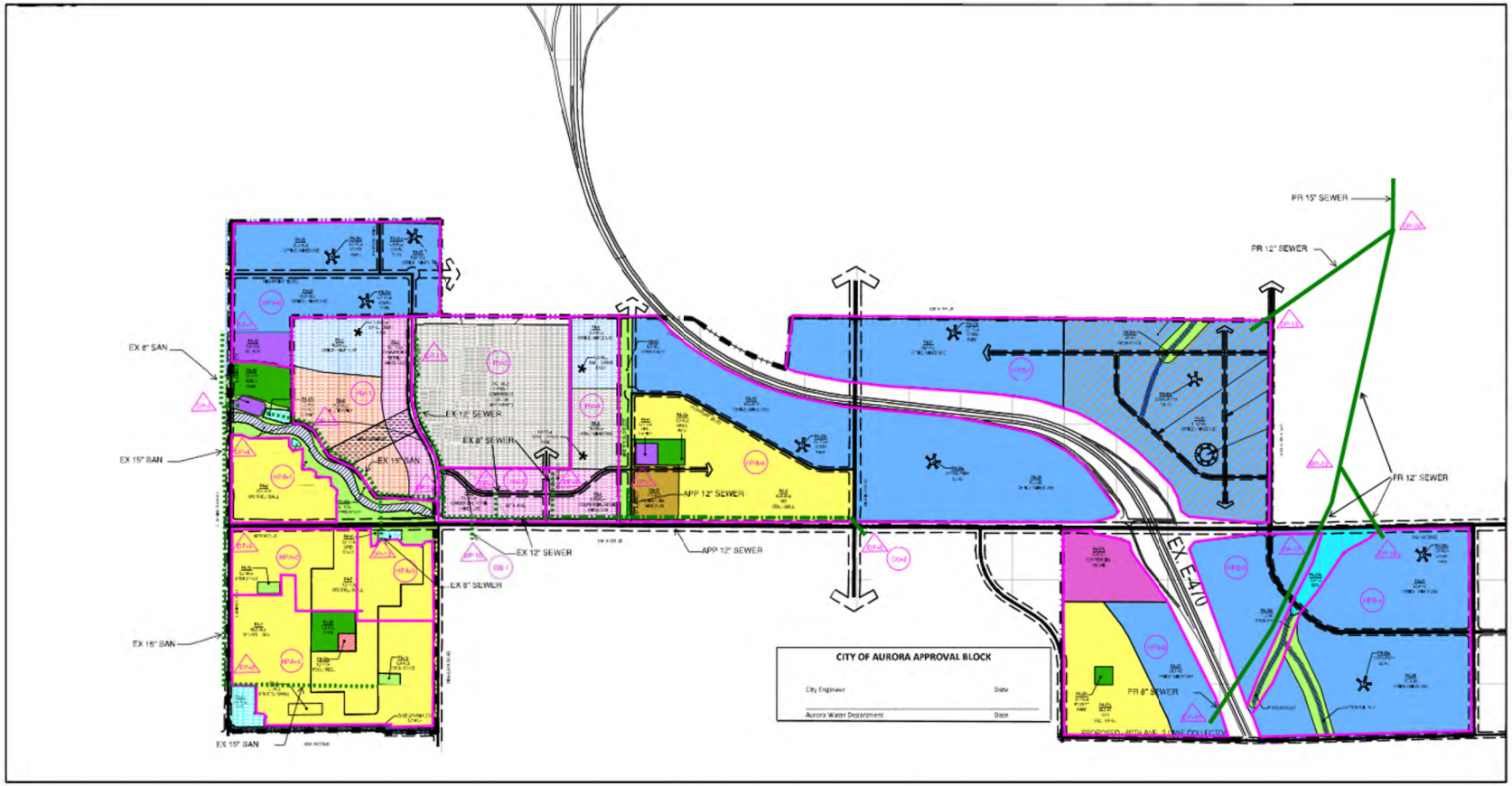


LEGEND

- OFFICE / MIXED USE
- CIVIC USES
- COMMERCIAL RETAIL
- SFD STANDARD / SMALL
- FLOODPLAIN
- WATER QUALITY / DETENTION
- RESIDENTIAL / MIXED USE
- REGIONAL ACTIVITY CENTER (RAC)
- COMMUNITY ACTIVITY CENTER (CAC)
- COMMERCIAL PARK
- PARK
- OPEN SPACE
- BASIN BOUNDARY
- BASIN DESIGNATION (HPA)
- DESIGN POINT (DP1)
- EXISTING SANITARY SEWER
- APPROVED SANITARY SEWER
- PROPOSED SANITARY SEWER

NORTH

SCALE: 1" = 600'



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Email: JasonM@bgconsultant

LNR CPI HIGH POINT, LLC
HIGH POINT AT DIA

SANITARY SEWER EXHIBIT

LNR CPI HIGH POINT, LLC
385 Inverness Pkwy, #310
ENGLEWOOD, CO 80112
Tel. (303) 397-9692
Contact: Craig Carswell

No	Date	Description
1	09/30/2015	SECOND SUBMITTAL
2	11/13/2015	THIRD SUBMITTAL
3	12/11/2015	FOURTH SUBMITTAL
4	12/21/2015	FIFTH SUBMITTAL
5	2/12/2016	SIXTH SUBMITTAL

DOCUMENT AMENDMENTS

Project Number: 128003
Designed By: CS
Drawn By: AMC
Checked By: JDM
Sheet Number: 2 of 2

1900-ADAMS
93V, 34V, 95
95U, 95V

MARTIN/MARTIN
CONSULTING ENGINEERS

Fulenwider– Master Utility Report

56TH AVENUE AND HARVEST ROAD
CITY OF AURORA, COLORADO

Martin/Martin, Inc. Project No.: 19.0001

July 22, 2020

City of Aurora Approval Block

THT	Vernon D. Adam	08/05/2020
	Aurora Water	Date
	Craig Paul for Victor Rachael	07/31/2020
	City Engineer	Date
	Will Pike	07/30/2020
	Fire Department	Date

Prepared For: L. C. Fulenwider
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Denver, CO 80202
303-295-3071

Prepared By: Martin/Martin, Inc.
12499 West Colfax Avenue
Lakewood, Colorado 80215
303.431.6100

Principal-in-Charge: Patrick F. Horn, P.E. CFM
Project Manager: David M. Le, P.E.
Project Engineer: Gregory R. Proulx, P.E.

FULENWIDER
SANITARY SEWER AVERAGE FLOWS AND POPULATION

Planning Area	Area (Ac)	Type of Development	Avg. Daily Flow/Ac (gpd/ac)	Avg. Daily Flow (MGD)	Equivalent Population /Ac	Population
PA-2	37.5	MU-COMM	1500	0.056	22	825
PA-3	48.1	MU-COMM	1500	0.072	22	1058
PA-4	81.8	MU-INDUSTIRAL	1200	0.098	18	1472
PA-5	117.4	MU-INDUSTIRAL	1200	0.141	18	2113
PA-6	84.0	MU-INDUSTIRAL	1200	0.101	18	1512
PA-7	59.7	MU-INDUSTIRAL	1200	0.072	18	1075
PA-8	16.7	MU-COMM	1500	0.025	22	367
PA-9	37.5	MU-COMM	1500	0.056	22	825
PA-10	75.4	MU-INDUSTIRAL	1200	0.090	18	1357
PA-11	1.7	LIFT STATION	1200	0.002	18	31
PA-12	12.2	XCEL SUBSTATION	1200	0.015	18	220
PA-13	5.0	N.P	SANITARY DEMANDS NOT APPLICABLE TO PARKS, OPEN SPACE, DRAINAGE CHANNEL, OR LAND ACQUISITION AREAS			
PA-14	4.0	N.P				
PA-15	4.6	2ND CREEK OPEN SPACE				
PA-16	19.7	DETENTION / OPEN SPACE				
PA-17	12.9	DETENTION / OPEN SPACE				
PA-18	3.8	DETENTION / OPEN SPACE				
PA-19	2.4	DETENTION / OPEN SPACE				
PA-20	12.5	FLOOD PLAIN				
PA-21	20.5	FLOOD PLAIN				
PA-22	15.6	FLOOD PLAIN				
PA-23	0.8	LAND ACQUISITION				
PA-24	3.4	LAND ACQUISITION				
PA-25	3.9	2ND CREEK OPEN SPACE				
PA-26	0.5	TRAILHEAD OPEN SPACE				

Planning Area	Area (Ac)	Type of Development	Dwelling Units (DU)	CAP/DU	CAP	Avg. Daily Demand gpd/CAP	Avg. Daily Flow (MGD)
PA-1	40.0	MU-RESIDENTIAL	30	2.77	3324	68	0.226

FULENWIDER

SANITARY SEWER PEAK FLOW CALCULATIONS

	Node	Basins Added to System	Total Avg. Daily Flow @ Node (MGD)	Total Upstream Population	Peaking Factor = 5/p^0.167	Peak Flow (MGD)	Infiltration (MGD)	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)
4	T	OFFSITE (page 165 of WINDLER HOMSTEAD REPORT)	0.690	3,250	4.00	2.760	0.069	2.829	4.377
1	S	OFFSITE from 310 West Development	0.403	5,928	3.71	1.497	0.040	1.537	2.378
2	R	OFFSITE from Avelon Development	0.362	5,327	3.78	1.369	0.036	1.405	2.174
	P	50% PA-1	0.878	12,917	3.26	2.864	0.088	2.951	4.566
	O	50% PA-1 + PA-12	1.006	14,799	3.19	3.206	0.101	3.307	5.116
	N	NODE O + PA-2	1.062	15,624	3.16	3.355	0.106	3.461	5.355
	M	PA-3	0.072	1,058	4.00	0.289	0.007	0.296	0.458
	L.1	50% PA-4 + 30% PA-5	0.091	1,370	4.00	0.365	0.009	0.375	0.579
	L	NODE L.1 + 50% PA-4	0.140	2,106	4.00	0.562	0.014	0.576	0.891
3	K	OFFSITE (2nd Creek Tributary WINDLER HOMSTEAD REPORT)	3.683	54,718	2.56	9.439	0.368	9.807	15.174
	J	35% PA-5 + OFFSITE NODE K + OFFSITE NODE T	4.423	58,708	2.53	11.201	0.442	11.644	18.015
	I	PA-8	0.025	367	4.00	0.100	0.003	0.103	0.159
	H	35% PA-5 + NODE L + NODE J + NODE I	4.6	61,554	2.51	11.653	0.464	12.117	18.747
	G	35% PA-6 + NODE H	4.673	62,083	2.51	11.725	0.467	12.192	18.863
	F	PA-9	0.056	825	4.00	0.225	0.006	0.231	0.357
	E.1	30% PA-6	0.030	529	4.00	0.121	0.003	0.124	0.192
	E	OFFSITE + NODE E.1	0.030	529	4.00	0.121	0.003	0.124	0.192
	D	35% PA-6 + NODE G + NODE F	4.764	63,437	2.50	11.911	0.476	12.388	19.166
	C	50% PA-7 + NODE D	4.800	63,974	2.50	11.984	0.480	12.464	19.284
	B	PA-10	0.090	1,357	4.00	0.362	0.009	0.371	0.574
	A	50% PA-7 + NODE B + NODE C + NODE N + NODE M	6.091	145,988	2.18	13.249	0.609	13.858	21.441

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 - 1.84 CFS

3 OFFSITE from 2nd Creek Tributary Area meeting on 06/30/2020

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

FULENWIDER
SANITARY SEWER ROUTING CALCULATIONS

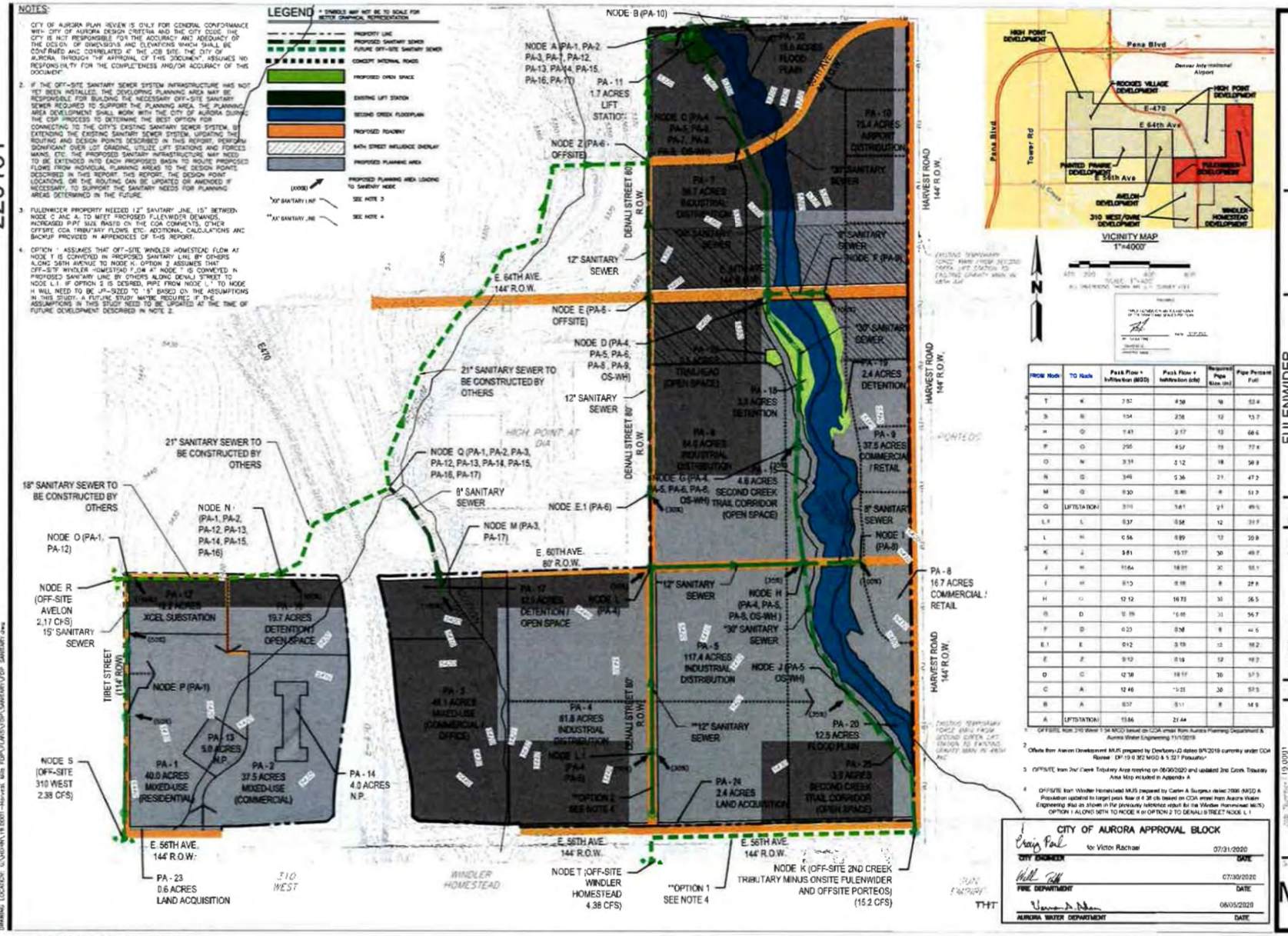
From Node:	To Node:	Basins Added to System	Total Flow Flow (cfs)	Required Pipe Size (in)	Minimum Slope* (%)	Maximum Slope* (%)	Percentage Full (%)
				(see note below)			
T	K	OFFSITE FROM WINDLER HOMESTEAD	4.377	18	0.40	2.03	53.4
S	R	OFFSITE FROM 310 WEST (310)	2.378	12	0.40	2.87	73.7
R	O	OFFSITE FROM AVELON (AV)	2.174	12	0.40	2.87	68.6
P	O	PA-1, AV, 310	4.566	15	0.40	2.13	77.4
O	N	PA-1, PA-12, AV, 310	5.116	18	0.40	2.03	58.8
N	Q	PA-2, AV, 310	5.355	21	0.40	1.65	47.2
M	Q	PA-3	0.458	8	0.40	4.94	51.2
Q	LIFTSTATION	PA-1, PA-2, PA-3, PA-12 AV, 310	5.813	21	0.40	1.65	49.5
K	J	OFFSITE FROM WINDLER HOMESTEAD (WH	15.174	30	0.40	1.00	49.7
J	H	PA-5, WH	18.015	30	0.40	1.00	55.1
L.1	L	PA-5	0.579	12	0.40	2.87	31.7
L	H	PA-4	0.891	12	0.40	2.87	39.9
I	H	PA-8	0.159	8	0.40	4.94	28.8
H	G	PA-4, PA-5, PA-8, WH	18.747	30	0.40	1.00	56.5
G	D	PA-4, PA-5, PA-6, PA-8, WH	18.863	30	0.40	1.00	56.7
E.1	E	PA-6	0.192	12	0.40	2.87	18.2
E	Z	OFFSITE HIGHPOINT	0.192	12	0.40	2.87	18.2
F	D	PA-9	0.357	8	0.40	4.94	44.6
D	C	PA-4, PA-5, PA-6, PA-8, PA-9, WH	19.166	30	0.40	1.00	57.3
C	A	PA-4, PA-5, PA6, PA-7, PA-8, PA-9, WH	19.284	30	0.40	1.00	57.5
B	A	PA-10	0.574	8	0.40	4.94	58.9
A	LIFTSTATION	PA-1 THROUGH PA-10 & WH, AV, 310	21.441				

* Note:

achieve a minimum velocity of 2.0 ft/sec and a maximum percent full capacity of 75% for pipes 12" and smaller or 80% for pipes larger than 12".

2

220131



FROM Node	TO Node	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)	Required Pipe Size (in)	Pipe Percent Full
T	K	7.62	11.80	18	53.4
S	R	1.54	2.38	12	13.7
H	G	1.41	2.17	12	66.6
P	O	2.95	4.57	15	77.6
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	51.9
Q	LIFTSTATION	3.76	5.81	21	49.5
L.1	L	0.37	0.58	12	31.9
L	H	0.56	0.89	12	39.8
K	J	9.81	15.17	30	49.7
J	H	11.64	18.01	30	58.1
I	H	0.13	0.19	8	29.8
H	G	12.12	18.76	30	56.5
R	D	0.76	1.18	10	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	12.18	18.77	30	57.5
C	A	12.46	19.20	30	57.5
B	A	0.37	0.57	8	54.9
A	LIFTSTATION	13.84	21.44		

1. OFFSITE from 310 West T-34 MUD based on COA email from Aurora Planning Department & Aurora Water Engineering 11/1/2019
2. Offsite from Avelon Development MUS prepared by Dewberry,JD dated 8/9/2019 currently under COA Review - DP-19-0362 MOD & S-527 Porteous*
3. OFFSITE from 2nd Creek Tributary Area routing 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 (MOD A Population updated to target peak flow of 4.38 cfs based on COA email from Aurora Water Engineering that as shown in the previously submitted report for the Windler Homestead MUTS) OPTION 1 ALONG 56TH TO NODE K or OPTION 2 TO DENALI STREET NODE L.1

APPROVED ON 08/05/2020

2004-3087
94P

MARTIN/MARTIN
CONSULTING ENGINEERS

High Point at DIA - FDP Amendment No. 4 – Master Utility Study Amendment

64TH AVENUE AND PICADILLY ROAD
CITY OF AURORA, COLORADO

Martin/Martin, Inc. Project No.: 19.0397

May 11, 2020

City of Aurora Approval Block

07/29/2020

CWB	Vernon A. Adam	07/23/2020
	Aurora Water	Date
	Craig Paul for Victor Rachael	07/28/2020
	City Engineer	Date
	Will Pabl	07/27/2020
	Life Safety	Date

Prepared For: Westside Investment Partners, Inc.
4100 East Mississippi Avenue, Suite 500
Glendale, Colorado 80246
Attn: Kevin Smith

Prepared By: Martin/Martin, Inc.
12499 West Colfax Avenue
Lakewood, Colorado 80215
303.431.6100

Principal-in-Charge: Pat Horn, P.E.
Project Manager: Jeff White, P.E.
Project Engineer: Gregory R. Proulx, P.E.

BASIN B ROUTING

Design Point	Basins Added to System	Total Avg. Daily Flow @ Node (MGD)	Total Upstream Population	Peaking Factor = 5/p^0.167	Peak Flow (MGD)	Infiltration (MGD)	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)
DP-24	HP-B7	0.085	1,249	4.00	0.339	0.008	0.348	0.538
DP-23	HP-B6	0.166	2,441	4.00	0.664	0.017	0.681	1.053
DP-22	DP-23 + DP-24	0.251	3,690	4.00	1.003	0.025	1.028	1.591
DP-15	DP-22+ HP-B1	0.462	6,856	3.63	1.675	0.046	1.721	2.663
[1] DP-FW1	Offsite flow from Fulenwider MUS Report Node Q (INCLUDES DP-AV1 & DP-310W	1.134	16,682	3.13	3.544	0.113	3.657	5.813
[2] DP-AV1	Offsite flow from Avelon MUS Report DP-19	0.362	5,327	3.78	1.369	0.036	1.405	2.174
[3] DP-310W	Offsite flow from 310 West MUS Report DP-1	0.403	5,928	3.71	1.497	0.040	1.537	2.378
DP-16	HP-B2 + DP-FW1	1.253	18,435	3.07	3.849	0.125	3.975	6.336
DP-17	DP-16 + HP-B3	1.301	19,159	3.05	3.974	0.130	4.104	6.535
DP-18	HP-B4	0.124	1,863	4.00	0.497	0.012	0.509	0.788
DP-19	DP-17 + DP-18	1.426	21,022	3.01	4.286	0.143	4.429	7.038
DP-20	DP-15 + DP-19 + HP-B5	1.989	29,393	2.84	5.654	0.199	5.853	9.242
DP-26	HP-B9	0.025	370	4.00	0.101	0.003	0.103	0.160
DP-25	DP-20 + DP-26 + HP-B8	2.066	30,539	2.82	5.837	0.207	6.044	9.537

[1] Offsite from Fulenwider MUS prepared by Martin/Martin Inc, dated 05/2020 currently under COA Review: Node Q-5,813 CFS

[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 310 West Development MUS prepared by Calibre Engineering Inc, dated 10/2017 currently under COA Review: DP-1 0.444 MGD & 5,928 Population

HIGH POINT
SANITARY SEWER ROUTING CALCULATIONS
BASIN A

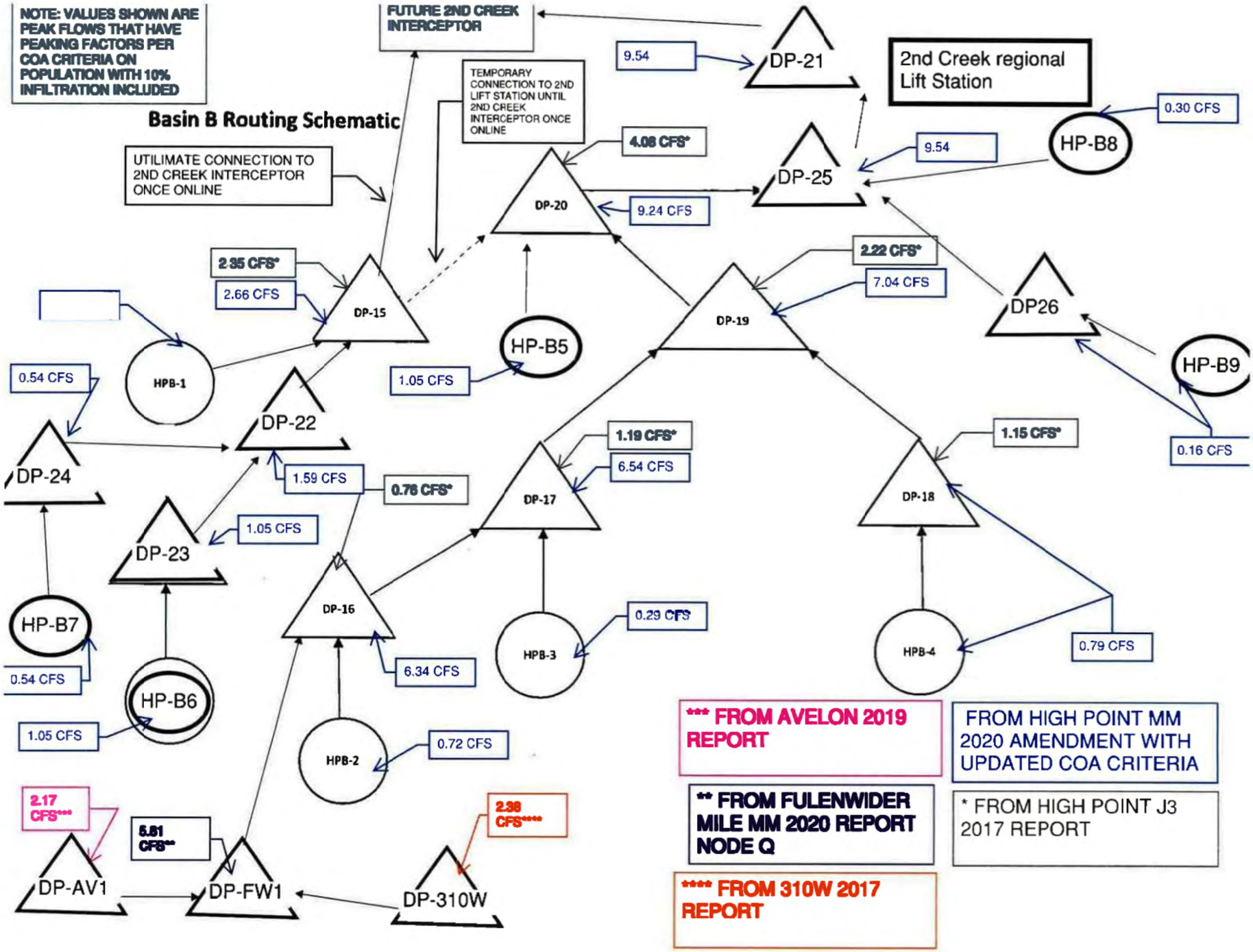
From Design Point:	To Design Point:	Basins Added to System	Total Flow Flow (cfs)	Required Pipe Size (in)	Minimum Slope* (%)	Maximum Slope* (%)	Percentage Full** (%)
				(see note below)			
DP-6	DP-7	OS-2 FROM AVELON	0.641	12	0.40	2.87	33.4
DP-7	DP-8	HP-A6	2.119	15	0.40	2.13	46.2
DP-8	DP-9	RV4	2.819	15	0.40	2.13	54.9
DP-9	DP-10	RV3	2.963	15	0.40	2.13	56.6
DP-10	DP-12	OS-1 FROM PAINTED PRAIRIE	4.493	15	0.40	2.13	76.3
DP-11	DP-12	RV2	1.313	12	0.40	2.87	49.5
DP-12	DP-13	OS-1 FROM PAINTED PRAIRIE & RV2	5.403	15	0.60	2.13	75.1
DP-13	DP-14	HP-A3	5.722	15	0.60	2.13	79.2
DP-14	LIFT STATION	RV1	6.314	15	0.70	2.13	80.8
DP-2	DP-3	HP-A4	0.471	12	0.40	2.87	28.4
DP-3	DP-4	HP-A2	0.925	12	0.40	2.87	40.8
DP-1	DP-5	HP-A5	0.831	8	0.40	4.94	74.7
DP-4	DP-5	HP-A1	1.207	12	0.40	2.87	47.1
DP-5	LIFT STATION		1.961	12	0.40	2.87	61.3

* Note: Minimum slopes were determined as the greater of 0.40% as required by the City of Aurora or the slope required to achieve a minimum velocity of 2.0 ft/sec and a maximum percent full capacity of 75% for pipes 12" and smaller or 80% for pipes larger than 12".

Maximum slopes were determined based on a velocity of 10 ft/sec for full or half pipe conditions.

Refer to attached Flow Master analysis sheets for slope calculations

**Pipes exceeding 80% full were designed to previous City of Aurora Criteria for pipes which was 90% full for pipes larger than 12". Also these lines were constructed at greater than the minimum slope to increase capacity and Painted Prarie MUS comment from COA that proposed 15" parallel line to be constructed.


NOTE: VALUES SHOWN ARE PEAK FLOWS THAT HAVE PEAKING FACTORS PER COA CRITERIA ON POPULATION WITH 10% INFILTRATION INCLUDED
Basin B Routing Schematic
FUTURE 2ND CREEK INTERCEPTOR
TEMPORARY CONNECTION TO 2ND LIFT STATION UNTIL 2ND CREEK INTERCEPTOR ONCE ONLINE
UTILIMATE CONNECTION TO 2ND CREEK INTERCEPTOR ONCE ONLINE
2nd Creek regional Lift Station
9.54
DP-21
0.30 CFS
HP-B8
9.54
DP-25
4.08 CFS*
DP-20
9.24 CFS
2.35 CFS*
2.66 CFS
DP-15
HP-B5
1.05 CFS
2.22 CFS*
7.04 CFS
DP-19
DP26
HP-B9
0.16 CFS
0.54 CFS
HPB-1
DP-22
DP-24
1.59 CFS
0.76 CFS*
1.19 CFS*
6.54 CFS
DP-17
1.15 CFS*
DP-18
1.05 CFS
DP-23
DP-16
6.34 CFS
HPB-3
0.29 CFS
HPB-4
0.79 CFS
HP-B7
0.54 CFS
HP-B6
1.05 CFS
HPB-2
0.72 CFS
2.17 CFS***
5.61 CFS**
2.38 CFS****
DP-AV1
DP-FW1
DP-310W
*** FROM AVELON 2019 REPORT
FROM HIGH POINT MM 2020 AMENDMENT WITH UPDATED COA CRITERIA
** FROM FULENWIDER MILE MM 2020 REPORT NODE Q
* FROM HIGH POINT J3 2017 REPORT
**** FROM 310W 2017 REPORT

2

220127

COA BENCHMARK:

CITY OF AURORA BENCHMARK, COA ID 356611NW002 (OLD BENCHMARK 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 BENCHMARK IS 4" HIGH 2 ½" YELLOW COLORED PIPE VICINITY OF THE N ¼ CORNER SECTION 11, T3S R66W. ELEVATION=5424.588 NAVD 88

LEGEND

BASIN BOUNDARY

PROPOSED SANITARY SEWER

PROPOSED OFF-SITE SANITARY SEWER

EXISTING SANITARY SEWER

PROPOSED FUTURE 2ND CREEK SANITARY SEWER INTERCEPTOR MAIN

DESIGN POINT

SANITARY BASIN

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 WILL 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, OS THE ROUTING CAN BE UPDATED OR AMENDED IF NECESSARY, TO SUPPORT THE SANITARY NEEDS FOR PLANNING AREAS DETERMINED IN THE FUTURE.
3. DASHED CONNECTION FROM DP 15 TO DP 20 UTILIZED FOR INTERIM CONDITION AND INITIAL BUILD OUT UNTIL THE 2ND CREEK INTERCEPTOR IS CONSTRUCTED AND ONLINE. INITIAL DEVELOPMENT CAN UTILIZE INTERIM CONNECTION UNTIL CAPACITY DOWNSTREAM OF DP 20 IS EXCEEDED.

BASIN A SUMMARY TABLE:

From Design Point:	To Design Point:	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)	Required Pipe Size for min slope (in)	Min Pipe Slope (%)	Pipe Percent Full**
DP-6	DP-7	0.414	0.641	12	0.40	33.4%
DP-7	DP-8	1.370	2.119	15	0.40	46.2%
DP-8	DP-9	1.822	2.819	15	0.40	54.9%
DP-9	DP-10	1.915	2.963	15	0.40	56.6%
DP-10	DP-17	2.504	4.493	15	0.40	76.3%
DP-11	DP-12	0.848	1.313	12	0.40	48.5%
DP-12	DP-13	3.480	5.403	15	0.60	75.1%
DP-13	DP-14	3.696	5.722	15	0.60	79.2%
DP-14	LIFT STAT	4.051	6.314	15	0.70	86.8%
DP-2	DP-3	0.334	0.471	12	0.40	29.4%
DP-3	DP-4	0.586	0.925	12	0.40	49.8%
DP-1	DP-5	0.537	0.831	8	0.40	74.7%
DP-4	DP-5	0.780	1.202	12	0.40	47.1%
DP-5	LIFT STAT	1.254	1.935	12	0.40	61.3%

1. OS-2 which is DP-20 from Avelon Development MUS prepared by Dewberry,I3 dated 8/8/2019 (6.101 MGD & 1,483 population for 0.64 cfs)
2. RV4 from Rockies Village MUS prepared by JS dated 02/03/2017, COA #21702 - 0.15 MGD & 25.8 acres of 22 equivalent population per acre (568) plus 800 units at 2.77 people per unit (2216) = (2784 population)
3. RV3 from Rockies Village MUS prepared by JS dated 02/03/2017, COA #21702 - 0.93 MGD & 19.3 acres of 22 equivalent population per acre (425 population)
4. OS-1 from Painted Prairie MUS, prepared by CVL approved 04/13/2022 design points A, F, & I 11.33 CFS
5. RV2 from Rockies Village MUS prepared by JS dated 02/03/2017, COA #21702 - 0.21 MGD & 1500 units at 2.77 people per unit (4155 population)
6. RV1 from Rockies Village MUS prepared by JS dated 02/03/2017, COA #21702 - 0.14 MGD & 600 units at 2.77 people per unit (1662) plus 39.1 acres of 22 equivalent populations per acre (795) = (2457 population)

** "Pipes exceeding 80% full were designed to promote City of Aurora Criteria for pipes which was 90% full for pipes larger than 12". Also these lines were constructed at greater than the minimum slope to increase capacity and Painted Prairie MUS comment from COA that proposed 15" parallel line to be constructed

BASIN B SUMMARY TABLE:

From Design Point:	To Design Point:	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)	Required Pipe Size at min slope (in)	Min Pipe Slope (%)	Pipe Percent Full
DP-24	DP-22	0.35	0.54	12	0.40	38.9
DP-23	DP-22	0.68	1.05	12	0.40	43.7
DP-22	DP-15	1.03	1.59	12	0.40	59.7
DP-16	DP-17	4.10	6.34	21	0.40	52.1
DP-17	DP-19	4.22	6.54	21	0.40	53.1
DP-18	DP-19	0.51	0.79	12	0.40	41.2
DP-15	DP-20	1.72	2.66	15	0.40	53
DP-19	DP-20	4.55	7.04	21	0.40	55.9
DP-20	DP-25	5.97	9.24	12	0.40	19.6
DP-26	DP-25	6.10	9.16	21	0.40	66
DP-25	DP-21	6.16	9.54	21	0.00	68
DP-21	RECORD CREEK LIFT STATION	AVELON TO OUTFALL TO 2ND CREEK REGIONAL FACILITY (OCA TEXABA HORIZONTAL WEST CORNER OF FULENWIDER PROPERTY. SEE NOTES				

1. Offsite from Lennader MUS prepared by Martin/Martin Inc. dated 05/2020 currently under COA Review. Node OS-8.83 CFS
2. Offsite from Avelon Development MUS prepared by Dewberry,I3 dated 8/5/2019 currently under COA Review. DP-19 (6.362 MGD & 9.33 Population
3. Offsite from 370 West Development MUS prepared by Calibre Engineering Inc. dated 10/2017 currently under COA Review. DP-1 (0.644 MGD & 5.928 Population

VICINITY MAP
1"=4000'

FACSIMILE
THIS ELECTRONIC PLAN IS A FACSIMILE OF THE SIGNED AND SEALED PDF PLAN

(PE SIGNATURE)

DATE 05/11/2020

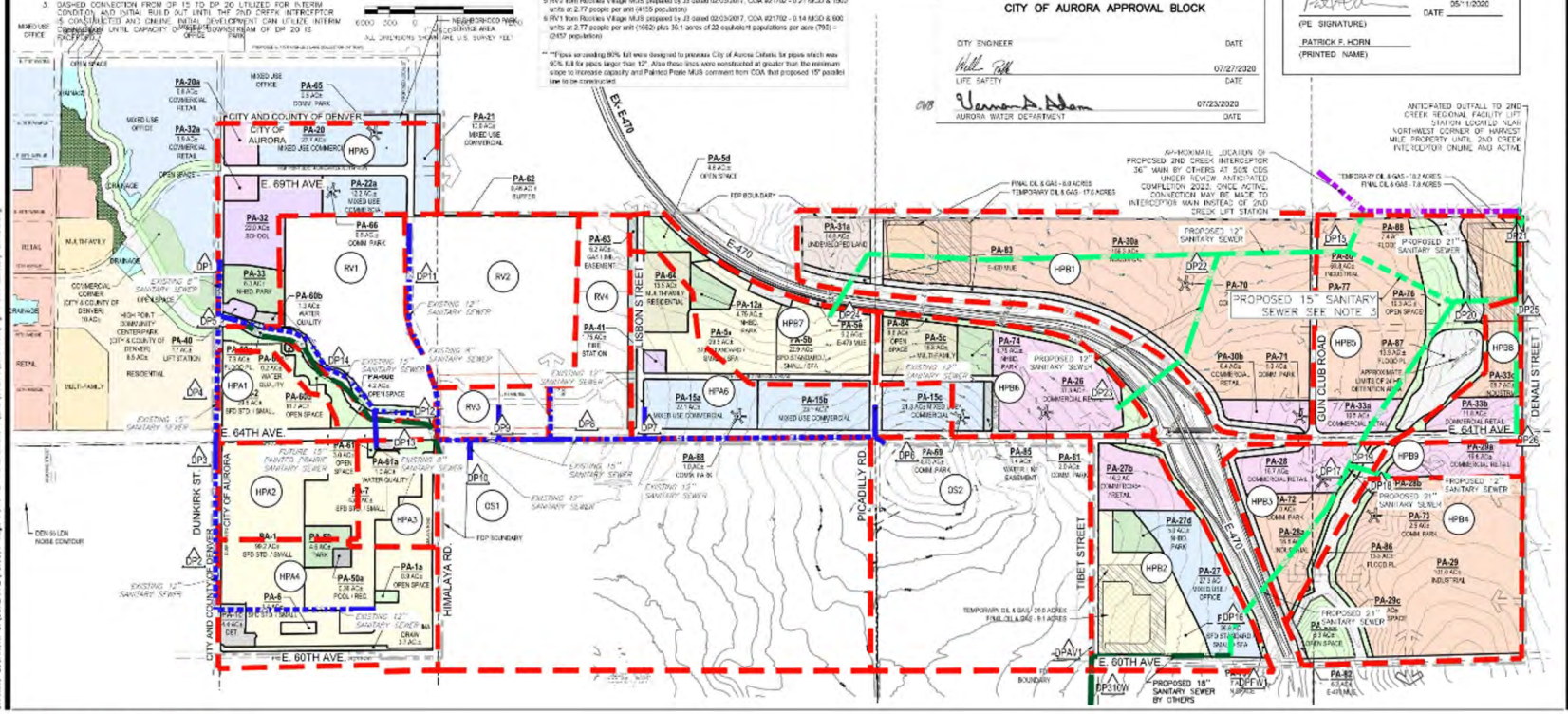
PATRICK F. HORN
(PRINTED NAME)

CITY OF AURORA APPROVAL BLOCK

CITY ENGINEER — DATE

LIFE SAFETY — 07/27/2020 — DATE

AURORA WATER DEPARTMENT — 07/23/2020 — DATE



APPROVED ON 07/29/2020

No.	Issue / Revision	Date	Name
1	ISSUED FOR COA REVIEW	08/26/19	M/N
2	PER COA COMMENTS	09/27/19	M/N
3	PER COA COMMENTS	10/31/19	M/N
4	PER COA COMMENTS	12/23/19	M/N
5	PER COA COMMENTS	03/24/20	M/N
6	PER COA COMMENTS	05/11/20	M/N

Job Number: 19.0397
Project Manager: J.WHITE &G.PROULX
Design By: G. PROULX
Drawn By: G. PROULX
Principal In Charge: P. HORN

THE DESIGNS, IDEAS INCLUDE ALL SKETCH, DRAWINGS, & PLANS AS WELL AS THE ARRANGEMENT THEREOF ARE & SHALL REMAIN THE PROPERTY OF MARTIN/MARTIN INC. & ARE NOT TO BE USED IN WHOLE OR PART FOR ANY PURPOSE FROM WHATSOEVER WITHOUT THE WRITTEN PERMISSION OF MARTIN/MARTIN INC.

MARTIN/MARTIN
CIVIL ENGINEERING & SURVEYING
12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215
303.431.6100 MARTINMARTINCOM

HIGH POINT AT DIA FDP AMENDMENT NO. 4

MASTER UTILITY STUDY

SANITARY BASIN MAP

Sheet Number:

SS

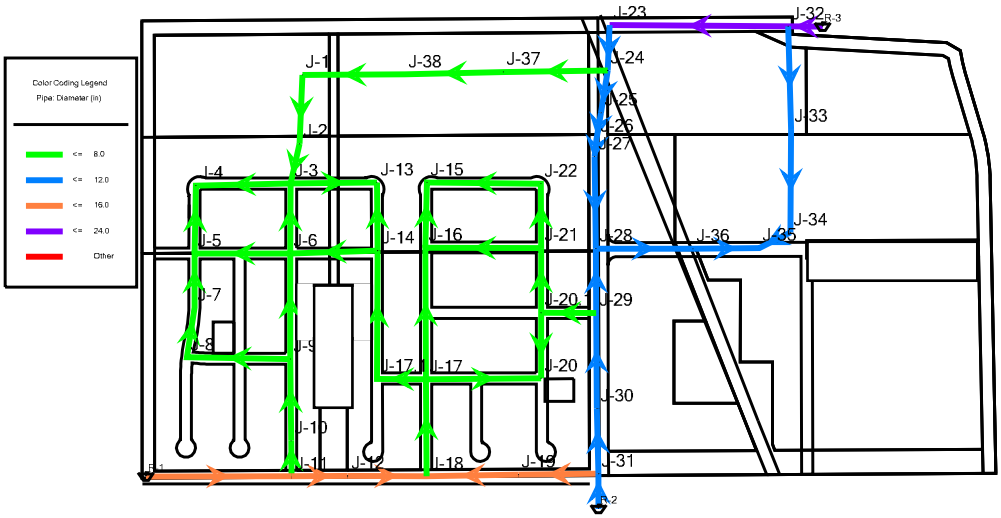
PLOT DATE: Monday, May 11, 2020 2:06 PM LAST SAVED BY: GPROULX
DRAWING LOCATION: G:\DCALAPPS\19.0397-High Point FDP Amendment 4\DWG\UTILITY\SANITARY\High Point Sanitary Exhibit.dwg

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							43345.00	30.10	121366.00	84.28	165892.50	115.20	J-5, J-6, J-8, J-9
	132	2.77	365		AA Residential		36865.00	25.60	103222.00	71.68	165892.50	115.20	
				3.6	PA-56 & 1/2 of PA-59 & PA-60	1800	6480.00	4.50	18144.00	12.60	N/A	N/A	
PA-46							61121.00	42.45	171138.80	118.85	245884.50	170.75	J-16, J-17, J-20, J-21
	195	2.77	541		AA Residential		54641.00	37.95	152994.80	106.25	245884.50	170.75	
				3.6	PA-57 & 1/2 of PA-59 & PA-60	1800	6480.00	4.50	18144.00	12.60	N/A	N/A	
PA-47							31368.00	21.78	87830.40	60.99	137713.50	95.63	J-3, J-4, J-5, J-6
	109	2.77	303		AA Residential		30603.00	21.25	85688.40	59.51	137713.50	95.63	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-48							44902.00	31.18	125725.60	87.31	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	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-49							100716.00	69.94	282004.80	195.84	381132.00	264.68	J-28, J-29, J-36
	197	2.77	546	19.7	Mixed Use	1500	84696.00	58.82	237148.80	164.69	381132.00	264.68	
				8.9	1/2 of PA-61 & PA-63	1800	16020.00	11.13	44856.00	31.15	N/A	N/A	
PA-50							334461.00	232.26	936490.80	650.34	1389649.50	965.03	J-33, J-34, J-35, J-36
	798	2.77	2211	57	Mixed Use	1500	308811.00	214.45	864670.80	600.47	1389649.50	965.03	
				14.25	PA-62 & 64, 1/2 of PA-61 & 65	1800	25650.00	17.81	71820.00	49.88	N/A	N/A	
PA-51				15.3	Mixed Use	1500	22950.00	15.94	64260.00	44.63	103275.00	71.72	J-26, J-33
PA-52							19890.00	13.81	55692.00	38.68	64800.00	45.00	J-33
				9.6	Mixed Use	1500	14400.00	10.00	40320.00	28.00	64800.00	45.00	
				3.05	1/2 of PA 65	1800	5490.00	3.81	15372.00	10.68	N/A	N/A	
PA-53							30165.00	20.95	84462.00	58.65	132300.00	91.88	J-1, J-26
				19.6	Commercial	1500	29400.00	20.42	82320.00	57.17	132300.00	91.88	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-54							21315.00	14.80	59682.00	41.45	92475.00	64.22	J-1, J-2
				13.7	Commercial	1500	20550.00	14.27	57540.00	39.96	92475.00	64.22	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	

Green Valley Master Plan Amendment 2 - Option 1



Average Daily
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	50	5,719.89	118
J-2	5,457.13	<Collection: 1 items>	21	5,719.89	114
J-3	5,459.18	<Collection: 1 items>	10	5,719.89	113
J-4	5,447.39	<Collection: 1 items>	10	5,719.89	118
J-5	5,451.86	<Collection: 2 items>	17	5,719.89	116
J-6	5,459.56	<Collection: 2 items>	17	5,719.89	113
J-7	5,444.79	<Collection: 0 items>	0	5,719.90	119
J-8	5,447.57	<Collection: 1 items>	8	5,719.90	118
J-9	5,452.89	<Collection: 1 items>	8	5,719.91	116
J-10	5,453.34	<Collection: 0 items>	0	5,719.97	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.99	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.99	115
J-13	5,458.98	<Collection: 1 items>	14	5,719.89	113
J-14	5,462.25	<Collection: 1 items>	14	5,719.90	111
J-15	5,460.59	<Collection: 1 items>	14	5,719.93	112
J-16	5,456.09	<Collection: 1 items>	11	5,719.93	114
J-17	5,455.36	<Collection: 1 items>	11	5,719.94	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.93	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.99	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.99	112
J-20	5,456.30	<Collection: 1 items>	11	5,719.94	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.94	114
J-21	5,462.66	<Collection: 1 items>	11	5,719.93	111
J-22	5,456.00	<Collection: 1 items>	14	5,719.93	114
J-23	5,440.00	<Collection: 0 items>	0	5,720.00	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.98	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.97	118
J-26	5,452.77	<Collection: 2 items>	52	5,719.96	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.96	114
J-28	5,469.67	<Collection: 1 items>	17	5,719.95	108
J-29	5,461.26	<Collection: 1 items>	17	5,719.96	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.98	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.99	111
J-32	5,438.99	<Collection: 0 items>	0	5,720.00	122
J-33	5,451.47	<Collection: 3 items>	87	5,719.95	116
J-34	5,461.16	<Collection: 1 items>	63	5,719.94	112
J-35	5,462.39	<Collection: 1 items>	63	5,719.94	111
J-36	5,463.00	<Collection: 2 items>	66	5,719.94	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.95	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.92	120

Average Daily
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	399	J-1	J-2	8.0	PVC	150.0	-2	0.01	0.000
P-2	235	J-3	J-2	8.0	PVC	150.0	23	0.15	0.000
P-3	547	J-4	J-3	8.0	PVC	150.0	5	0.03	0.000
P-4	393	J-5	J-4	8.0	PVC	150.0	15	0.09	0.000
P-5	554	J-5	J-6	8.0	PVC	150.0	-9	0.06	0.000
P-6	313	J-7	J-5	8.0	PVC	150.0	23	0.15	0.000
P-7	290	J-8	J-7	8.0	PVC	150.0	23	0.15	0.000
P-8	597	J-9	J-8	8.0	PVC	150.0	30	0.19	0.000
P-9	473	J-10	J-9	8.0	PVC	150.0	75	0.48	0.000
P-10	205	J-10	J-11	8.0	PVC	150.0	-75	0.48	0.000
P-11	324	J-11	J-12	16.0	PVC	150.0	49	0.08	0.000
P-12	456	J-12	J-18	16.0	PVC	150.0	49	0.08	0.000
P-13	499	J-3	J-13	8.0	PVC	150.0	-7	0.05	0.000
P-14	395	J-13	J-14	8.0	PVC	150.0	-21	0.13	0.000
P-15	658	J-15	J-22	8.0	PVC	150.0	-1	0.01	0.000
P-16	379	J-16	J-15	8.0	PVC	150.0	12	0.08	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-18	0.11	0.000
P-18	561	J-17	J-18	8.0	PVC	150.0	-66	0.42	0.000
P-19	531	J-18	J-19	16.0	PVC	150.0	-18	0.03	0.000
P-20	665	J-20	J-17	8.0	PVC	150.0	5	0.03	0.000
P-21	374	J-21	J-20.1	8.0	PVC	150.0	-31	0.20	0.000
P-22	373	J-22	J-21	8.0	PVC	150.0	-15	0.09	0.000
P-23	1,032	J-32	J-23	24.0	Steel	140.0	166	0.12	0.000
P-24	262	J-23	J-24	12.0	PVC	150.0	166	0.47	0.000
P-25	247	J-25	J-24	12.0	PVC	150.0	-118	0.34	0.000
P-26	154	J-26	J-25	12.0	PVC	150.0	-118	0.34	0.000
P-27	101	J-27	J-26	12.0	PVC	150.0	-66	0.19	0.000
P-28	534	J-28	J-27	12.0	PVC	150.0	-66	0.19	0.000
P-29	372	J-29	J-28	12.0	PVC	150.0	52	0.15	0.000
P-30	553	J-30	J-29	12.0	PVC	150.0	116	0.33	0.000
P-31	378	J-30	J-31	12.0	PVC	150.0	-116	0.33	0.000
P-32	199	R-3	J-32	24.0	Steel	140.0	344	0.24	0.000
P-33	595	J-32	J-33	12.0	PVC	150.0	178	0.50	0.000
P-34	598	J-33	J-34	12.0	PVC	150.0	91	0.26	0.000
P-35	202	J-34	J-35	12.0	PVC	150.0	28	0.08	0.000
P-36	384	J-35	J-36	12.0	PVC	150.0	-34	0.10	0.000
P-37	602	J-24	J-37	8.0	PVC	150.0	48	0.31	0.000
P-38	569	J-37	J-38	8.0	PVC	150.0	48	0.31	0.000
P-39	405	J-6	J-3	8.0	PVC	150.0	20	0.13	0.000
P-40	611	J-9	J-6	8.0	PVC	150.0	37	0.24	0.000
P-41	504	J-14	J-6	8.0	PVC	150.0	9	0.06	0.000
P-42	743	J-17.1	J-14	8.0	PVC	150.0	43	0.28	0.000
P-43	284	J-17	J-17.1	8.0	PVC	150.0	43	0.28	0.000
P-44	379	J-20.1	J-20	8.0	PVC	150.0	16	0.10	0.000
P-45	669	J-21	J-16	8.0	PVC	150.0	5	0.03	0.000
P-46	318	J-29	J-20.1	8.0	PVC	150.0	47	0.30	0.000
P-47	561	J-36	J-28	12.0	PVC	150.0	-101	0.29	0.000
P-48	203	R-2	J-31	12.0	PVC	150.0	134	0.38	0.000
P-49	462	J-19	J-31	16.0	PVC	150.0	-18	0.03	0.000
P-50	593	J-38	J-1	8.0	PVC	150.0	48	0.31	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	124	0.20	0.000

Max Daily
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	141	5,719.24	118
J-2	5,457.13	<Collection: 1 items>	58	5,719.24	113
J-3	5,459.18	<Collection: 1 items>	27	5,719.26	113
J-4	5,447.39	<Collection: 1 items>	27	5,719.26	118
J-5	5,451.86	<Collection: 2 items>	48	5,719.28	116
J-6	5,459.56	<Collection: 2 items>	48	5,719.29	112
J-7	5,444.79	<Collection: 0 items>	0	5,719.31	119
J-8	5,447.57	<Collection: 1 items>	21	5,719.33	118
J-9	5,452.89	<Collection: 1 items>	21	5,719.42	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.78	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.94	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.94	115
J-13	5,458.98	<Collection: 1 items>	38	5,719.27	113
J-14	5,462.25	<Collection: 1 items>	38	5,719.29	111
J-15	5,460.59	<Collection: 1 items>	38	5,719.53	112
J-16	5,456.09	<Collection: 1 items>	30	5,719.54	114
J-17	5,455.36	<Collection: 1 items>	30	5,719.58	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.50	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.93	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.94	112
J-20	5,456.30	<Collection: 1 items>	30	5,719.59	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.60	114
J-21	5,462.66	<Collection: 1 items>	30	5,719.55	111
J-22	5,456.00	<Collection: 1 items>	38	5,719.53	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.97	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.84	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.78	118
J-26	5,452.77	<Collection: 2 items>	147	5,719.74	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.73	114
J-28	5,469.67	<Collection: 1 items>	49	5,719.69	108
J-29	5,461.26	<Collection: 1 items>	49	5,719.71	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.84	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.94	111
J-32	5,438.99	<Collection: 0 items>	0	5,719.99	122
J-33	5,451.47	<Collection: 3 items>	243	5,719.67	116
J-34	5,461.16	<Collection: 1 items>	175	5,719.58	112
J-35	5,462.39	<Collection: 1 items>	175	5,719.57	111
J-36	5,463.00	<Collection: 2 items>	186	5,719.58	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.64	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.44	120

Max Daily
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	399	J-1	J-2	8.0	PVC	150.0	-6	0.04	0.000
P-2	235	J-3	J-2	8.0	PVC	150.0	64	0.41	0.000
P-3	547	J-4	J-3	8.0	PVC	150.0	15	0.09	0.000
P-4	393	J-5	J-4	8.0	PVC	150.0	41	0.26	0.000
P-5	554	J-5	J-6	8.0	PVC	150.0	-25	0.16	0.000
P-6	313	J-7	J-5	8.0	PVC	150.0	64	0.41	0.000
P-7	290	J-8	J-7	8.0	PVC	150.0	64	0.41	0.000
P-8	597	J-9	J-8	8.0	PVC	150.0	85	0.54	0.000
P-9	473	J-10	J-9	8.0	PVC	150.0	210	1.34	0.001
P-10	205	J-10	J-11	8.0	PVC	150.0	-210	1.34	0.001
P-11	324	J-11	J-12	16.0	PVC	150.0	137	0.22	0.000
P-12	456	J-12	J-18	16.0	PVC	150.0	137	0.22	0.000
P-13	499	J-3	J-13	8.0	PVC	150.0	-20	0.13	0.000
P-14	395	J-13	J-14	8.0	PVC	150.0	-59	0.37	0.000
P-15	658	J-15	J-22	8.0	PVC	150.0	-3	0.02	0.000
P-16	379	J-16	J-15	8.0	PVC	150.0	35	0.22	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-49	0.31	0.000
P-18	561	J-17	J-18	8.0	PVC	150.0	-186	1.19	0.001
P-19	531	J-18	J-19	16.0	PVC	150.0	-49	0.08	0.000
P-20	665	J-20	J-17	8.0	PVC	150.0	15	0.09	0.000
P-21	374	J-21	J-20.1	8.0	PVC	150.0	-87	0.55	0.000
P-22	373	J-22	J-21	8.0	PVC	150.0	-42	0.27	0.000
P-23	1,032	J-32	J-23	24.0	Steel	140.0	466	0.33	0.000
P-24	262	J-23	J-24	12.0	PVC	150.0	466	1.32	0.000
P-25	247	J-25	J-24	12.0	PVC	150.0	-331	0.94	0.000
P-26	154	J-26	J-25	12.0	PVC	150.0	-331	0.94	0.000
P-27	101	J-27	J-26	12.0	PVC	150.0	-185	0.52	0.000
P-28	534	J-28	J-27	12.0	PVC	150.0	-185	0.52	0.000
P-29	372	J-29	J-28	12.0	PVC	150.0	146	0.41	0.000
P-30	553	J-30	J-29	12.0	PVC	150.0	326	0.92	0.000
P-31	378	J-30	J-31	12.0	PVC	150.0	-326	0.92	0.000
P-32	199	R-3	J-32	24.0	Steel	140.0	963	0.68	0.000
P-33	595	J-32	J-33	12.0	PVC	150.0	497	1.41	0.001
P-34	598	J-33	J-34	12.0	PVC	150.0	254	0.72	0.000
P-35	202	J-34	J-35	12.0	PVC	150.0	79	0.22	0.000
P-36	384	J-35	J-36	12.0	PVC	150.0	-96	0.27	0.000
P-37	602	J-24	J-37	8.0	PVC	150.0	135	0.86	0.000
P-38	569	J-37	J-38	8.0	PVC	150.0	135	0.86	0.000
P-39	405	J-6	J-3	8.0	PVC	150.0	55	0.35	0.000
P-40	611	J-9	J-6	8.0	PVC	150.0	104	0.66	0.000
P-41	504	J-14	J-6	8.0	PVC	150.0	25	0.16	0.000
P-42	743	J-17.1	J-14	8.0	PVC	150.0	122	0.78	0.000
P-43	284	J-17	J-17.1	8.0	PVC	150.0	122	0.78	0.000
P-44	379	J-20.1	J-20	8.0	PVC	150.0	44	0.28	0.000
P-45	669	J-21	J-16	8.0	PVC	150.0	15	0.10	0.000
P-46	318	J-29	J-20.1	8.0	PVC	150.0	131	0.84	0.000
P-47	561	J-36	J-28	12.0	PVC	150.0	-282	0.80	0.000
P-48	203	R-2	J-31	12.0	PVC	150.0	375	1.06	0.000
P-49	462	J-19	J-31	16.0	PVC	150.0	-49	0.08	0.000
P-50	593	J-38	J-1	8.0	PVC	150.0	135	0.86	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	347	0.55	0.000

Max Hour
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	224	5,718.31	117
J-2	5,457.13	<Collection: 1 items>	92	5,718.31	113
J-3	5,459.18	<Collection: 1 items>	42	5,718.36	112
J-4	5,447.39	<Collection: 1 items>	42	5,718.37	117
J-5	5,451.86	<Collection: 2 items>	71	5,718.41	115
J-6	5,459.56	<Collection: 2 items>	71	5,718.43	112
J-7	5,444.79	<Collection: 0 items>	0	5,718.47	118
J-8	5,447.57	<Collection: 1 items>	29	5,718.53	117
J-9	5,452.89	<Collection: 1 items>	29	5,718.72	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.53	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.88	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.87	115
J-13	5,458.98	<Collection: 1 items>	61	5,718.37	112
J-14	5,462.25	<Collection: 1 items>	61	5,718.44	111
J-15	5,460.59	<Collection: 1 items>	61	5,719.00	112
J-16	5,456.09	<Collection: 1 items>	43	5,719.03	114
J-17	5,455.36	<Collection: 1 items>	43	5,719.11	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,718.93	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.86	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.86	112
J-20	5,456.30	<Collection: 1 items>	43	5,719.13	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.17	114
J-21	5,462.66	<Collection: 1 items>	43	5,719.04	111
J-22	5,456.00	<Collection: 1 items>	61	5,719.00	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.93	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.67	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.54	118
J-26	5,452.77	<Collection: 2 items>	234	5,719.46	115
J-27	5,456.68	<Collection: 0 items>	0	5,719.44	114
J-28	5,469.67	<Collection: 1 items>	66	5,719.36	108
J-29	5,461.26	<Collection: 1 items>	66	5,719.40	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.68	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.86	111
J-32	5,438.99	<Collection: 0 items>	0	5,719.97	122
J-33	5,451.47	<Collection: 3 items>	359	5,719.33	116
J-34	5,461.16	<Collection: 1 items>	255	5,719.14	112
J-35	5,462.39	<Collection: 1 items>	255	5,719.14	111
J-36	5,463.00	<Collection: 2 items>	260	5,719.16	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.20	118
J-38	5,443.00	<Collection: 0 items>	0	5,718.76	119

Max Hour
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	399	J-1	J-2	8.0	PVC	150.0	-15	0.09	0.000
P-2	235	J-3	J-2	8.0	PVC	150.0	107	0.68	0.000
P-3	547	J-4	J-3	8.0	PVC	150.0	26	0.17	0.000
P-4	393	J-5	J-4	8.0	PVC	150.0	68	0.44	0.000
P-5	554	J-5	J-6	8.0	PVC	150.0	-38	0.24	0.000
P-6	313	J-7	J-5	8.0	PVC	150.0	101	0.65	0.000
P-7	290	J-8	J-7	8.0	PVC	150.0	101	0.65	0.000
P-8	597	J-9	J-8	8.0	PVC	150.0	130	0.83	0.000
P-9	473	J-10	J-9	8.0	PVC	150.0	321	2.05	0.002
P-10	205	J-10	J-11	8.0	PVC	150.0	-321	2.05	0.002
P-11	324	J-11	J-12	16.0	PVC	150.0	200	0.32	0.000
P-12	456	J-12	J-18	16.0	PVC	150.0	200	0.32	0.000
P-13	499	J-3	J-13	8.0	PVC	150.0	-33	0.21	0.000
P-14	395	J-13	J-14	8.0	PVC	150.0	-94	0.60	0.000
P-15	658	J-15	J-22	8.0	PVC	150.0	-5	0.03	0.000
P-16	379	J-16	J-15	8.0	PVC	150.0	55	0.35	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-74	0.47	0.000
P-18	561	J-17	J-18	8.0	PVC	150.0	-280	1.79	0.001
P-19	531	J-18	J-19	16.0	PVC	150.0	-80	0.13	0.000
P-20	665	J-20	J-17	8.0	PVC	150.0	27	0.17	0.000
P-21	374	J-21	J-20.1	8.0	PVC	150.0	-133	0.85	0.000
P-22	373	J-22	J-21	8.0	PVC	150.0	-66	0.42	0.000
P-23	1,032	J-32	J-23	24.0	Steel	140.0	700	0.50	0.000
P-24	262	J-23	J-24	12.0	PVC	150.0	700	1.99	0.001
P-25	247	J-25	J-24	12.0	PVC	150.0	-491	1.39	0.001
P-26	154	J-26	J-25	12.0	PVC	150.0	-491	1.39	0.001
P-27	101	J-27	J-26	12.0	PVC	150.0	-257	0.73	0.000
P-28	534	J-28	J-27	12.0	PVC	150.0	-257	0.73	0.000
P-29	372	J-29	J-28	12.0	PVC	150.0	211	0.60	0.000
P-30	553	J-30	J-29	12.0	PVC	150.0	480	1.36	0.001
P-31	378	J-30	J-31	12.0	PVC	150.0	-480	1.36	0.000
P-32	199	R-3	J-32	24.0	Steel	140.0	1,429	1.01	0.000
P-33	595	J-32	J-33	12.0	PVC	150.0	728	2.07	0.001
P-34	598	J-33	J-34	12.0	PVC	150.0	369	1.05	0.000
P-35	202	J-34	J-35	12.0	PVC	150.0	114	0.32	0.000
P-36	384	J-35	J-36	12.0	PVC	150.0	-141	0.40	0.000
P-37	602	J-24	J-37	8.0	PVC	150.0	209	1.33	0.001
P-38	569	J-37	J-38	8.0	PVC	150.0	209	1.33	0.001
P-39	405	J-6	J-3	8.0	PVC	150.0	90	0.57	0.000
P-40	611	J-9	J-6	8.0	PVC	150.0	162	1.04	0.000
P-41	504	J-14	J-6	8.0	PVC	150.0	37	0.24	0.000
P-42	743	J-17.1	J-14	8.0	PVC	150.0	191	1.22	0.001
P-43	284	J-17	J-17.1	8.0	PVC	150.0	191	1.22	0.001
P-44	379	J-20.1	J-20	8.0	PVC	150.0	70	0.45	0.000
P-45	669	J-21	J-16	8.0	PVC	150.0	25	0.16	0.000
P-46	318	J-29	J-20.1	8.0	PVC	150.0	204	1.30	0.001
P-47	561	J-36	J-28	12.0	PVC	150.0	-401	1.14	0.000
P-48	203	R-2	J-31	12.0	PVC	150.0	561	1.59	0.001
P-49	462	J-19	J-31	16.0	PVC	150.0	-80	0.13	0.000
P-50	593	J-38	J-1	8.0	PVC	150.0	209	1.33	0.001
P-51	842	R-1	J-11	16.0	PVC	150.0	521	0.83	0.000

Fire Flow
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	141	5,719.24	118
J-2	5,457.13	<Collection: 1 items>	58	5,719.24	113
J-3	5,459.18	<Collection: 1 items>	27	5,719.26	113
J-4	5,447.39	<Collection: 1 items>	27	5,719.26	118
J-5	5,451.86	<Collection: 2 items>	48	5,719.28	116
J-6	5,459.56	<Collection: 2 items>	48	5,719.29	112
J-7	5,444.79	<Collection: 0 items>	0	5,719.31	119
J-8	5,447.57	<Collection: 1 items>	21	5,719.33	118
J-9	5,452.89	<Collection: 1 items>	21	5,719.42	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.78	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.94	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.94	115
J-13	5,458.98	<Collection: 1 items>	38	5,719.27	113
J-14	5,462.25	<Collection: 1 items>	38	5,719.29	111
J-15	5,460.59	<Collection: 1 items>	38	5,719.53	112
J-16	5,456.09	<Collection: 1 items>	30	5,719.54	114
J-17	5,455.36	<Collection: 1 items>	30	5,719.58	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.50	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.93	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.94	112
J-20	5,456.30	<Collection: 1 items>	30	5,719.59	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.60	114
J-21	5,462.66	<Collection: 1 items>	30	5,719.55	111
J-22	5,456.00	<Collection: 1 items>	38	5,719.53	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.97	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.84	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.78	118
J-26	5,452.77	<Collection: 2 items>	147	5,719.74	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.73	114
J-28	5,469.67	<Collection: 1 items>	49	5,719.69	108
J-29	5,461.26	<Collection: 1 items>	49	5,719.71	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.84	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.94	111
J-32	5,438.99	<Collection: 0 items>	0	5,719.99	122
J-33	5,451.47	<Collection: 3 items>	243	5,719.67	116
J-34	5,461.16	<Collection: 1 items>	175	5,719.58	112
J-35	5,462.39	<Collection: 1 items>	175	5,719.57	111
J-36	5,463.00	<Collection: 2 items>	186	5,719.58	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.64	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.44	120

Fire Flow
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	399	J-1	J-2	8.0	PVC	150.0	-6	0.04	0.000
P-2	235	J-3	J-2	8.0	PVC	150.0	64	0.41	0.000
P-3	547	J-4	J-3	8.0	PVC	150.0	15	0.09	0.000
P-4	393	J-5	J-4	8.0	PVC	150.0	41	0.26	0.000
P-5	554	J-5	J-6	8.0	PVC	150.0	-25	0.16	0.000
P-6	313	J-7	J-5	8.0	PVC	150.0	64	0.41	0.000
P-7	290	J-8	J-7	8.0	PVC	150.0	64	0.41	0.000
P-8	597	J-9	J-8	8.0	PVC	150.0	85	0.54	0.000
P-9	473	J-10	J-9	8.0	PVC	150.0	210	1.34	0.001
P-10	205	J-10	J-11	8.0	PVC	150.0	-210	1.34	0.001
P-11	324	J-11	J-12	16.0	PVC	150.0	137	0.22	0.000
P-12	456	J-12	J-18	16.0	PVC	150.0	137	0.22	0.000
P-13	499	J-3	J-13	8.0	PVC	150.0	-20	0.13	0.000
P-14	395	J-13	J-14	8.0	PVC	150.0	-59	0.37	0.000
P-15	658	J-15	J-22	8.0	PVC	150.0	-3	0.02	0.000
P-16	379	J-16	J-15	8.0	PVC	150.0	35	0.22	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-49	0.31	0.000
P-18	561	J-17	J-18	8.0	PVC	150.0	-186	1.19	0.001
P-19	531	J-18	J-19	16.0	PVC	150.0	-49	0.08	0.000
P-20	665	J-20	J-17	8.0	PVC	150.0	15	0.09	0.000
P-21	374	J-21	J-20.1	8.0	PVC	150.0	-87	0.55	0.000
P-22	373	J-22	J-21	8.0	PVC	150.0	-42	0.27	0.000
P-23	1,032	J-32	J-23	24.0	Steel	140.0	466	0.33	0.000
P-24	262	J-23	J-24	12.0	PVC	150.0	466	1.32	0.000
P-25	247	J-25	J-24	12.0	PVC	150.0	-331	0.94	0.000
P-26	154	J-26	J-25	12.0	PVC	150.0	-331	0.94	0.000
P-27	101	J-27	J-26	12.0	PVC	150.0	-185	0.52	0.000
P-28	534	J-28	J-27	12.0	PVC	150.0	-185	0.52	0.000
P-29	372	J-29	J-28	12.0	PVC	150.0	146	0.41	0.000
P-30	553	J-30	J-29	12.0	PVC	150.0	326	0.92	0.000
P-31	378	J-30	J-31	12.0	PVC	150.0	-326	0.92	0.000
P-32	199	R-3	J-32	24.0	Steel	140.0	963	0.68	0.000
P-33	595	J-32	J-33	12.0	PVC	150.0	497	1.41	0.001
P-34	598	J-33	J-34	12.0	PVC	150.0	254	0.72	0.000
P-35	202	J-34	J-35	12.0	PVC	150.0	79	0.22	0.000
P-36	384	J-35	J-36	12.0	PVC	150.0	-96	0.27	0.000
P-37	602	J-24	J-37	8.0	PVC	150.0	135	0.86	0.000
P-38	569	J-37	J-38	8.0	PVC	150.0	135	0.86	0.000
P-39	405	J-6	J-3	8.0	PVC	150.0	55	0.35	0.000
P-40	611	J-9	J-6	8.0	PVC	150.0	104	0.66	0.000
P-41	504	J-14	J-6	8.0	PVC	150.0	25	0.16	0.000
P-42	743	J-17.1	J-14	8.0	PVC	150.0	122	0.78	0.000
P-43	284	J-17	J-17.1	8.0	PVC	150.0	122	0.78	0.000
P-44	379	J-20.1	J-20	8.0	PVC	150.0	44	0.28	0.000
P-45	669	J-21	J-16	8.0	PVC	150.0	15	0.10	0.000
P-46	318	J-29	J-20.1	8.0	PVC	150.0	131	0.84	0.000
P-47	561	J-36	J-28	12.0	PVC	150.0	-282	0.80	0.000
P-48	203	R-2	J-31	12.0	PVC	150.0	375	1.06	0.000
P-49	462	J-19	J-31	16.0	PVC	150.0	-49	0.08	0.000
P-50	593	J-38	J-1	8.0	PVC	150.0	135	0.86	0.000
P-51	842	R-1	J-11	16.0	PVC	150.0	347	0.55	0.000

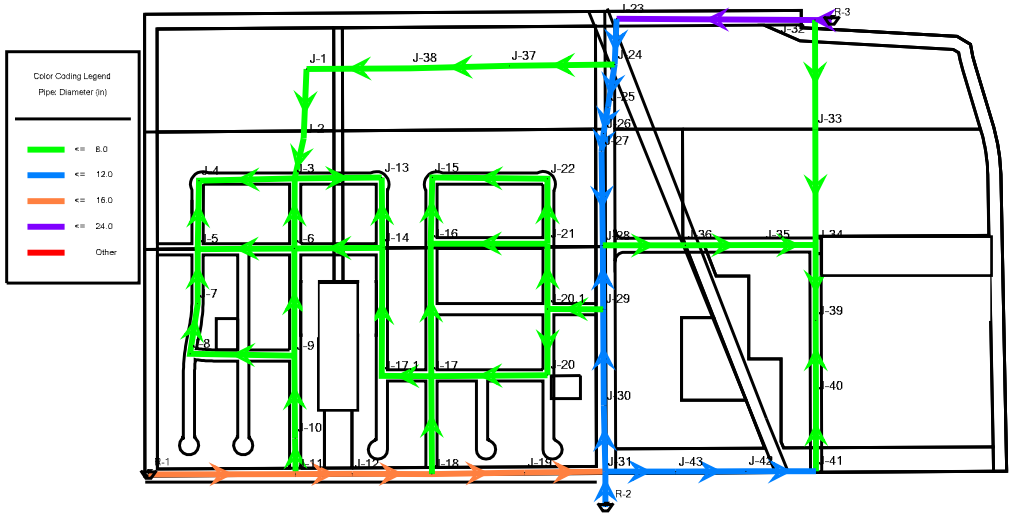
Fire Flow Node FlexTable: Fire Flow Report

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	111	107	J-28	107	J-28
J-25	2,500	2,500	3,500	20	116	107	J-28	107	J-28
J-24	2,500	2,500	3,500	20	118	107	J-28	107	J-28
J-34	2,500	2,675	3,675	20	108	107	J-28	107	J-28
J-28	2,500	2,549	3,549	20	106	109	J-36	109	J-36
J-16	2,500	2,530	3,530	20	95	95	J-15	95	J-15
J-6	2,500	2,548	3,548	20	97	99	J-14	99	J-14
J-3	2,500	2,527	3,527	20	97	99	J-2	99	J-2
J-26	2,500	2,647	3,647	20	113	107	J-28	107	J-28
J-2	2,500	2,558	3,558	20	92	99	J-3	99	J-3
J-10	1,500	1,500	3,500	20	107	107	J-14	107	J-14
J-33	2,500	2,743	3,743	20	113	107	J-28	107	J-28
J-12	1,500	1,500	3,500	20	114	108	J-28	108	J-28
J-29	2,500	2,549	3,549	20	110	107	J-28	107	J-28
J-30	2,500	2,500	3,500	20	109	107	J-28	107	J-28
J-19	1,500	1,500	3,500	20	111	108	J-28	108	J-28
J-9	1,500	1,521	3,521	20	101	101	J-6	101	J-6
J-8	1,500	1,521	3,521	20	93	99	J-7	99	J-7
J-7	1,500	1,500	3,500	20	95	97	J-8	97	J-8
J-5	2,500	2,548	3,548	20	96	99	J-6	99	J-6
J-21	2,500	2,530	3,530	20	94	97	J-15	97	J-15
J-20	1,500	1,530	3,530	20	99	105	J-21	105	J-21
J-17	1,500	1,530	3,530	20	107	106	J-21	106	J-21
J-1	2,500	2,641	3,641	20	92	97	J-2	97	J-2
J-32	2,500	2,500	3,500	20	121	108	J-28	108	J-28
J-23	2,500	2,500	3,500	20	121	108	J-28	108	J-28
J-15	2,500	2,538	3,538	20	86	95	J-22	95	J-22
J-22	2,500	2,538	3,538	20	88	93	J-15	93	J-15
J-4	2,500	2,527	3,527	20	94	99	J-3	99	J-3
J-13	2,500	2,538	3,538	20	91	97	J-14	97	J-14
J-14	2,500	2,538	3,538	20	95	98	J-13	98	J-13
J-11	1,500	1,500	3,500	20	116	108	J-28	108	J-28

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-18	1,500	1,500	3,500	20	114	108	J-28	108	J-28
J-31	2,500	2,500	3,500	20	110	108	J-28	108	J-28
J-20.1	1,500	1,500	3,500	20	105	103	J-21	103	J-21
J-17.1	1,500	1,500	3,500	20	99	104	J-14	104	J-14
J-35	2,500	2,675	3,675	20	107	107	J-28	107	J-28
J-36	2,500	2,686	3,686	20	107	107	J-28	107	J-28
J-37	2,500	2,500	3,500	20	99	104	J-38	104	J-38
J-38	2,500	2,500	3,500	20	94	100	J-1	100	J-1

Green Valley Master Plan Amendment 2 - Option 2



Average Daily
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	50	5,719.89	118
J-2	5,457.13	<Collection: 1 items>	21	5,719.89	114
J-3	5,459.18	<Collection: 1 items>	10	5,719.89	113
J-4	5,447.39	<Collection: 1 items>	10	5,719.89	118
J-5	5,451.86	<Collection: 2 items>	17	5,719.89	116
J-6	5,459.56	<Collection: 2 items>	17	5,719.89	113
J-7	5,444.79	<Collection: 0 items>	0	5,719.90	119
J-8	5,447.57	<Collection: 1 items>	8	5,719.90	118
J-9	5,452.89	<Collection: 1 items>	8	5,719.91	116
J-10	5,453.34	<Collection: 0 items>	0	5,719.96	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.99	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.98	115
J-13	5,458.98	<Collection: 1 items>	14	5,719.89	113
J-14	5,462.25	<Collection: 1 items>	14	5,719.89	111
J-15	5,460.59	<Collection: 1 items>	14	5,719.93	112
J-16	5,456.09	<Collection: 1 items>	11	5,719.93	114
J-17	5,455.36	<Collection: 1 items>	11	5,719.94	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.93	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.98	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.98	112
J-20	5,456.30	<Collection: 1 items>	11	5,719.94	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.94	114
J-21	5,462.66	<Collection: 1 items>	11	5,719.93	111
J-22	5,456.00	<Collection: 1 items>	14	5,719.93	114
J-23	5,440.00	<Collection: 0 items>	0	5,720.00	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.98	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.97	118
J-26	5,452.77	<Collection: 2 items>	52	5,719.97	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.97	114
J-28	5,469.67	<Collection: 0 items>	0	5,719.96	108
J-29	5,461.26	<Collection: 0 items>	0	5,719.96	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.97	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.98	111
J-32	5,438.99	<Collection: 0 items>	0	5,720.00	122
J-33	5,451.47	<Collection: 2 items>	55	5,719.88	116
J-34	5,461.16	<Collection: 1 items>	47	5,719.86	112
J-35	5,462.39	<Collection: 1 items>	47	5,719.86	111
J-36	5,463.00	<Collection: 1 items>	23	5,719.89	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.95	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.92	120
J-39	5,466.71	<Collection: 1 items>	47	5,719.86	110
J-40	5,472.04	<Collection: 1 items>	47	5,719.87	107
J-41	5,475.47	<Collection: 1 items>	23	5,719.93	106
J-42	5,469.92	<Collection: 1 items>	23	5,719.95	108
J-43	5,465.00	<Collection: 0 items>	0	5,719.96	110

Average Daily
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	247	J-25	J-24	12.0	PVC	150.0	-106	0.30	0.000
P-2	541	J-28	J-27	12.0	PVC	150.0	-54	0.15	0.000
P-3	401	J-6	J-3	8.0	PVC	150.0	19	0.12	0.000
P-4	101	J-27	J-26	12.0	PVC	150.0	-54	0.15	0.000
P-5	154	J-26	J-25	12.0	PVC	150.0	-106	0.30	0.000
P-6	235	J-3	J-2	8.0	PVC	150.0	22	0.14	0.000
P-7	664	J-33	J-34	8.0	PVC	150.0	42	0.27	0.000
P-8	365	J-29	J-28	12.0	PVC	150.0	31	0.09	0.000
P-9	553	J-30	J-29	12.0	PVC	150.0	84	0.24	0.000
P-10	473	J-10	J-9	8.0	PVC	150.0	73	0.47	0.000
P-11	615	J-9	J-6	8.0	PVC	150.0	36	0.23	0.000
P-12	597	J-9	J-8	8.0	PVC	150.0	30	0.19	0.000
P-13	290	J-8	J-7	8.0	PVC	150.0	22	0.14	0.000
P-14	314	J-7	J-5	8.0	PVC	150.0	22	0.14	0.000
P-15	554	J-5	J-6	8.0	PVC	150.0	-9	0.06	0.000
P-16	669	J-21	J-16	8.0	PVC	150.0	7	0.04	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-16	0.10	0.000
P-18	665	J-20	J-17	8.0	PVC	150.0	10	0.06	0.000
P-19	399	J-1	J-2	8.0	PVC	150.0	-1	0.01	0.000
P-20	95	R-3	J-32	24.0	Steel	140.0	253	0.18	0.000
P-21	1,136	J-32	J-23	24.0	Steel	140.0	156	0.11	0.000
P-22	262	J-23	J-24	12.0	PVC	150.0	156	0.44	0.000
P-23	625	J-32	J-33	8.0	PVC	150.0	97	0.62	0.000
P-24	379	J-16	J-15	8.0	PVC	150.0	12	0.08	0.000
P-25	658	J-15	J-22	8.0	PVC	150.0	-2	0.01	0.000
P-26	373	J-22	J-21	8.0	PVC	150.0	-15	0.10	0.000
P-27	392	J-5	J-4	8.0	PVC	150.0	14	0.09	0.000
P-28	547	J-4	J-3	8.0	PVC	150.0	5	0.03	0.000
P-29	499	J-3	J-13	8.0	PVC	150.0	-7	0.05	0.000
P-30	504	J-14	J-6	8.0	PVC	150.0	10	0.06	0.000
P-31	404	J-13	J-14	8.0	PVC	150.0	-21	0.13	0.000
P-32	205	J-10	J-11	8.0	PVC	150.0	-73	0.47	0.000
P-33	324	J-11	J-12	16.0	PVC	150.0	87	0.14	0.000
P-34	842	R-1	J-11	16.0	PVC	150.0	160	0.26	0.000
P-35	456	J-12	J-18	16.0	PVC	150.0	87	0.14	0.000
P-36	531	J-18	J-19	16.0	PVC	150.0	26	0.04	0.000
P-37	561	J-17	J-18	8.0	PVC	150.0	-61	0.39	0.000
P-38	462	J-19	J-31	16.0	PVC	150.0	26	0.04	0.000
P-39	378	J-30	J-31	12.0	PVC	150.0	-84	0.24	0.000
P-40	203	R-2	J-31	12.0	PVC	150.0	189	0.54	0.000
P-41	374	J-21	J-20.1	8.0	PVC	150.0	-33	0.21	0.000
P-42	379	J-20.1	J-20	8.0	PVC	150.0	20	0.13	0.000
P-43	318	J-29	J-20.1	8.0	PVC	150.0	53	0.34	0.000
P-44	284	J-17	J-17.1	8.0	PVC	150.0	44	0.28	0.000
P-45	734	J-17.1	J-14	8.0	PVC	150.0	44	0.28	0.000
P-46	300	J-34	J-35	8.0	PVC	150.0	-14	0.09	0.000
P-47	445	J-35	J-36	8.0	PVC	150.0	-61	0.39	0.000
P-48	473	J-36	J-28	8.0	PVC	150.0	-85	0.54	0.000
P-49	602	J-24	J-37	8.0	PVC	150.0	49	0.31	0.000
P-50	569	J-37	J-38	8.0	PVC	150.0	49	0.31	0.000
P-51	593	J-38	J-1	8.0	PVC	150.0	49	0.31	0.000
P-52	432	J-34	J-39	8.0	PVC	150.0	9	0.06	0.000
P-53	432	J-39	J-40	8.0	PVC	150.0	-38	0.24	0.000
P-54	432	J-40	J-41	8.0	PVC	150.0	-85	0.54	0.000
P-55	402	J-41	J-42	12.0	PVC	150.0	-108	0.31	0.000
P-56	402	J-42	J-43	12.0	PVC	150.0	-131	0.37	0.000
P-57	402	J-31	J-43	12.0	PVC	150.0	131	0.37	0.000

Max Daily
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	141	5,719.24	118
J-2	5,457.13	<Collection: 1 items>	58	5,719.24	113
J-3	5,459.18	<Collection: 1 items>	27	5,719.26	113
J-4	5,447.39	<Collection: 1 items>	27	5,719.26	118
J-5	5,451.86	<Collection: 2 items>	48	5,719.27	116
J-6	5,459.56	<Collection: 2 items>	48	5,719.28	112
J-7	5,444.79	<Collection: 0 items>	0	5,719.30	119
J-8	5,447.57	<Collection: 1 items>	21	5,719.32	118
J-9	5,452.89	<Collection: 1 items>	21	5,719.41	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.76	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.91	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.90	115
J-13	5,458.98	<Collection: 1 items>	38	5,719.26	113
J-14	5,462.25	<Collection: 1 items>	38	5,719.29	111
J-15	5,460.59	<Collection: 1 items>	38	5,719.54	112
J-16	5,456.09	<Collection: 1 items>	30	5,719.55	114
J-17	5,455.36	<Collection: 1 items>	30	5,719.59	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.50	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.88	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.88	112
J-20	5,456.30	<Collection: 1 items>	30	5,719.60	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.62	114
J-21	5,462.66	<Collection: 1 items>	30	5,719.56	111
J-22	5,456.00	<Collection: 1 items>	38	5,719.54	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.98	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.87	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.82	118
J-26	5,452.77	<Collection: 2 items>	147	5,719.79	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.78	114
J-28	5,469.67	<Collection: 0 items>	0	5,719.75	108
J-29	5,461.26	<Collection: 0 items>	0	5,719.75	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.83	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.88	111
J-32	5,438.99	<Collection: 0 items>	0	5,720.00	122
J-33	5,451.47	<Collection: 2 items>	155	5,719.21	116
J-34	5,461.16	<Collection: 1 items>	132	5,719.04	112
J-35	5,462.39	<Collection: 1 items>	132	5,719.05	111
J-36	5,463.00	<Collection: 1 items>	65	5,719.29	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.65	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.45	120
J-39	5,466.71	<Collection: 1 items>	132	5,719.03	109
J-40	5,472.04	<Collection: 1 items>	132	5,719.12	107
J-41	5,475.47	<Collection: 1 items>	65	5,719.55	106
J-42	5,469.92	<Collection: 1 items>	65	5,719.63	108
J-43	5,465.00	<Collection: 0 items>	0	5,719.76	110

Max Daily
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	247	J-25	J-24	12.0	PVC	150.0	-298	0.85	0.000
P-2	541	J-28	J-27	12.0	PVC	150.0	-151	0.43	0.000
P-3	401	J-6	J-3	8.0	PVC	150.0	54	0.35	0.000
P-4	101	J-27	J-26	12.0	PVC	150.0	-151	0.43	0.000
P-5	154	J-26	J-25	12.0	PVC	150.0	-298	0.85	0.000
P-6	235	J-3	J-2	8.0	PVC	150.0	61	0.39	0.000
P-7	664	J-33	J-34	8.0	PVC	150.0	117	0.75	0.000
P-8	365	J-29	J-28	12.0	PVC	150.0	86	0.24	0.000
P-9	553	J-30	J-29	12.0	PVC	150.0	234	0.66	0.000
P-10	473	J-10	J-9	8.0	PVC	150.0	205	1.31	0.001
P-11	615	J-9	J-6	8.0	PVC	150.0	101	0.64	0.000
P-12	597	J-9	J-8	8.0	PVC	150.0	83	0.53	0.000
P-13	290	J-8	J-7	8.0	PVC	150.0	62	0.39	0.000
P-14	314	J-7	J-5	8.0	PVC	150.0	62	0.39	0.000
P-15	554	J-5	J-6	8.0	PVC	150.0	-26	0.16	0.000
P-16	669	J-21	J-16	8.0	PVC	150.0	19	0.12	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-44	0.28	0.000
P-18	665	J-20	J-17	8.0	PVC	150.0	27	0.17	0.000
P-19	399	J-1	J-2	8.0	PVC	150.0	-3	0.02	0.000
P-20	95	R-3	J-32	24.0	Steel	140.0	708	0.50	0.000
P-21	1,136	J-32	J-23	24.0	Steel	140.0	436	0.31	0.000
P-22	262	J-23	J-24	12.0	PVC	150.0	436	1.24	0.000
P-23	625	J-32	J-33	8.0	PVC	150.0	272	1.73	0.001
P-24	379	J-16	J-15	8.0	PVC	150.0	33	0.21	0.000
P-25	658	J-15	J-22	8.0	PVC	150.0	-5	0.03	0.000
P-26	373	J-22	J-21	8.0	PVC	150.0	-43	0.28	0.000
P-27	392	J-5	J-4	8.0	PVC	150.0	40	0.25	0.000
P-28	547	J-4	J-3	8.0	PVC	150.0	13	0.08	0.000
P-29	499	J-3	J-13	8.0	PVC	150.0	-20	0.13	0.000
P-30	504	J-14	J-6	8.0	PVC	150.0	27	0.17	0.000
P-31	404	J-13	J-14	8.0	PVC	150.0	-58	0.37	0.000
P-32	205	J-10	J-11	8.0	PVC	150.0	-205	1.31	0.001
P-33	324	J-11	J-12	16.0	PVC	150.0	243	0.39	0.000
P-34	842	R-1	J-11	16.0	PVC	150.0	448	0.71	0.000
P-35	456	J-12	J-18	16.0	PVC	150.0	243	0.39	0.000
P-36	531	J-18	J-19	16.0	PVC	150.0	73	0.12	0.000
P-37	561	J-17	J-18	8.0	PVC	150.0	-170	1.08	0.001
P-38	462	J-19	J-31	16.0	PVC	150.0	73	0.12	0.000
P-39	378	J-30	J-31	12.0	PVC	150.0	-234	0.66	0.000
P-40	203	R-2	J-31	12.0	PVC	150.0	530	1.50	0.001
P-41	374	J-21	J-20.1	8.0	PVC	150.0	-92	0.59	0.000
P-42	379	J-20.1	J-20	8.0	PVC	150.0	57	0.36	0.000
P-43	318	J-29	J-20.1	8.0	PVC	150.0	149	0.95	0.000
P-44	284	J-17	J-17.1	8.0	PVC	150.0	123	0.79	0.000
P-45	734	J-17.1	J-14	8.0	PVC	150.0	123	0.79	0.000
P-46	300	J-34	J-35	8.0	PVC	150.0	-40	0.26	0.000
P-47	445	J-35	J-36	8.0	PVC	150.0	-172	1.10	0.001
P-48	473	J-36	J-28	8.0	PVC	150.0	-237	1.51	0.001
P-49	602	J-24	J-37	8.0	PVC	150.0	138	0.88	0.000
P-50	569	J-37	J-38	8.0	PVC	150.0	138	0.88	0.000
P-51	593	J-38	J-1	8.0	PVC	150.0	138	0.88	0.000
P-52	432	J-34	J-39	8.0	PVC	150.0	26	0.16	0.000
P-53	432	J-39	J-40	8.0	PVC	150.0	-106	0.68	0.000
P-54	432	J-40	J-41	8.0	PVC	150.0	-238	1.52	0.001
P-55	402	J-41	J-42	12.0	PVC	150.0	-303	0.86	0.000
P-56	402	J-42	J-43	12.0	PVC	150.0	-368	1.04	0.000
P-57	402	J-31	J-43	12.0	PVC	150.0	368	1.04	0.000

Max Hour
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	224	5,718.30	117
J-2	5,457.13	<Collection: 1 items>	92	5,718.30	113
J-3	5,459.18	<Collection: 1 items>	42	5,718.35	112
J-4	5,447.39	<Collection: 1 items>	42	5,718.36	117
J-5	5,451.86	<Collection: 2 items>	71	5,718.39	115
J-6	5,459.56	<Collection: 2 items>	71	5,718.41	112
J-7	5,444.79	<Collection: 0 items>	0	5,718.45	118
J-8	5,447.57	<Collection: 1 items>	29	5,718.51	117
J-9	5,452.89	<Collection: 1 items>	29	5,718.69	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.47	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.81	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.79	115
J-13	5,458.98	<Collection: 1 items>	61	5,718.36	112
J-14	5,462.25	<Collection: 1 items>	61	5,718.43	111
J-15	5,460.59	<Collection: 1 items>	61	5,719.02	112
J-16	5,456.09	<Collection: 1 items>	43	5,719.04	114
J-17	5,455.36	<Collection: 1 items>	43	5,719.11	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,718.92	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.75	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.75	112
J-20	5,456.30	<Collection: 1 items>	43	5,719.14	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.20	114
J-21	5,462.66	<Collection: 1 items>	43	5,719.06	111
J-22	5,456.00	<Collection: 1 items>	61	5,719.02	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.95	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.72	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.61	118
J-26	5,452.77	<Collection: 2 items>	234	5,719.54	115
J-27	5,456.68	<Collection: 0 items>	0	5,719.53	114
J-28	5,469.67	<Collection: 0 items>	0	5,719.47	108
J-29	5,461.26	<Collection: 0 items>	0	5,719.48	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.64	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.75	111
J-32	5,438.99	<Collection: 0 items>	0	5,719.99	122
J-33	5,451.47	<Collection: 2 items>	232	5,718.40	115
J-34	5,461.16	<Collection: 1 items>	191	5,718.07	111
J-35	5,462.39	<Collection: 1 items>	191	5,718.09	111
J-36	5,463.00	<Collection: 1 items>	88	5,718.57	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.23	119
J-38	5,443.00	<Collection: 0 items>	0	5,718.78	119
J-39	5,466.71	<Collection: 1 items>	191	5,718.05	109
J-40	5,472.04	<Collection: 1 items>	191	5,718.25	107
J-41	5,475.47	<Collection: 1 items>	88	5,719.11	105
J-42	5,469.92	<Collection: 1 items>	88	5,719.28	108
J-43	5,465.00	<Collection: 0 items>	0	5,719.51	110

Max Hour
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	247	J-25	J-24	12.0	PVC	150.0	-447	1.27	0.000
P-2	541	J-28	J-27	12.0	PVC	150.0	-213	0.60	0.000
P-3	401	J-6	J-3	8.0	PVC	150.0	88	0.56	0.000
P-4	101	J-27	J-26	12.0	PVC	150.0	-213	0.60	0.000
P-5	154	J-26	J-25	12.0	PVC	150.0	-447	1.27	0.000
P-6	235	J-3	J-2	8.0	PVC	150.0	102	0.65	0.000
P-7	664	J-33	J-34	8.0	PVC	150.0	166	1.06	0.001
P-8	365	J-29	J-28	12.0	PVC	150.0	127	0.36	0.000
P-9	553	J-30	J-29	12.0	PVC	150.0	354	1.00	0.000
P-10	473	J-10	J-9	8.0	PVC	150.0	314	2.01	0.002
P-11	615	J-9	J-6	8.0	PVC	150.0	158	1.01	0.000
P-12	597	J-9	J-8	8.0	PVC	150.0	128	0.81	0.000
P-13	290	J-8	J-7	8.0	PVC	150.0	99	0.63	0.000
P-14	314	J-7	J-5	8.0	PVC	150.0	99	0.63	0.000
P-15	554	J-5	J-6	8.0	PVC	150.0	-39	0.25	0.000
P-16	669	J-21	J-16	8.0	PVC	150.0	30	0.19	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-66	0.42	0.000
P-18	665	J-20	J-17	8.0	PVC	150.0	44	0.28	0.000
P-19	399	J-1	J-2	8.0	PVC	150.0	-10	0.07	0.000
P-20	95	R-3	J-32	24.0	Steel	140.0	1,059	0.75	0.000
P-21	1,136	J-32	J-23	24.0	Steel	140.0	661	0.47	0.000
P-22	262	J-23	J-24	12.0	PVC	150.0	661	1.87	0.001
P-23	625	J-32	J-33	8.0	PVC	150.0	398	2.54	0.003
P-24	379	J-16	J-15	8.0	PVC	150.0	53	0.34	0.000
P-25	658	J-15	J-22	8.0	PVC	150.0	-8	0.05	0.000
P-26	373	J-22	J-21	8.0	PVC	150.0	-68	0.44	0.000
P-27	392	J-5	J-4	8.0	PVC	150.0	66	0.42	0.000
P-28	547	J-4	J-3	8.0	PVC	150.0	24	0.16	0.000
P-29	499	J-3	J-13	8.0	PVC	150.0	-32	0.20	0.000
P-30	504	J-14	J-6	8.0	PVC	150.0	40	0.26	0.000
P-31	404	J-13	J-14	8.0	PVC	150.0	-93	0.59	0.000
P-32	205	J-10	J-11	8.0	PVC	150.0	-314	2.01	0.002
P-33	324	J-11	J-12	16.0	PVC	150.0	354	0.56	0.000
P-34	842	R-1	J-11	16.0	PVC	150.0	668	1.07	0.000
P-35	456	J-12	J-18	16.0	PVC	150.0	354	0.56	0.000
P-36	531	J-18	J-19	16.0	PVC	150.0	95	0.15	0.000
P-37	561	J-17	J-18	8.0	PVC	150.0	-259	1.65	0.001
P-38	462	J-19	J-31	16.0	PVC	150.0	95	0.15	0.000
P-39	378	J-30	J-31	12.0	PVC	150.0	-354	1.00	0.000
P-40	203	R-2	J-31	12.0	PVC	150.0	784	2.22	0.001
P-41	374	J-21	J-20.1	8.0	PVC	150.0	-141	0.90	0.000
P-42	379	J-20.1	J-20	8.0	PVC	150.0	86	0.55	0.000
P-43	318	J-29	J-20.1	8.0	PVC	150.0	227	1.45	0.001
P-44	284	J-17	J-17.1	8.0	PVC	150.0	194	1.24	0.001
P-45	734	J-17.1	J-14	8.0	PVC	150.0	194	1.24	0.001
P-46	300	J-34	J-35	8.0	PVC	150.0	-60	0.38	0.000
P-47	445	J-35	J-36	8.0	PVC	150.0	-251	1.60	0.001
P-48	473	J-36	J-28	8.0	PVC	150.0	-340	2.17	0.002
P-49	602	J-24	J-37	8.0	PVC	150.0	213	1.36	0.001
P-50	569	J-37	J-38	8.0	PVC	150.0	213	1.36	0.001
P-51	593	J-38	J-1	8.0	PVC	150.0	213	1.36	0.001
P-52	432	J-34	J-39	8.0	PVC	150.0	35	0.22	0.000
P-53	432	J-39	J-40	8.0	PVC	150.0	-157	1.00	0.000
P-54	432	J-40	J-41	8.0	PVC	150.0	-348	2.22	0.002
P-55	402	J-41	J-42	12.0	PVC	150.0	-436	1.24	0.000
P-56	402	J-42	J-43	12.0	PVC	150.0	-525	1.49	0.001
P-57	402	J-31	J-43	12.0	PVC	150.0	525	1.49	0.001

Fire Flow
FlexTable: Junction Table

Label	Elevation (ft)	Demand Collection	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
J-1	5,447.29	<Collection: 2 items>	141	5,719.24	118
J-2	5,457.13	<Collection: 1 items>	58	5,719.24	113
J-3	5,459.18	<Collection: 1 items>	27	5,719.26	113
J-4	5,447.39	<Collection: 1 items>	27	5,719.26	118
J-5	5,451.86	<Collection: 2 items>	48	5,719.27	116
J-6	5,459.56	<Collection: 2 items>	48	5,719.28	112
J-7	5,444.79	<Collection: 0 items>	0	5,719.30	119
J-8	5,447.57	<Collection: 1 items>	21	5,719.32	118
J-9	5,452.89	<Collection: 1 items>	21	5,719.41	115
J-10	5,453.34	<Collection: 0 items>	0	5,719.76	115
J-11	5,449.76	<Collection: 0 items>	0	5,719.91	117
J-12	5,453.35	<Collection: 0 items>	0	5,719.90	115
J-13	5,458.98	<Collection: 1 items>	38	5,719.26	113
J-14	5,462.25	<Collection: 1 items>	38	5,719.29	111
J-15	5,460.59	<Collection: 1 items>	38	5,719.54	112
J-16	5,456.09	<Collection: 1 items>	30	5,719.55	114
J-17	5,455.36	<Collection: 1 items>	30	5,719.59	114
J-17.1	5,458.26	<Collection: 0 items>	0	5,719.50	113
J-18	5,454.37	<Collection: 0 items>	0	5,719.88	115
J-19	5,461.92	<Collection: 0 items>	0	5,719.88	112
J-20	5,456.30	<Collection: 1 items>	30	5,719.60	114
J-20.1	5,456.39	<Collection: 0 items>	0	5,719.62	114
J-21	5,462.66	<Collection: 1 items>	30	5,719.56	111
J-22	5,456.00	<Collection: 1 items>	38	5,719.54	114
J-23	5,440.00	<Collection: 0 items>	0	5,719.98	121
J-24	5,443.96	<Collection: 0 items>	0	5,719.87	119
J-25	5,446.70	<Collection: 0 items>	0	5,719.82	118
J-26	5,452.77	<Collection: 2 items>	147	5,719.79	116
J-27	5,456.68	<Collection: 0 items>	0	5,719.78	114
J-28	5,469.67	<Collection: 0 items>	0	5,719.75	108
J-29	5,461.26	<Collection: 0 items>	0	5,719.75	112
J-30	5,464.15	<Collection: 0 items>	0	5,719.83	111
J-31	5,463.00	<Collection: 0 items>	0	5,719.88	111
J-32	5,438.99	<Collection: 0 items>	0	5,720.00	122
J-33	5,451.47	<Collection: 2 items>	155	5,719.21	116
J-34	5,461.16	<Collection: 1 items>	132	5,719.04	112
J-35	5,462.39	<Collection: 1 items>	132	5,719.05	111
J-36	5,463.00	<Collection: 1 items>	65	5,719.29	111
J-37	5,445.34	<Collection: 0 items>	0	5,719.65	119
J-38	5,443.00	<Collection: 0 items>	0	5,719.45	120
J-39	5,466.71	<Collection: 1 items>	132	5,719.03	109
J-40	5,472.04	<Collection: 1 items>	132	5,719.12	107
J-41	5,475.47	<Collection: 1 items>	65	5,719.55	106
J-42	5,469.92	<Collection: 1 items>	65	5,719.63	108
J-43	5,465.00	<Collection: 0 items>	0	5,719.76	110

Fire Flow
FlexTable: Pipe Table

Label	Length (Scaled) (ft)	Start Node	Stop Node	Diameter (in)	Material	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
P-1	247	J-25	J-24	12.0	PVC	150.0	-298	0.85	0.000
P-2	541	J-28	J-27	12.0	PVC	150.0	-151	0.43	0.000
P-3	401	J-6	J-3	8.0	PVC	150.0	54	0.35	0.000
P-4	101	J-27	J-26	12.0	PVC	150.0	-151	0.43	0.000
P-5	154	J-26	J-25	12.0	PVC	150.0	-298	0.85	0.000
P-6	235	J-3	J-2	8.0	PVC	150.0	61	0.39	0.000
P-7	664	J-33	J-34	8.0	PVC	150.0	117	0.75	0.000
P-8	365	J-29	J-28	12.0	PVC	150.0	86	0.24	0.000
P-9	553	J-30	J-29	12.0	PVC	150.0	234	0.66	0.000
P-10	473	J-10	J-9	8.0	PVC	150.0	205	1.31	0.001
P-11	615	J-9	J-6	8.0	PVC	150.0	101	0.64	0.000
P-12	597	J-9	J-8	8.0	PVC	150.0	83	0.53	0.000
P-13	290	J-8	J-7	8.0	PVC	150.0	62	0.39	0.000
P-14	314	J-7	J-5	8.0	PVC	150.0	62	0.39	0.000
P-15	554	J-5	J-6	8.0	PVC	150.0	-26	0.16	0.000
P-16	669	J-21	J-16	8.0	PVC	150.0	19	0.12	0.000
P-17	760	J-16	J-17	8.0	PVC	150.0	-44	0.28	0.000
P-18	665	J-20	J-17	8.0	PVC	150.0	27	0.17	0.000
P-19	399	J-1	J-2	8.0	PVC	150.0	-3	0.02	0.000
P-20	95	R-3	J-32	24.0	Steel	140.0	708	0.50	0.000
P-21	1,136	J-32	J-23	24.0	Steel	140.0	436	0.31	0.000
P-22	262	J-23	J-24	12.0	PVC	150.0	436	1.24	0.000
P-23	625	J-32	J-33	8.0	PVC	150.0	272	1.73	0.001
P-24	379	J-16	J-15	8.0	PVC	150.0	33	0.21	0.000
P-25	658	J-15	J-22	8.0	PVC	150.0	-5	0.03	0.000
P-26	373	J-22	J-21	8.0	PVC	150.0	-43	0.28	0.000
P-27	392	J-5	J-4	8.0	PVC	150.0	40	0.25	0.000
P-28	547	J-4	J-3	8.0	PVC	150.0	13	0.08	0.000
P-29	499	J-3	J-13	8.0	PVC	150.0	-20	0.13	0.000
P-30	504	J-14	J-6	8.0	PVC	150.0	27	0.17	0.000
P-31	404	J-13	J-14	8.0	PVC	150.0	-58	0.37	0.000
P-32	205	J-10	J-11	8.0	PVC	150.0	-205	1.31	0.001
P-33	324	J-11	J-12	16.0	PVC	150.0	243	0.39	0.000
P-34	842	R-1	J-11	16.0	PVC	150.0	448	0.71	0.000
P-35	456	J-12	J-18	16.0	PVC	150.0	243	0.39	0.000
P-36	531	J-18	J-19	16.0	PVC	150.0	73	0.12	0.000
P-37	561	J-17	J-18	8.0	PVC	150.0	-170	1.08	0.001
P-38	462	J-19	J-31	16.0	PVC	150.0	73	0.12	0.000
P-39	378	J-30	J-31	12.0	PVC	150.0	-234	0.66	0.000
P-40	203	R-2	J-31	12.0	PVC	150.0	530	1.50	0.001
P-41	374	J-21	J-20.1	8.0	PVC	150.0	-92	0.59	0.000
P-42	379	J-20.1	J-20	8.0	PVC	150.0	57	0.36	0.000
P-43	318	J-29	J-20.1	8.0	PVC	150.0	149	0.95	0.000
P-44	284	J-17	J-17.1	8.0	PVC	150.0	123	0.79	0.000
P-45	734	J-17.1	J-14	8.0	PVC	150.0	123	0.79	0.000
P-46	300	J-34	J-35	8.0	PVC	150.0	-40	0.26	0.000
P-47	445	J-35	J-36	8.0	PVC	150.0	-172	1.10	0.001
P-48	473	J-36	J-28	8.0	PVC	150.0	-237	1.51	0.001
P-49	602	J-24	J-37	8.0	PVC	150.0	138	0.88	0.000
P-50	569	J-37	J-38	8.0	PVC	150.0	138	0.88	0.000
P-51	593	J-38	J-1	8.0	PVC	150.0	138	0.88	0.000
P-52	432	J-34	J-39	8.0	PVC	150.0	26	0.16	0.000
P-53	432	J-39	J-40	8.0	PVC	150.0	-106	0.68	0.000
P-54	432	J-40	J-41	8.0	PVC	150.0	-238	1.52	0.001
P-55	402	J-41	J-42	12.0	PVC	150.0	-303	0.86	0.000
P-56	402	J-42	J-43	12.0	PVC	150.0	-368	1.04	0.000
P-57	402	J-31	J-43	12.0	PVC	150.0	368	1.04	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-1	2,500	2,641	3,641	20	92	97	J-2	97	J-2
J-2	2,500	2,558	3,558	20	92	99	J-3	99	J-3
J-3	1,500	1,527	3,527	20	97	99	J-2	99	J-2
J-4	1,500	1,527	3,527	20	94	99	J-3	99	J-3
J-5	1,500	1,548	3,548	20	96	99	J-6	99	J-6
J-6	1,500	1,548	3,548	20	97	99	J-14	99	J-14
J-7	1,500	1,500	3,500	20	95	97	J-8	97	J-8
J-8	1,500	1,521	3,521	20	93	99	J-7	99	J-7
J-9	1,500	1,521	3,521	20	101	101	J-6	101	J-6
J-10	1,500	1,500	3,500	20	107	105	J-41	105	J-41
J-11	1,500	1,500	3,500	20	116	105	J-41	105	J-41
J-12	1,500	1,500	3,500	20	114	105	J-41	105	J-41
J-13	1,500	1,538	3,538	20	91	97	J-14	97	J-14
J-14	1,500	1,538	3,538	20	95	98	J-13	98	J-13
J-15	1,500	1,538	3,538	20	86	95	J-22	95	J-22
J-16	1,500	1,530	3,530	20	95	94	J-15	94	J-15
J-17	1,500	1,530	3,530	20	106	105	J-41	105	J-41
J-17.1	1,500	1,500	3,500	20	99	104	J-14	104	J-14
J-18	1,500	1,500	3,500	20	114	105	J-41	105	J-41
J-19	1,500	1,500	3,500	20	111	105	J-41	105	J-41
J-20	1,500	1,530	3,530	20	99	105	J-21	105	J-21
J-20.1	1,500	1,500	3,500	20	105	103	J-21	103	J-21
J-21	1,500	1,530	3,530	20	94	97	J-15	97	J-15
J-22	1,500	1,538	3,538	20	88	92	J-15	92	J-15
J-23	2,500	2,500	3,500	20	121	106	J-41	106	J-41
J-24	2,500	2,500	3,500	20	118	105	J-41	105	J-41
J-25	2,500	2,500	3,500	20	116	105	J-41	105	J-41
J-26	2,500	2,647	3,647	20	113	105	J-41	105	J-41
J-27	2,500	2,500	3,500	20	111	105	J-41	105	J-41
J-28	2,500	2,500	3,500	20	106	105	J-41	105	J-41
J-29	2,500	2,500	3,500	20	109	105	J-41	105	J-41
J-30	2,500	2,500	3,500	20	109	105	J-41	105	J-41

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-31	3,500	3,500	4,000	20	110	105	J-41	105	J-41
J-32	2,500	2,500	3,500	20	122	106	J-41	106	J-41
J-33	2,500	2,655	3,655	20	100	103	J-40	103	J-40
J-34	2,500	2,632	3,632	20	98	99	J-39	99	J-39
J-35	2,500	2,632	3,632	20	95	101	J-39	101	J-39
J-36	2,500	2,565	3,565	20	96	101	J-35	101	J-35
J-37	2,500	2,500	3,500	20	99	104	J-38	104	J-38
J-38	2,500	2,500	3,500	20	94	100	J-1	100	J-1
J-39	2,500	2,632	3,632	20	91	95	J-40	95	J-40
J-40	2,500	2,632	3,632	20	90	97	J-39	97	J-39
J-41	3,500	3,565	4,065	20	95	98	J-40	98	J-40
J-42	3,500	3,565	4,065	20	100	98	J-41	98	J-41
J-43	3,500	3,500	4,000	20	105	101	J-41	101	J-41

APPENDIX C – Sanitary Sewer 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							43345.00	30.10	121366.00	84.28	165892.50	115.20	J-5, J-6, J-8, J-9
	132	2.77	365		AA Residential		36865.00	25.60	103222.00	71.68	165892.50	115.20	
				3.6	PA-56 & 1/2 of PA-59 & PA-60	1800	6480.00	4.50	18144.00	12.60	N/A	N/A	
PA-46							61121.00	42.45	171138.80	118.85	245884.50	170.75	J-16, J-17, J-20, J-21
	195	2.77	541		AA Residential		54641.00	37.95	152994.80	106.25	245884.50	170.75	
				3.6	PA-57 & 1/2 of PA-59 & PA-60	1800	6480.00	4.50	18144.00	12.60	N/A	N/A	
PA-47							54768.00	38.03	153350.40	106.49	243013.50	168.76	J-3, J-4, J-5, J-6
	109	2.77	303	15.6	Mixed Use	1500	54003.00	37.50	151208.40	105.01	243013.50	168.76	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-48							78652.00	54.62	220225.60	152.93	350491.50	243.40	J-13, J-14, J-15, J-22
	158	2.77	437	22.5	Mixed Use	1500	77887.00	54.09	218083.60	151.45	350491.50	243.40	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-49							100716.00	69.94	282004.80	195.84	381132.00	264.68	J-28, J-29, J-36
	197	2.77	546	19.7	Mixed Use	1500	84696.00	58.82	237148.80	164.69	381132.00	264.68	
				8.9	1/2 of PA-61 & PA-62	1800	16020.00	11.13	44856.00	31.15	N/A	N/A	
PA-50							270629.00	187.94	757761.20	526.22	1102405.50	765.56	J-33, J-34, J-35, J-36
	570	2.77	1579	57	Mixed Use	1500	244979.00	170.12	685941.20	476.35	1102405.50	765.56	
				14.25	PA-62 & 64, 1/2 of PA-61 & 65	1800	25650.00	17.81	71820.00	49.88	N/A	N/A	
PA-51	153	2.77	424	15.3	Mixed Use	1500	65774.00	45.68	184167.20	127.89	295983.00	205.54	J-26, J-33
PA-52							46756.00	32.47	130916.80	90.91	185697.00	128.96	J-33
	96	2.77	266	9.6	Mixed Use	1500	41266.00	28.66	115544.80	80.24	185697.00	128.96	
				3.05	1/2 of PA 65	1800	5490.00	3.81	15372.00	10.68	N/A	N/A	
PA-53							85008.00	59.03	238022.40	165.29	379093.50	263.26	J-1, J-26
	196	2.77	543	19.6	Mixed Use	1500	84243.00	58.50	235880.40	163.81	379093.50	263.26	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	
PA-54							59695.00	41.45	167146.00	116.07	265185.00	184.16	J-1, J-2
	137	2.77	380	13.7	Mixed Use	1500	58930.00	40.92	165004.00	114.59	265185.00	184.16	
				0.425	1/4 of PA-58	1800	765.00	0.53	2142.00	1.49	N/A	N/A	

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	26.3	132	5	365	188.36	24769.34			
	TOTAL						24769.34		0.00	24769.34
PA-46	RESIDENTIAL	39	195	5	541	188.36	36730.20		0	
	TOTAL						36730.20		0.00	36730.20
PA-47	MIXED USE	15.6	109	7	303	188.36	20568.91	1500	23400	
	TOTAL						20568.91		23400.00	43968.91
PA-48	MIXED USE	22.5	158	7	437	188.36	29666.70	1500	33750	
	TOTAL						29666.70		33750.00	63416.70
PA-49	MIXED USE	19.7	197	10	546	188.36	37106.92	1500	29550	
	TOTAL						37106.92		29550.00	66656.92
PA-50	MIXED USE	57	570	10	1579	188.36	107365.20	1500	85500	
	TOTAL						107365.20		85500.00	192865.20
PA-51	MIXED USE	15.3	153	10	424	188.36	28819.08	1500	22950	
	TOTAL						28819.08		22950.00	51769.08
PA-52	MIXED USE	9.6	96	10	266	188.36	18082.56	1500	14400	
	TOTAL						18082.56		14400.00	32482.56
PA-53	MIXED USE	19.6	196	10	543	188.36	36918.56	1500	29400	
	TOTAL						36918.56		29400.00	66318.56
PA-54	MIXED USE	13.7	137	10	380	188.36	25805.32	1500	20550	
	TOTAL						25805.32		20550.00	46355.32
Brandenburg Parcel PA-55[3]	MIXED USE	17.2	258	15	715	188.36	48596.88	1500	25800	
	TOTAL						48596.88		25800.00	74396.88

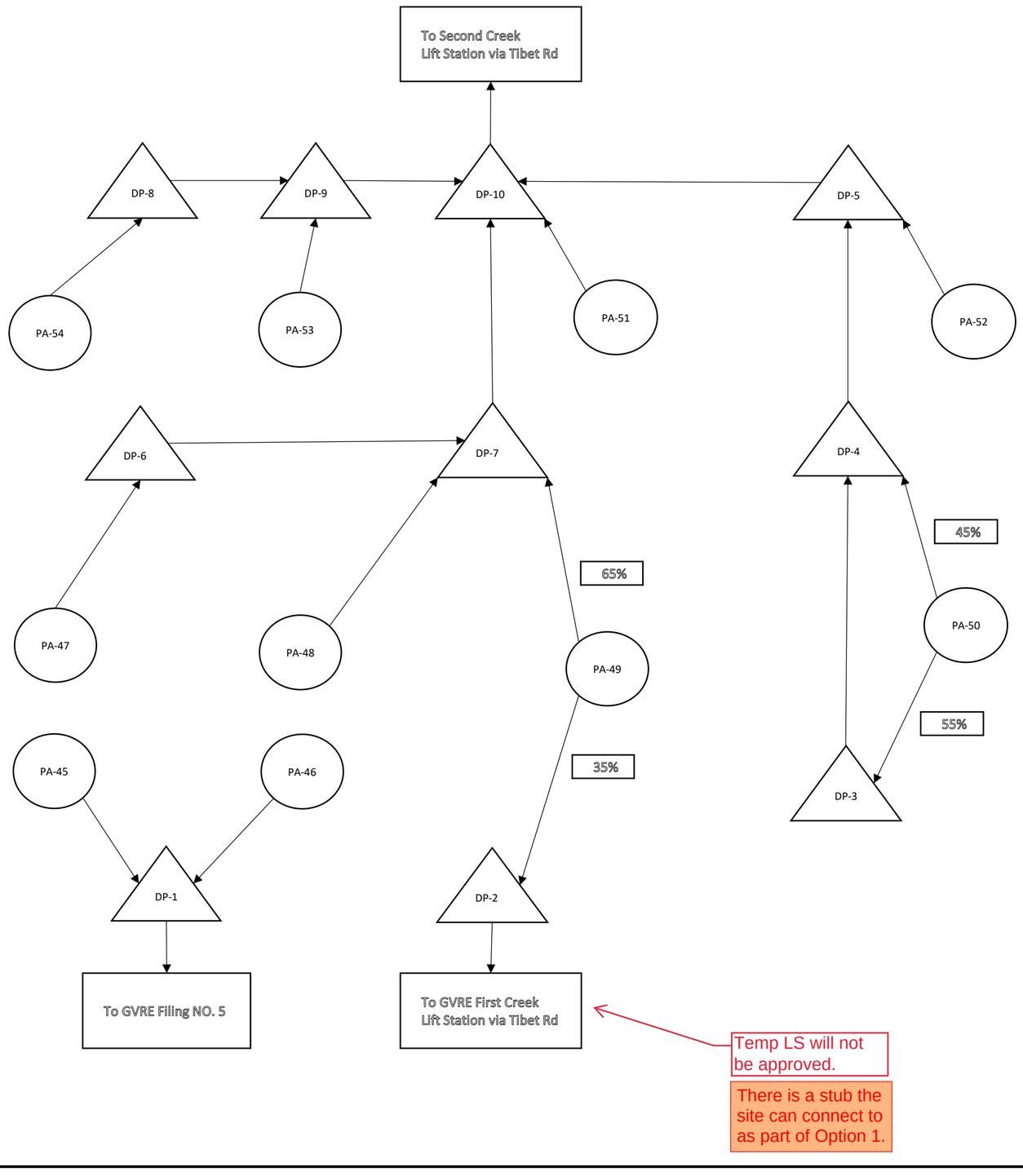
1. Residential based on 68 gallons per capita per day, 2.77 people per residence
2. Windler Homestead Sanitary not tributary to Aurora 310 per Windler Master Utility Report, Revised October 2021, by Olsson
3. Basin accounted for within the Green Valley Ranch East Amendment 1 Master Utility Report as Basin 310-4. That Study estimated the gpd at 27,676

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	24769.34	364.26												
	PA-46	36730.20	540.15												
Total		**61499.54**	**904.41**	5.08	**4.00**	**245998.16**	**6149.95**	**252148.11**	**0.25**	**0.39**	**8.00**	**0.4%**	**2.49**	**3.7**	**46%**
DP-2	35% PA-49	23329.92	343.09												
Total		**23329.92**	**343.09**	5.98	**4.00**	**93319.69**	**2332.99**	**95652.68**	**0.10**	**0.15**	**8.00**	**0.5%**	**2.08**	**2.1**	**26%**
DP-3	55% PA-50	106075.86	1559.94												
Total		**106075.86**	**1559.94**	4.64	**4.00**	**424303.44**	**10607.59**	**434911.03**	**0.43**	**0.67**	**8.00**	**0.4%**	**2.83**	**5.1**	**64%**
DP-4	DP-3	106075.86	1559.94												
	45% PA-50	86789.34	1276.31												
Total		**192865.20**	**2836.25**	4.20	**4.00**	**771460.80**	**19286.52**	**790747.32**	**0.79**	**1.22**	**10.00**	**0.4%**	**3.29**	**6.4**	**64%**
DP-5	DP-4	192865.20	2836.25												
	PA-52	32482.56	477.68												
Total		**225347.76**	**3313.94**	4.09	**4.00**	**901391.04**	**22534.78**	**923925.82**	**0.92**	**1.43**	**10.00**	**0.4%**	**3.38**	**7.2**	**72%**
DP-6	PA-47	43968.91	646.60												
Total		**43968.91**	**646.60**	5.38	**4.00**	**175875.65**	**4396.89**	**180272.54**	**0.18**	**0.28**	**8.00**	**0.4%**	**2.28**	**3.1**	**39%**
DP-7	65% PA-49	43327.00	637.16												
	DP-6	43968.91	646.60												
	PA-48	63416.70	932.60												
Total		**150712.61**	**2216.36**	4.38	**4.00**	**602850.44**	**15071.26**	**617921.70**	**0.62**	**0.96**	**8.00**	**0.6%**	**3.57**	**5.8**	**73%**
DP-8	PA-54	46355.32	681.70												
Total		**46355.32**	**681.70**	5.33	**4.00**	**185421.28**	**4635.53**	**190056.81**	**0.19**	**0.29**	**8.00**	**0.4%**	**2.31**	**3.1**	**39%**
DP-9	DP-8	46355.32	681.70												
	PA-53	66318.56	975.27												
Total		**112673.88**	**1656.97**	4.60	**4.00**	**450695.52**	**11267.39**	**461962.91**	**0.46**	**0.71**	**8.00**	**0.4%**	**2.86**	**5.3**	**66%**
DP-10	DP-5	225347.76	3313.94												
	DP-7	150712.61	2216.36												
	DP-9	112673.88	1656.97												
Total		**488734.25**	**7187.27**	3.60	**3.60**	**1757909.91**	**48873.43**	**1806783.33**	**1.81**	**2.80**	**15.00**	**0.4%**	**4.08**	**8.2**	**55%**
Total	Alt. 12" Exception	**488734.25**	**7187.27**	3.60	**3.60**	**1757909.91**	**48873.43**	**1806783.33**	**1.81**	**2.80**	**12.00**	**0.4%**	**3.84**	**10.5**	**88%**
Total	Alt. 12" Allowed	**488734.25**	**7187.27**	3.60	**3.60**	**1757909.91**	**48873.43**	**1806783.33**	**1.81**	**2.80**	**12.00**	**0.6%**	**4.67**	**8.6**	**72%**
PA-47, PA-48 Servicing Alternative (Through Commercial PA 53 AND PA 54)															
DP-9	PA-47	43968.91	646.60												
	PA-48	63416.70	932.60												
	PA-54	46355.32	681.70												
	PA-53	66318.56	975.27												
Total		**220059.49**	**3236.17**	4.11	**4.00**	**880237.97**	**22005.95**	**902243.92**	**0.90**	**1.40**	**10.00**	**0.4%**	**3.37**	**7.1**	**71%**
Option #2 (Lift to GVRE First Creek Lift Station)															
DP-2	DP-10	488734.25	7187.27												
	35% PA-49	23329.92	343.09								**South Connection**				
Total		**512064.17**	**7530.36**	3.57	**3.57**	**1827537.13**	**51206.42**	**1878743.55**	**1.88**	**2.91**	**12.00**	**0.6%**	**4.69**	**8.8**	**73%**
Total	Alt. 10" Exception	**512064.17**	**7530.36**	3.57	**3.57**	**1827537.13**	**51206.42**	**1878743.55**	**1.88**	**2.91**	**10.00**	**1.1%**	**5.57**	**9.1**	**91%**
Total	Alt 10" Allowed	**512064.17**	**7530.36**	3.57	**3.57**	**1827537.13**	**51206.42**	**1878743.55**	**1.88**	**2.91**	**10.00**	**1.5%**	**6.59**	**7.5**	**75%**
Total	Alt 10" Designed (46%)	**235549.52**	**3463.96**	4.06	**4.00**	**942198.08**	**23554.95**	**965753.03**	**0.97**	**1.49**	**10.00**	**0.4%**	**3.40**	**7.5**	**75%**

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



Worksheet for 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	0.39 cfs

Results	
Normal Depth	3.7 in
Flow Area	0.2 ft²
Wetted Perimeter	1.0 ft
Hydraulic Radius	1.9 in
Top Width	0.66 ft
Critical Depth	3.5 in
Percent Full	45.9 %
Critical Slope	0.005 ft/ft
Velocity	2.49 ft/s
Velocity Head	0.10 ft
Specific Energy	0.40 ft
Froude Number	0.906
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	3.7 in
Critical Depth	3.5 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A310 DP1

Notes:

PA-45 & PA-46

Worksheet for A310 DP2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.005	ft/ft
Diameter	8.0	in
Discharge	0.15	cfs

Results		
Normal Depth	2.1	in
Flow Area	0.1	ft^2
Wetted Perimeter	0.7	ft
Hydraulic Radius	1.2	in
Top Width	0.59	ft
Critical Depth	2.1	in
Percent Full	26.0	%
Critical Slope	0.005	ft/ft
Velocity	2.08	ft/s
Velocity Head	0.07	ft
Specific Energy	0.24	ft
Froude Number	1.041	
Maximum Discharge	1.09	cfs
Discharge Full	1.01	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	26.0	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.1	in
Critical Depth	2.1	in
Channel Slope	0.005	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for A310 DP2

Notes:

35% PA-49

Worksheet for A310 DP3

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	0.67 cfs

Results	
Normal Depth	5.1 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	64.1 %
Critical Slope	0.005 ft/ft
Velocity	2.83 ft/s
Velocity Head	0.12 ft
Specific Energy	0.55 ft
Froude Number	0.821
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	64.1 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.1 in
Critical Depth	4.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A310 DP3

Notes:

55% PA-50

Worksheet for 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	10.0 in
Discharge	1.22 cfs

Results	
Normal Depth	6.4 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.9 in
Top Width	0.80 ft
Critical Depth	5.9 in
Percent Full	64.3 %
Critical Slope	0.005 ft/ft
Velocity	3.29 ft/s
Velocity Head	0.17 ft
Specific Energy	0.70 ft
Froude Number	0.851
Maximum Discharge	1.76 cfs
Discharge Full	1.64 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	54.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.4 in
Critical Depth	5.9 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A310 DP4

Notes:

DP3 & 45% PA-50

Worksheet for 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	10.0 in
Discharge	1.43 cfs

Results	
Normal Depth	7.2 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	3.0 in
Top Width	0.75 ft
Critical Depth	6.4 in
Percent Full	72.3 %
Critical Slope	0.006 ft/ft
Velocity	3.38 ft/s
Velocity Head	0.18 ft
Specific Energy	0.78 ft
Froude Number	0.792
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.003 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	7.2 in
Critical Depth	6.4 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for A310 DP5

Notes:

DP-4 & PA-52

Worksheet for 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	8.0	in
Discharge	0.28	cfs

Results		
Normal Depth	3.1	in
Flow Area	0.1	ft^2
Wetted Perimeter	0.9	ft
Hydraulic Radius	1.7	in
Top Width	0.65	ft
Critical Depth	2.9	in
Percent Full	38.2	%
Critical Slope	0.005	ft/ft
Velocity	2.28	ft/s
Velocity Head	0.08	ft
Specific Energy	0.34	ft
Froude Number	0.926	
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	36.0	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.1	in
Critical Depth	2.9	in
Channel Slope	0.004	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for A310 DP6

Notes:

PA-47

Worksheet for A310 DP7

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	0.96	cfs

Results		
Normal Depth	5.8	in
Flow Area	0.3	ft^2
Wetted Perimeter	1.4	ft
Hydraulic Radius	2.4	in
Top Width	0.60	ft
Critical Depth	5.6	in
Percent Full	72.0	%
Critical Slope	0.007	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	0.68	ft
Froude Number	0.939	
Maximum Discharge	1.19	cfs
Discharge Full	1.11	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	49.6	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.8	in
Critical Depth	5.6	in
Channel Slope	0.006	ft/ft
Critical Slope	0.007	ft/ft

Worksheet for A310 DP7

Notes:

65% PA-49, DP-6, PA-48

Worksheet for A310 DP8

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	0.29	cfs

Results		
Normal Depth	3.1	in
Flow Area	0.1	ft^2
Wetted Perimeter	0.9	ft
Hydraulic Radius	1.7	in
Top Width	0.65	ft
Critical Depth	3.0	in
Percent Full	38.9	%
Critical Slope	0.005	ft/ft
Velocity	2.31	ft/s
Velocity Head	0.08	ft
Specific Energy	0.34	ft
Froude Number	0.925	
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	35.0	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.1	in
Critical Depth	3.0	in
Channel Slope	0.004	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for A310 DP8

Notes:

PA-54

Worksheet for 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	0.71	cfs

Results		
Normal Depth	5.3	in
Flow Area	0.2	ft^2
Wetted Perimeter	1.3	ft
Hydraulic Radius	2.3	in
Top Width	0.63	ft
Critical Depth	4.8	in
Percent Full	66.8	%
Critical Slope	0.006	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	0.57	ft
Froude Number	0.804	
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	42.5	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.3	in
Critical Depth	4.8	in
Channel Slope	0.004	ft/ft
Critical Slope	0.006	ft/ft

Worksheet for A310 DP9

Notes:

DP-8 & PA-53

Worksheet for A310 DP10

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	15.0 in
Discharge	2.80 cfs

Results	
Normal Depth	8.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	4.0 in
Top Width	1.24 ft
Critical Depth	8.1 in
Percent Full	54.7 %
Critical Slope	0.004 ft/ft
Velocity	4.08 ft/s
Velocity Head	0.26 ft
Specific Energy	0.94 ft
Froude Number	0.969
Maximum Discharge	5.19 cfs
Discharge Full	4.83 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	49.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.2 in
Critical Depth	8.1 in
Channel Slope	0.004 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for A310 DP10

Notes:

DP-5, DP-7, DP-9

Worksheet for A310 DP10_Alt 12" Alt Exception

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0
Channel Slope	0
Diameter	
Discharge	

AW will not permit a temporary lift station to serve the interim conditions. Please remove the alternate version from this master utility report amendment. Please coordinate with the neighboring developers to coordinate the Possum Gully sanitary sewer instation to serve the A310 parcel.

Removed sheet as it does not reflect current design of Tibet sanitary sewer in Skydance Filing No. 1

Results	
Normal Depth	10.5 in
Flow Area	0.7 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	3.6 in
Top Width	0.66 ft
Critical Depth	8.6 in
Percent Full	87.6 %
Critical Slope	0.006 ft/ft
Velocity	3.84 ft/s
Velocity Head	0.23 ft
Specific Energy	1.11 ft
Froude Number	0.643
Maximum Discharge	2.86 cfs
Discharge Full	2.66 cfs
Slope Full	0.004 ft/ft
Flow Type	Subcritical

Exceeds AW design specs.

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	67.3 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.5 in
Critical Depth	8.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for A310 DP10_Alt 12" Alt Exception

Notes:

DP-5, DP-7, DP-9. Using a 10" connection what slope is exceeds 75% pipe flow depth?

Worksheet for A310 DP10_Alt 12" Alt Allowed

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.006 ft/ft
Diameter	12.0 in
Discharge	2.80 cfs

Results	
Normal Depth	8.6 in
Flow Area	0.6 ft²
Wetted Perimeter	2.0 ft
Hydraulic Radius	3.6 in
Top Width	0.90 ft
Critical Depth	8.6 in
Percent Full	71.4 %
Critical Slope	0.006 ft/ft
Velocity	4.67 ft/s
Velocity Head	0.34 ft
Specific Energy	1.05 ft
Froude Number	1.011
Maximum Discharge	3.51 cfs
Discharge Full	3.26 cfs
Slope Full	0.004 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	71.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.6 in
Critical Depth	8.6 in
Channel Slope	0.006 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for A310 DP10_Alt 12" Alt Allowed

Notes:

DP-5, DP-7, DP-9. Using a 10" connection what slope is required to be at or below 75% pipe flow depth?

Worksheet for A310 DP9-Alternative

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	1.40 cfs

Results	
Normal Depth	7.1 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	3.0 in
Top Width	0.76 ft
Critical Depth	6.4 in
Percent Full	71.1 %
Critical Slope	0.005 ft/ft
Velocity	3.37 ft/s
Velocity Head	0.18 ft
Specific Energy	0.77 ft
Froude Number	0.803
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.003 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	7.1 in
Critical Depth	6.4 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for A310 DP9-Alternative

Notes:

This alternative looks at routing PA-47 north through commercial planning area PA-54, and routing PA-48 north through commercial planning area PA-53.

Worksheet for A310 DP2 First Creek LS Alt

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.006 ft/ft
Diameter	12.0 in
Discharge	2.91 cfs

Results	
Normal Depth	8.8 in
Flow Area	0.6 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	3.6 in
Top Width	0.88 ft
Critical Depth	8.8 in
Percent Full	73.6 %
Critical Slope	0.006 ft/ft
Velocity	4.69 ft/s
Velocity Head	0.34 ft
Specific Energy	1.08 ft
Froude Number	0.987
Maximum Discharge	3.51 cfs
Discharge Full	3.26 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	8.8 in
Critical Depth	8.8 in
Channel Slope	0.006 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for 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.

The temporary lift station option will not be permitted with this master utility report. Please remove this option from the MUR. Please coordinate with neighboring developers on installation of the offsite possum gully gravity sewer to serve A310. Gravity sewer is the only option to serve this site.

Removed Sheet as it pertains to "Option 2."

Worksheet for A310 DP2 First Creek LS Alt_10" Except

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.011 ft/ft
Diameter	10.0 in
Discharge	2.91 cfs

Results	
Normal Depth	9.1 in
Flow Area	0.5 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	3.0 in
Top Width	0.47 ft
Critical Depth	8.9 in
Percent Full	91.4 %
Critical Slope	0.011 ft/ft
Velocity	5.57 ft/s
Velocity Head	0.48 ft
Specific Energy	1.24 ft
Froude Number	0.928
Maximum Discharge	2.92 cfs
Discharge Full	2.72 cfs
Slope Full	0.013 ft/ft
Flow Type	Subcritical

Exceeds pipe percentage design requirements.

Removed Sheet as it pertains to "Option 2."

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	9.1 in
Critical Depth	8.9 in
Channel Slope	0.011 ft/ft
Critical Slope	0.011 ft/ft

Worksheet for A310 DP2 First Creek LS Alt_10" Except

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. This Alternate Calculation shows the max flow permissible while exceeding a 75% pipe flow depth.

Connection to gravity sewer is the only option for sanitary service for A310 development.

Removed Sheet as it pertains to "Option 2."

Flows in the temporary condition can't exceed 75% pipe flow depths. (typ)

Worksheet for A310 DP2 First Creek LS Alt_10" Allow

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.015 ft/ft
Diameter	10.0 in
Discharge	2.91 cfs

Results	
Normal Depth	7.5 in
Flow Area	0.4 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.0 in
Top Width	0.72 ft
Critical Depth	8.9 in
Percent Full	75.4 %
Critical Slope	0.011 ft/ft
Velocity	6.59 ft/s
Velocity Head	0.68 ft
Specific Energy	1.30 ft
Froude Number	1.482
Maximum Discharge	3.41 cfs
Discharge Full	3.17 cfs
Slope Full	0.013 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	75.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.5 in
Critical Depth	8.9 in
Channel Slope	0.015 ft/ft
Critical Slope	0.011 ft/ft

Worksheet for A310 DP2 First Creek LS Alt_10" Allow

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. This Alternate Calculation shows the max flow permissible while adhering to a 75% pipe flow depth.

Worksheet for A310 DP2 First Creek LS Alt_10" Design-46%

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	1.49 cfs

Results	
Normal Depth	7.5 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	3.0 in
Top Width	0.72 ft
Critical Depth	6.6 in
Percent Full	74.9 %
Critical Slope	0.006 ft/ft
Velocity	3.40 ft/s
Velocity Head	0.18 ft
Specific Energy	0.80 ft
Froude Number	0.771
Maximum Discharge	1.76 cfs
Discharge Full	1.64 cfs
Slope Full	0.003 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	7.5 in
Critical Depth	6.6 in
Channel Slope	0.004 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for A310 DP2 First Creek LS Alt_10" Design-46%

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. This Alternate Calculation determines the max temporary development permissible (57%) until the gravity main is constructed if the connection at the Green Valley Ranch Subdivision outfall pipe was laid at a 0.4% slope.

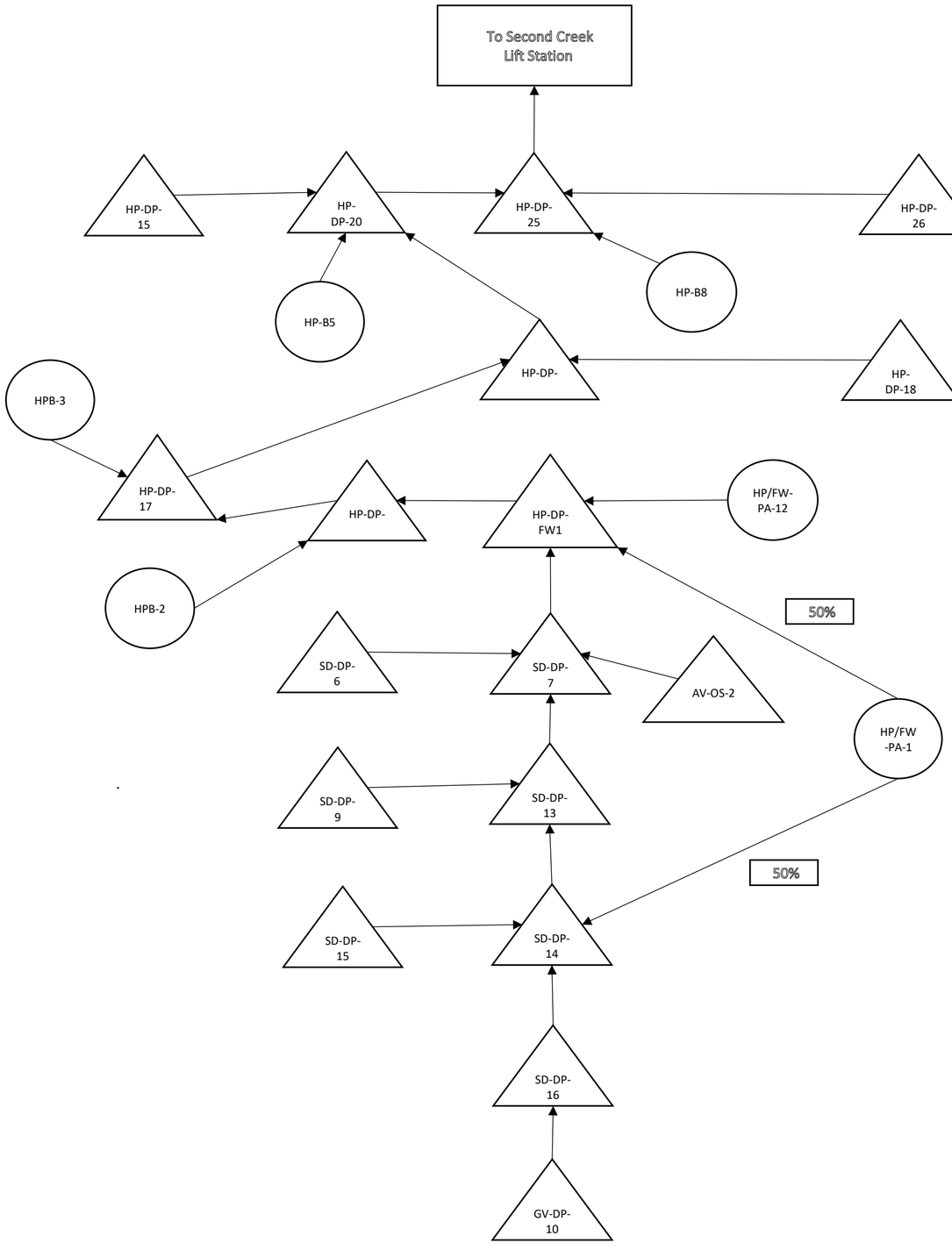
TABLE 2: 2nd CREEK SANITARY SEWER ROUTING

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)[2]	Velocity (ft/s)	Depth of Flow (in)	Depth of Ratio (Percent)
SD-DP-16	GV-DP-10	488734.25	7187.27	3.60	3.60	1757909.91	48873.43	1806783.33	1.81	2.80	15.00	0.4%	4.08	**8.2**	**55%**
	SD-DP-16	4260.00	62.65	7.94	4.00	17040.00	426.00	17466.00	0.02	0.03	8.00	1.8%	2.02	**0.7**	**9%**
Total		**492994.25**	**7249.92**	3.59	**3.59**	**1770664.41**	**49299.43**	**1819963.83**	**1.82**	**2.82**	**15.00**	**0.4%**	**4.09**	**8.2**	**55%**
SD-DP-14	SD-DP-16	492994.25	7249.92	3.59	3.59	1770664.41	49299.43	1819963.83	1.82	2.82	15.00	0.4%	4.09	**8.2**	**55%**
	SD-DP-15	194635.00	2862.28	4.19	4.00	778540.00	19463.50	798003.50	0.80	1.23	12.00	0.4%	3.32	**5.7**	**48%**
	50% HP/FW-PA-1	113016.00	1662.00	4.59	4.00	452064.00	11301.60	463365.60	0.46	0.72	8.00	0.4%	2.62	**4.1**	**51%**
Total		**800645.25**	**11774.19**	3.31	**3.31**	**2651945.67**	**80064.53**	**2732010.19**	**2.73**	**4.23**	**15.00**	**0.4%**	**4.44**	**10.9**	**73%**
SD-DP-13	SD-DP-14	800645.25	11774.19	3.31	3.31	2651945.67	80064.53	2732010.19	2.73	4.23	15.00	0.4%	4.44	**10.9**	**73%**
	SD-DP-9	130775.00	1923.16	4.48	4.00	523100.00	13077.50	536177.50	0.54	0.83	12.00	0.4%	3.00	**4.6**	**38%**
Total		**931420.25**	**13697.36**	3.23	**3.23**	**3008135.12**	**93142.03**	**3101277.15**	**3.10**	**4.80**	**18.00**	**0.4%**	**4.66**	**10.2**	**57%**
SD-DP-7	SD-DP-13	931420.25	13697.36	3.23	3.23	3008135.12	93142.03	3101277.15	3.10	4.80	18.00	0.4%	4.66	**10.2**	**57%**
	AV-OS-2	31280.00	460.00	5.69	4.00	125120.00	3128.00	128248.00	0.13	0.20	8.00	0.4%	2.08	**2.6**	**33%**
	SD-DP-6	210746.00	3099.21	4.14	4.00	842984.00	21074.60	864058.60	0.86	1.34	12.00	0.4%	3.40	**6.0**	**50%**
Total		**1173446.25**	**17256.56**	3.11	**3.11**	**3646379.28**	**117344.63**	**3763723.90**	**3.76**	**5.82**	**18.00**	**0.4%**	**4.87**	**11.5**	**64%**
HP-DP-FW1	SD-DP-7	1173446.25	17256.56	3.11	3.11	3646379.28	117344.63	3763723.90	3.76	5.82	18.00	0.4%	4.87	**11.5**	**64%**
	50% HP/FW-PA-1	113016.00	1662.00	4.59	4.00	452064.00	11301.60	463365.60	0.46	0.72	8.00	0.4%	2.87	**5.4**	**68%**
	HP/FW-PA-12	15000.00	220.59	6.44	4.00	60000.00	1500.00	61500.00	0.06	0.10	8.00	0.7%	2.08	**1.6**	**20%**
Total		**1301462.25**	**19139.15**	3.05	**3.05**	**3974847.72**	**130146.23**	**4104993.95**	**4.10**	**6.35**	**18.00**	**0.4%**	**4.95**	**12.3**	**68%**
HP-DP-16	HP-DP-FW1	1301462.25	19139.15	3.05	3.05	3974847.72	130146.23	4104993.95	4.10	6.35	18.00	0.4%	4.95	**12.3**	**68%**
	HP-B2	119204.00	1753.00	4.55	4.00	476816.00	11920.40	488736.40	0.49	0.76	8.00	0.4%	2.90	**5.6**	**70%**
Total		**1420666.25**	**20892.15**	3.01	**3.01**	**4275873.83**	**142066.63**	**4417940.45**	**4.42**	**6.84**	**18.00**	**0.4%**	**5.01**	**13.0**	**72%**
HP-DP-17	HP-DP-16	1420666.25	20892.15	3.01	3.01	4275873.83	142066.63	4417940.45	4.42	6.84	18.00	0.4%	5.01	**13.0**	**72%**
	HP-B3	49232.00	724.00	5.28	4.00	196928.00	4923.20	201851.20	0.20	0.31	8.00	0.4%	2.35	**3.2**	**40%**
Total		**1469898.25**	**21616.15**	2.99	**2.99**	**4398952.69**	**146989.83**	**4545942.51**	**4.55**	**7.03**	**18.00**	**0.4%**	**5.02**	**13.3**	**74%**
HP-DP-19	HP-DP-17	1469898.25	21616.15	2.99	2.99	4398952.69	146989.83	4545942.51	4.55	7.03	18.00	0.4%	5.02	**13.3**	**74%**
	HP-DP-18	126684.00	1863.00	4.51	4.00	506736.00	12668.40	519404.40	0.52	0.80	8.00	0.4%	2.92	**5.9**	**74%**
Total		**1596582.25**	**23479.15**	2.95	**2.95**	**4712564.89**	**159658.23**	**4872223.11**	**4.87**	**7.54**	**18.00**	**0.4%**	**5.06**	**14.2**	**79%**
HP-DP-20	HP-DP-19	1596582.25	23479.15	2.95	2.95	4712564.89	159658.23	4872223.11	4.87	7.54	18.00	0.4%	5.06	**14.2**	**79%**
	HP-DP-15	466208.00	6856.00	3.63	3.63	1690152.53	46620.80	1736773.33	1.74	2.69	15.00	0.4%	4.04	**8.0**	**53%**
	HP-B5	103020.00	1515.00	4.66	4.00	412080.00	10302.00	422382.00	0.42	0.65	8.00	0.4%	2.81	**5.0**	**63%**
Total		**2165810.25**	**31850.15**	2.81	**2.81**	**6075342.83**	**216581.03**	**6291923.85**	**6.29**	**9.74**	**20.00**	**0.4%**	**5.42**	**15.4**	**77%**
HP-DP-25	HP-DP-20	2165810.25	31850.15	2.81	2.81	6075342.83	216581.03	6291923.85	6.29	9.74	20.00	0.4%	5.42	**15.4**	**77%**
(To Lift Station)	HP-DP-26	25160.00	370.00	5.90	4.00	100640.00	2516.00	103156.00	0.10	0.16	8.00	0.5%	2.11	**2.2**	**28%**
	HP-B8	52768.00	776.00	5.22	4.00	211072.00	5276.80	216348.80	0.22	0.33	8.00	0.4%	2.39	**3.3**	**41%**
Total		**2243738.25**	**32996.15**	2.79	**2.79**	**6256894.44**	**224373.83**	**6481268.27**	**6.48**	**10.03**	**20.00**	**0.4%**	**5.43**	**15.8**	**79%**

Design Point & Basin Abbreviations: GV - Green Valley (Aurora 310); AV - Avelon; FW - Fulenwider (Harvest Mile); HP - High Point; SD - Moffit/Skydance (South portion of Avelon)

1. Cumulative Equivalent Population = Total Average Daily Flow at a design point ÷ 68 gallons per person per day
2. Actual design slopes of downstream infrastructure may be higher than amount shown. This merely shows the minimum slope required to achieve sufficient velocity with flow depths in compliance to City of Aurora requirements.

2nd Creek Routing Schematic



Worksheet for SD-DP-16

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	15.0 in
Discharge	2.82 cfs

Results	
Normal Depth	8.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	4.0 in
Top Width	1.24 ft
Critical Depth	8.1 in
Percent Full	54.9 %
Critical Slope	0.004 ft/ft
Velocity	4.09 ft/s
Velocity Head	0.26 ft
Specific Energy	0.95 ft
Froude Number	0.967
Maximum Discharge	5.19 cfs
Discharge Full	4.83 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	8.2 in
Critical Depth	8.1 in
Channel Slope	0.004 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for SD-DP-14

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.004	ft/ft
Diameter	15.0	in
Discharge	4.23	cfs

Results		
Normal Depth	10.9	in
Flow Area	1.0	ft^2
Wetted Perimeter	2.5	ft
Hydraulic Radius	4.5	in
Top Width	1.12	ft
Critical Depth	10.0	in
Percent Full	72.5	%
Critical Slope	0.005	ft/ft
Velocity	4.44	ft/s
Velocity Head	0.31	ft
Specific Energy	1.21	ft
Froude Number	0.846	
Maximum Discharge	5.19	cfs
Discharge Full	4.83	cfs
Slope Full	0.003	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	8.7	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	10.9	in
Critical Depth	10.0	in
Channel Slope	0.004	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for SD-DP-13

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.004	ft/ft
Diameter	18.0	in
Discharge	4.80	cfs

Results		
Normal Depth	10.2	in
Flow Area	1.0	ft^2
Wetted Perimeter	2.6	ft
Hydraulic Radius	4.8	in
Top Width	1.49	ft
Critical Depth	10.1	in
Percent Full	56.5	%
Critical Slope	0.004	ft/ft
Velocity	4.66	ft/s
Velocity Head	0.34	ft
Specific Energy	1.19	ft
Froude Number	0.988	
Maximum Discharge	8.45	cfs
Discharge Full	7.85	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	10.2	in
Critical Depth	10.1	in
Channel Slope	0.004	ft/ft
Critical Slope	0.004	ft/ft

Worksheet for SD-DP-13 0.5%

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.005 ft/ft
Diameter	15.0 in
Discharge	4.80 cfs

Results	
Normal Depth	11.0 in
Flow Area	1.0 ft²
Wetted Perimeter	2.6 ft
Hydraulic Radius	4.5 in
Top Width	1.10 ft
Critical Depth	10.7 in
Percent Full	73.4 %
Critical Slope	0.005 ft/ft
Velocity	4.97 ft/s
Velocity Head	0.38 ft
Specific Energy	1.30 ft
Froude Number	0.937
Maximum Discharge	5.81 cfs
Discharge Full	5.40 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	52.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.0 in
Critical Depth	10.7 in
Channel Slope	0.005 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for SD-DP-7

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.004	ft/ft
Diameter	18.0	in
Discharge	5.82	cfs

Results		
Normal Depth	11.5	in
Flow Area	1.2	ft^2
Wetted Perimeter	2.8	ft
Hydraulic Radius	5.2	in
Top Width	1.44	ft
Critical Depth	11.2	in
Percent Full	64.1	%
Critical Slope	0.004	ft/ft
Velocity	4.87	ft/s
Velocity Head	0.37	ft
Specific Energy	1.33	ft
Froude Number	0.941	
Maximum Discharge	8.45	cfs
Discharge Full	7.85	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	27.9	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	11.5	in
Critical Depth	11.2	in
Channel Slope	0.004	ft/ft
Critical Slope	0.004	ft/ft

Worksheet for HP-DP-FW1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	18.0 in
Discharge	6.35 cfs

Results	
Normal Depth	12.3 in
Flow Area	1.3 ft²
Wetted Perimeter	2.9 ft
Hydraulic Radius	5.3 in
Top Width	1.40 ft
Critical Depth	11.7 in
Percent Full	68.2 %
Critical Slope	0.005 ft/ft
Velocity	4.95 ft/s
Velocity Head	0.38 ft
Specific Energy	1.40 ft
Froude Number	0.909
Maximum Discharge	8.45 cfs
Discharge Full	7.85 cfs
Slope Full	0.003 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	20.5 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	12.3 in
Critical Depth	11.7 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for HP-DP-16

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	18.0 in
Discharge	6.84 cfs

Results	
Normal Depth	13.0 in
Flow Area	1.4 ft²
Wetted Perimeter	3.0 ft
Hydraulic Radius	5.4 in
Top Width	1.34 ft
Critical Depth	12.1 in
Percent Full	72.2 %
Critical Slope	0.005 ft/ft
Velocity	5.01 ft/s
Velocity Head	0.39 ft
Specific Energy	1.47 ft
Froude Number	0.875
Maximum Discharge	8.45 cfs
Discharge Full	7.85 cfs
Slope Full	0.003 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	21.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.0 in
Critical Depth	12.1 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for HP-DP-17

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.011	
Channel Slope	0.004	ft/ft
Diameter	18.0	in
Discharge	7.03	cfs

Results		
Normal Depth	13.3	in
Flow Area	1.4	ft^2
Wetted Perimeter	3.1	ft
Hydraulic Radius	5.4	in
Top Width	1.32	ft
Critical Depth	12.3	in
Percent Full	73.9	%
Critical Slope	0.005	ft/ft
Velocity	5.02	ft/s
Velocity Head	0.39	ft
Specific Energy	1.50	ft
Froude Number	0.860	
Maximum Discharge	8.45	cfs
Discharge Full	7.85	cfs
Slope Full	0.003	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	13.6	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	13.3	in
Critical Depth	12.3	in
Channel Slope	0.004	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for HP-DP-19

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	18.0 in
Discharge	7.54 cfs

Results	
Normal Depth	14.2 in
Flow Area	1.5 ft²
Wetted Perimeter	3.3 ft
Hydraulic Radius	5.5 in
Top Width	1.23 ft
Critical Depth	12.8 in
Percent Full	78.6 %
Critical Slope	0.005 ft/ft
Velocity	5.06 ft/s
Velocity Head	0.40 ft
Specific Energy	1.58 ft
Froude Number	0.810
Maximum Discharge	8.45 cfs
Discharge Full	7.85 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	21.6 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.2 in
Critical Depth	12.8 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for HP-DP-20

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	20.0 in
Discharge	9.74 cfs

Results	
Normal Depth	15.4 in
Flow Area	1.8 ft²
Wetted Perimeter	3.6 ft
Hydraulic Radius	6.1 in
Top Width	1.41 ft
Critical Depth	14.1 in
Percent Full	76.8 %
Critical Slope	0.005 ft/ft
Velocity	5.42 ft/s
Velocity Head	0.46 ft
Specific Energy	1.74 ft
Froude Number	0.845
Maximum Discharge	11.19 cfs
Discharge Full	10.40 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	40.4 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.4 in
Critical Depth	14.1 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for HP-DP-25

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

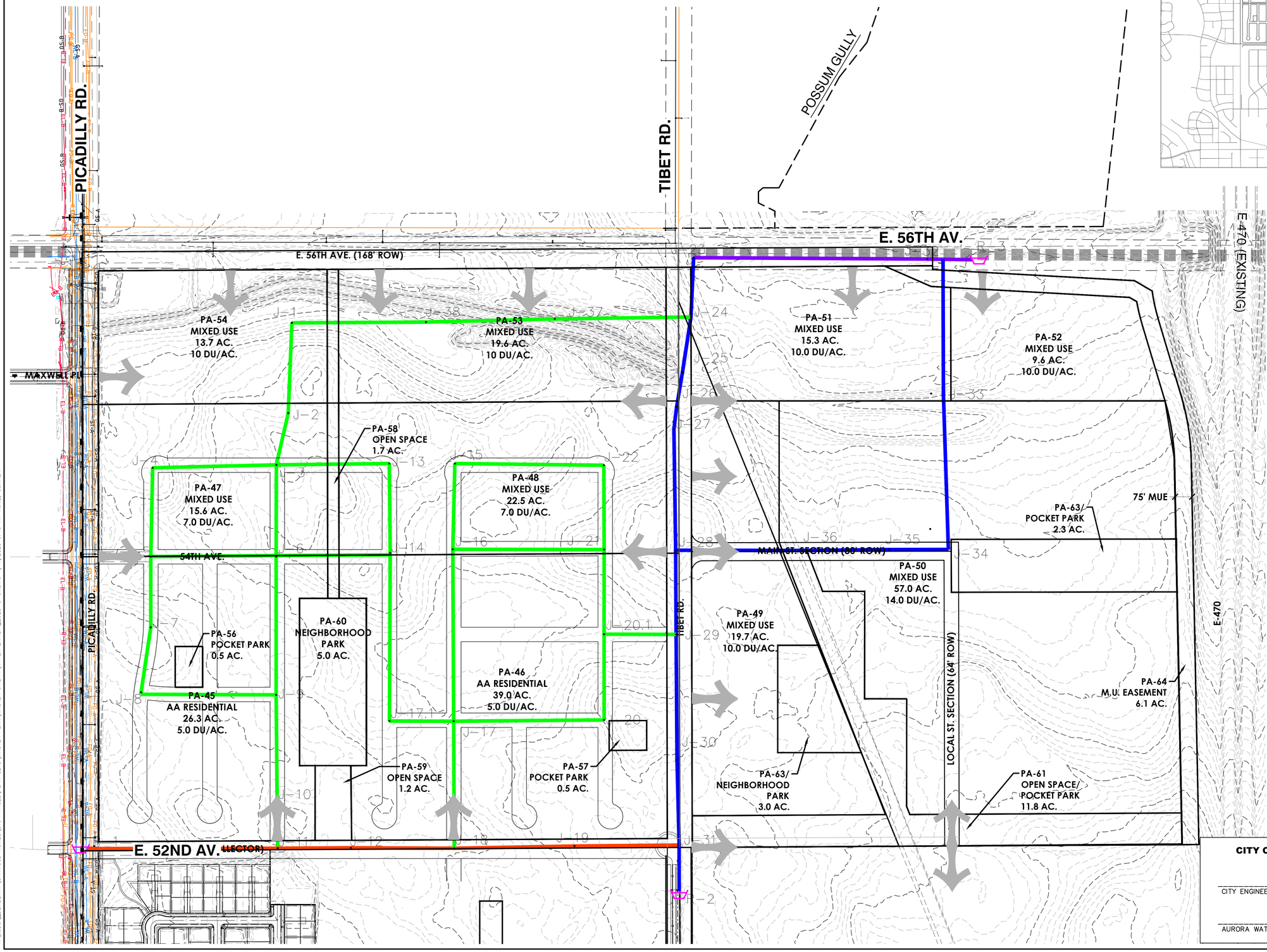
Input Data	
Roughness Coefficient	0.011
Channel Slope	0.004 ft/ft
Diameter	20.0 in
Discharge	10.03 cfs

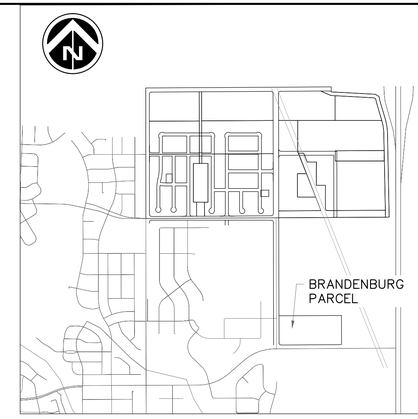
Results	
Normal Depth	15.8 in
Flow Area	1.8 ft²
Wetted Perimeter	3.6 ft
Hydraulic Radius	6.1 in
Top Width	1.36 ft
Critical Depth	14.3 in
Percent Full	79.0 %
Critical Slope	0.005 ft/ft
Velocity	5.43 ft/s
Velocity Head	0.46 ft
Specific Energy	1.77 ft
Froude Number	0.821
Maximum Discharge	11.19 cfs
Discharge Full	10.40 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	26.9 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.8 in
Critical Depth	14.3 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

GREEN VALLEY MASTER PLAN AMENDMENT 2





KEY MAP
N.T.S.

200 0 100 200 400
(IN FEET)
1 inch = 200 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
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
- SANITARY DESIGN POINT

CITY OF AURORA APPROVAL BLOCK

CITY ENGINEER DATE

AURORA WATER DEPARTMENT DATE

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

DOCUMENT AMENDMENTS

No.	Date	Description
4	12/22/2022	THIRD SUBMITTAL
3	05/23/2022	SECOND SUBMITTAL
2	03/01/2022	FIRST SUBMITTAL - UPDATE
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JDM
Checked By: JDM
Sheet Number: 1 OF 1

Y:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\MASTER PLAN\MASTER UTILITY\WATER EXHIBIT_2023-3-31.DWG 4/11/2023 9:48 AM ROME, CONNER

GREEN VALLEY MASTER PLAN AMENDMENT 2

PICADILLY RD.

TIBET RD.

POSSUM GULLY

E. 56TH AV.

E. 56TH AVE. (168' ROW)

E-470 (EXISTING)

MAXWELL PL

54TH AVE.

E. 52ND AV. (COLLECTOR)

MAIN ST. SECTION (80' ROW)

75' MUE

PA-54
MIXED USE
13.7 AC.
10 DU/AC.

PA-53
MIXED USE
19.6 AC.
10 DU/AC.

PA-51
MIXED USE
15.3 AC.
10.0 DU/AC.

PA-52
MIXED USE
9.6 AC.
10.0 DU/AC.

PA-58
OPEN SPACE
1.7 AC.

PA-47
MIXED USE
15.6 AC.
7.0 DU/AC.

PA-48
MIXED USE
22.5 AC.
7.0 DU/AC.

PA-63/
POCKET PARK
2.3 AC.

PA-50
MIXED USE
57.0 AC.
14.0 DU/AC.

PA-56
POCKET PARK
0.5 AC.

PA-60
NEIGHBORHOOD
PARK
5.0 AC.

PA-49
MIXED USE
19.7 AC.
10.0 DU/AC.

PA-45
AA RESIDENTIAL
26.3 AC.
5.0 DU/AC.

PA-46
AA RESIDENTIAL
39.0 AC.
5.0 DU/AC.

PA-64
M.U. EASEMENT
6.1 AC.

PA-59
OPEN SPACE
1.2 AC.

PA-57
POCKET PARK
0.5 AC.

PA-63/
NEIGHBORHOOD
PARK
3.0 AC.

PA-61
OPEN SPACE/
POCKET PARK
11.8 AC.

BRANDENBURG
PARCEL

KEY MAP
N.T.S.

200 0 100 200 400
(IN FEET)
1 inch = 200 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
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
- SANITARY DESIGN POINT

CITY OF AURORA APPROVAL BLOCK

CITY ENGINEER DATE

AURORA WATER DEPARTMENT DATE

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

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DOCUMENT AMENDMENTS

PRELIMINARY
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Project Number: 50145755
Designed By: JDM
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Sheet Number: 1 OF 1

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GREEN VALLEY MASTER PLAN AMENDMENT 2

Please remove option 2. A temporary lift station with a force main in Tibet Rd. will not be permitted. Gravity sewer connection to the possum gully sanitary main is the only option to serve A310. Show tie in connection point north of E. 56th Ave. Coordinate with neighboring developers on installation and timing of the gravity sewer to second creek.

Option 2 removed

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-7
OPTION 2: PA-47 TO DP-8 AND PA-48 TO DP-9 THROUGH THE COMMERCIAL PROPERTY

POSSUM GULLY

PICADILLY RD.

TIBET RD.

E. 56TH AVE. (168' ROW)

E. 56TH AV.

E-470 (EXISTING)

PR. 10" SANITARY OPTION #1

PR. 8" SANITARY

PR. 10" SANITARY

PA-54
MIXED USE
13.7 AC.
10 DU/AC.

PA-53
MIXED USE
19.6 AC.
10 DU/AC.

PA-51
MIXED USE
15.3 AC.
10.0 DU/AC.

PA-52
MIXED USE
9.6 AC.
10.0 DU/AC.

DP-8

DP-9

DP-10

DP-5

DP-4

PA-58
OPEN SPACE
1.7 AC.

PA-47
MIXED USE
15.6 AC.
7.0 DU/AC.

PA-48
MIXED USE
22.5 AC.
7.0 DU/AC.

DP-6

DP-7

PA-63/
POCKET PARK
2.3 AC.

75' MUE

54TH AVE.

MAIN ST. SECTION (80' ROW)

PA-50
MIXED USE
57.0 AC.
14.0 DU/AC.

DP-3

PA-49
MIXED USE
19.7 AC.
10.0 DU/AC.

PA-60
NEIGHBORHOOD
PARK
5.0 AC.

PA-56
POCKET PARK
0.5 AC.

PA-45
AA RESIDENTIAL
26.3 AC.
5.0 DU/AC.

PA-46
AA RESIDENTIAL
39.0 AC.
5.0 DU/AC.

PA-64
M.U. EASEMENT
6.1 AC.

PA-63/
NEIGHBORHOOD
PARK
3.0 AC.

PA-61
OPEN SPACE/
POCKET PARK
11.8 AC.

LOCAL ST. SECTION (64' ROW)

PA-59
OPEN SPACE
1.2 AC.

PA-57
POCKET PARK
0.5 AC.

DP-1

DP-2

PR. 8" SANITARY

PR. 10" SANITARY

52ND AVE. (80' COLLECTOR)

E-470

BRANDENBURG PARCEL

KEY MAP
N.T.S.

200 0 100 200 400
(IN FEET)
1 inch = 200 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)

CITY OF AURORA APPROVAL BLOCK

CITY ENGINEER DATE

AURORA WATER DEPARTMENT DATE

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
4	12/22/2022	THIRD SUBMITTAL
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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

X:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\MASTER PLAN\MASTER UTILITY\SANITARY EXHIBIT_2023-3-31.DWG 3/31/2023 1:37 PM ROME, CONNER

The master plan will not be approved by public works until the master drainage amendment #4 (MD AMDT #4 RSN 1611254) is approved.

Street Sections in Tab 10 are not consistent. Review all and revise. Make sure they are named the same.

PUBLIC IMPROVEMENT PLAN

GREEN VALLEY MASTER PLAN AMENDMENT 2

DECEMBER 22, 2021

MARCH 1, 2022

MAY 24, 2022

DECEMBER 19, 2022

APRIL 12, 2023

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 5

1. Amendment 2 Project Location 5

2. Proposed Development 6

B. OVERALL INFRASTRUCTURE 7

1. Description 7

2. Roadway Improvements 7

3. Drainage Improvements 8

4. Water Improvements 8

5. Sanitary Sewer Improvements 9

6. Parks and Open Space 9

C. PLANNING AREA 45 10

1. Land Development 10

2. Roadway Improvements 10

3. Drainage Improvements 10

4. Water Improvements 10

5. Sanitary Sewer Improvements 10

6. Parks and Open Space 10

D. PLANNING AREA 46 11

1. Land Development 11

2. Roadway Improvements 11

3. Drainage Improvements 11

4. Water Improvements 11

5. Sanitary Sewer Improvements 11

6. Parks and Open Space 12

E. PLANNING AREA 47 12

1. Land Development 12

2. Roadway Improvements 12

3. Drainage Improvements 12

4. Water Improvements 12

5. Sanitary Sewer Improvements 13

6. Parks and Open Space 13

F. PLANNING AREA 48 13

1. Land Development 13

2. Roadway Improvements 13

3. Drainage Improvements 13

4. Water Improvements 14

5. Sanitary Sewer Improvements 14

6. Parks and Open Space 14

G. PLANNING AREA 49 14

1. Land Development 14

2. Roadway Improvements 15

3. Drainage Improvements 15

4. Water Improvements 15

5. Sanitary Sewer Improvements 15

6. Parks and Open Space 15

H. PLANNING AREA 50 15

1. Land Development 15

2. Roadway Improvements 16

3. Drainage Improvements 16

4. Water Improvements 16

5. Sanitary Sewer Improvements 16

6. Parks and Open Space 16

I. PLANNING AREA 51 17

1. Land Development 17

2. Roadway Improvements 17

3. Drainage Improvements 17

4. Water Improvements 17

5. Sanitary Sewer Improvements 17

6. Parks and Open Space 18

J. PLANNING AREA 52 18

1. Land Development 18

2. Roadway Improvements 18
3. Drainage Improvements 18
4. Water Improvements 18
5. Sanitary Sewer Improvements 19
6. Parks and Open Space 19

K. PLANNING AREA 53 19
1. Land Development 19
2. Roadway Improvements 19
3. Drainage Improvements 19
4. Water Improvements 20
5. Sanitary Sewer Improvements 20
6. Parks and Open Space 20

L. PLANNING AREA 54 20
1. Land Development 20
2. Roadway Improvements 21
3. Drainage Improvements 21
4. Water Improvements 21
5. Sanitary Sewer Improvements 21
6. Parks and Open Space 21

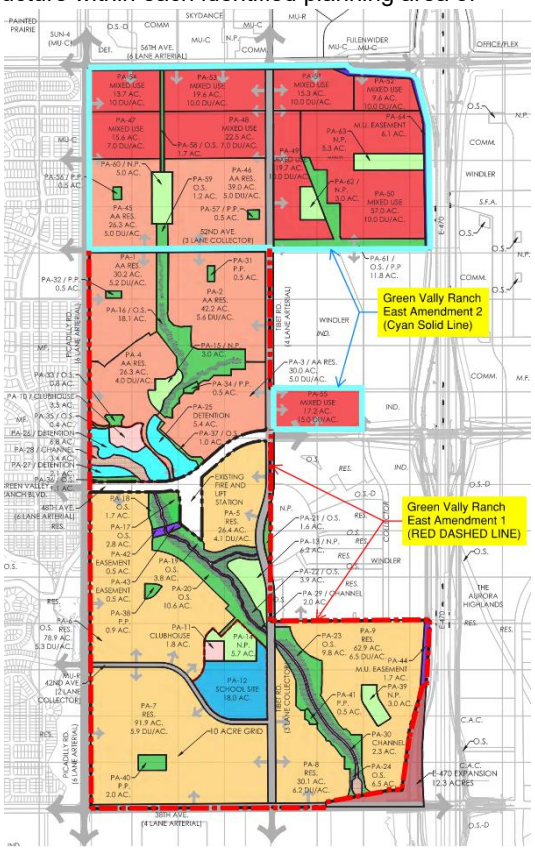
M. PLANNING AREA 55 22
1. Land Development 22
2. Roadway Improvements 22
3. Drainage Improvements 22
4. Water Improvements 22
5. Sanitary Sewer Improvements 22
6. Parks and Open Space 22

N. REFERENCES 23

APPENDIX A - SUPPORTING DOCUMENTS
Public Improvements Plan Sheets

A. INTRODUCTION

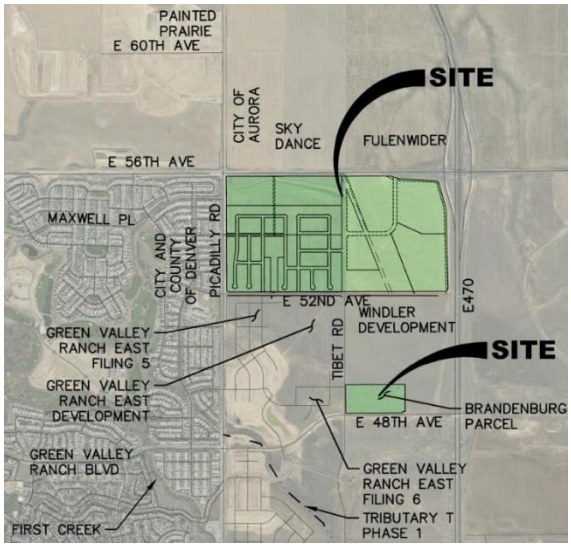
The purpose of this report is to provide the City of Aurora with a guide for the anticipated planned land use and intended public infrastructure improvements for the proposed Green Valley Master Plan Amendment 2 Development. This narrative provides a description of the overall project and infrastructure within each identified planning area of the development consisting of a variety of single-family attached and detached residential homes, mixed-use, and commercial land uses within the proposed development. Green Valley Master Plan Amendment 2 will be referred to as “Site”, “Parcel”, or “Project” within the body of this Report.



The Site is an extension of the Green Valley Ranch East (GVRE) development generally located north of 38th Avenue, west of E-470 and the Windler Development, south of 52nd Avenue and east of Picadilly Road. An overall exhibit, which is an elaboration of Tab 8.4 of the Master Plan document depicting the GVRE development (Amendment 1) within the red dash line and this Project (Green Valley Ranch East Amendment 2) within the cyan solid line, is provided within the Appendix of this report for reference with a snippet located to the right. A Public Improvement Plan (PIP) was completed as a portion of the Master Planning process for Amendment 1 and is included within the Appendix for reference and to outline the requirement of the planning areas within the Amendment 1 PIP. The regional improvements within the Amendment 1 PIP anticipated portions of the Site, specifically the portions of PA45 and PA46 sanitary and drainage outfalls. Additionally, Amendment 1 evaluated the potential for a lift station within the Amendment 2 Site, which is discussed within the Master Utility Report. Most of the planning areas within Amendment 1 are constructed, under construction, or in-process with the City of Aurora at the time of this report and the infrastructure requirements with those planning areas are assumed to be existing. Discussion has been provided within the Planning Areas for this Site (Amendment 2) to this effect, stating at the time of the development of the Planning Areas within Amendment 2, should any assumed existing infrastructure not be existing and is needed for the development of the specific Planning Areas herein, the Site Planning Area would be responsible for the development of the infrastructure.

1. Amendment 2 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 on the location of Amendment 2. Additionally, an exhibit, which outlines the Amendment 1 and 2 locations as an elaboration of Tab 8.4 is provided



within the Appendix of this report for reference.

The Site is 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 Amendment 1 of the Green Valley Ranch East south of the Site. Entitlements are in-process for three developments: Sky Dance to the north, Fulenwider to the north, and Windler to the south and east. Entitlements and construction are on-going within the Amendment 1 area of 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, as Amendment 2 an extension of the Green Valley Ranch East development. The Project consists of a mix of proposed uses including residential, mixed-use, 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 to meet market conditions. The precise timing of the development of the planning areas within Amendment 2 will be determined by market demands, with supporting infrastructure as outlined within this Public Improvements Plan and in accordance with the requirements of City of Aurora Life Safety Division and the Traffic Study for this project. Specific improvements will be further defined in a subsequent Contextual Site Plan (CSP) for each phase of the development. Each planning area will have two distinct, approved 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 within the Amendment 2 area 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 45 to 48 are residential use, while PAs 49 to 54 are for mixed-use. 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

The Site is bound by existing arterial and collector roadways along the west, north, east and a portion of the southern property boundaries. The existing roadway improvements support the initial phases of the Site development. Roadway improvement triggers have been outlined within the individual Planning 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 anticipated at various locations along the proposed roadway network consistent with TIS. The signals will not be installed until signal warrants are 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 a PIFA agreement between the Developer and the City of Aurora, which was in process at the time of this report. In the event a PIFA is not reached, the improvements to Picadilly Road and 56th Avenue will occur with the development of the directly adjacent planning area or via ARTA. In the event roadway improvements are completed with the directly adjacent planning area, those improvements will extend the length of the planning area. Additional roadway improvements may be required to meet life safety and traffic needs.

The west ½ section of Picadilly Road is existing from 52nd Avenue to 56th Avenue along the western boundary of the Site. The east ½ of Picadilly Road, along with median and landscape improvements, will be completed with this Project. 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 or consistent with the scenarios outlined above.

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 or consistent with the scenarios outlined above.

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 as existing for the purposes of this report. This portion of 52nd Avenue is in design and under the City review and approval process at the time of this

report. The Green Valley Ranch East subdivision to the south (Amendment 1) 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 Developer and the City of Aurora or with the adjacent planning areas, in the event a PIFA is not reached. 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 to the Moffit parcel and then west along East 56th Avenue to the Painted Prairie development, to ultimately outfall 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 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 comprising 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 portion 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 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 (Amendment 1) and are considered existing for the purposes 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 (Amendment 2) is located within three separate tributaries as previously identified within the Green Valley Ranch East (Amendment 1) 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, Phase 1 of the sanitary trunk main from the Second Creek lift station up Possum Gully to the E-470 has been constructed and is existing. Meetings between the developments tributary to this sanitary trunk main have occurred and Phase 2 of the sanitary trunk main generally described as beginning at the Phase 1 terminus east of E-470 to the intersection of the future Tibet Road and 60th Avenue intersection is under design and in process with the City of Aurora. Future phases of this trunk main to service this Site are anticipated and ultimately required to service portions of the Project. That future phase is generally described as extending from the Phase 2 terminus at 60th Avenue and Tibet Road south to the Tibet Road and 56th Avenue intersection. This extension(s) will occur, by others, as a portion of downstream development or by the Site, if easements or rights-of-way are dedicated by downstream, off-site developments. The timing extension of this sanitary trunk main to the Tibet Road and 56th Avenue intersection has yet to be determined. In the event 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 (Amendment 1) Master Utility Study anticipated this potential temporary condition. In the event the Green Valley Master Plan Amendment 2 developer constructs the downstream sanitary trunk main to complete the connection to existing improvements, 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 (Amendment 1) development two sanitary sewer connection points are planned for the Site. The first is an 8-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 amenity. The Site's zoning requires a walkable main street and outdoor plazas and common areas within the Commercial planning areas. The main street location and street section are identified herein and 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 (Amendment 1) development area to the Project via pedestrian crossing of 52nd Avenue. The Site will extend the First Creek Trail at 52nd Avenue north to 56th Avenue through planning areas 58, 59, and 60. This extension will occur through the open space and greenways within those planning areas as an 8-foot-wide trail within a minimum 30-foot off-street corridor and developed as a portion of the adjacent Planning Areas.

C. PLANNING AREA 45

1. Land Development

Planning Area (PA) 45 is generally located in the southwest corner of the Site and is north of 52nd Avenue and east of Picadilly Road. The PA consists of active adult residential and will offer a variety of single-family detached product types and associated infrastructure within the 26.3 acres.

Planning Area 45		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	5.0	26.3

It is assumed 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 eastern PA boundary. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

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 or in the event a PIFA is not completed, it will be developed by ARTA or the directly adjacent improvements will be completed with the Planning Area. The north ½ section of 52nd Avenue will be developed from the Picadilly Road connection east to the western boundary of this Planning Area.

3. Drainage Improvements

The Planning Area drainage will be conveyed from northwest to southeast to the outfall at the existing box culvert under 52nd Avenue generally located south of PA-59, developed as a portion of the Green Valley Ranch East (Amendment 1) development. The open channel within the open space in Planning Area 59 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 sanitary main stub from within Green Valley Ranch East Filing No 5.

6. Parks and Open Space

The pocket park identified as PA-56 will be developed as a portion of this Planning Area and will be constructed prior

to the last certificate of occupancy within PA-45. The open space identified as PA-59 will be developed prior to or concurrent with the 1st certificate of occupancy within PA-45 and PA-46 with landscaping completed prior to the 50% certificate of occupancy of the two planning areas. The neighborhood park identified at PA-60 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 provide a variety of single-family detached product types and associated infrastructure within the 39.0 acres.

Planning Area 46		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
RESIDENTIAL	5.0	39.0

It is assumed 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

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 directly adjacent to the 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 north ½ section of 52nd Avenue will be developed from the western Planning Area boundary, east to the Tibet Road intersection.

3. Drainage Improvements

The Planning Area drainage will be conveyed from northeast to southwest 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 59 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 sanitary main connection from within Green Valley Ranch East Filing No. 5.

6. Parks and Open Space

The pocket park identified as PA-57 will be developed as a portion of this Planning Area and will be constructed prior to the last certificate of occupancy within PA-46. The open space identified as PA-59 will be developed prior to or concurrent with the 1st certificate of occupancy within PA-45 and PA-46 with landscaping completed prior to the 50% certificate of occupancy of the two planning areas. The neighborhood park identified at PA-60 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 mixed-use and associated infrastructure within the 15.6 acres.

Planning Area 47		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	7.0	15.6

It is assumed 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

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/or a connection to either 52nd Avenue or Tibet Road through the adjacent Planning Areas. In the event PA-47 develops prior to PA-45 or PA-48 and a connection to 52nd or Tibet Road is required for a secondary access, the connection can be temporary and for emergency vehicles only provided all emergency access requirements are met. The construction of the east ½ section of Picadilly Road shall occur in accordance with the requirements within the PIFA or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

3. Drainage Improvements

The Planning Area drainage will be conveyed from southeast to northwest 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 shall convey developed runoff to Pond 840 and 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 54 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 north 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 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 53 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 at the intersection of 52nd Avenue.

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-58 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 mixed-use and associated infrastructure within the 22.5 acres.

Planning Area 48		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	7.0	22.5

It is assumed 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 48 via local road access point(s) off Picadilly Road and connection to 52nd Avenue through the adjacent Planning Areas, in the event the adjacent planning areas develop prior. 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 if a secondary point of connection is not already established via an adjacent planning area. 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 or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

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 will convey developed runoff to Pond 840 and 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 54 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-59, under 52nd Avenue via the existing 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 north 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 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 53 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 at the intersection of 52nd Avenue.

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 and trail within PA-58 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 east central portion of the Site and is north of the Windler Development and east of Tibet Road. The PA consists of mixed-use development and associated infrastructure within the 19.7 acres.

Planning Area 49		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	19.7

It is assumed 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 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. In the event the assumed infrastructure isn’t completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 49. The directly adjacent, eastern ½ section of Tibet Road will be developed along the Planning Area boundary. PA-49 will develop the full width of the Main Street section within the Planning Area boundary

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 via storm sewer within 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 were not known. However, the conveyance obligation was identified within the Green Valley Ranch East Amendment 1 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, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Approximately 35% of the 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 Amendment 1 development, consistent with the Amendment 1 Master Utility Report. The remaining 65% of the sanitary sewer main within PA-49 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 north 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 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 53 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 at the intersection of 52nd Avenue.

6. Parks and Open Space

The neighborhood park identified as PA-62 will be developed as part of this Planning Area and will be constructed prior to the last certificate of occupancy within PA-49. The open space/pocket park identified as PA-61 will be developed prior to or concurrent with the 1st certificate of occupancy within PA-49 and PA-50 with landscaping completed prior to the 50% certificate of occupancy of the two mixed-use planning areas.

H. PLANNING AREA 50

1. Land Development

Planning Area (PA) 50 is generally located in the east central portion of the Site, is east of Planning Area 49, and is south of Planning Areas 51 & 52. The PA consists of mixed-use and associated infrastructure within the 57.0 acres.

Planning Area 50		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	57.0

It is assumed 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 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 50. The directly adjacent eastern ½ section of Tibet Road will be developed along the boundary of PA-49. 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 internal movements from Tibet Road bisecting one or more of the following: PA-49, PA-51, PA-52.

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 51 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, Main Street, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

The sanitary sewer main within PA-50 will outfall to the north through the mixed-use area PA-52 before flowing west through PA-51 extended to Tibet Road where it 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 north 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 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 53 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 at the intersection of 52nd Avenue.

6. Parks and Open Space

The neighborhood park identified as PA-63 will be developed as part of this Planning Area and will be constructed prior to the last certificate of occupancy within PA-50. The open space/pocket park identified as PA-61 will be developed prior to or concurrent with the 1st certificate of occupancy within PA-49 and PA-50 with landscaping completed prior to the 50% certificate of occupancy of the two planning areas. The municipal utility easement

identified as PA-65 will be developed prior to the last certificate of occupancy within the mixed-use Planning Areas of PA-50 and PA-52.

I. PLANNING AREA 51

1. Land Development

Planning Area (PA) 51 is generally located in the north central portion of the Site and is southeast of the intersection of Tibet Road and 56th Avenue. The PA consists of mixed-use and associated infrastructure within the 15.3 acres.

Planning Area 51		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	15.3

It is assumed 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 51. PA-51 will develop the east ½ section of Tibet Road directly adjacent to the PA boundary. 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 or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

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 the 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 51 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 Ave, Tibet Road, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-51 will outfall to a main within the planning area and will flow from 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 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 53 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 northeast portion of the Site and is south of 56th Avenue and west of E-470. The PA consists of mixed-use and associated infrastructure within the 9.6 acres.

Planning Area 52		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	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 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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 52. PA-52 will construct an access to 56th Avenue and shall provide for a connection to Main Street at the southwest corner of the planning area. Should PA-52 develop prior to the adjacent planning areas and if determined required by Life Safety, a second access to Tibet Road, if not already existing at the time of the development of the planning area will occur. 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 or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

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 51 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, Tibet Road, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-52 will outfall to a main within the planning area and will 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 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 53 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 municipal utility easement identified as PA-64 will be developed prior to the last certificate of occupancy within the mixed-use Planning Areas of PA-50 and PA-52.

K. PLANNING AREA 53

1. Land Development

Planning Area (PA) 53 is generally located in the north central portion of the Site and is southwest of the 56th Avenue and Tibet Road intersection. The PA consists of mixed-use and associated infrastructure within the 19.6 acres.

Planning Area 53		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	19.6

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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 53. The west ½ section of Tibet Road will be developed along the directly adjacent boundary of the Planning Area. Access to 56th Avenue from the Planning Area is anticipated so long as they are consistent with the approved TIA and will provide the second access point(s) to the PA. 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 or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

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 will convey developed runoff to Pond 840 and 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 54 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 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 is not 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 51 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, 56th Avenue, or via the adjacent Planning Areas.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-53 will flow north and east 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 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 53 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-58 along this PA boundary will be developed prior to the first certificate of occupancy within PA-53.

L. PLANNING AREA 54

1. Land Development

Planning Area (PA) 54 is in the northwest portion of the Site and is southwest of the 56th Avenue and Picadilly Road intersection. The PA consists of mixed-use and associated infrastructure within the 13.7 acres.

Planning Area 54		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	10.0	13.7

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. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 54. 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 or in the event a PIFA is not completed, it will be developed by ARTA, or the directly adjacent improvements will be completed with the Planning Area.

3. Drainage Improvements

The Planning Area drainage is located within the Blue Grama Draw major basin 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 or via the adjacent Planning Areas, or within Picadilly Road if allowed by Aurora Water.

5. Sanitary Sewer Improvements

Sanitary sewer main within PA-54 will flow east to a to a main within PA-53 and 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 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-54 was analyzed for two potential service options for the residential PA-47 to the south. Specifically, PA-47 will either be serviced to the north through PA-54 or east through the residential planning area to the sewer 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-58 along this PA boundary will be developed prior to the first certificate of occupancy within PA-54.

M. PLANNING AREA 55

1. Land Development

Planning Area (PA) 55 is Brandenburg Parcel south of the main Site and is northeast of the 48th Avenue and Tibet Road intersection. The PA consists of mixed-use and associated infrastructure within the 17.2 acres.

Planning Area 54		
AREA DESCRIPTION	DENSITY (DU/AC)	GROSS LAND AREA (AC)
MIXED-USE	15.0	17.2

It is assumed that the following infrastructure is existing prior to the development of this Planning Area; the south ½ section of 48th Avenue from Picadilly Road to E-470 and the associated 16" water main, the west ½ section of Tibet Road from 52nd Avenue to 48th Avenue and 8" water main stub and 8" sanitary sewer main stub. In the event the assumed infrastructure isn't completed at the time of the development of the PA, the portion of those improvements to service the PA will be completed with the respective Planning Area.

2. Roadway Improvements

The existing roadway improvements will support the development of Planning Area 55. Access to this Planning Area will be via 48th Avenue and Tibet Road at the locations and movements specified within the approved Traffic Impact Study. The construction of the north ½ section of 48th Avenue and the east ½ section of Tibet Road will be developed along the Planning Area boundary.

3. Drainage Improvements

The Planning Area drainage is located within the First Creek Tributary T major basin and will be conveyed to the southwest corner of the Site. The Planning Area will be conveyed under 48th Avenue through Green Valley Ranch East to the off-site, regional detention pond identified as Pond 8503C. The piped conveyance under 48th Avenue to convey developed runoff to Pond 8503C will be extended prior to or concurrent with this Planning Area.

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 48th Avenue or Tibet Road.

5. Sanitary Sewer Improvements

The sanitary sewer within PA-55 will flow west to a to a main within Tibet Road and to the intersection of 48th Avenue and Tibet Road.

6. Parks and Open Space

No Parks or Open Space has been identified as required to support this Planning Area.

N. REFERENCES

The following documents, reports, and plans were referenced during the generation of this Public Improvements Plan (PIP).

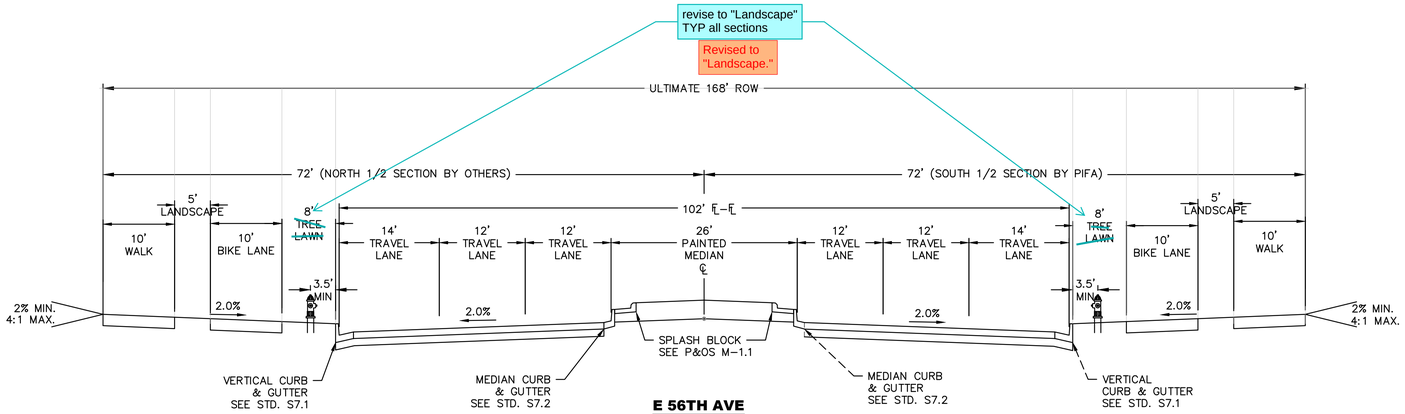
1) *Green Valley Master Plan Amendment 2 Master Plan and support reports, December 2021*

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

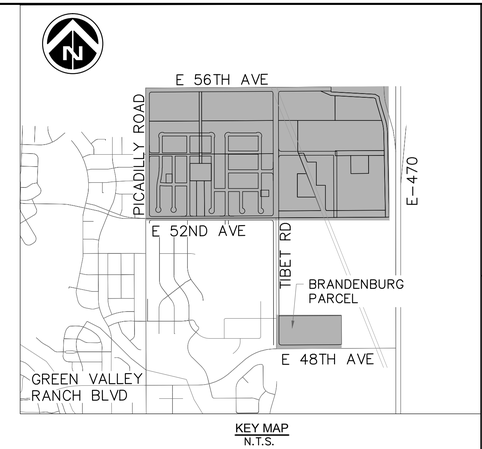


E 56TH AVE
144' ROW
SIX-LANE ARTERIAL
(FULL SECTION)

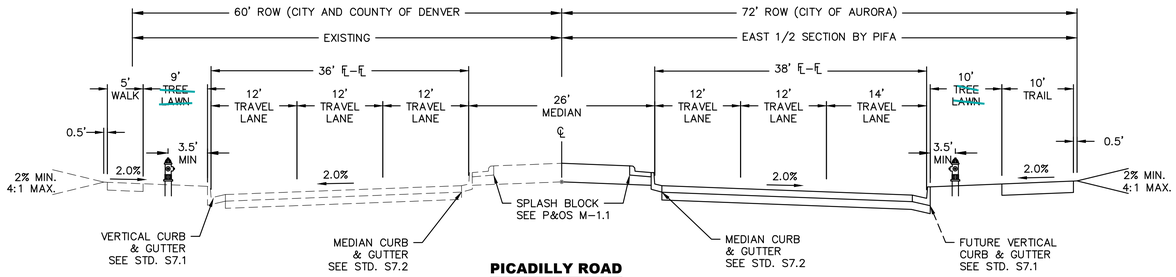
NTS

please confirm with Traffic that this is the appropriate section for 56th.

Confirmed with Traffic.



KEY MAP
N.T.S.

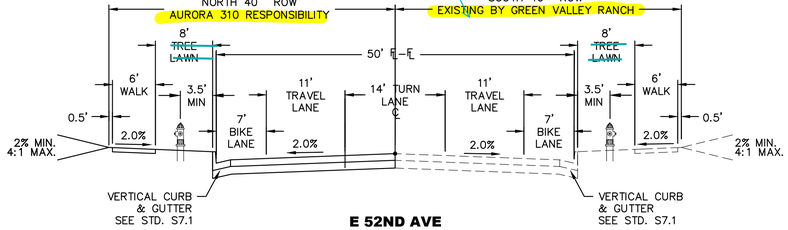


PICADILLY ROAD
132' ROW
SIX-LANE ARTERIAL
(FULL SECTION)

NTS

this doesn't make sense. GVRE will be ultimately responsible for all of this.

Corrected all to existing by GVRE



E 52ND AVE
80' ROW
THREE-LANE COLLECTOR
(FULL SECTION)

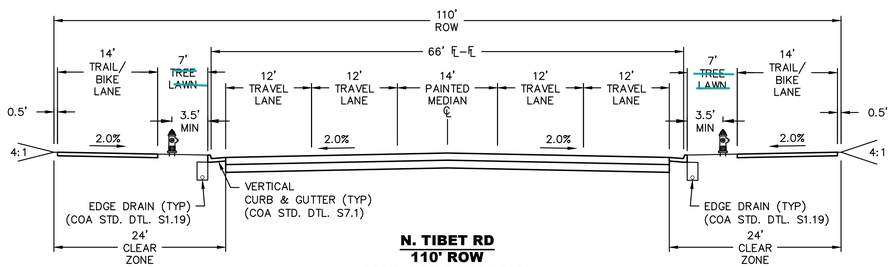
BY GREEN VALLEY RANCH EAST DEVELOPMENT

(FOR INFORMATION ONLY)

NTS

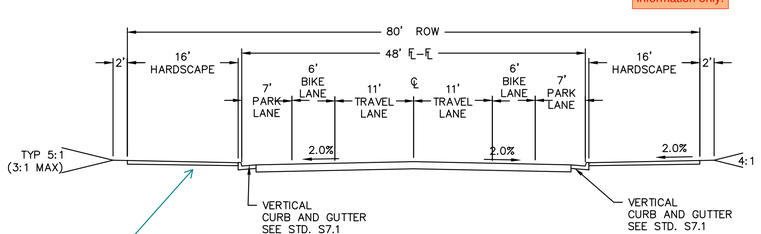
?? this is a public street so it is a requirement.

Removed for information only.



N. TIBET RD
110' ROW
FOUR-LANE ARTERIAL
SECTION (ULTIMATE)

NTS



MAIN STREET
80' ROW
(FULL SECTION)

NTS

Section in Tab 10 does not match. parallel or angled parking, bike lane?

Changed to match Tab 10

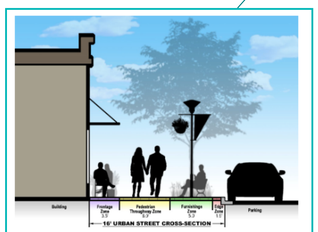


Figure 4.7-10: Urban Street Frontage Zones With Parallel Parking

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

DOCUMENT AMENDMENTS

No.	Date	Description
3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
1	12/2/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM
Drawn By: JTM
Checked By: JDM
Sheet Number: 1

I:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PHV1 TYPICAL STREET SECTIONS.DWG 12/22/2022 11:30 AM FISHER, ELDON R.

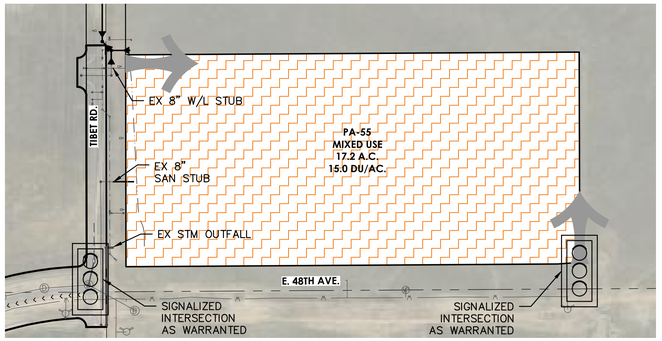
LEGEND

EX STORM — D
EX WATER — W
FUTURE SANITARY
DEVELOPMENT ACCESS

PROP STORM
PROP WATER
PROP SANITARY
COMMERCIAL
AA RESIDENTIAL
MIXED-USE
OPEN SPACE
INFRASTRUCTURE REQUIRED PER PA
UTILITIES REQUIRED PER PA

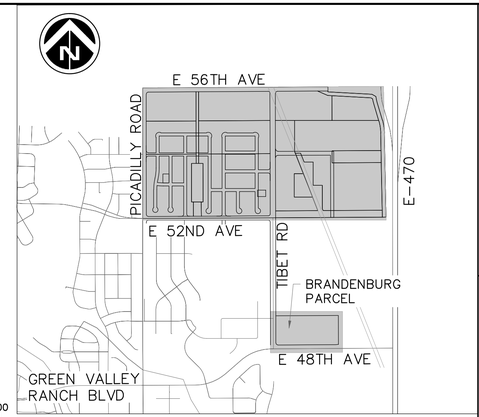
NOTES:

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, TWO SEPARATE AND APPROVED POINTS OF ACCESS, SANITARY SERVICE AND ACCOMMODATION FOR DRAINAGE CONVEYANCE TO OFF-SITE REGIONAL ATTENUATION. FURTHERMORE, THE LOOPED WATER SUPPLY AND TWO POINTS OF ACCESS MUST BE ACCOUNTED FOR IN THE OVERALL DEVELOPMENT AND EACH INDIVIDUAL PHASE OF THE PROJECT. AS SUCH, EACH INDIVIDUAL SITE PLAN MUST IDENTIFY PHASING REQUIREMENTS TO INCLUDE ADJACENT INFRASTRUCTURE NEEDS TO MEET MINIMUM WATER SUPPLY AND ACCESS REQUIREMENTS.
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 OR THAT IS ALREADY EXISTING, IS REQUIRED FOR THE DEVELOPMENT OF THE AMENDMENT 2 PLANNING AREAS.
5. DEVELOPMENT ACCESS POINTS DEPICTED HEREIN, ARE CONCEPTUAL AND MAY CHANGE OR INCREASE IN NUMBER TO SERVICE THE DEVELOPMENT, SO LONG AS THE SHIFTED AND/OR INCREASED ACCESS POINTS MEET CITY OF AURORA SPACING REQUIREMENTS AND ARE SUPPORTED BY A TRAFFIC IMPACT ANALYSIS.
6. REFER TO THE MASTER UTILITY REPORT FOR SPECIFICS OF UTILITY OPTIONS PRESENTED HEREIN.

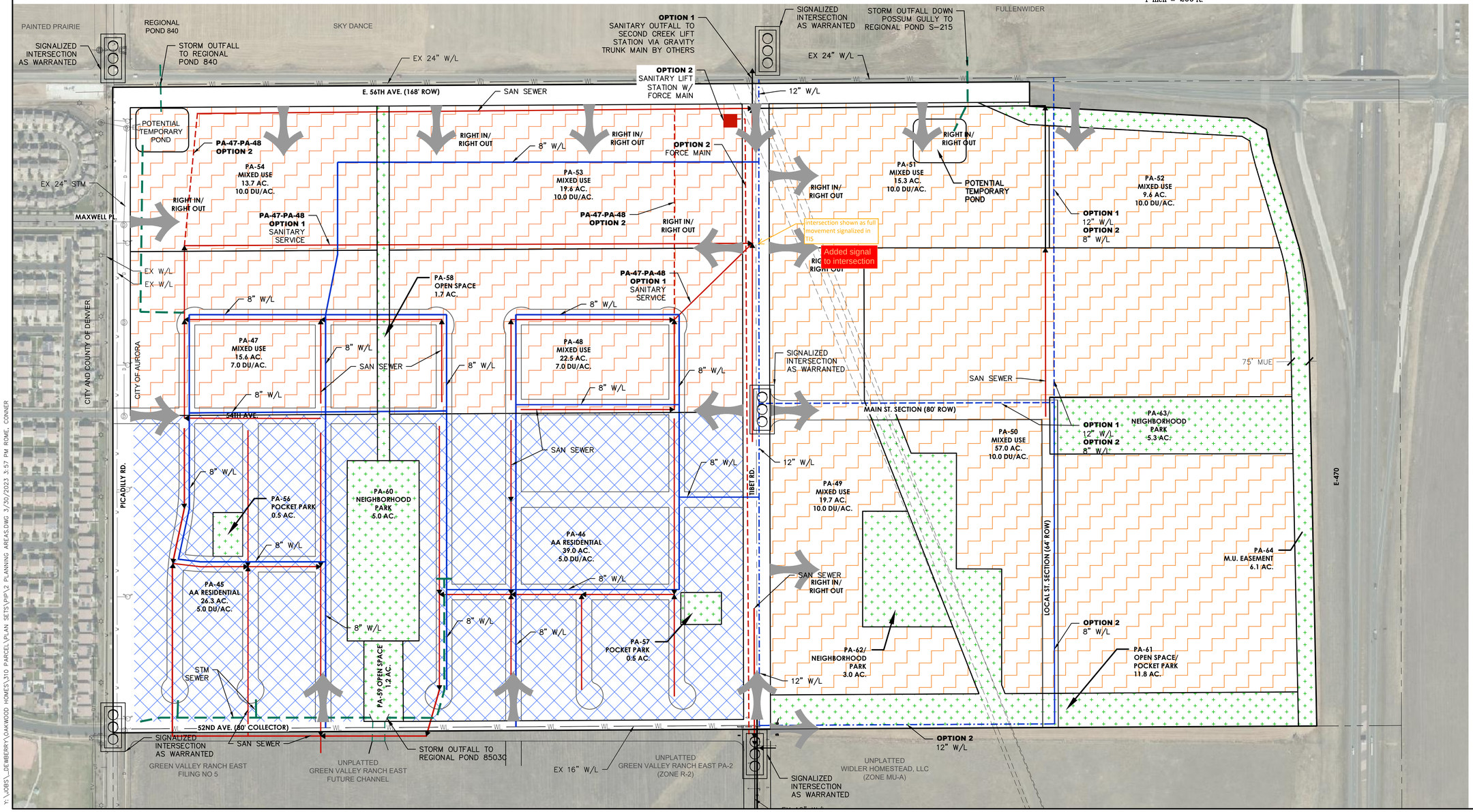


BRANDENBURG PARCEL
PA-55
SCALE 1"=200'

200 0 100 200 400
(IN FEET)
1 inch = 200 ft.



KEY MAP
N.T.S.



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

No.	Date	Description
3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
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: 2

X:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\2 PLANNING AREAS.DWG 3/30/2023 3:57 PM ROME, CONNER

LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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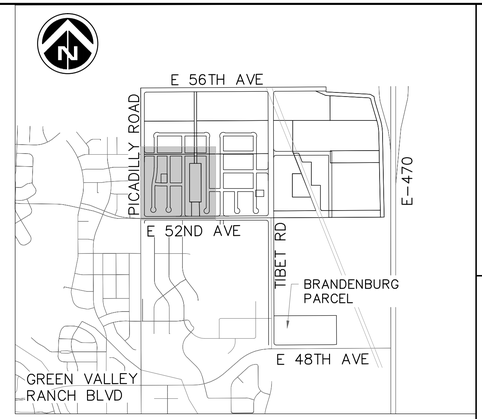
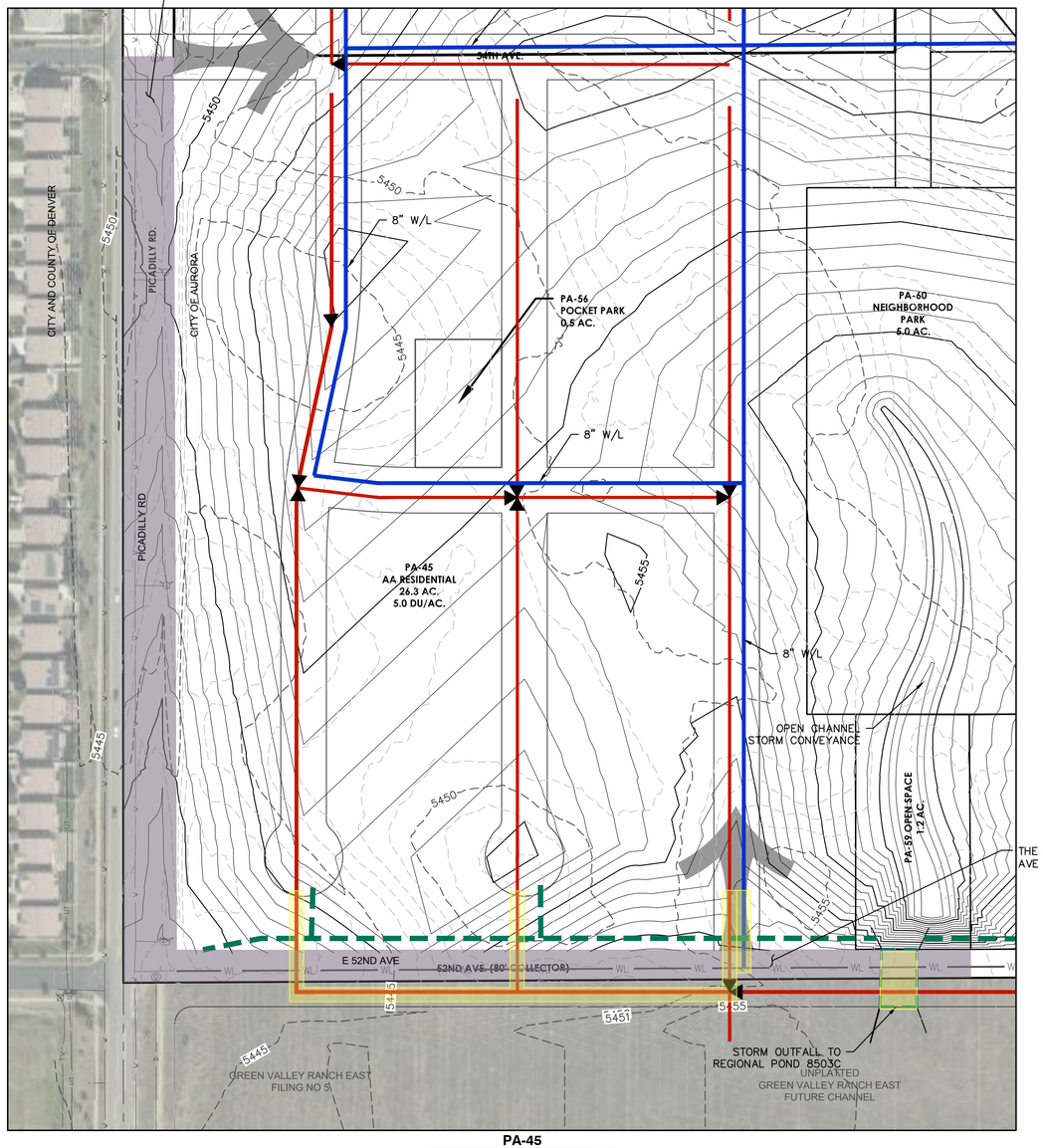


KEY MAP
N.T.S.

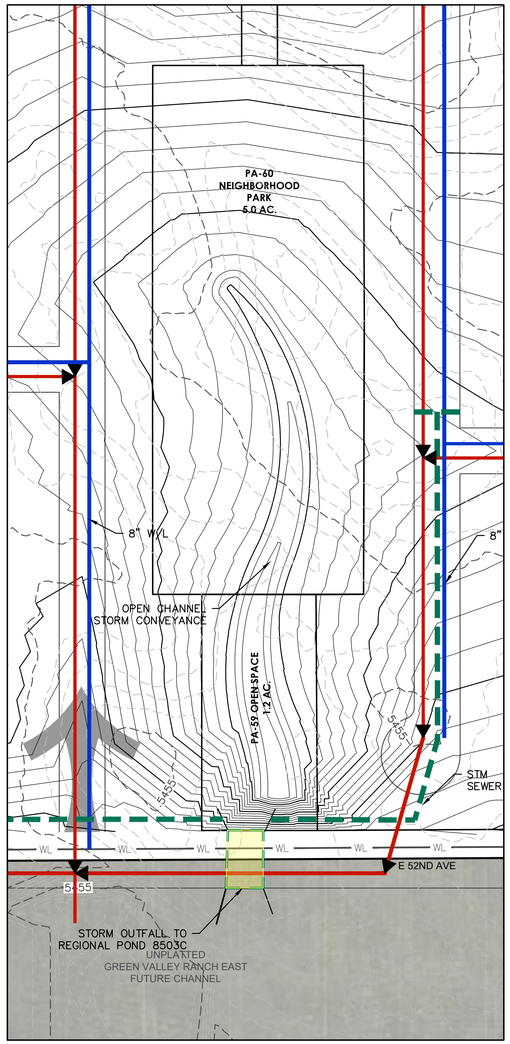
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

THE EAST 1/2 SECTION OF E PICADILLY RD ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS WITHIN THE PIFA AGREEMENT



THE NORTH 1/2 SECTION OF E 52ND AVE ALONG THE PA BOUNDARY

PA-45
AA RESIDENTIAL
SCALE 1"=100'



PA-59 & PA-60
OPEN SPACE & NEIGHBORHOOD PARK
SCALE 1"=100'

Dewberry
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Greenwood Village, CO 80111
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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
3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
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

X:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\3 PLANNING AREA DETAILS.DWG 3/30/2023 4:09 PM ROME, CONNER

LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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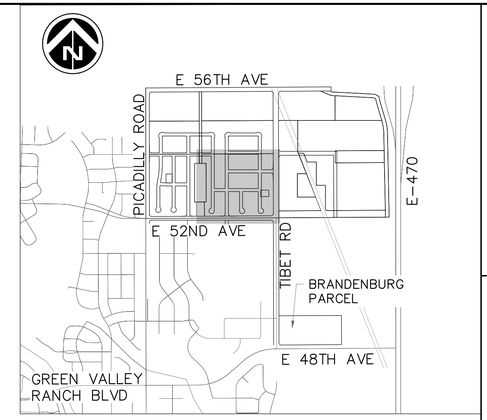
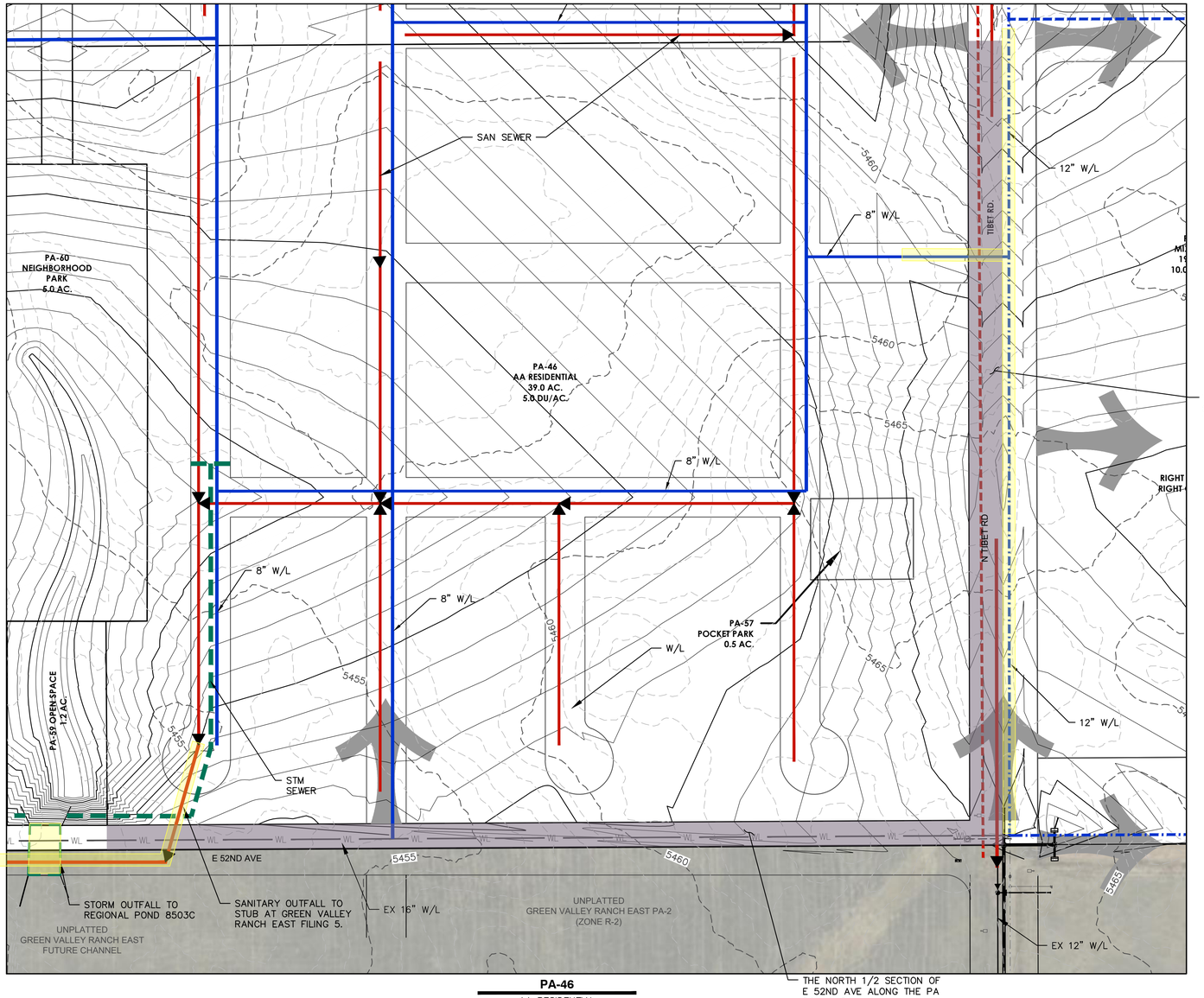
100 0 50 100 200

(IN FEET)
1 inch = 100 ft.



KEY MAP
N.T.S.



PA-46
AA RESIDENTIAL
SCALE 1"=100'

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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

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PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 4

X:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\4 PLANNING AREA DETAILS.DWG 3/30/2023 1:46 PM ROME, CONNER

LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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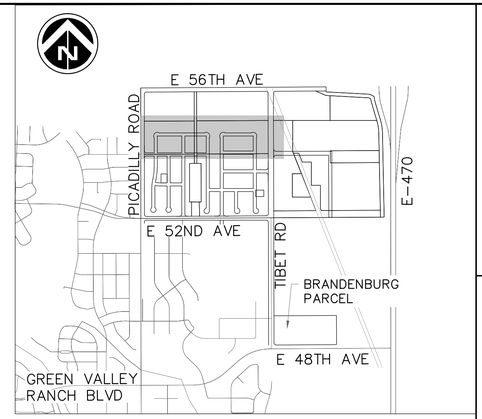
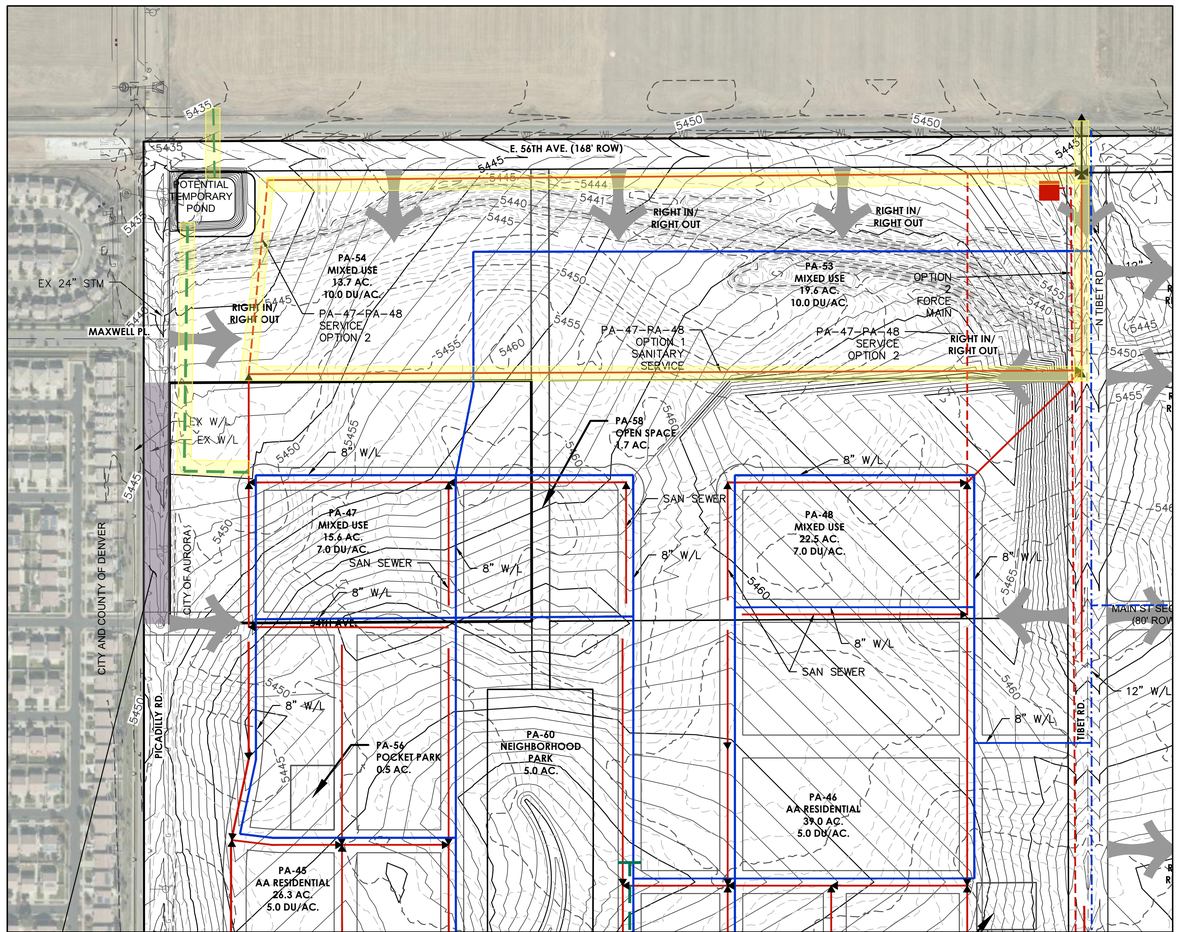


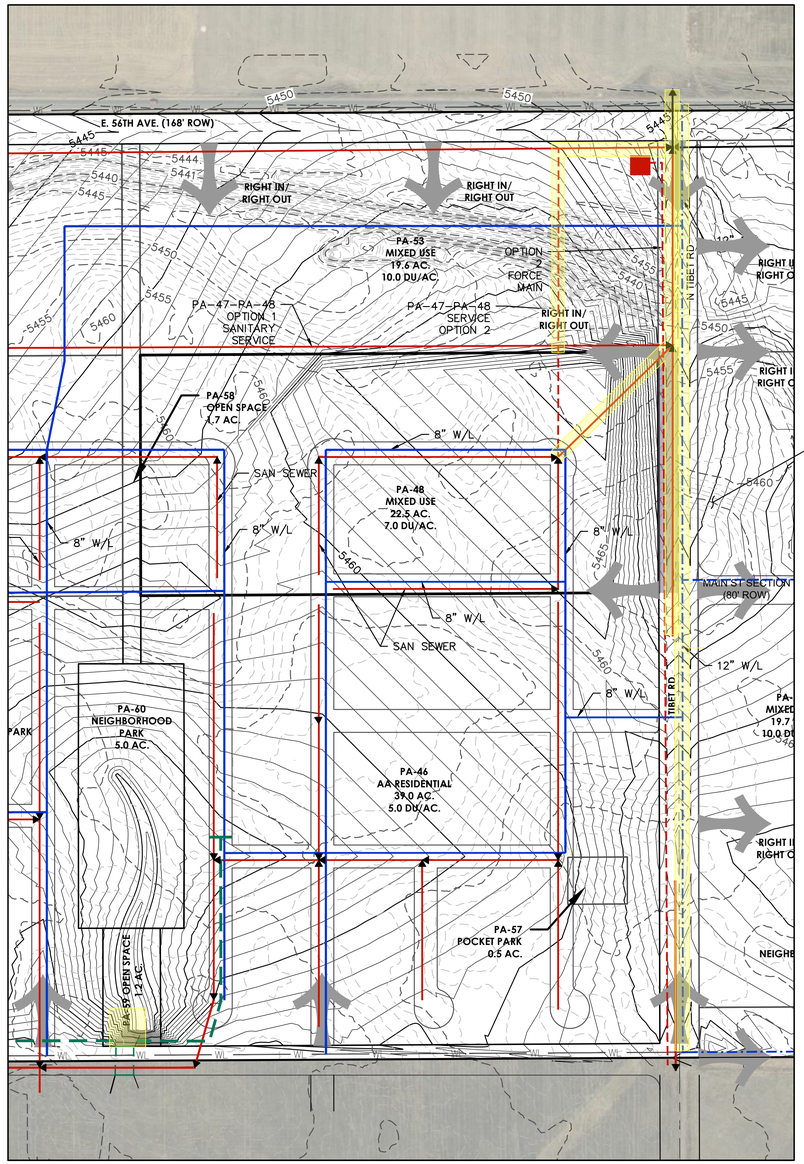
KEY MAP
N.T.S.

200 0 100 200 400
(IN FEET)
1 inch = 200 ft.



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
MIXED-USE
SCALE 1"=200'



THE WEST 1/2 SECTION OF TIBET RD ALONG THE PA BOUNDARY

PA-48
MIXED-USE
SCALE 1"=200'

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
3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM Drawn By: JTM
Checked By: JDM
Sheet Number: 5

Y:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\5 PLANNING AREA DETAILS.DWG 3/31/2023 8:17 AM ROME, CONNER

LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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200 0 100 200 400

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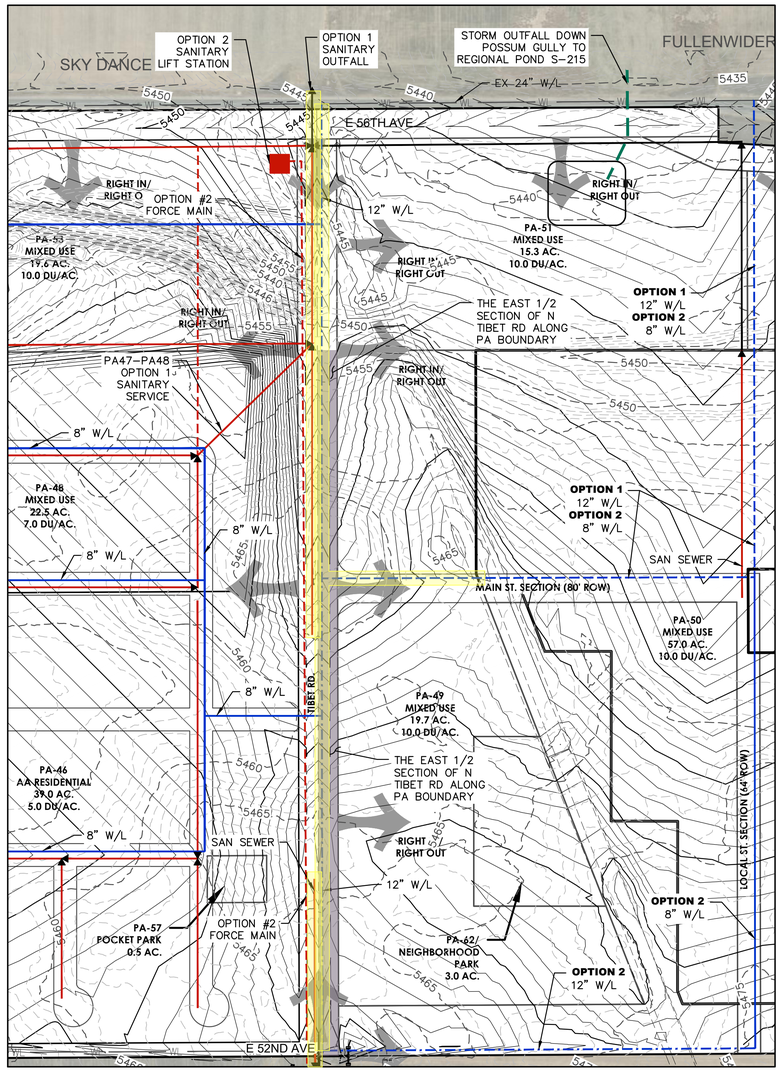
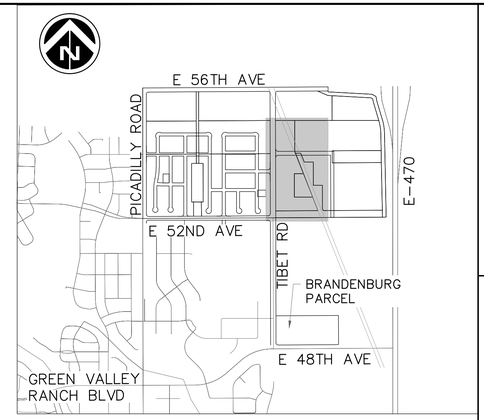


PA-49
MIXED-USE
SCALE 1"=200'

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.



KEY MAP
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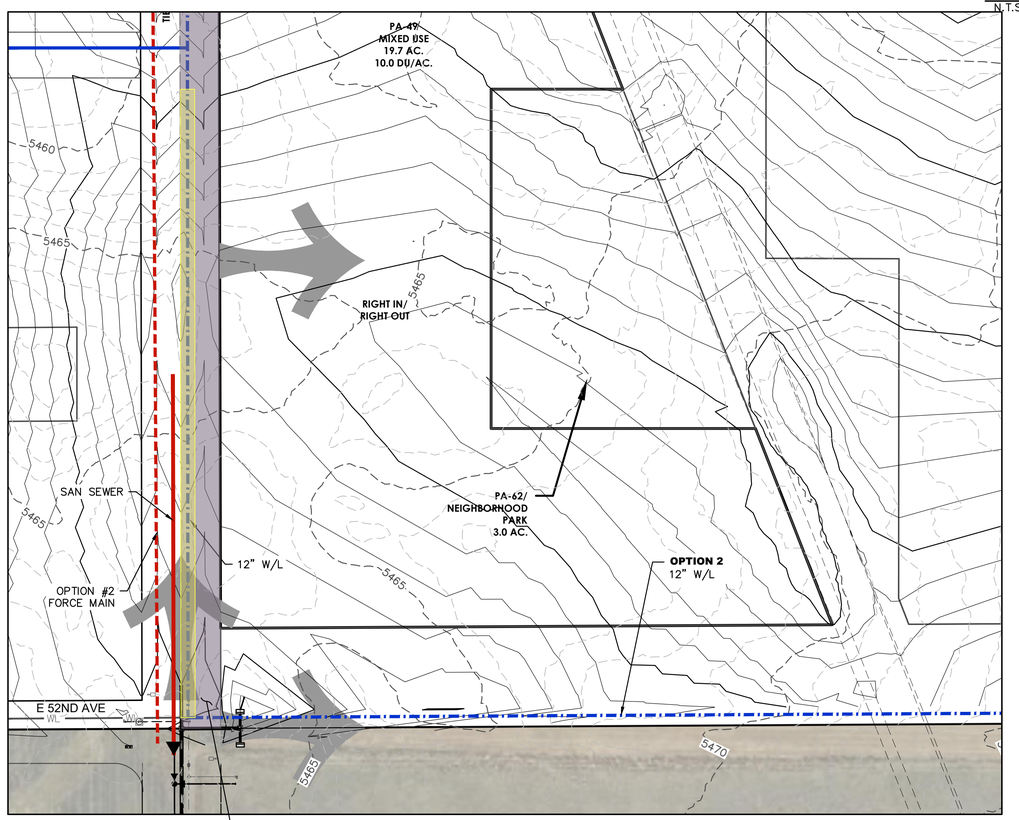

PA-62
NEIGHBORHOOD PARK
SCALE 1"=100'

Dewberry
Dewberry Engineers Inc.
8100 East Maplewood Avenue, Suite 150
Greenwood Village, CO 80111
303.486.5601
Contact: Jason D. Margraf, PE
Email: jmargraf@Dewberry.com

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

#########################

Client Name
OAKWOOD HOMES
18655 GREEN VALLEY RANCH BLVD
DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

DOCUMENT AMENDMENTS

No.	Date	Description
3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
1	12/22/2021	FIRST SUBMITTAL

PRELIMINARY
NOT FOR CONSTRUCTION

Project Number: 50145755
Designed By: JDM **Drawn By:** JTM
Checked By: JDM
Sheet Number: #

Y:\JOBS_DEWBERRY\OAKWOOD HOMES\310 PARCEL\PLAN SETS\PIP\6 PLANNING AREA DETAILS.DWG 3/30/2023 1:52 PM ROME, CONNER

LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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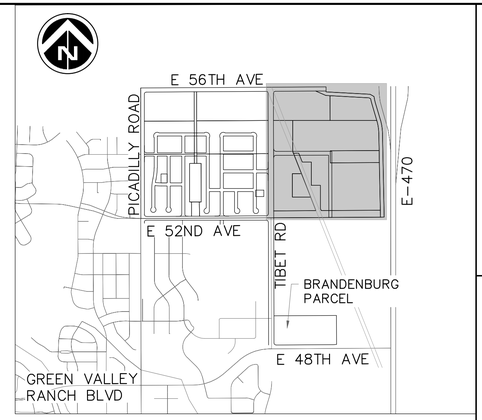

KEY MAP
N.T.S.

200 0 100 200 400
(IN FEET)
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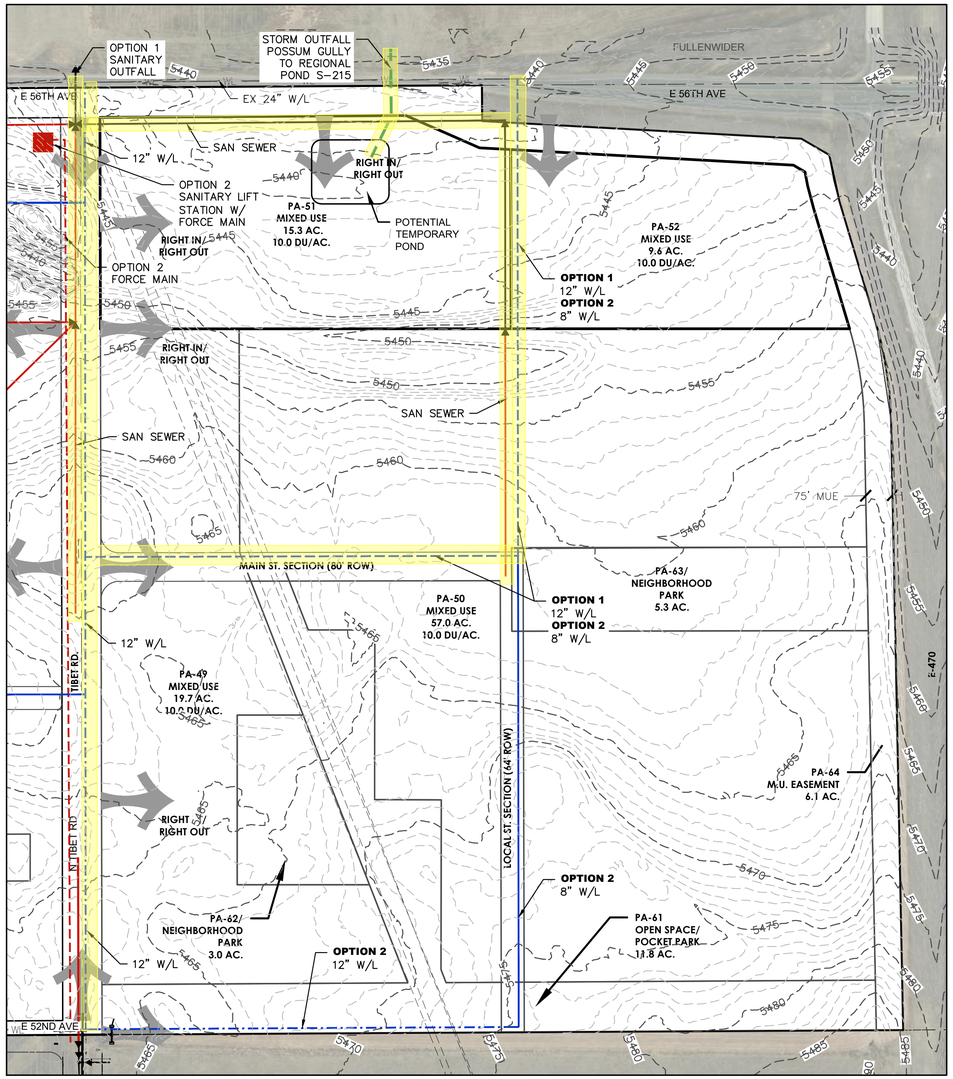
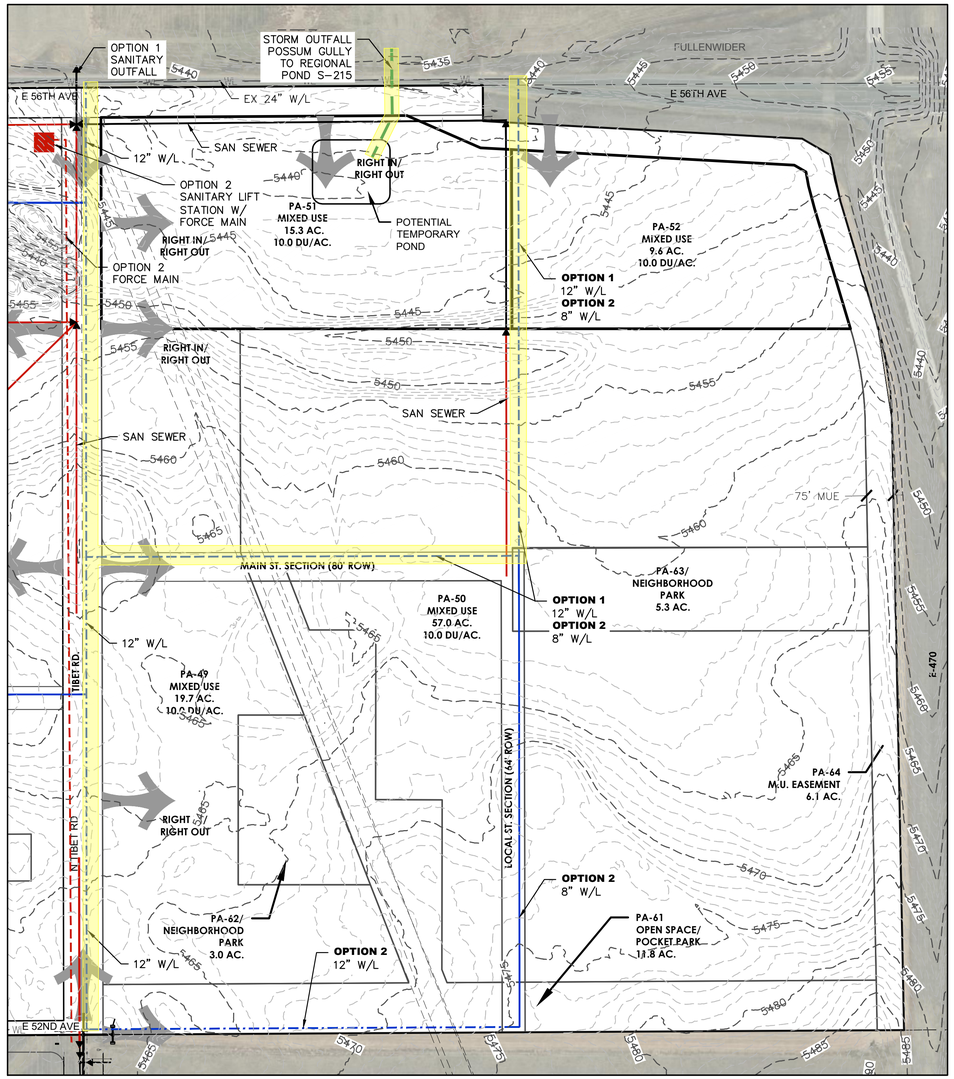


PA-50
MIXED-USE
SCALE 1"=200'



PA-61, 62, 63, 64
PARKS AND OPEN SPACE
SCALE 1"=200'

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GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

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Checked By: JDM
Sheet Number: 7

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LEGEND

EX STORM — D

EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

PROP SANITARY

COMMERCIAL

AA RESIDENTIAL

MIXED-USE

OPEN SPACE

INFRASTRUCTURE REQUIRED PER PA

UTILITIES REQUIRED PER PA

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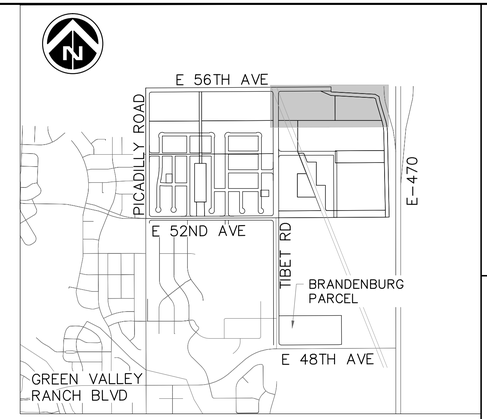
(IN FEET)
1 inch = 100 ft.



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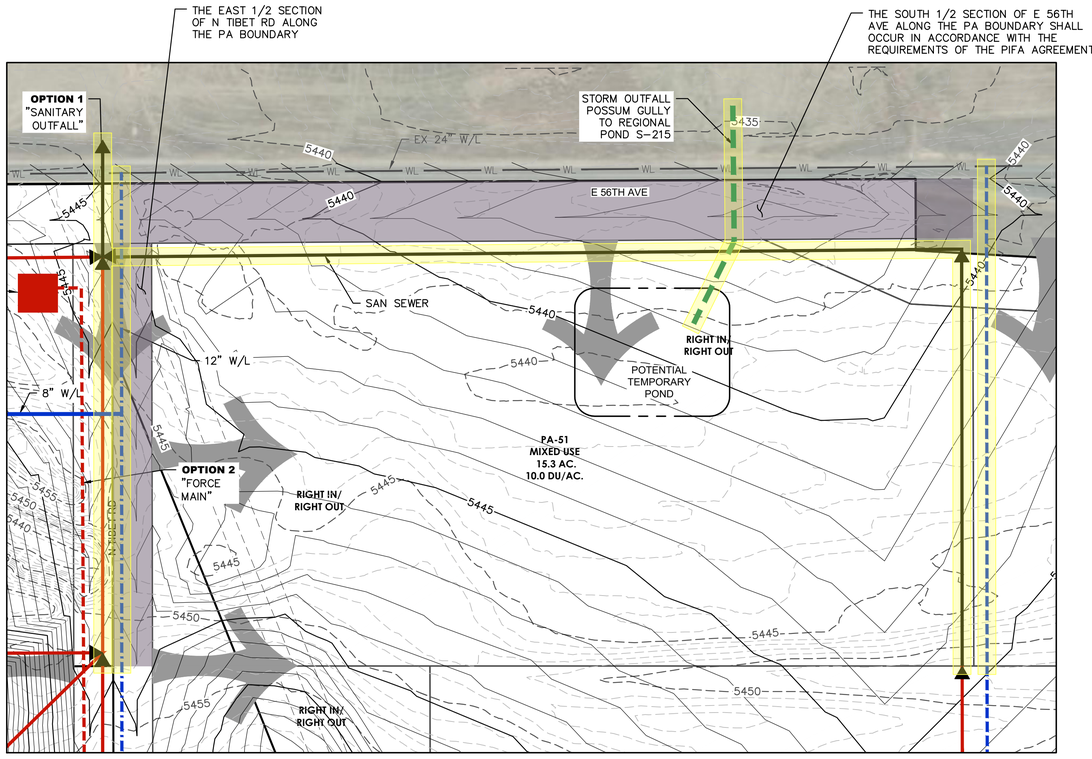

PA-51
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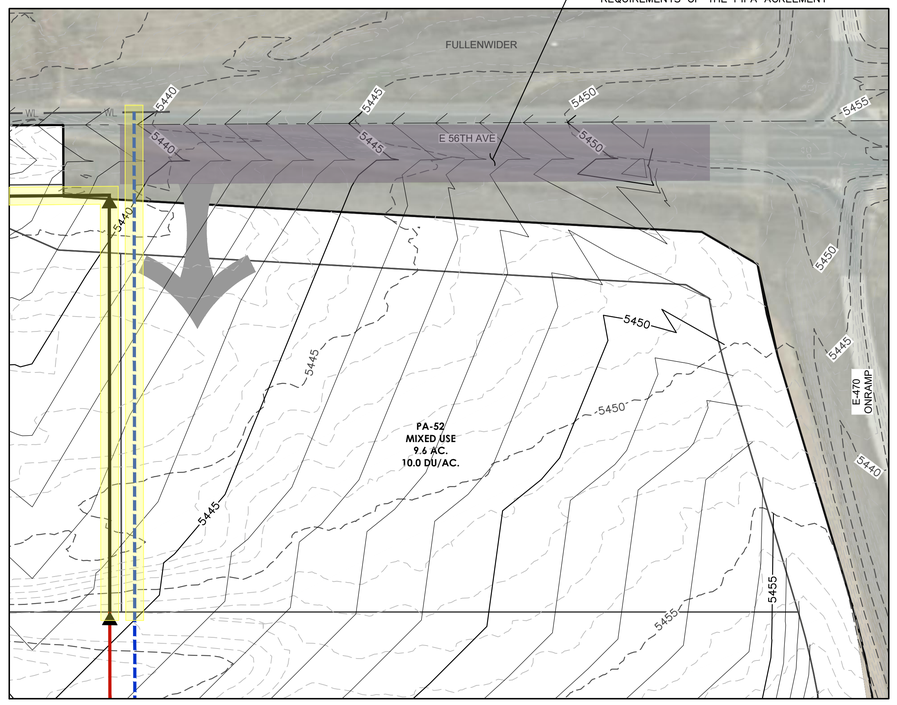

PA-52
MIXED-USE
SCALE 1"=100'

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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

DOCUMENT AMENDMENTS

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3	12/22/2022	THIRD SUBMITTAL
2	5/24/2022	SECOND SUBMITTAL
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PRELIMINARY
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EX WATER — W

FUTURE SANITARY

DEVELOPMENT ACCESS

PROP STORM

PROP WATER

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COMMERCIAL

AA RESIDENTIAL

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OPEN SPACE

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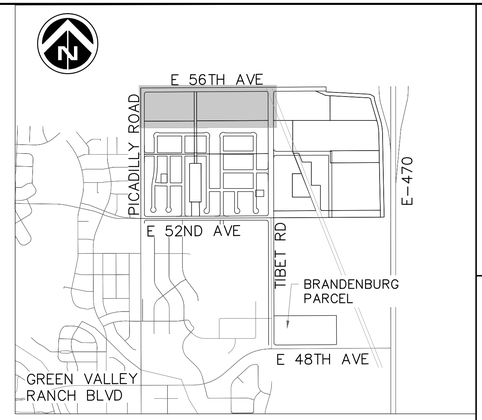

KEY MAP
N.T.S.

THE EAST 1/2 SECTION OF PICADILLY RD ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PIFA AGREEMENT

THE SOUTH 1/2 SECTION OF E 56TH AVE ALONG THE PA BOUNDARY SHALL OCCUR IN ACCORDANCE WITH THE REQUIREMENTS OF THE PIFA AGREEMENT

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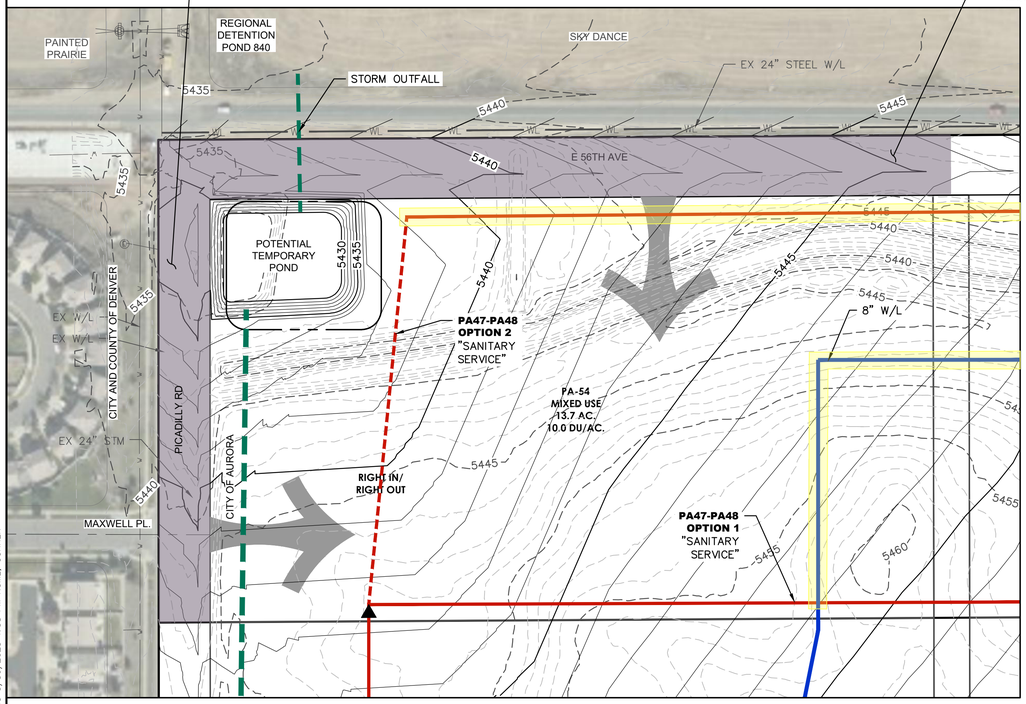

PA-54
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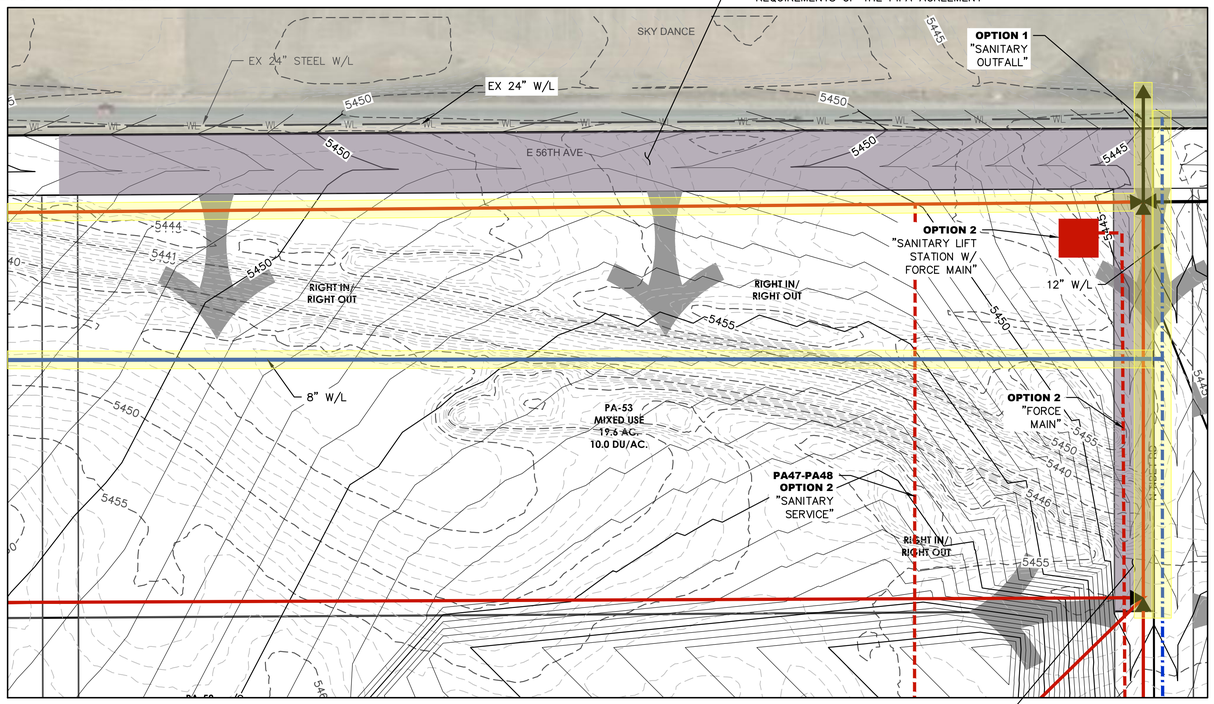
SCALE 1"=100'



PA-53
MIXED-USE
SCALE 1"=100'

THE WEST 1/2 SECTION OF N TIBET RD ALONG THE PA BOUNDARY

GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

PLANNING AREA DETAILS

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EX WATER — W

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PROP WATER

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COMMERCIAL

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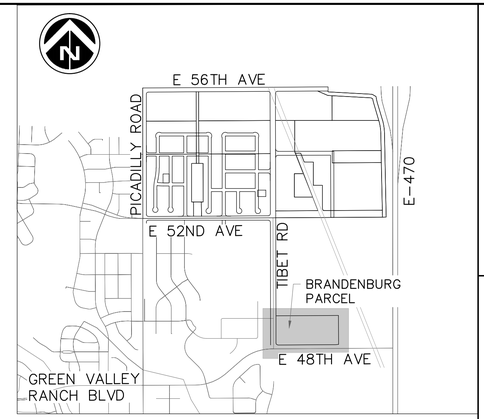

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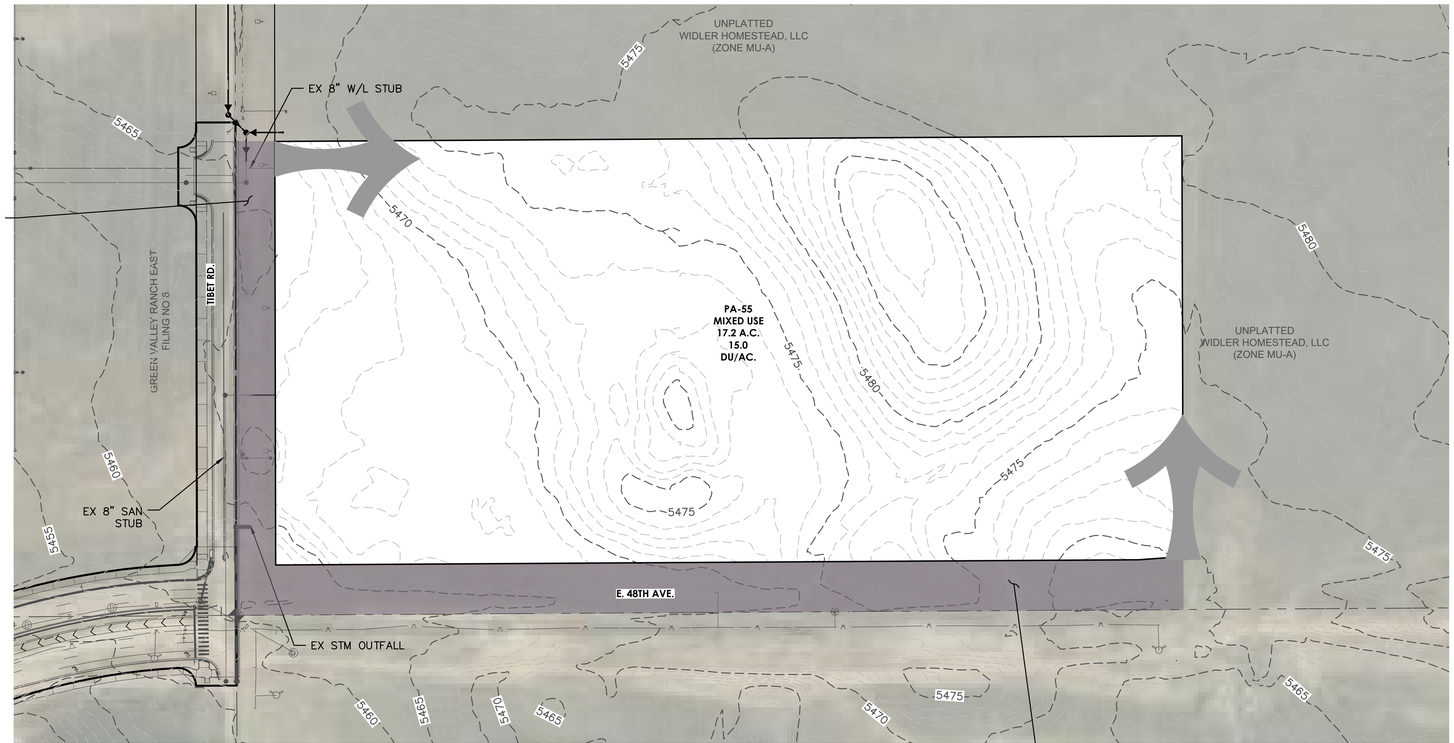

PA-55
MIXED USE
SCALE 1"=100'

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GREEN VALLEY MASTER PLAN AMENDMENT 2
PUBLIC IMPROVEMENT PLAN

########################

Client Name
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DENVER, CO 80249
Tel: 303-486-8734
Contact: DAVID CARRO

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APPENDIX – Green Valley Amendment 1 PIP

GREEN VALLEY – AMENDMENT 1

PUBLIC IMPROVEMENT PLAN

MAY 2017

REVISED OCTOBER 2017

REVISED DECEMBER 2017

REVISED MAY 2018

REVISED SEPTEMBER 2018

For:
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TABLE OF CONTENTS

SCOPE 3
A. INTRODUCTION 3
B. GENERAL PARAMETERS 4
C. PLANNING AREAS – GROUP A 8
D. PLANNING AREAS – GROUP B 11
E. PLANNING AREAS – GROUP C 13
F. PLANNING AREAS – GROUP D 16
G. PLANNING AREAS – GROUP E 19
H. PLANNING AREAS – GROUP F 22
I. LIST OF REFERENCES 24

APPENDICES

A. Maps and Exhibits

SCOPE

The purpose of this Master Land Use / Public Improvement Report is to discuss relevant issues regarding infrastructure planning for Green Valley – Amendment 1 development. More specifically, this report will discuss with each identified planning areas the required roadway, storm drainage, water and sanitary sewer infrastructure necessary to facilitate them as standalone developments.

A. INTRODUCTION

1. Location

- The Green Valley – Amendment 1 development is located in northeastern Aurora, Colorado. The site is east of Picadilly Road, west E-470, north of 38th Avenue, and south of 52nd Avenue with the regional detention improvements north 48th Avenue. The site is within Sections 13 and 24, Township 3 south, Range 66 west of the Sixth Principal Meridian, City of Aurora, Adams County Colorado. The existing Green Valley Ranch residential development is to the west of Picadilly Road (located within the City and County of Denver). Portions of the proposed Windler and The Aurora Highlands proposed developments are to the east and south of the site.

2. Proposed Development

- The proposed Framework Development Plan (FDP) for Green Valley – Amendment No. 1 development consists of approximately +/- 583.6 total acres. The site is surrounded by the existing Green Valley Ranch residential developments to the west (located within the City and County of Denver). E-470 Airport Corporate, Distribution, and I-70 Corridor uses to the north. Light industrial uses are permitted to the south, and I-70 Corridor uses are permitted to the east. West of the site are the GVRE, Windler and Majestic Commercenter developments
- Green Valley – Amendment 1 is a mixed use planned development consisting of a variety of proposed land uses that include: residential housing options, school, parks and open space. The predominant land use will be a variety of residential dwelling units. With an average gross density of approximately 5.5 dwelling units per acre, this equates to roughly 2,500 units or +/- 6,900 residents. Housing varieties include single-family detached, single-family attached, and multi-family options.

B. GENERAL PARAMETERS

1. Land Development

- Green Valley – Amendment 1 has been split into several distinct planning areas based on market analysis and development opportunities. As such the planning areas noted herein were analyzed to determine the minimum required infrastructure necessary to support them. However, the actual sequential development of this project shall be determined by market demands. Furthermore, dependent upon market needs, identified planning areas may be combined or partially skipped as needed.
- Roadway and utility alignments (water, sanitary sewer, storm drainage) are shown for illustrative purposes to identify required infrastructure but are subject to change as planning areas are developed. Final roadway and utility alignments will be determined by subsequent CSP and construction document submittals.
- Each planning area shall at a minimum have:
  - Two points of access into the property.
  - Sufficient roadways to assure emergency vehicle access.
  - Sufficient fire hydrants to provide adequate fire flows.
  - Sufficient looped water main system connected to COA water system.
  - Sanitary outfalls to connect into COA sewer interceptor mains.
- Water quality treatment shall be provided to any developed areas prior to release to adjoining waterways.

2. Roadway Improvements

- The proposed arterial and collector roadways align with the arterial and collector roadways of adjacent properties. Currently E-470, 48th Avenue, and Picadilly Road are adjacent or internal to the site.
- It is anticipated that roadway sections shall be constructed as necessary to accommodate traffic volumes and movement requirements as well as to satisfy Life

Safety requirements. Intersections may require full sections and proper transitions to adequately handle the ultimate traffic volumes and traffic movements. The remaining roadway and utility infrastructure shall be completed as future planning areas are developed. Development and Fire/Life Safety may require segments to be constructed out of phasing order.

- Perimeter roadway improvements and associated infrastructure is required for the proposed development. As set forth in the Public Infrastructure Funding Agreement (PIFA) (the "Agreement") between the Developer (Oakwood Homes), the Metropolitan District (the District), and the City of Aurora (the City), together referred to as the "Parties", the improvements will be constructed in the following twelve segments:

Segment	Description and Location of Roadway Improvement	Trigger Event
Segment A	North 1/2 of 48th Ave - Picadilly Road to Rome Street	Collection of the 74th Impact Fee
Segment B	South 1/2 of 48th Ave - Picadilly Road to Rome Street	Collection of the 148th Impact Fee
Segment C	S. 1/2 of 52nd Ave - Picadilly Road to East Boundary of PA-1	Collection of the 240th Impact Fee
Segment D	48th Ave - Rome Street to Tibet Road	Collection of the 460th Impact Fee
Segment E	East 1/2 of Picadilly Road - 48th Ave to 42nd Ave	Collection of the 616th Impact Fee
Segment F	East 1/2 of Picadilly Road - 52nd Ave to 48th Ave	Collection of the 824th Impact Fee
Segment G	Tibet Road - South boundary of PA-2 to Tributary T Crossing	Collection of the 1126th Impact Fee
Segment H	East 1/2 of Picadilly Road - 42nd Ave to 38th Ave	Collection of the 1253rd Impact Fee
Segment I	38th Ave - Picadilly Road East to Tibet Road	Collection of the 1497th Impact Fee
Segment J	52nd Ave -West Boundary of PA-2 to Tibet Road	Collection of the 1606th Impact Fee
Segment K	Tibet Road - 52nd Ave to South Boundary of PA-2	Collection of the 1738th Impact Fee
Segment L	Tibet Road - Tributary T Crossing South to 38th Ave	Collection of the 1922nd Impact Fee
Segment M	38th Ave - Tibet Road East to E-470	Collection of the 2111th Impact Fee or Last platted area within the FDP boundary, whichever comes first

- To fund the cost of the work, the District will impose an impact fee on homebuilders constructing single-family residences in the proposed development in the amount agreed upon by the Parties base upon an approved cost estimate of the work. The impact fee will be due at the time a homebuilder applies for a building permit, and the District will collect such impact fee as a condition to the issuance of a building permit in the property.
- The impact fee is calculated by dividing the cost estimate by the number of single-family platted lots (or preliminary platted lots if final plats are not recorded). The district will assess the impact fees for each succeeding year by dividing the cost estimate for the remaining work for such year and the District's estimate out of pocket costs by the number of single-family lots in the property for which a building permit has not been issued.
- The District will deposit impact fees upon receipt, shall hold such impact fees in escrow, and release escrow funds to pay the cost of the work at the Triggering Events listed below. The constructing party shall commence construction of a segment of the work upon occurrence of a Triggering Event provided that a determination by the City that life safety, traffic counts, or other considerations does not warrant construction of a segment earlier than the Triggering Event.

3. Drainage Improvements

- The Green Valley – Amendment 1 development lies within the First Creek watershed. In general, historic drainage patterns consist of poorly defined drainages that traverse the agricultural fields in direction towards 48th Ave and Picadilly. The development of Green Valley – Amendment 1 will require public and private drainage improvements for the safe collection and conveyance of stormwater runoff. All public drainage improvements will meet the requirements of the City of Aurora and UDFCD as directed. Runoff within the proposed development will initially be carried in the streets. The street conveyance will be supplemented with storm systems where street flow capacities are exceeded. Storm sewer networks along with open channel drainageways will convey runoff to water quality and detention facilities. Flow from the site will ultimately reach Tributary T.
- Offsite flow will be conveyed through the site via the main branch of Tributary T.
- Responsibility for construction of improvements to the drainageways will be apportioned between the City of Aurora and the developer. The developer assumes the responsibility for earthwork, erosion protection and revegetation associated with the stream channelization required for the adequate drainage, control, and conveyance of stormwater to the detention facilities and/or receiving waters. The City of Aurora is responsible for the construction of grade control structures in channels with tributary areas greater than 160 acres. The need for grade control structures will be determined with preliminary design. The developer is responsible for the construction of the grade control structures in the channel with the City providing agreed upon reimbursements.

- Adequate drainage infrastructure/outfalls to Master Planned drainage improvements shall be provided within each Development Phase or Group.

4. Water Improvements

- The Green Valley – Amendment 1 development will be served by the City of Aurora (COA) water system with the proposed development integrating into Pressure Zone 3. Pressures generally increase towards the northwest boundary and reduce towards the southeast boundary of the proposed project area.
- Existing Water Facilities: Water transmission to the proposed development area is currently conveyed by means of two 24" waterlines:
    - N Picadilly Road Water Transmission Line
      24" waterline which extends from the east-west 24" ductile iron pipe (DIP) water transmission line along the I-70 Interstate corridor. The existing waterline proceeds north at Picadilly Road transitioning to polyvinyl chloride (PVC) pipe at approximately 26th Avenue. The 24" PVC water transmission line continues north to 64th Ave. before proceeding west to serve the High Point, Single Tree, and The Meadows at Dunkirk subdivisions.
    - E 48th Avenue Water Transmission Line
      24" PVC water line which branches off the Picadilly Road water transmission line at 48th Avenue and proceeds east to Harvest Road before continuing north to 56th Avenue. The 24" water transmission line then proceeds east along 56th Avenue for approximately 2,000' before terminating at Jackson Gap Street.
- Each planning area shall be required to provide an internal looped water network per city criteria during their respective CSP submittals.

5. Sanitary Sewer Improvements

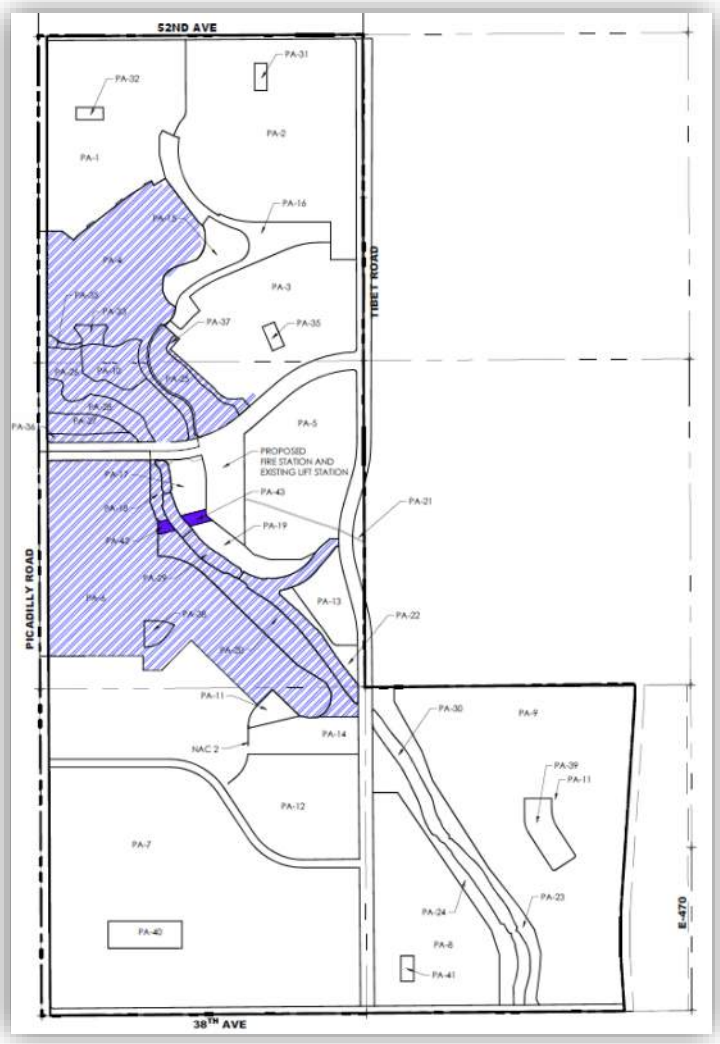
- The Green Valley – Amendment 1 development will be served by the City of Aurora (COA) sanitary sewer system. COA has anticipated growth and development in this area and constructed the First Creek Lift Station and approximately 9,750 linear feet of 36" PVC sanitary sewer line. The lift station is located off Rome Street approximately 600' south of 48th Avenue. The 36" sanitary sewer line proceeds east from the lift station in a dedicated easement and terminates at 48th Avenue approximately 1,180' west of Harvest Road.
- Green Valley – Amendment 1 lies within the First Creek watershed.
- The capacity of the First Creek Lift Station will be considered for phasing and layout of the proposed internal sanitary sewer system including any outfall lines to existing COA interceptor mainlines.
- Suitable outfall mains shall extend from each Development Group Area and connect into COA sanitary sewer system. Interior sewer mains shall extend to Development Area limits to provide service connections for future development areas.

6. Parks and Open Space

- The parks and open space planning areas referenced herein are shown on the Framework Development Plan (FDP) entitled 'Green Valley - Amendment No. 1'.

- The phasing and appropriate triggers have been included herein within each individual Planning Area Group.

C. PLANNING AREAS – GROUP A



1. Land Development

The land development within Planning Areas – Group A incorporates approximately 82 acres.

Land uses described below:

Planning Areas - Group A		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-4	Active Adult Residential	28.1
**PA-6*	*Single Family Residential*	*22.5*
PA-11	Clubhouse	3.5
PA-25	Detention	6.1
PA-26	Detention	8.0
PA-27	Detention	3.8
PA-29	Channel	1.7
**PA-30*	*Channel*	*7.9*
	Total	***81.6***

**PA-6 is also represented in Planning Areas B & C*
**PA-30 is also represented in Planning Areas B, C, and D*

2. Roadway Improvements

- The following roadways are required to support the planned development located within Planning Areas – Group A:
  - North outer two lanes of 48th Avenue from Picadilly Road about 1,305 LF east to the access road for PA-4 (Rome St.) including 1 - left turn lane at Picadilly Road and provide interim landscape median (Segment A Trigger).
  - South outer two lanes of 48th Avenue from Picadilly Road east to PA-17 Open Space including 1 – left turn lane at Rome Street (Segment A Trigger).

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group A:
  - Regional Detention Pond 8503 occupying planning areas PA-26, and PA-27.
  - Tributary T Channel improvements from the existing 48th Ave box culvert to the southeast spanning Planning Areas PA-28 (PA-29), and a portion of PA-29 (PA-30).
  - Internal Storm Sewer System within developed area of PA-4 and PA-6.
  - Water quality ponds within developed area of PA-28 and PA-20.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group A:
  - Water Main interior to PA-6 to create a looped connection from the existing 24-inch Transmission line located in Picadilly Road to the existing 24inch Transmission line in 48th Avenue.

- Water Main interior to PA-4 to create a looped connection from the existing 24-inch Transmission line located in Picadilly Road to the existing 24-inch Transmission line in 48th Avenue.
- Internally looping of water mains along planned local streets.

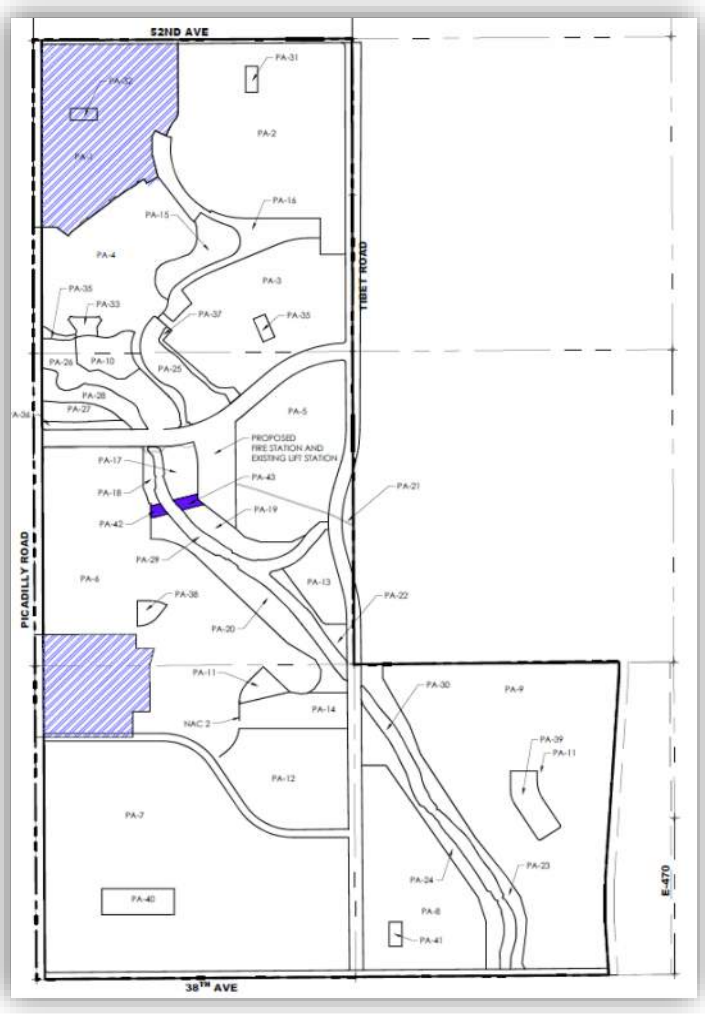
5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group A:
  - Sewer Main is anticipated to be installed from the First Creek Lift Station north through PA-4. This sewer main will service the basin area tributary to Tributary T drainage way including the Green Valley – Amendment 1 development north of 48th Avenue, west of Tibet Road and east of Picadilly Road.
  - A 30-inch interceptor line is anticipated to be installed by others running north along Picadilly Road and east through PA-6 to the First Creek Lift Station. It is anticipated that this interceptor line will service the area south of 48th Avenue, east of Picadilly Road, north of 38th Avenue, and west of the Tributary T drainage way.
  - Sewer main is anticipated to extend southeast parallel to and on the east side of Tributary T within PA-6 to PA-14 Neighborhood Park.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group A.
  - PA-33 Open space 0.8 ac.
  - PA-38 Pocket Park 0.9 ac.
  - PA-26 Detention Pond 6.8 ac.
  - PA-27 Detention Pond 2.1 ac.
  - PA-28 Channel 3.4 ac.

D. PLANNING AREAS – GROUP B



1. Land Development

The land development within Planning Areas - Group B incorporates approximately 74 acres. Land uses described below:

Planning Areas - Group B		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-1	Active Adult Residential	33.2
**PA-6*	*Single Family Residential*	*32.4*
**PA-30*	*Channel*	*7.9*
	Total	***73.5***

**PA-6 is also represented in Planning Areas A & C*
**PA-30 is also represented in Planning Areas A, C, and D*

- The development within Planning Areas - Group B assumes the following infrastructure to be constructed prior to the commencement of the above listed planning areas.
    - 30-inch interceptor line installed by others running north along Picadilly Road and east through PA-6 to the First Creek Lift Station.
    - Sewer Main installed from the First Creek Lift Station north through PA-4.
    - Regional Detention Pond 8503.
    - Tributary T channel improvements from 48th Avenue south to the interceptor crossing.
    - Parks and Open Space.

2. Roadway Improvements

- The following roadways shall be required to support the development Planning Areas – Group B:
    - 52nd Avenue whole street section (3-Lane Collector) from Picadilly Road east adjacent to PA-1 (Segment 2 Trigger).
    - 42nd Avenue whole street section (2-Lane Collector) from Picadilly Road east adjacent to PA-6.

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group B:
    - Tributary T Channel improvements from the interceptor crossing to the outfall of the proposed planning areas.
    - Water Quality ponds within developed area of PA- 6 before discharging into the Tributary T channel.
    - Internal Storm Sewer System within development area of PA-1 and PA-6.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group B.
    - Water Main along 52nd Avenue from Picadilly Road east adjacent to PA-1 and internally looped to proposed water main along 51st. Ave.
    - Water Main along 51st Avenue from Picadilly Road east interior to PA-1.
    - Water Main along 44th Avenue from Picadilly Road east interior to PA-6 and internally looped to proposed water main along 42nd. Ave.
    - Water Main along 42nd Avenue from Picadilly Road east adjacent to PA-6.

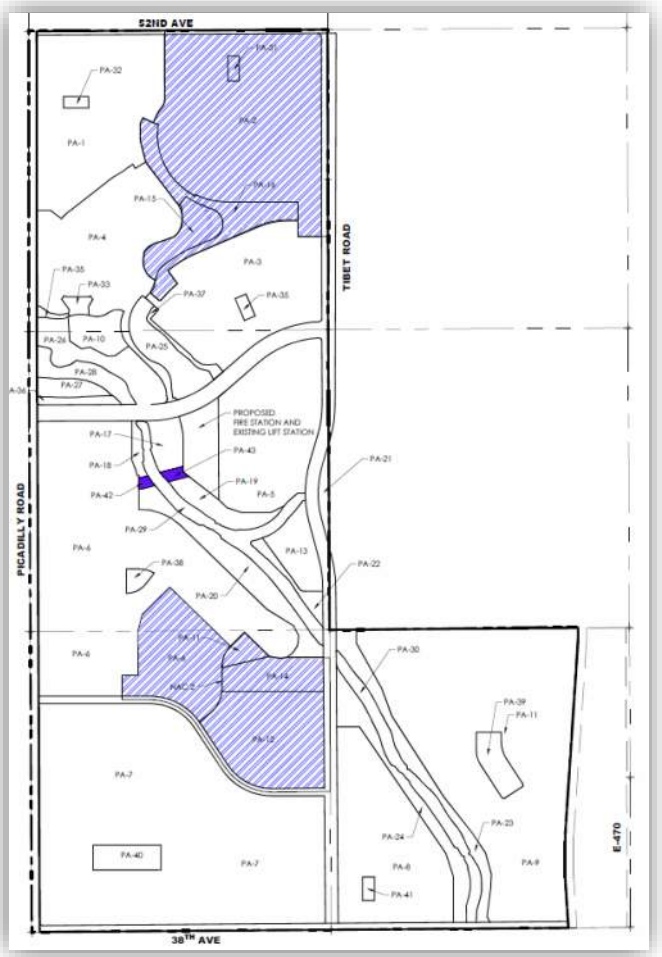
5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group B:
    - Extension of the Sewer Main north through PA-1 providing a connection for the future development to the north at the intersection of Picadilly Road and 52nd Avenue.
    - Extension of the Sewer Main south and west of Tributary T channel through the planned development within PA-6.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group B.
    - PA-32 Pocket Park 0.5 ac.
    - Portion of PA-29 Channel +/- 1.1 ac.

E. PLANNING AREAS – GROUP C



1. Land Development

The land development within Planning Areas – Group C incorporates approximately 96 acres. Land uses described below:

Planning Areas - Group C		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-2	Active Adult Residential	47.9
**PA-6*	*Single Family Residential*	*26.4*
PA-16	Open Space	6.1
PA-17	Open Space	3.5
PA-18	Open Space	0.6
PA-28	Channel	3.2
**PA-30*	*Channel*	*7.9*
	Total	***95.6***

**PA-6 is also represented in Planning Areas A & B*
**PA-30 is also represented in Planning Areas A, B, and D*

- The development within Planning Areas – Group C assumes the following infrastructure to be constructed prior to the commencement of the above listed planning areas.
  - South half of 52nd Avenue from Picadilly Road east to PA-2 (Segment C Trigger).
  - North half of 48th Avenue from Picadilly Road east to PA-4 and north along PA-4 to the proposed development connection (Segment A Trigger).
  - Internal roadway connection through PA-6 connecting into 48th Avenue to provide a secondary access.
  - 42nd Avenue from Picadilly Road east to the proposed development connection.
  - Regional Detention Pond 8503.
  - Tributary T channel improvements from 48th Ave to the outfall of Planning Areas Group B.
  - Sewer Main installed from the First Creek Lift Station north through PA-4.
  - Sewer Main installed from the First Creek Lift Station south to the proposed development connection.
  - Water Main installed from Picadilly east along 52nd Avenue, 51st Avenue, 50th Avenue, 44th Avenue, and 42nd Avenue connecting to the proposed developments.
  - PA-15, PA-16, and PA-31 Parks and Open Space.

2. Roadway Improvements

- The following roadways shall be required to support the development of Planning Areas – Group C:
  - 42nd Avenue whole street section (2-Lane Collector) adjacent to PA-6.

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group C:
    - Proposed Culvert crossing under 52nd Avenue at the shared boundary of PA-1 and PA-2.
    - Proposed Culvert crossing under Tibet Road at the shared boundary of PA-2 and PA-3.
    - Channel improvements throughout PA-16 (PA-28).
    - Tributary T channel continuation from Planning Areas Group B – part of PA-29 Channel to the confluence channel merger.
    - Detention Pond completion within PA-25.
    - Water Quality ponds within developed area of PA- 6 before discharging into the Tributary T channel.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group C.
    - Water Main system connecting and looping the 52nd Avenue main to the Tibet Road main internal to PA-2.
    - Water Main system connecting and looping the 44th Avenue main to the 42nd Avenue main internal to PA-6.

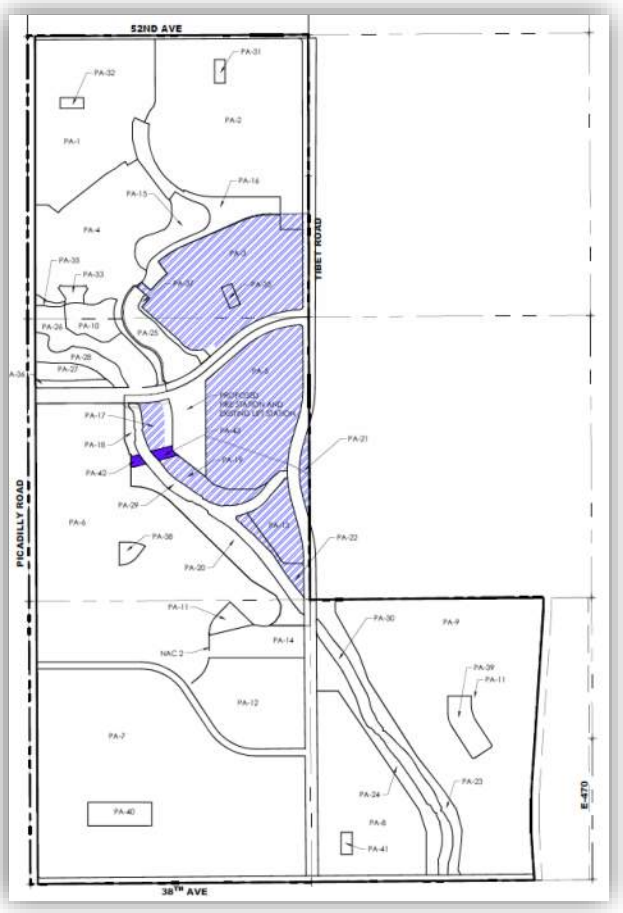
5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group C:
    - Extension of the Sewer Main south and west of Tributary T channel through the planned development within PA-6 terminating at PA-15 Park.
    - Extension of sewer main north and east within PA-16 Open space and PA-17 Open Space to Tibet Road.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group C.
    - PA-31 Pocket Park 0.5 ac.
    - PA-16 Open Space 8.1 ac.
    - PA-11Clubhouse 1.5 Ac.
    - PA-15 Neighborhood Park 4.5 ac.
    - PA-14 Neighborhood Park 5.8 Ac.
    - Portion of PA-29 Channel +/- 1.7 ac.

F. PLANNING AREAS – GROUP D



1. Land Development

The land development within Planning Areas – Group D incorporates approximately 106 acres.

Land uses described below:

Planning Areas - Group D		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-3	Active Adult Residential	47.9
PA-5	Single Family Residential	26.4
PA-14	Park	5.0
PA-19	Open Space	5.5
PA-20	Open Space	9.4
PA-21	Open Space	1.6
PA-22	Open Space	2.3
**PA-30*	*Channel*	*7.9*
	Total	***106.0***

**PA-30 is also represented in Planning Areas A, B, and C*

- The development within Planning Areas – Group D assumes the following infrastructure to be constructed prior to the commencement of the above listed planning areas.
  - North half of 48th Avenue from Picadilly Road east to PA-4 (Segment A Trigger).
  - A secondary access developed on the north side of 48th Avenue as well as on the south side of 48th Avenue connecting the planned development to Picadilly Road creating a secondary access for PA-3 and PA-5.
  - Sewer Main installed from the First Creek Lift Station north through PA-4.
  - Regional Detention Pond 8503.
  - Tributary T channel improvements from 48th Avenue to the confluence merger.
  - Parks and Open Space.

2. Roadway Improvements

- The following roadways shall be required to support the development of Planning Areas – Group D:
  - 48th Avenue whole street section from PA-17 east to Tibet Road (Segment D Trigger).
  - Tibet Road from the shared boundary of PA-2 and PA-3 south to the Tributary T channel crossing (Segment G Trigger).

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group D:
  - Tributary T channel improvements from the confluence channel merger to Tibet Road.
  - Proposed Culvert crossing under Tibet Road at the shared boundary of PA-5 and PA-29 Channel.
  - Proposed Culvert crossing under Tibet Road at the Tributary T crossing connecting PA-29 and PA-30 channels.
  - Water Quality ponds within PA-19 Open Space and PA-20 Open Space before discharging into the Tributary T channel, respectively.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group D:
  - Water Main along the development of Tibet Road from the shared boundary of PA-2 and PA-3 south to the Tributary T channel crossing.

- Internal water main connecting and looping through PA-5 from 48th. Ave. south and east to Tibet Road.

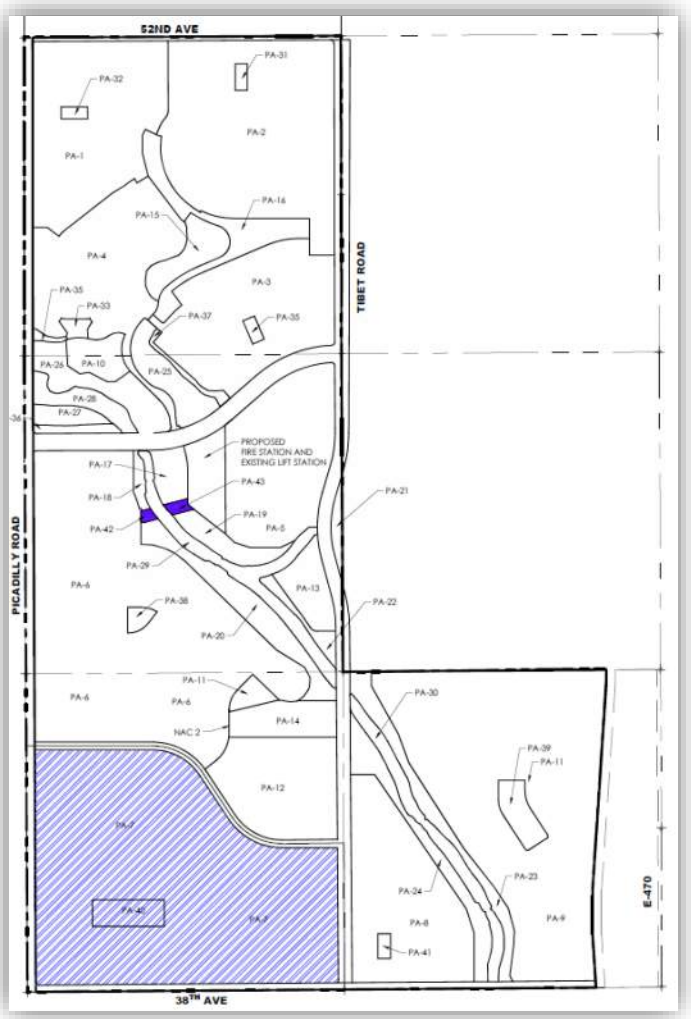
5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group D:
  - Sanitary Sewer Main connecting from the existing 36" main within PA-13 Neighborhood Park south east to Tibet Road continuing along the Tibet Road alignment south to the Tributary T channel crossing.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group D.
  - PA-34 Pocket Park 0.5 ac.
  - PA-25 Detention Pond 5.4 ac.
  - PA-37 Open Space 1.0 ac.
  - Portion of PA-29 Channel +/- 4.8 ac

G. PLANNING AREAS – GROUP E



1. Land Development

The land development within Planning Areas – Group E incorporates approximately 120 acres.

Land uses described below:

Planning Areas - Group E		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-7	Single Family Residential	95.7
PA-12	Clubhouse	1.5
PA-13	School Site	16.7
PA-15	Park	6.0
	Total	***119.9***

- The development within Planning Areas - E assumes the following infrastructure to be constructed prior to the commencement of the above listed planning areas.
    - 42nd Avenue from Picadilly east to the shared boundary of PA-6 and PA-13 School Site.
    - Regional Detention Pond 8503.
    - Tributary T channel improvements west of Tibet Road
    - Sewer Main installed from the First Creek Lift Station south to the proposed development connection.
    - 30inch interceptor line installed by others running north along Picadilly Road and east through PA-6 to the First Creek Lift Station.

2. Roadway Improvements

- The following roadways shall be required to support the development of Planning Areas – Group E:
    - North half of 38th Avenue street section (4-Lane Arterial) from Picadilly Road east to Tibet Road (Segment I Trigger).
    - 42nd Avenue whole street section (2-Lane Collector) from the shared boundary of PA-6 and PA-12 School Site east to Tibet Road.
    - Tibet Road whole street section (3-Lane Collector) for the Tributary T channel crossing south to 38th avenue (Segment L Trigger).

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group E:
    - Water Quality ponds within PA-12 School Site before discharging into the Tributary T channel.
    - Water Quality ponds within PA-7 before discharging into the First Creek channel.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group E.
    - Water Main along the development within 42nd Avenue.
    - Water Main along the development within Tibet Road.
    - Water Main along the development within 38th Avenue.
    - Internal connection and looping from 42nd. Ave., Tibet Road and 38th. Ave. through Planning Areas - Group E.

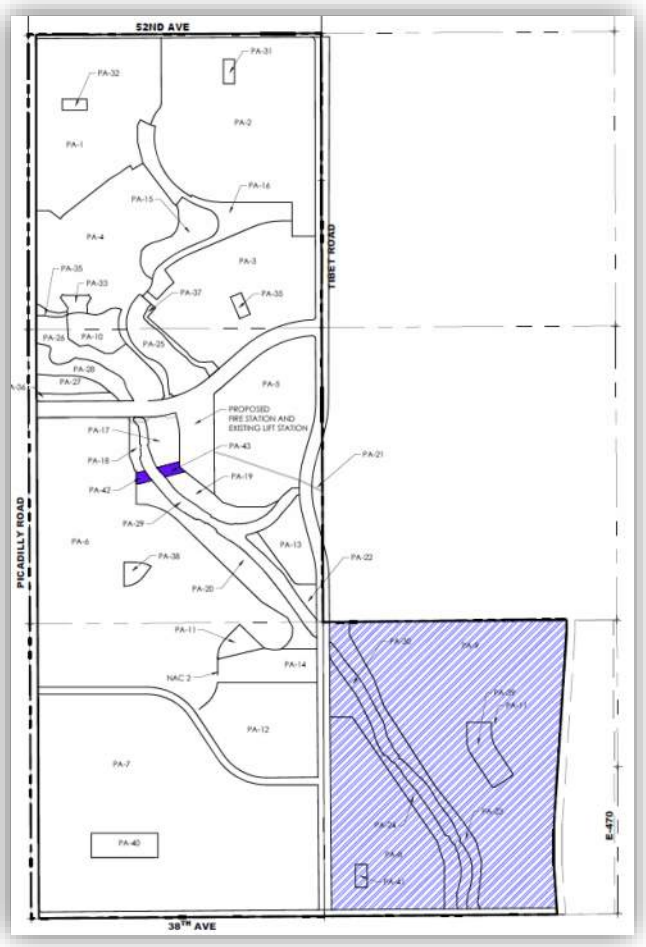
5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group E:
  - Internal sewer basins tributary to the First Creek watershed will connect to the Picadilly Road interceptor line (by others).
  - Internal sewer basins tributary to the Tributary T watershed will connect to the sewer main running parallel too and on the west side of Tributary T drainage channel.
  - A local sanitary sewer main will need to extend south along Tibet Road to 42nd. Avenue.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group E.
  - PA-14 Neighborhood Park 3.0 ac. Triggered with 300th. building permit within PA-7.
  - PA-40 Pocket Park 3.0 ac.

H. PLANNING AREAS – GROUP F



1. Land Development

The land development within Planning Areas – Group F incorporates approximately 120 acres.

Land uses described below:

Planning Areas - Group F		
Planning Area	**Area Code**	**Gross Land Area (AC)**
PA-8	Single Family Residential	32.7
PA-9	Single Family Residential	76.3
PA-23	Open Space	5.3
PA-24	Open Space	5.5
	Total	***119.8***

- The development within Planning Areas – Group F assumes the following infrastructure to be constructed prior to the commencement of the above listed planning areas.
    - Regional Detention Pond 8503.
    - Tributary T channel improvements east of Tibet Road.
    - North half of 38th Avenue street section from Tibet Road east to E-470 (Segment M Trigger).
    - 42nd Avenue connection from Picadilly Road east to the Tibet Road.
    - Tibet Road whole street section from 38th Avenue north to the Tributary T channel crossing (Segment L Trigger).
    - Water mains along 38th Avenue, 42nd Avenue, and Tibet Road.
    - Sanitary main connection from the existing 36" sewer main south through PA-14 and PA-22 connection to the proposed development.
    - Sanitary main connection from the First Creek Lift Station running parallel too and on the west side of Tributary T drainage channel through PA-14 Neighborhood Park and southeast across Tibet Road to the proposed development.

2. Roadway Improvements

- The following roadways shall be required to support the development of Planning Areas – Group F:
    - East half-section (6-Lane Arterial) of Picadilly Road from 38th Avenue to 42nd Avenue. (Segments H Trigger)
    - North half of 38th Avenue street section from Tibet Road east to E-470 (Segment M Trigger).
    - Tibet Road whole street section from 38th. Avenue to south boundary of PA-20 Tributary T crossing (Segment L Trigger).

3. Drainage Improvements

- The following drainage improvements shall be required to support the development of Planning Areas – Group F:
    - Water Quality ponds within the planned development PA-30 before discharging into the Tributary T channel.

4. Water Improvements

- The following water improvements shall be required to support the development of Planning Areas – Group F.
    - Water Main connection from 38th Avenue and Tibet Road east within 38th. Ave. to the existing 12" Water Main running north-south parallel to E-470.
    - Internal connection and looping of water mains from 38th. Ave. and Tibet Road.

5. Sanitary Sewer Improvements

- The following sanitary improvements shall be required to support the developments of Planning Areas – Group F:
    - Extension of the Sewer Main north and east of the Tributary T channel through the planned development within PA-9.
    - Extension of the Sewer Main south and west of Tributary T channel through the planned development within PA-8.

6. Parks and Open Space

- The following parks and open space shall be required to support the development of Planning Areas – Group F.
    - PA-23 and 24 Open Space 13.0 ac.
    - PA-39 Neighborhood Park 0.5 ac.
    - PA-30 Channel 6.2 ac.
    - PA-41 Pocket Park 0.5 Ac.

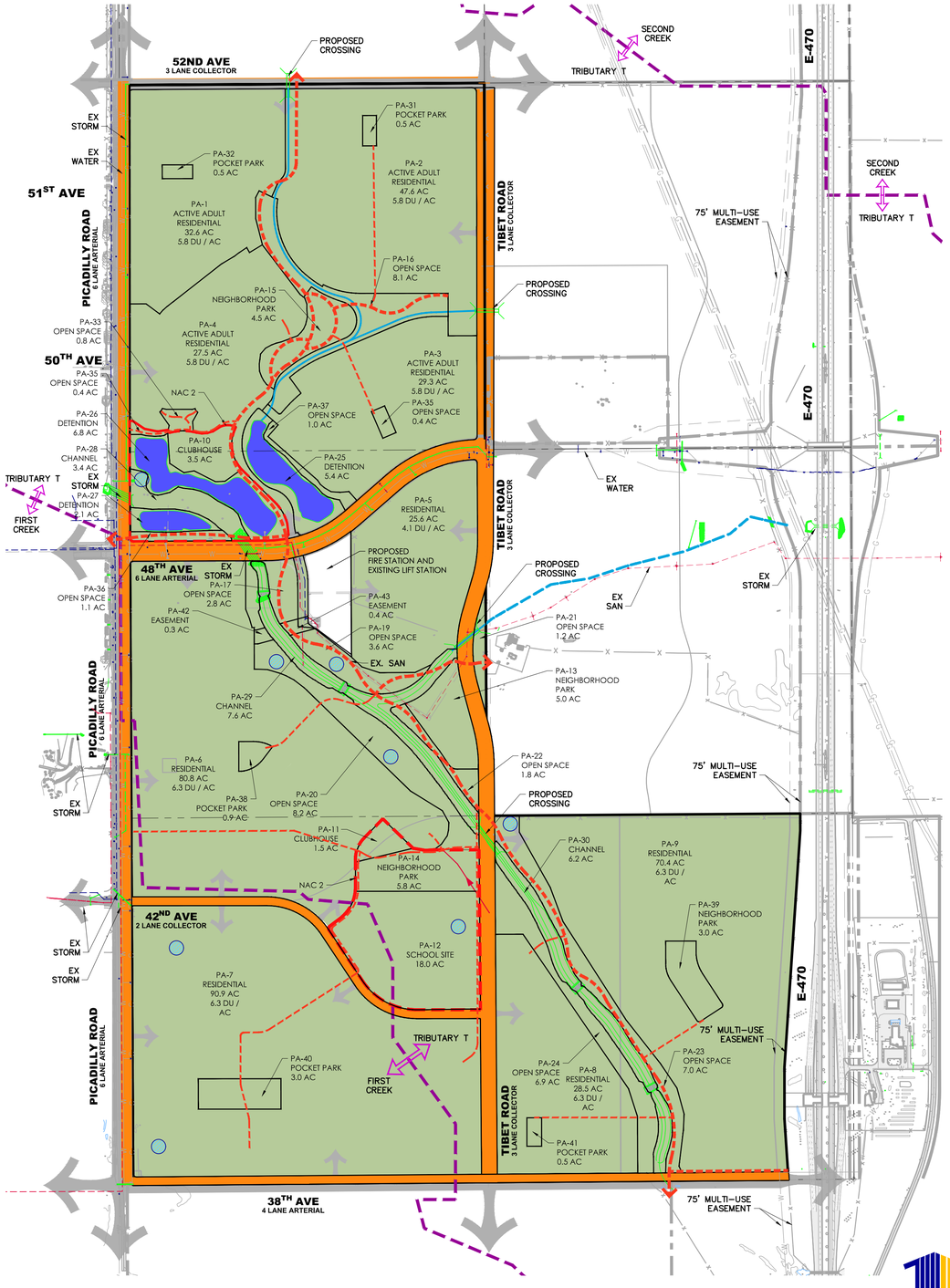
I. LIST OF REFERENCES

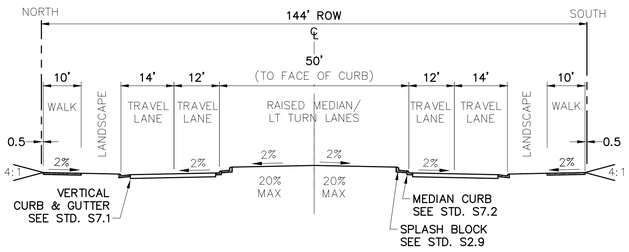
A. *Master Drainage Report for Green Valley Ranch East* by Calibre Engineering, April 2017, Latest Revision December 2017, COA No. 218019PD 2017 – 3032, 97 S, 98S – T.

B. *Master Utility Report for Green Valley Ranch East* by Calibre Engineering, April 2017, Latest Revision December 2017, COA Approved September 2018.

C. *Green Valley Ranch East Transportation Analysis* by Felsburg Holt & Ullevig, FHU Reference No. 117073-01 dated September 2017, COA Approved August 2018.

D. *Green Valley Ranch East Active Adult Residential Traffic Impact Study* by Felsburg Holt & Ullevig, FHU Reference No. 116-375 dated September 2017.





SIX LANE ARTERIAL
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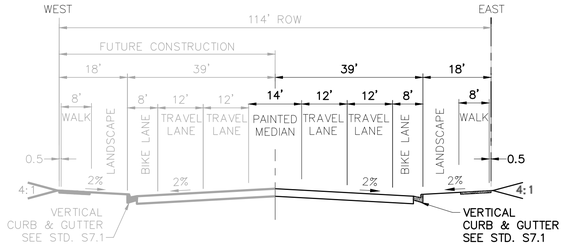

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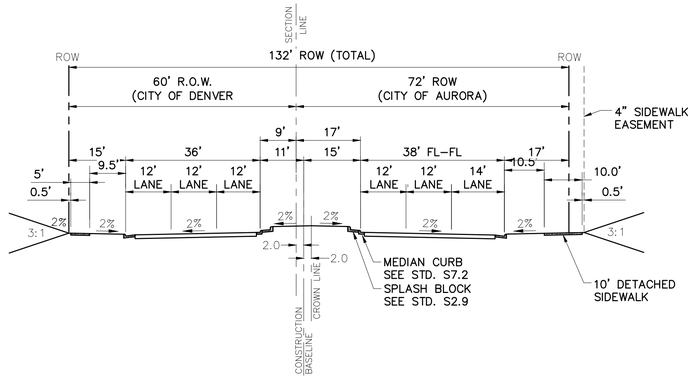
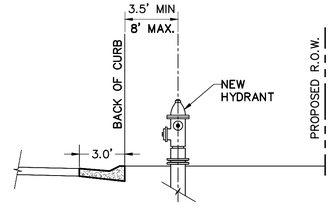


PICADILLY ROAD TYPICAL SECTION
FOR REFERENCE ONLY

LEGEND

- PROPOSED PLANNING AREA GROUP
- ON-SITE REGIONAL PONDS (SEE DRAINAGE REPORT)
- ON-SITE WQ PONDS (SEE DRAINAGE REPORT)
- DRAINAGE BASINS
- ON-SITE OPEN CHANNEL
- OFF-SITE OPEN CHANNEL
- ROADWAY IMPROVEMENTS
- OVERALL TRAIL SYSTEM
- WATER MAINS
- SANITARY SEWER MAINS
- STORM SEWER MAINS
- CULVERT CROSSINGS



TYPICAL FIRE HYDRANT PLACEMENT DETAIL
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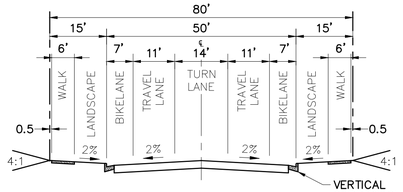
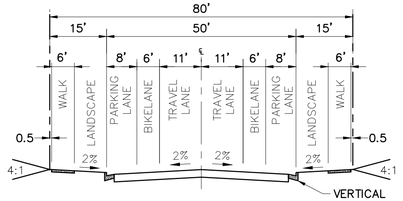
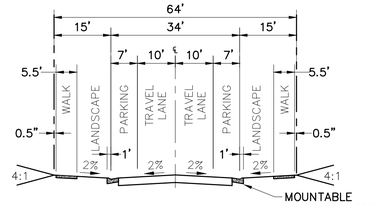


THREE LANE COLLECTOR



TWO LANE COLLECTOR



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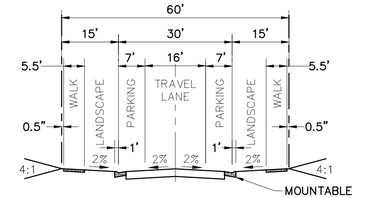

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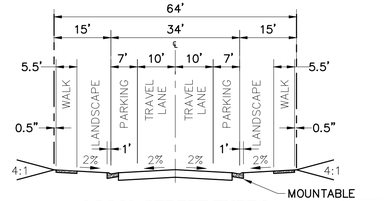
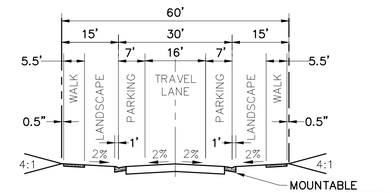


LOCAL STREET TYPE I
PRIVATE



LOCAL STREET TYPE II
PRIVATE

DATE	REVISION DESCRIPTION

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Job Number: Oakwood GVRE DD
Prepared For: CITY OF AURORA
Designer: EAP | Drafter: ETG | Checked: TAJ
0 250 500 1000
1 inch = 500 ft. Horizontal

Calibre
Calibre Engineering, Inc.
9090 South Ridgeline Boulevard, Suite 105
Highlands Ranch, CO 80129 (303) 730-0434
www.calibre-engineering.com
Construction Management Civil Engineering Surveying

GREEN VALLEY - AMENDMENT 1
PUBLIC IMPROVEMENT PLANS
FINAL BUILD OUT

Sheet: OA | 1 of 7
Date: DECEMBER 20, 2017

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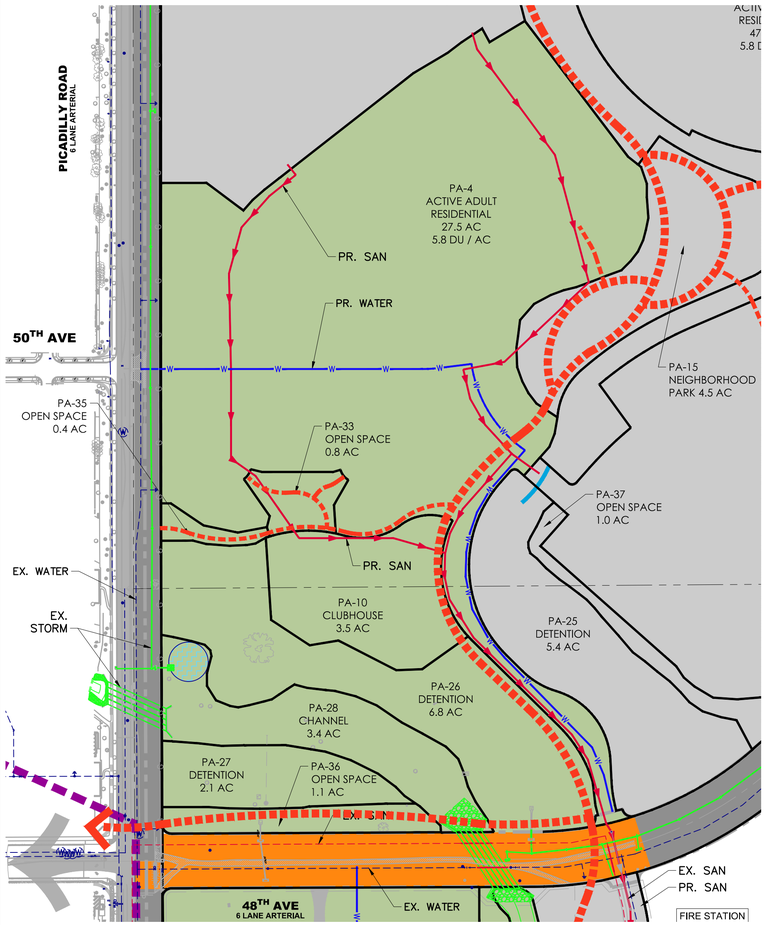
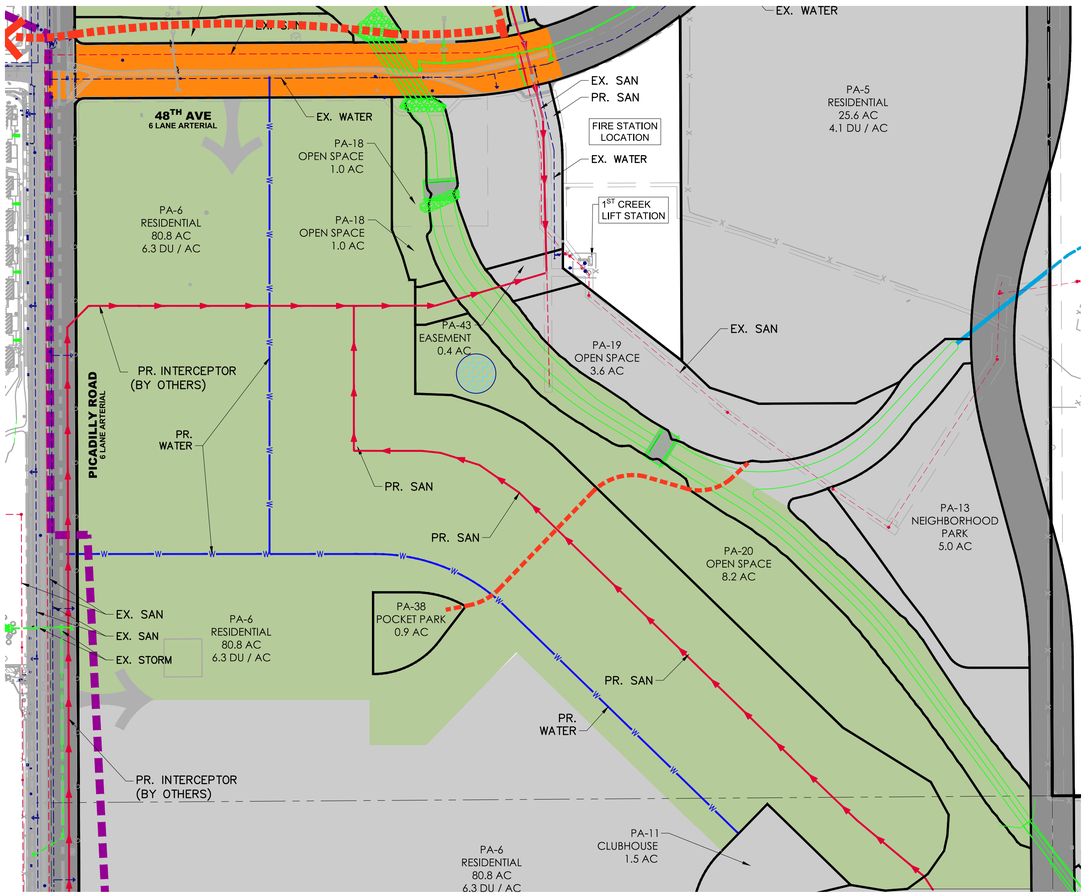


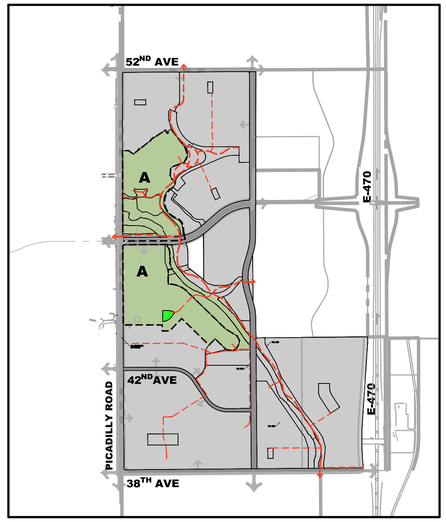
PLANNING AREA - GROUP A

FILING NO. 1



PLANNING AREA - GROUP A

FILING NO. 2



KEPMAP

NORTH

LEGEND

- PROPOSED PLANNING AREA GROUP
- ON-SITE REGIONAL PONDS (SEE DRAINAGE REPORT)
- ON-SITE WQ PONDS (SEE DRAINAGE REPORT)
- DRAINAGE BASINS
- ON-SITE OPEN CHANNEL
- OFF-SITE OPEN CHANNEL
- ROADWAY IMPROVEMENTS
- OVERALL TRAIL SYSTEM
- WATER MAINS
- SANITARY SEWER MAINS
- STORM SEWER MAINS
- CULVERT CROSSINGS

DATE	REVISION DESCRIPTION

Drawing Name: X-PIP Exhibits-PA.dwg
Job Number: Oakwood GVRE DD
Prepared For: PUBLIC IMPROVEMENT PLANS
Designer: EAP | Drafter: ETG | Checked: TAJ

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PLANNING AREAS - GROUP A

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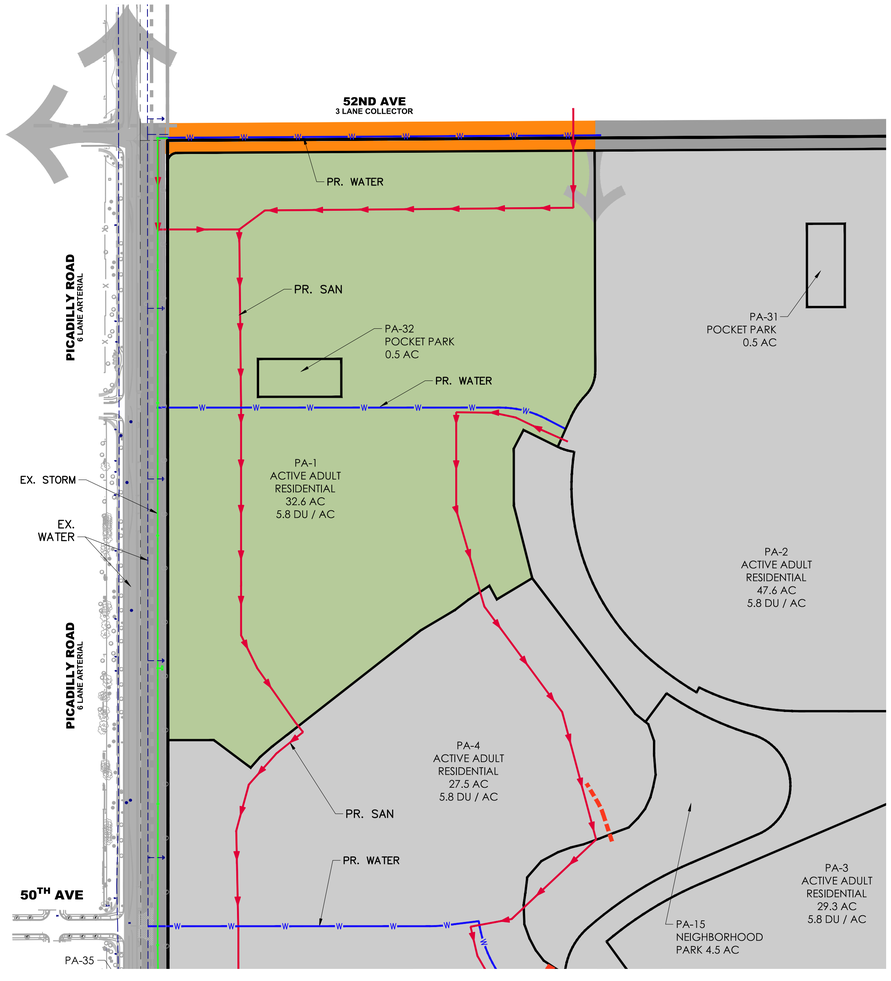

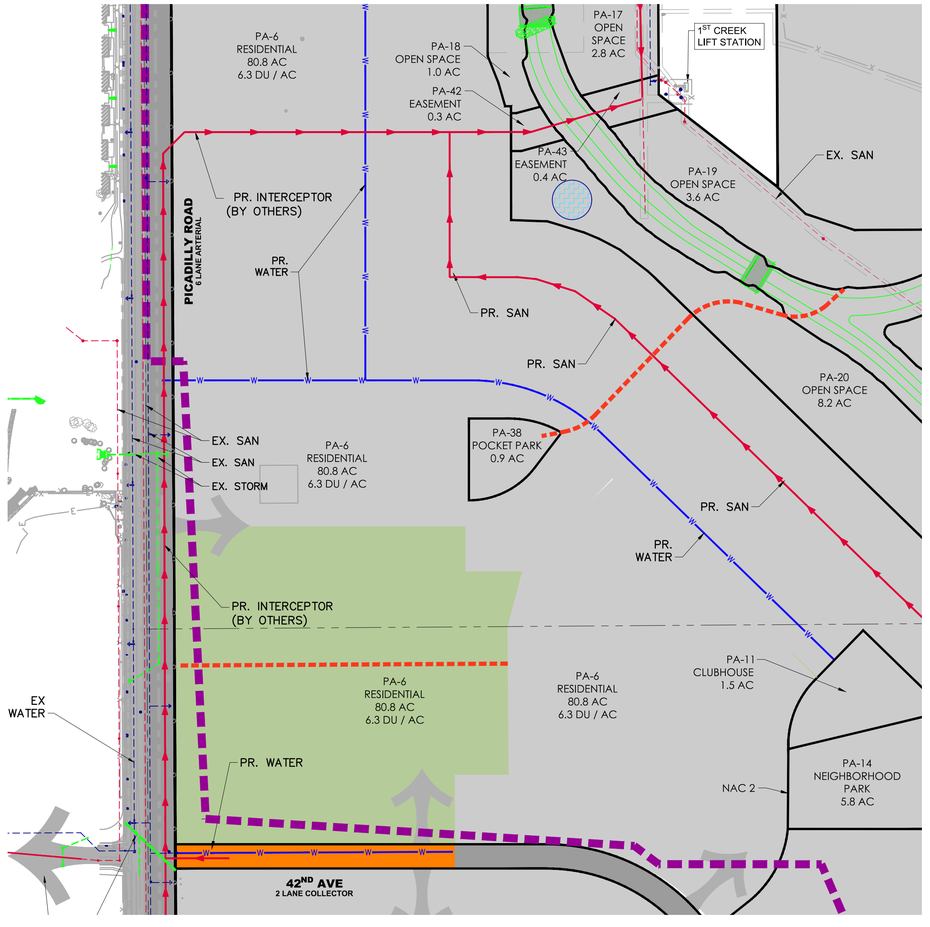

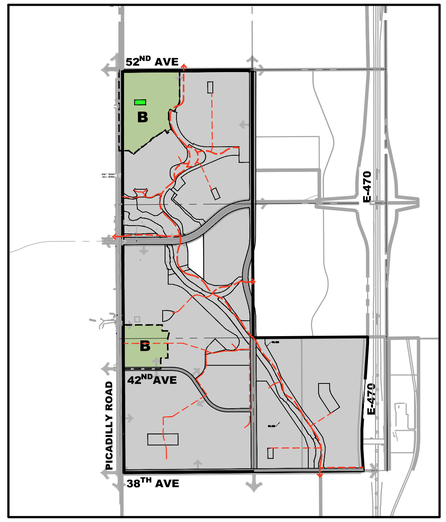

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- ON-SITE WQ PONDS (SEE DRAINAGE REPORT)
- DRAINAGE BASINS
- ON-SITE OPEN CHANNEL
- OFF-SITE OPEN CHANNEL
- ROADWAY IMPROVEMENTS
- OVERALL TRAIL SYSTEM
- WATER MAINS
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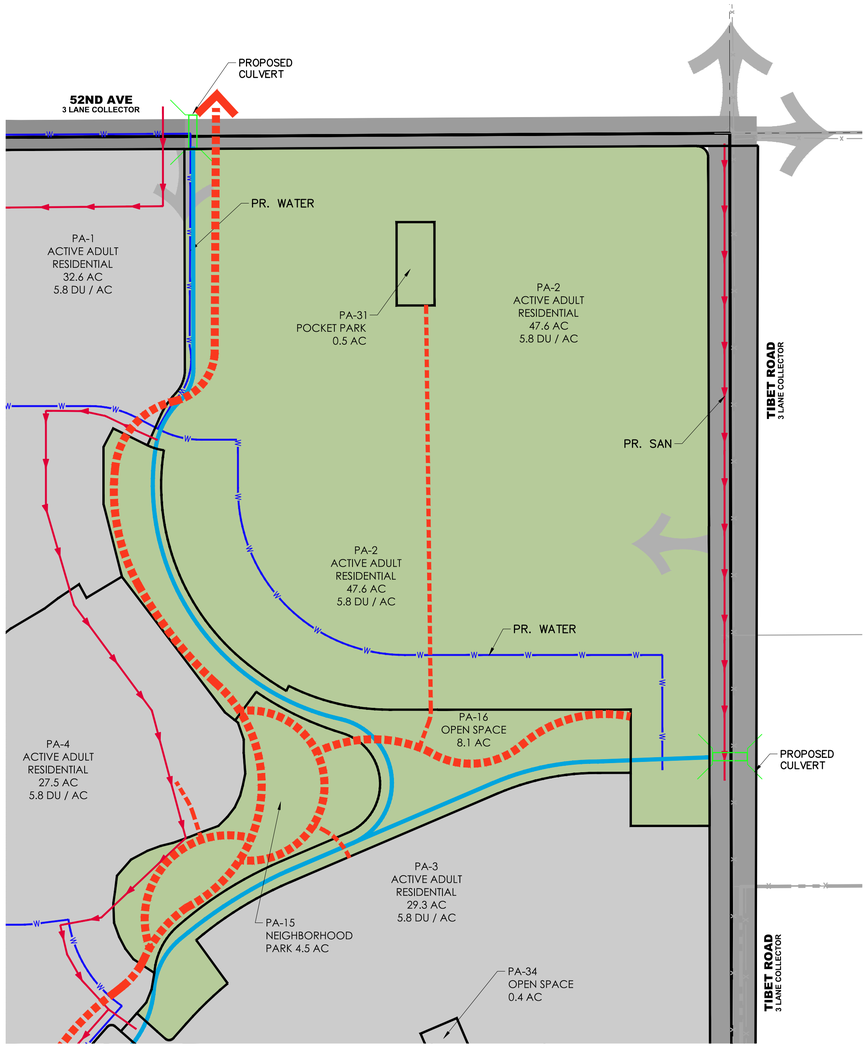

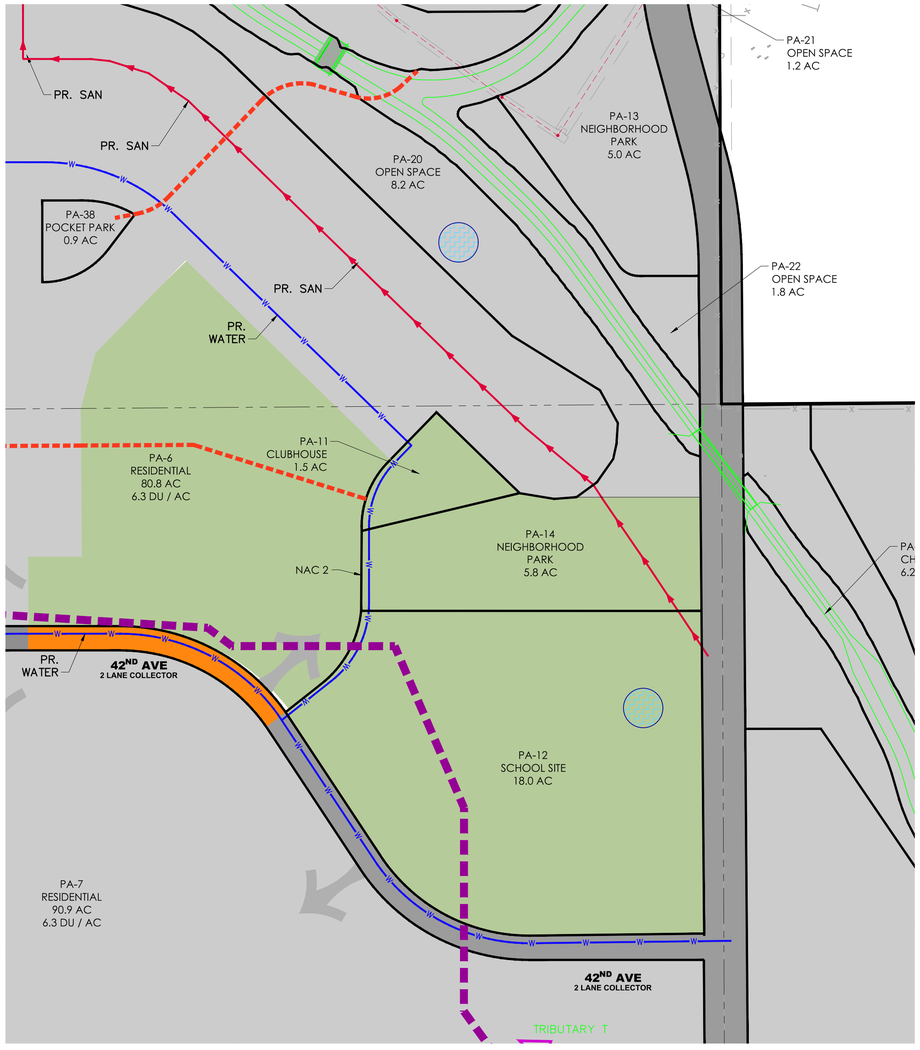

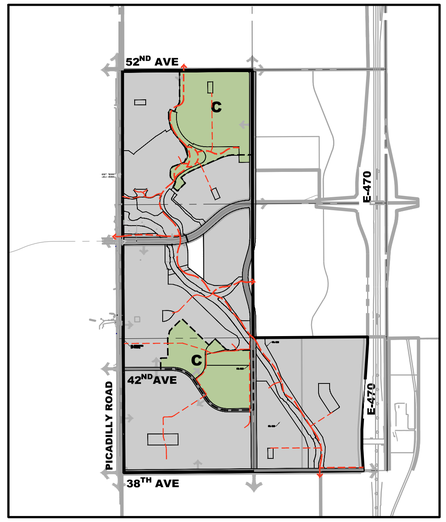

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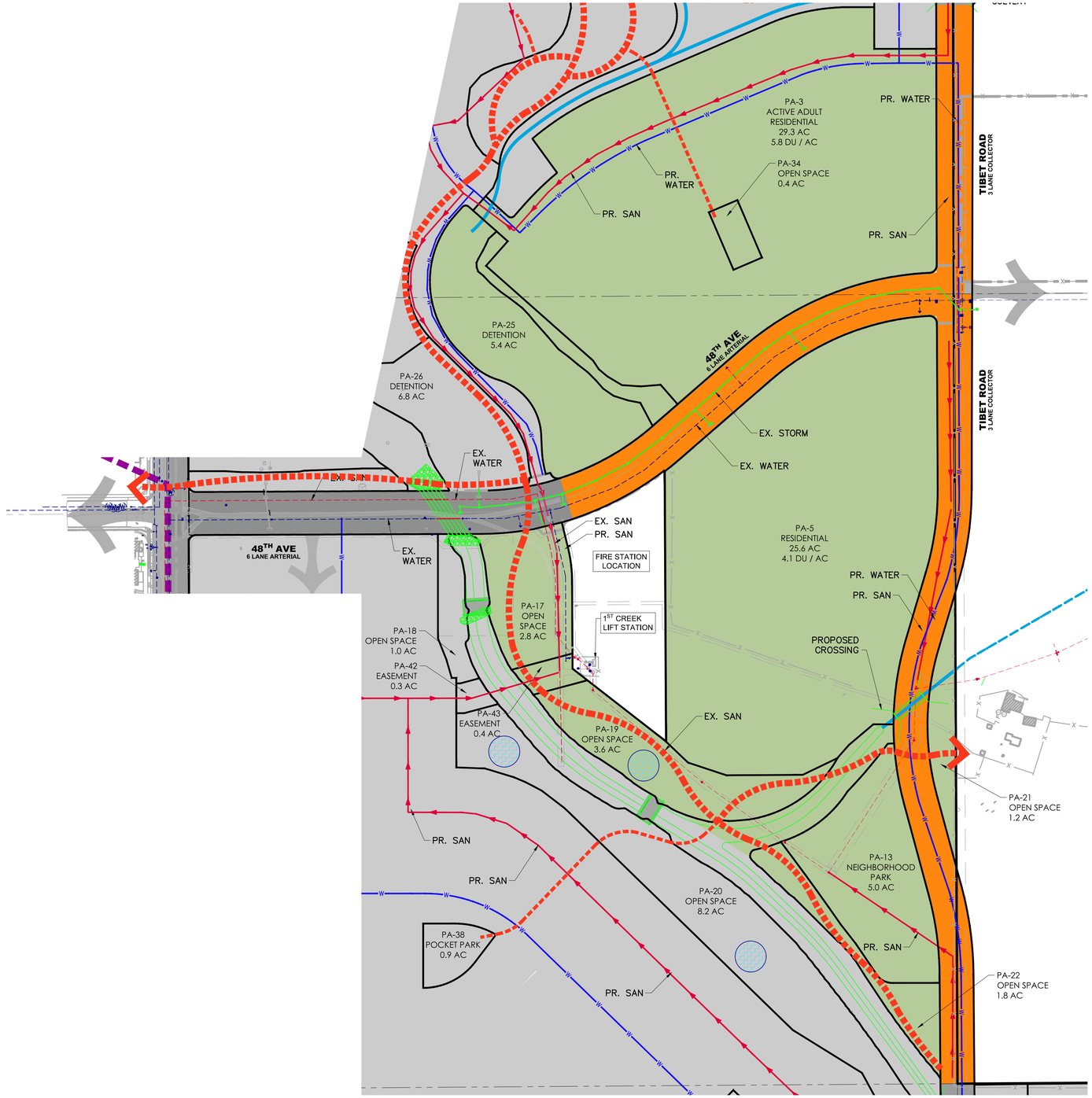

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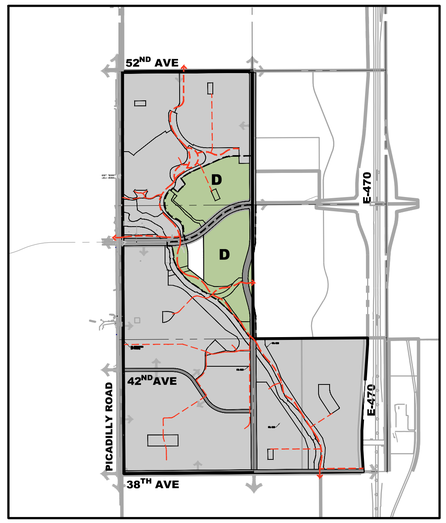

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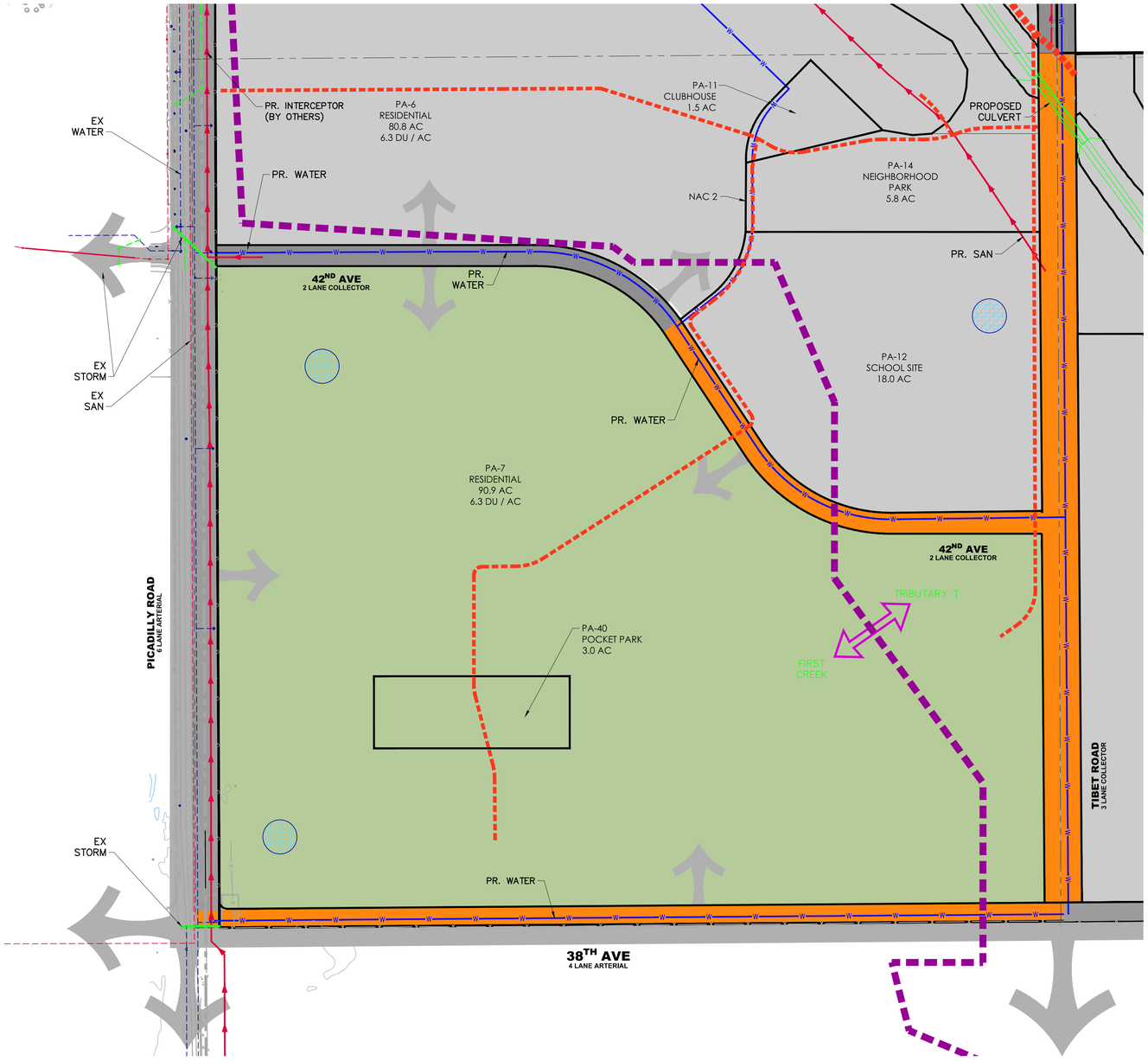

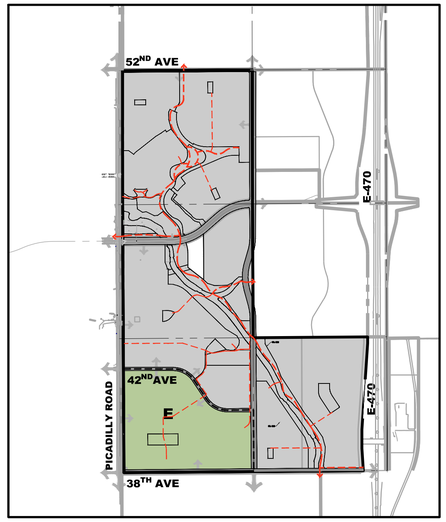

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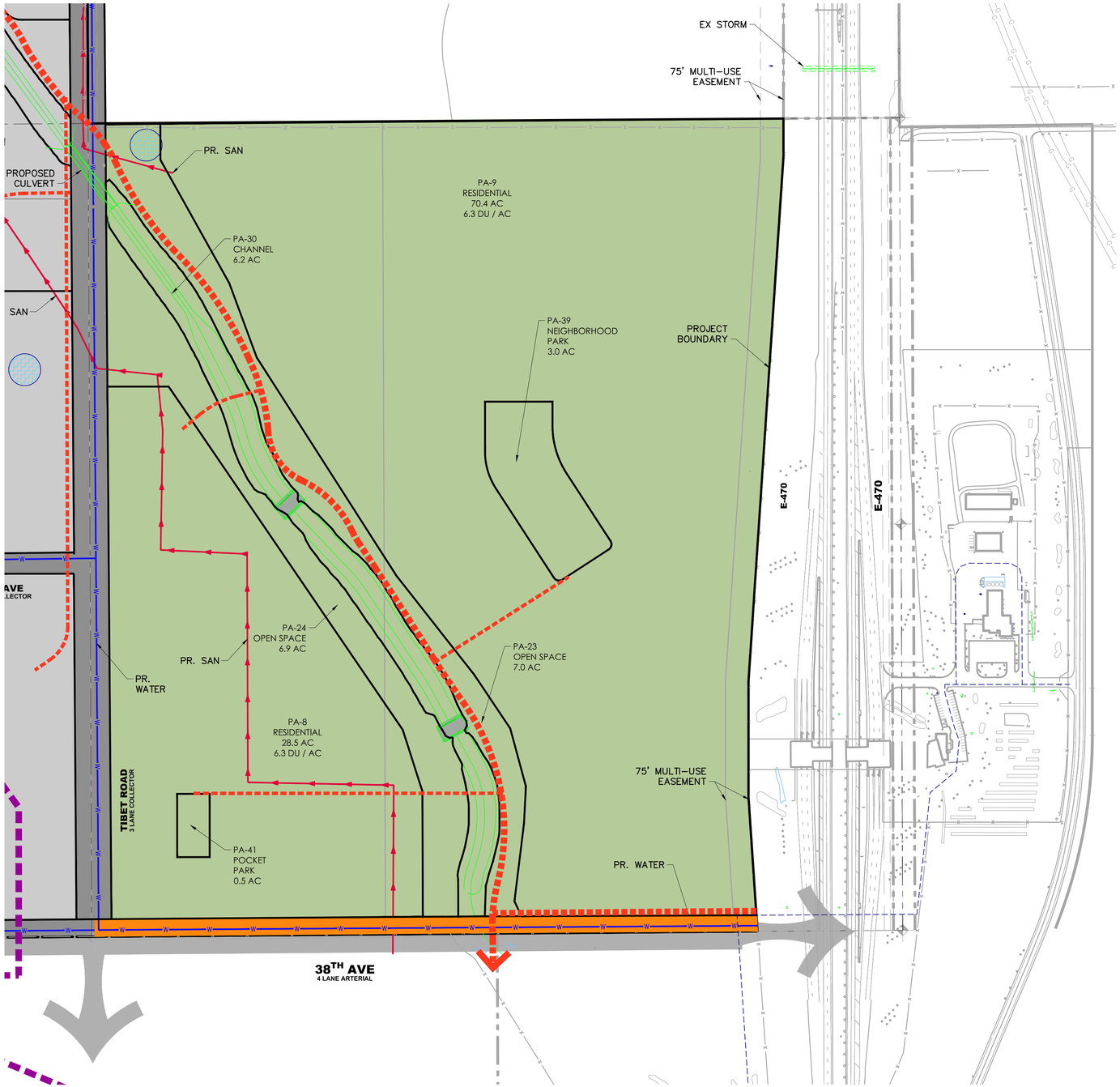

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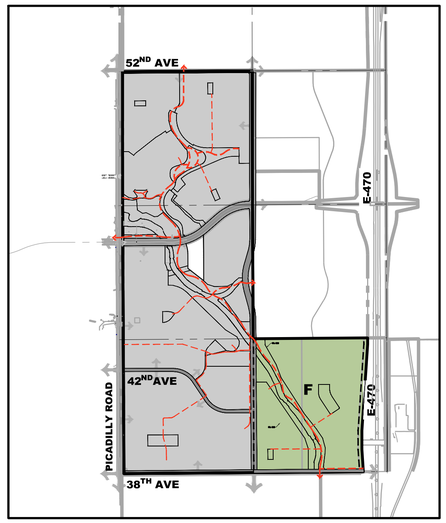

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comments provided on 0823/23 seg

1. verify intersection configuration/control with PIP
2.provide intersection LOS/delay summary tables for all intersections, existing, short term and long term, background and total traffic volumes. Can be included in the Appendix
3.Verify 2025 Background traffic volumes. Update volumes and analyses
4. provide discussion for auxiliary lane needs. Should be based on SHAC
5. NB vehicle queues from intersection 22 would extend past upstream intersections. Mitigation or upstream intersections will need to be restricted movement
6. see comments throughout report

OMENT 2

Y

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TABLE OF CONTENTS

Page

I. INTRODUCTION 1
II. EXISTING CONDITIONS 4
II.A. Surrounding Land Uses 4
II.B. Roadways 4
II.C. Traffic Volumes and Operations 5
III. PROPOSED CONDITIONS 7
III.A. Trip Generation 7
III.B. Site Trip Distribution and Site-Generated Traffic Assignment 11
IV. FUTURE CONDITIONS 13
IV.A. Background Traffic Conditions 13
IV.B. Total Future Traffic 19
V. EVALUATION 23
V.A. Level of Service 23
V.B. Traffic Control Devices 28
V.C. Queuing 29
VI. CONCLUSIONS AND RECOMMENDATIONS 34
VI.A. Short-Range Future 34
VI.B. Long-Range Future 35

Appendices

Appendix A. Traffic Counts
Appendix B. Existing Conditions LOS
Appendix C. Internal Capture Worksheet
Appendix D. Short-Range Future Background Traffic LOS
Appendix E. Long-Range Future Background Traffic LOS
Appendix F. Short-Range Future Total Traffic LOS
Appendix G. Long-Range Future Total Traffic LOS
Appendix H. Signal Warrants
Appendix I. Background Information

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 12
Figure 5. Short-Range Future Background Traffic Volumes 15
Figure 6. Short-Range Future Background Traffic Conditions 16
Figure 7. Long-Range Future Background Traffic Volumes 17
Figure 8. Long-Range Future Background Traffic Conditions 18
Figure 9. Short-Range Future Total Traffic Volumes 21
Figure 10. Long-Range Total Traffic Volumes 22
Figure 11. Short-Range Future Total Lane Geometry and Level of Service 25
Figure 12. Long-Range Total Lane Geometry and Level of Service 27

List of Tables

Page

Table 1. ITE Trip Generation Rates and Equations 7
Table 2. Trip Generation 8
Table 3. Signal Warrant Results 20
Table 4. Queue Results at Future Signalized Intersections 29

I. INTRODUCTION

Green Valley MP Amendment 2 is a mixed-use development, consisting of active adult residential, single-family residential, multifamily residential, office space and retail space, which may include a gas station, grocery store, restaurants, hardware store, fitness center, day care, and hotel. The approximate 290.57-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 327 senior housing units, 54 units of single-family housing, 1,164 multifamily units, 683,700 square feet of retail space, and 386,400 square feet of office space. **Figure 1** illustrates the location of the site and the adjacent roadway network. **Figure 2** depicts the current land use plan and enumerates the proposed access locations.

The main northern site would have vehicular access via 14 roadway connections:

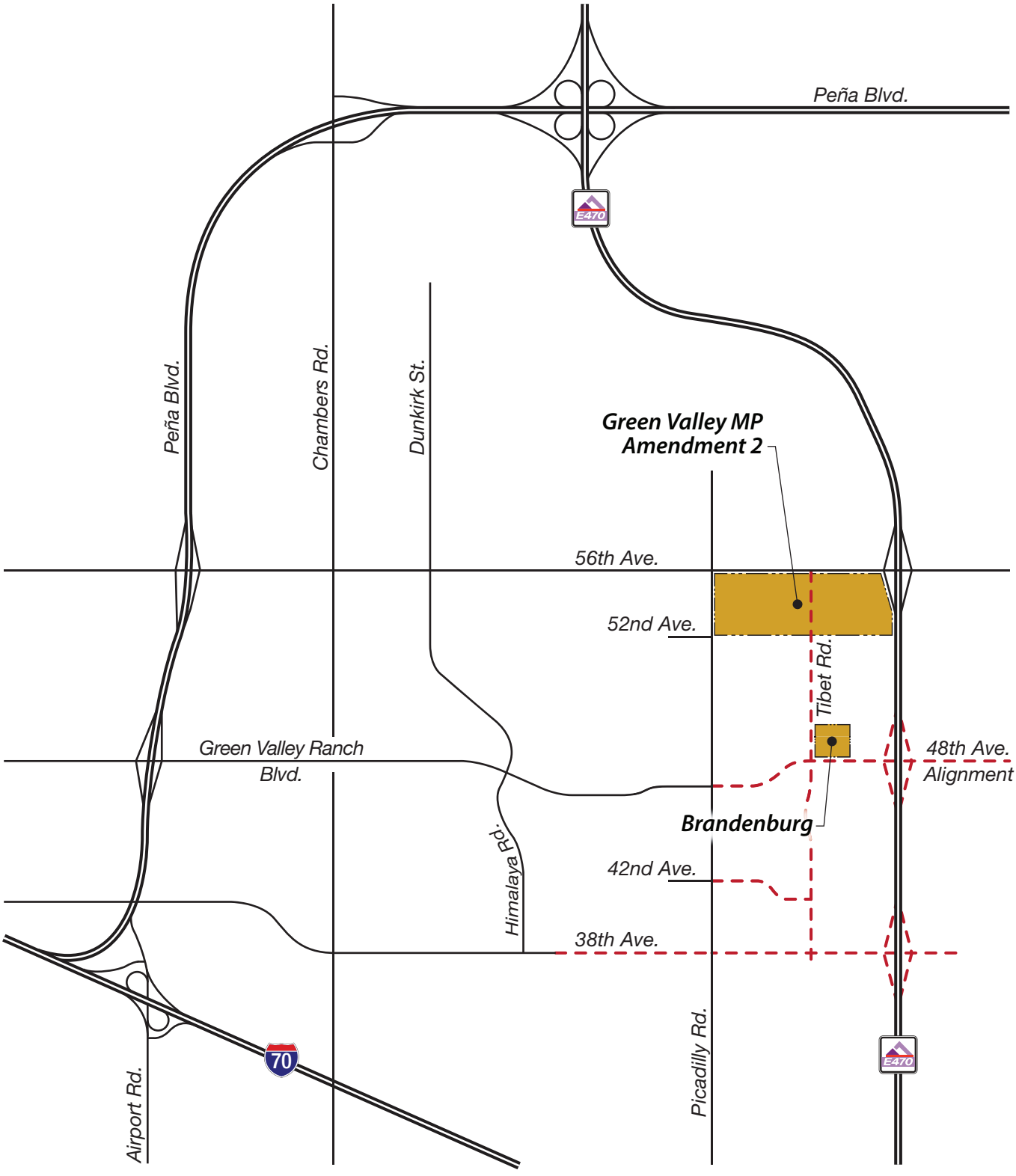
- Two full-movement accesses onto 52nd Avenue serving planning areas 46 and 45 respectively (Intersections #14 & #16)
- One ¾ movement access onto Picadilly Road at Maxwell Place serving planning area 54 (Intersection #4)
- One Right-In/Right-Out (RIRO) access onto Picadilly between Maxwell Place & 54th Avenue serving planning area 47 (Intersection #28)
- One full-movement access onto 54th Avenue serving planning areas 47 and 45 (Intersection #5)
- Two full-movement accesses onto 56th Avenue serving planning areas 53 and 52 respectively (Intersections #21 & #25)
- Three RIRO accesses onto 56th Avenue serving planning areas 54, 53, and 51 respectively (Intersections #20, #23, & #24)
- Two full-movement accesses onto Tibet Street with the southern access serving planning areas 46, 48, and 49 and the northern access serving planning areas 48, 53, 49, and 51 (Intersections #18 & #19)
- One ¾ Access onto Tibet Street serving planning area 49 (Intersection #17)
- One RIRO accesses onto Tibet Road serving planning areas 51 and 53 (Intersection #27)

shown as right in/right out in PIP

The southern parcel (Brandenburg) would have two full-movement accesses, one onto Tibet Street aligning with the Green Valley Ranch East Filing 17 access (Intersection #12) and one onto 48th Avenue (intersection #26).

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.



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- - - - - = Future Road Network

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FIGURE 1
Vicinity Map

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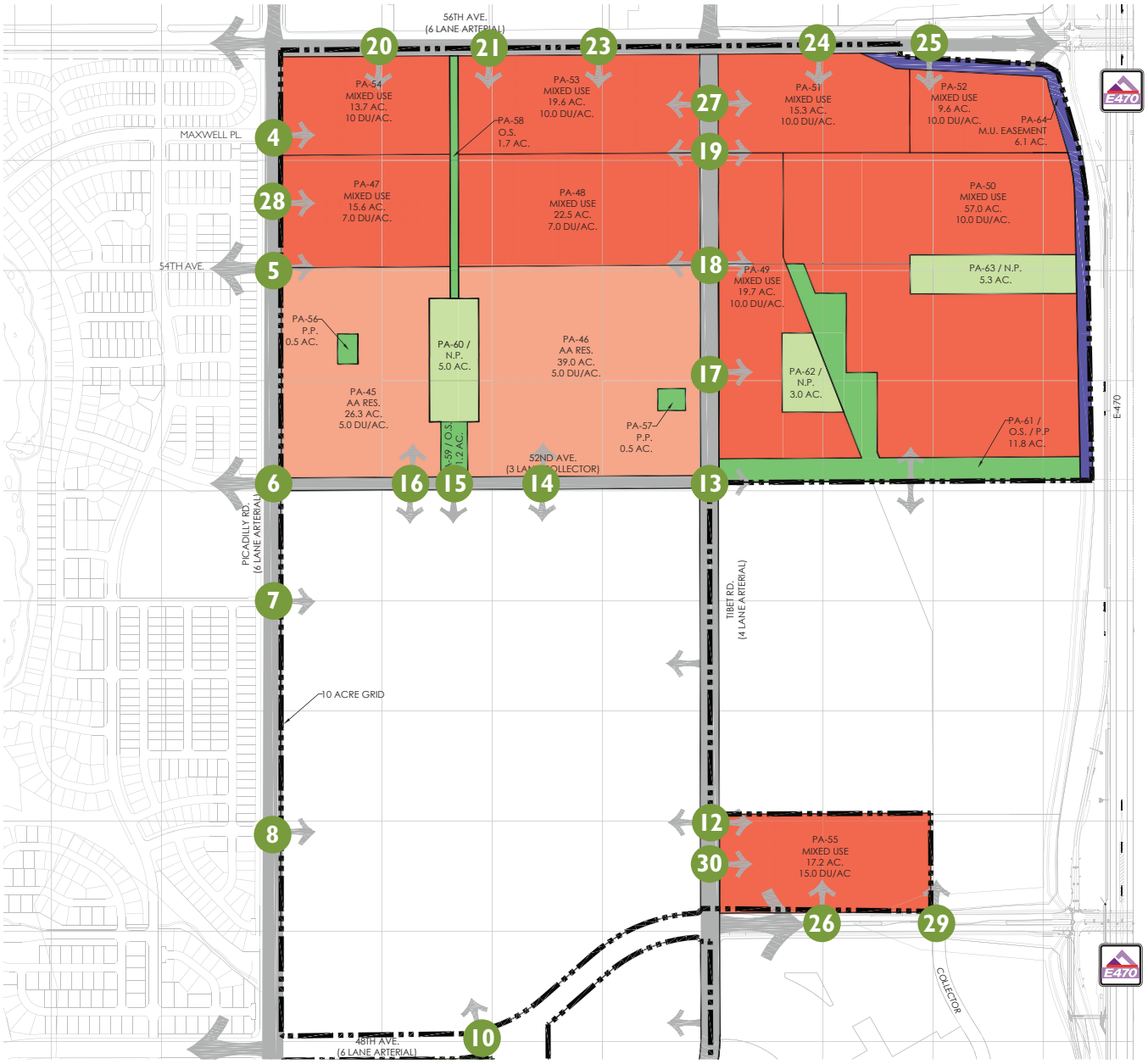

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FIGURE 2

Site Plan

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II. EXISTING CONDITIONS

II.A. Surrounding Land Uses

The majority of the surrounding area is currently vacant with some residential homes to the west of Picadilly Road. Other surrounding areas are anticipated to be developed before the long-range future scenario and traffic from these developments has been included in the analyses.

II.B. 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 north of 48th Avenue.

II.C. Traffic Volumes and Operations

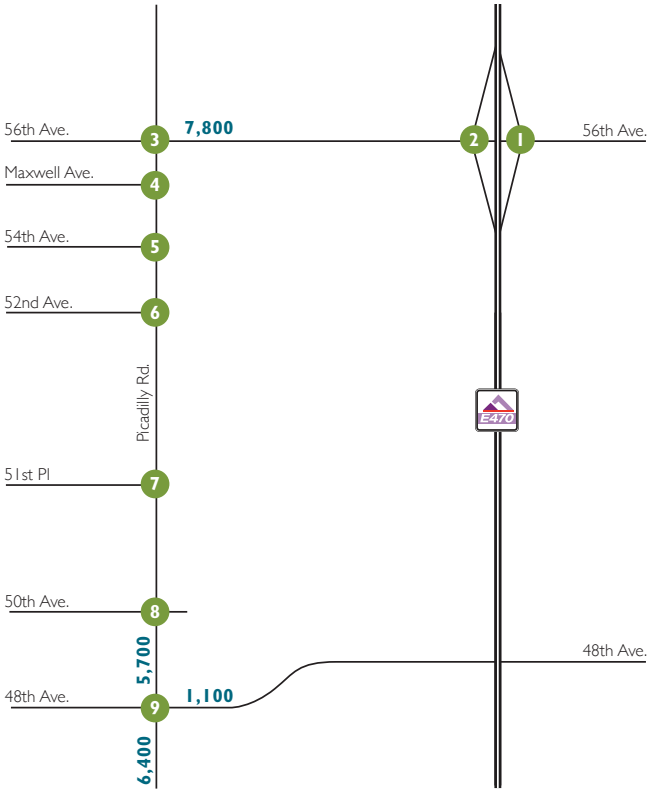
72-hour automated traffic counts were conducted on October 12th, 13th, and 14th of 2021 along 56th Avenue east of Picadilly Road, 48th Avenue east of Picadilly Road, and Picadilly Road north and south of 48th Avenue. Weekday AM and PM peak hour turning movements counts were conducted on May 31st, 2021, at the following intersections:

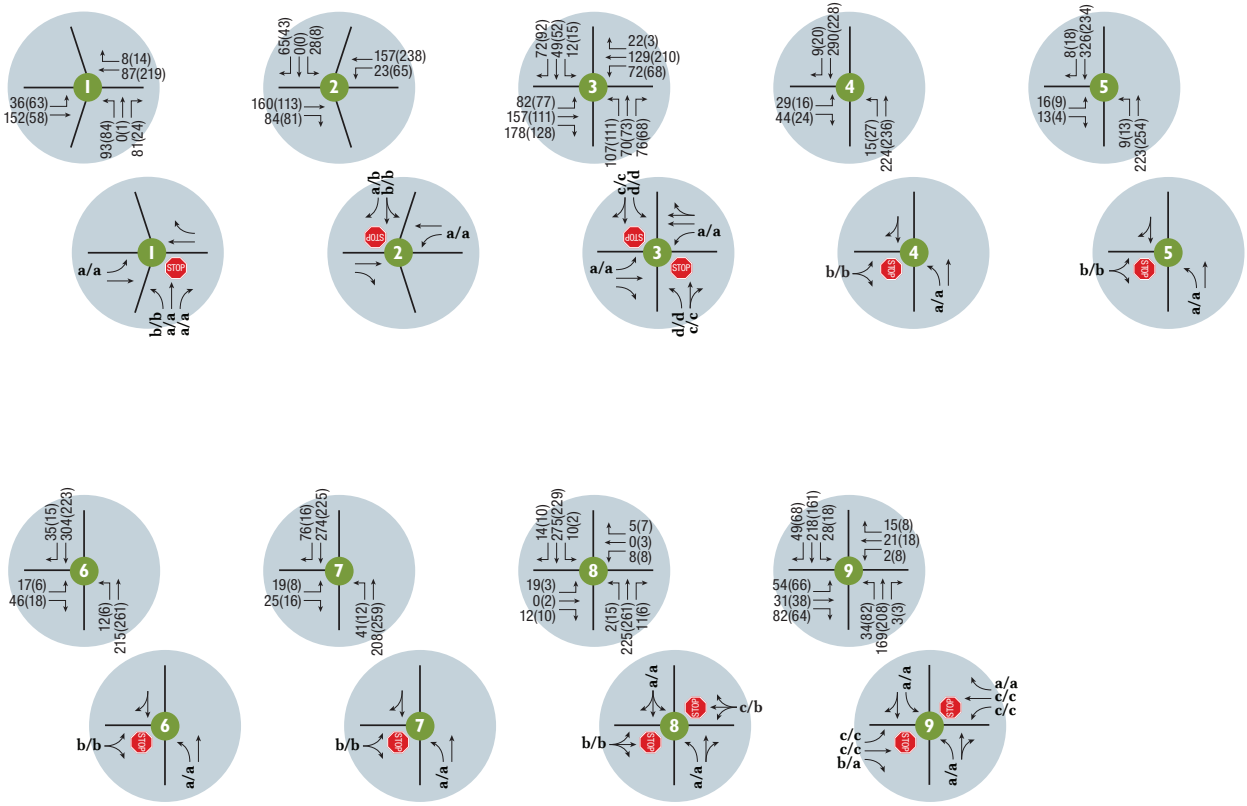
- 56th Avenue with E-470 NB Ramps
- 56th Avenue with E-470 SB Ramps
- 56th Avenue with Picadilly Road
- Picadilly Road with Maxwell Place
- Picadilly Road with 54th Avenue
- Picadilly Road with 52nd Avenue
- Picadilly Road with 51st Place
- Picadilly Road with 50th Avenue

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 indicative of traffic operations conforming to 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. Peak Hour Factors (PHF) and heavy vehicle percentages were determined using the collected counts. **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.





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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

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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, 11th Edition*, Institute of Transportation Engineers (ITE), 2021. The development would consist of about 327 senior housing units, 54 units of single-family housing, 1,164 multifamily units, 683,700 square feet of retail space, and 386,400 square feet of office space. This analysis used a mix of the regression equations and average rates per dwelling unit and per thousand square feet for the corresponding ITE code. **Table 1** outlines the ITE trip generation rates and equations for the applicable land use codes.

Table 1. ITE Trip Generation Rates and Equations

Land Use	ITE Code	Unit	Daily	Peak	Equations & Rates	Distributions	
						In	Out
Single-family Detached	210	DU	Ln(T)=0.92*Ln(X)+2.68	AM	Ln(T)=0.91*Ln(T)+0.12	25%	75%
				PM	Ln(T)=0.94*Ln(X)+0.27	63%	37%
Single-family Attached	215	DU	T=7.62*X+-50.48	AM	T=0.52*X+-5.7	25%	75%
				PM	T=0.6*X+-3.93	59%	41%
Multifamily (Low-Rise)	220	DU	T=6.41*X+75.31	AM	T=0.31*X+22.85	24%	76%
				PM	T=0.43*X+20.55	63%	37%
Senior Housing Detached	251	DU	Ln(T)=0.85ln(X)+2.47	AM	Ln(T)=0.76*Ln(T)+0.16	33%	67%
				PM	Ln(T)=0.78*Ln(X)+0.2	61%	39%
Hotel	310	Rooms	T=7.99*X	AM	T=0.46*X	56%	44%
				PM	T=0.59*X	51%	49%
Fitness Center	492	KSF	N/A	AM	T=1.31*X	51%	49%
				PM	T=3.45*X	57%	43%
Day Care	565	KSF	T=47.62*X	AM	T=11*X	53%	47%
				PM	T=11.12*X	47%	53%
General Office	710	KSF	T=10.84*X	AM	T=1.52*X	88%	12%
				PM	T=1.44*X	17%	83%
Medical Office Building	720	KSF	T=T=42.97*X-108.01	AM	Ln(T)=0.9*Ln(X)+1.34	79%	21%
				PM	T=4.07*X-3.17	30%	70%
Shopping Center	821	KSF	T=67.52*X	AM	T=1.73*X	62%	38%
				PM	T=5.19*X	49%	51%
Shopping Center	822	KSF	T=42.2*X+229.68	AM	T=2.36*X	60%	40%
				PM	T=6.59*X	50%	50%

Land Use	ITE Code	Unit	Daily	Peak	Equations & Rates	Distributions	
						In	Out
Grocery Store	850	KSF	T=93.84*X	AM	T=2.86*X	59%	41%
				PM	T=8.95*X	50%	50%
Hardware Store	863	KSF	T=30.74*X	AM	T=1.51*X	57%	43%
				PM	T=2.29*X	49%	51%
High Turnover (Sit-Down) Restaurant	932	KSF	T=107.2*X	AM	T=9.57*X	55%	45%
				PM	T=9.05*X	61%	39%
Fast-Food Restaurant with Drive-Thru Window	934	KSF	T=467.48*X	AM	T=44.61*X	51%	49%
				PM	T=33.03*X	52%	48%
Gas Station	945	FP	T=265.12*X	AM	T=16.06*X	50%	50%
				PM	T=18.42*X	50%	50%

As shown in **Table 2**, the Green Valley MP Amendment 2 development would generate an estimated total of 52,000 new external vehicle trips per day with 2,739 in the AM and 4,364 in the PM. These trips are divided by assumed planning areas as shown in **Figure 2**. Given the National Cooperative Highway Research Program (NCHRP) 684 spreadsheet, an 8 percent daily internal capture rate was determined with 9 to 17 percent of the trips being internal for the AM and PM peak hours. **Appendix C** shows the NCHRP 684 internal capture summary sheets. Pass-by trips are those trips which are assumed to already use the roadway network, but decide to stop at a proposed use, if it is implemented. Land uses within this development that are assumed to generate pass-by trips would be restaurants, shopping centers, gas stations, hardware stores, and grocery stores. Pass-by estimates were assumed to be approximately 10 percent for each applicable land use based on engineering judgement.

Table 2. Trip Generation

Planning Area	Land Use	ITE Code	Unit	Quantity	Daily	AM Peak			PM Peak		
						In	Out	Total	In	Out	Total
45	Senior Housing Attached	251	DU	132	750	16	32	48	34	21	55
46	Senior Housing Attached	251	DU	195	1,045	21	44	65	46	29	75
47	Multi-Family (Low-Rise)	220	DU	97	697	13	40	53	39	23	62
48	Multi-Family (Low-Rise)	220	DU	135	941	16	49	65	50	29	79
49	Single Family Detached	210	DU	24	271	5	15	20	16	10	26
	Single Family Attached	215	DU	30	178	3	7	10	8	6	14
	Multi-Family (Low-Rise)	220	DU	84	614	12	37	49	36	21	57
	Drive-Thru Restaurant	934	KSF	2.1	998	48	47	95	37	34	71
	General Office	710	KSF	53.8	583	72	10	82	13	64	77
	Shopping Center	822	KSF	14.4	838	20	14	34	48	47	95

Planning Area	Land Use	ITE Code	Unit	Quantity	Daily	AM Peak			PM Peak		
						In	Out	Total	In	Out	Total
	General Office	710	KSF	13.4	146	18	2	20	3	16	19
	Gas Station	945	FP	8	2,121	64	64	128	74	73	147
	Subtotal				5,749	242	196	438	235	271	506
50	Multi-Family (Low-Rise)	220	DU	340	2,255	31	97	128	105	62	167
	Shopping Center	821	KSF	125.235	8,456	135	82	217	319	331	650
	General Office	710	KSF	250.47	2,715	335	46	381	61	300	361
	Subtotal				13,426	501	225	726	485	693	1,178
51	Multi-Family (Low-Rise)	220	DU	153	1,056	17	53	70	54	32	86
	High-Turnover Sit-Down Restaurant	932	KSF	1.90419	204	10	8	18	10	7	17
	Shopping Center	821	KSF	42.8444	2,893	46	28	74	109	113	222
	Subtotal				4,153	73	89	162	173	152	325
52	Multi-Family (Low-Rise)	220	DU	97	697	13	40	53	39	23	62
	Hotel	310	Rooms	100	799	26	20	46	30	29	59
	Subtotal				1,496	39	60	99	69	52	121
53	Hardware Store	863	KSF	111	3,412	96	72	168	124	130	254
	Shopping Center	822	KSF	27	1,369	38	26	64	89	89	178
	Shopping Center	822	KSF	24	1,242	34	23	57	79	79	158
	Shopping Center	822	KSF	7.4	542	10	7	17	25	24	49
	Shopping Center	822	KSF	7.4	542	10	7	17	25	24	49
	Shopping Center	821	KSF	8.9	600	9	6	15	23	23	46
	Shopping Center	821	KSF	9.9	671	11	6	17	25	27	52
	Shopping Center	821	KSF	10.7	724	12	7	19	27	29	56
	Shopping Center	822	KSF	7.2	534	10	7	17	24	23	47
	Shopping Center	822	KSF	4.8	432	7	4	11	16	16	32
	Medical Office Building	720	KSF	9.1	283	22	6	28	10	24	34
	Day Care	565	KSF	12	571	70	62	132	63	70	133
	Subtotal				10,922	329	233	562	530	558	1,088
54	Shopping Center	822	KSF	6.4	498	9	6	15	21	21	42

Planning Area	Land Use	ITE Code	Unit	Quantity	Daily	AM Peak			PM Peak		
						In	Out	Total	In	Out	Total
	Shopping Center	822	KSF	6.4	498	9	6	15	21	21	42
	Shopping Center	821	KSF	8.1	547	9	5	14	21	21	42
	Shopping Center	821	KSF	8.1	547	9	5	14	21	21	42
	Shopping Center	821	KSF	9.6	647	11	6	17	25	25	50
	Grocery Store	850	KSF	124.0	11,636	209	146	355	555	555	1,110
	Shopping Center	822	KSF	7.8	559	11	7	18	26	25	51
	Fitness Center	492	KSF	40	N/A	27	25	52	79	59	138
	Shopping Center	822	KSF	22	1,158	31	21	52	73	72	145
	Gas Station	945	FP	10	2,651	81	80	161	92	92	184
	Subtotal				18,741	406	307	713	934	912	1,846
55	Multi-Family (Low-Rise)	220	DU	258	1,729	25	78	103	83	48	131
	Shopping Center	822	KSF	29.799	1,487	42	28	70	98	98	196
	General Office	710	KSF	59.598	646	80	11	91	15	71	86
	Subtotal				3,862	147	117	264	196	217	413
Subtotal Trips					61,782	1,803	1,392	3,195	2,791	2,957	5,748
Total Internal Trips					5,200	143	137	286	504	481	981
Total Passby Trips					4,582	99	73	170	202	201	403
Total New Externa[illegible]ips					52,000	1,561	1,182	2,739	2,085	2,275	4,364

verify passby trips were calculated after the internal trips were subtracted from the total trips

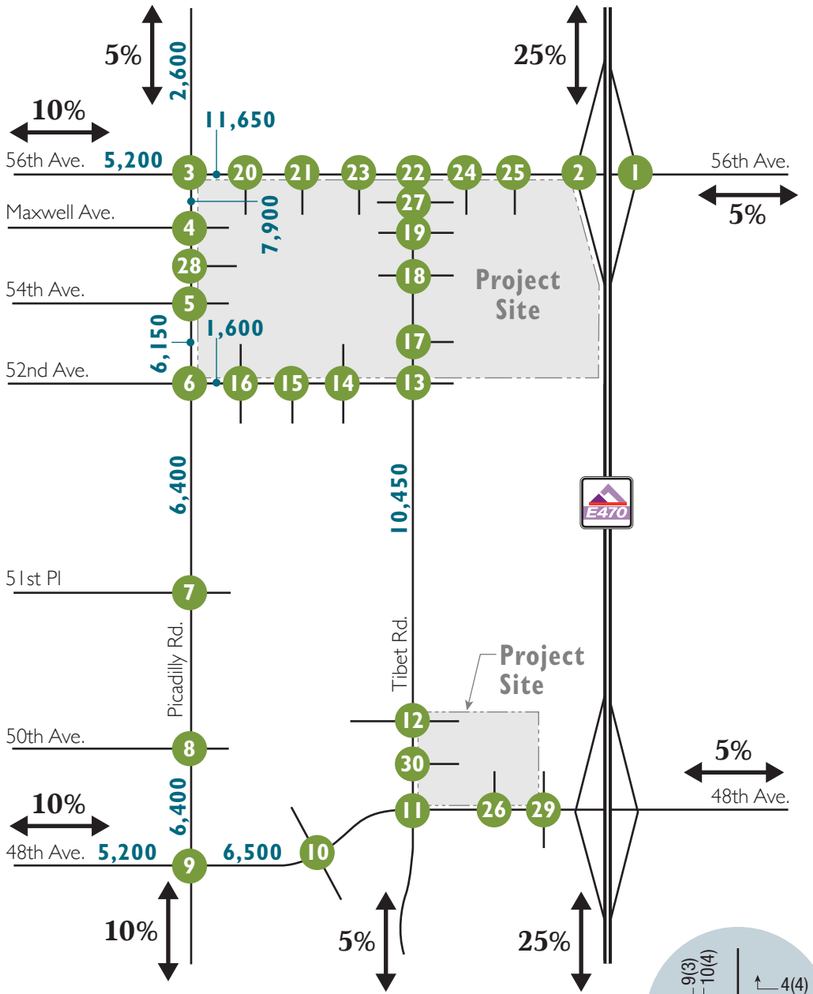
III.B. Site Trip Distribution and Site-Generated Traffic Assignment

For the Short-Range Future scenario, it is expected that the Green Valley Ranch East MP Amendment 1 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 2** 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
- 25 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
- 5 percent oriented to/from the east on 56th Avenue

Internal trips were deducted from the trip generation total before assignments and are not reflected in the site generated trips. It should be noted that some internal trips may cross Tibet Road to reach other planning areas; however, these trips were not accounted for and Tibet is anticipated to see more east-west through volumes at site accesses than shown. Pass-by trips were assumed to travel through on 56th Avenue, Picadilly Road, 48th Avenue, and Tibet Road. Using an industry software tool, VISTRO, net new site generated trips were assigned to the network along with pass-by trips. **Figure 4** shows the site trip distribution and resultant traffic assignment including pass-by trips. As indicated, Picadilly Road would carry between 2,600 and 7,900 VPD of site traffic, 56th Avenue would carry about 5,200 west of Picadilly Road and 11,650 VPD east of Picadilly Road. 48th Avenue would carry between 5,200 VPD west of Picadilly and 6,500 VPD east of Picadilly Road in site-generated traffic.

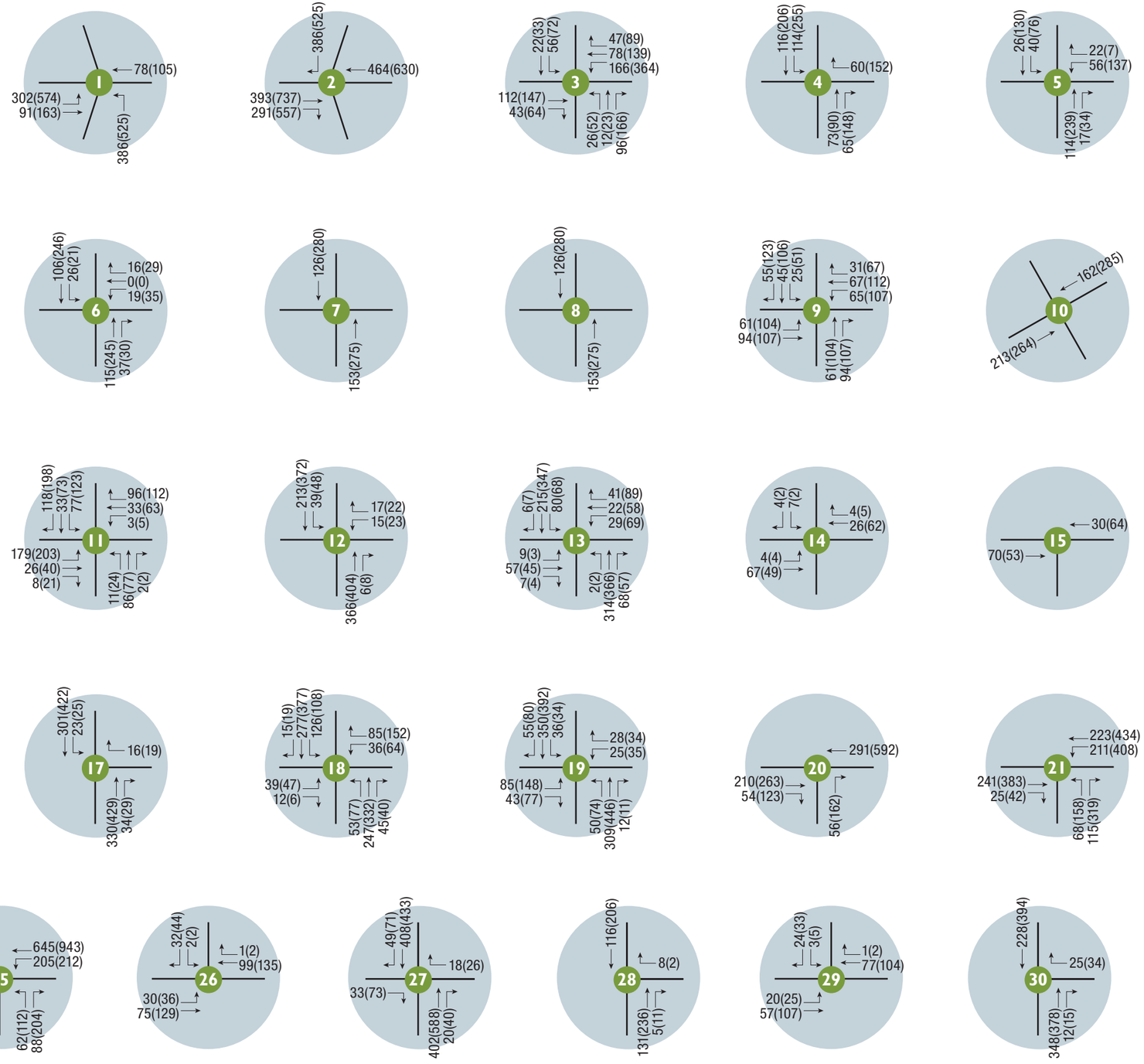


LEGEND

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

XXXX = Daily Traffic Volumes

XX% = Site Trip Distribution



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NOTE: Drawing Not to Scale

FIGURE 4

Site Generated Traffic and Distribution

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 D** 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.

For the Long-Range Future scenario (year 2040), the background volumes shown on **Figure 7** were based 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).

Report excerpts providing additional detail are included in **Appendix I**.

- 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.
  - Fulenwider, 716 acres of residential, industrial, and commercial land uses in the northeast corner of future intersection of 56th Avenue with Tibet Road.

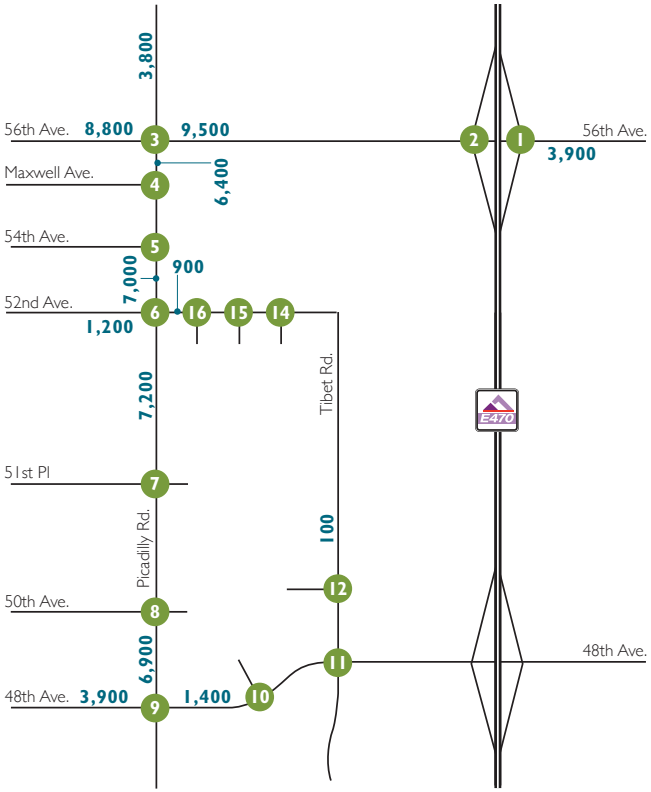
The Long-Range background peak hour volumes were used as the basis for intersection LOS analyses, the results of which are summarized on **Figure 8**. **Appendix E** contains the LOS worksheets. The analyses assume the following improvements by 2040:

- Dual left-turn lanes would be required on all approaches at the intersection of 48th Avenue with Picadilly Road.

- The intersections of Picadilly Road with 52nd Avenue, Picadilly Road with 48th Avenue, 48th Avenue with Filing 1 Access (Rome Street), 48th Avenue with Tibet Road, 56th Avenue with Access #25, and Tibet Road with 56th Avenue are all anticipated to meet signal warrants by the Long Term (2040) Background scenario. Traffic 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.

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

The majority of unsignalized movements would operate at LOS D or better with the exception of the eastbound left turn at the intersection of Tibet Road with 52nd Avenue which is anticipated to operate at LOS E during the AM and LOS F during the PM peak hour. However, it is not uncommon for side street stop controlled movements to experience higher than average delays during peak hours, and this intersection is not anticipated to meet signal warrant requirements in the background condition. 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

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NOTE: Drawing Not to Scale

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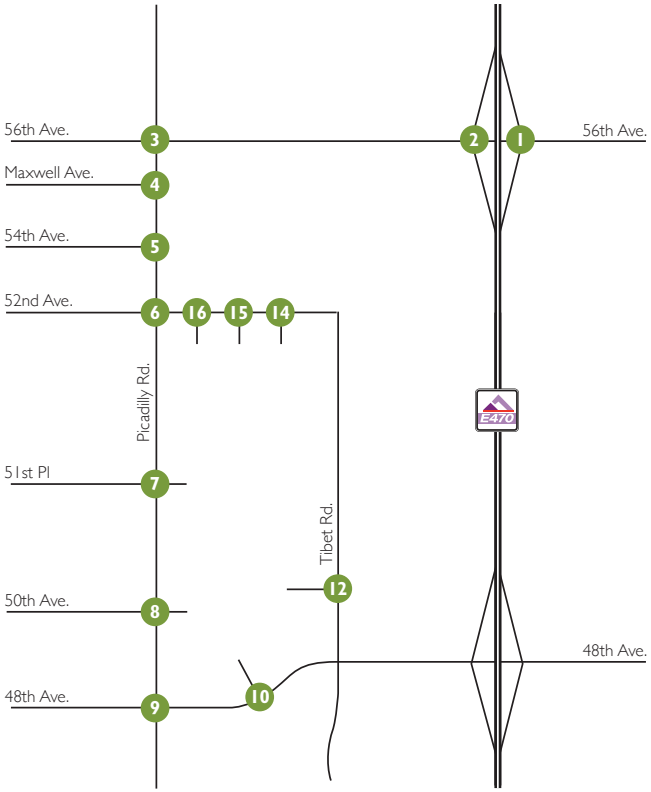
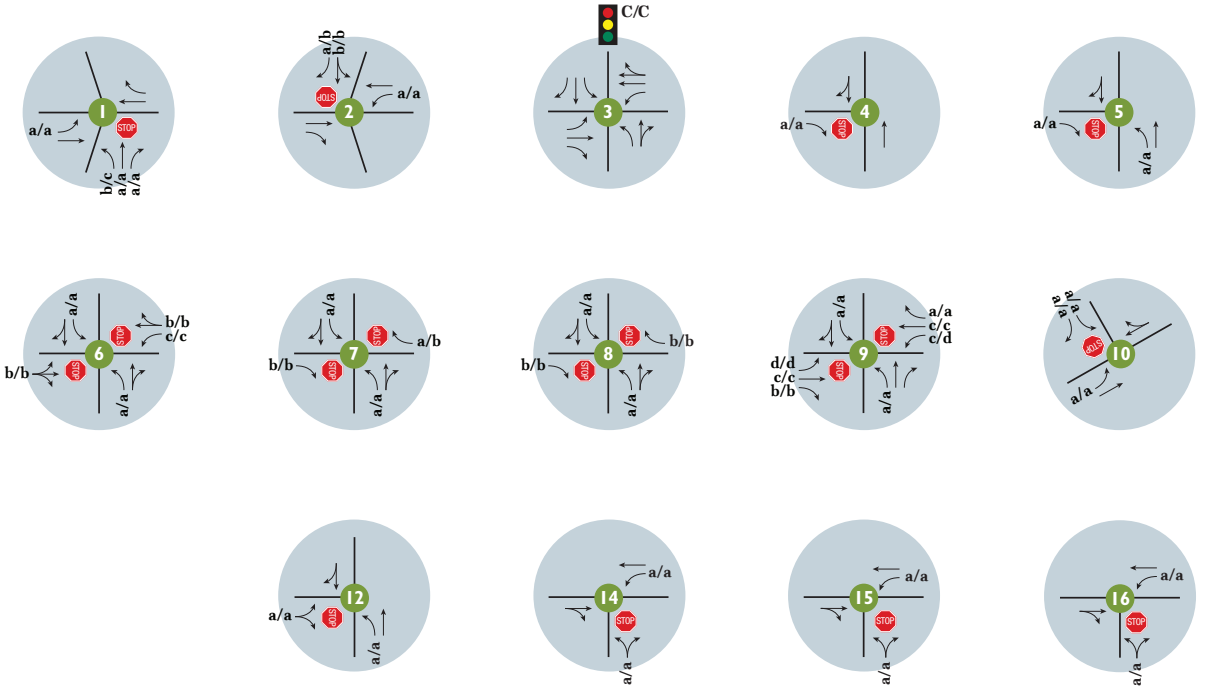
FIGURE 5

Short Term (2025) Background Traffic Volumes

GVR 310 West TIS - JUL_23 121372-01 7/16/23





provide intersection LOS/delay summary tables for all intersections, existing, short term and long term, background and total traffic volumes. Can be included in the Appendix

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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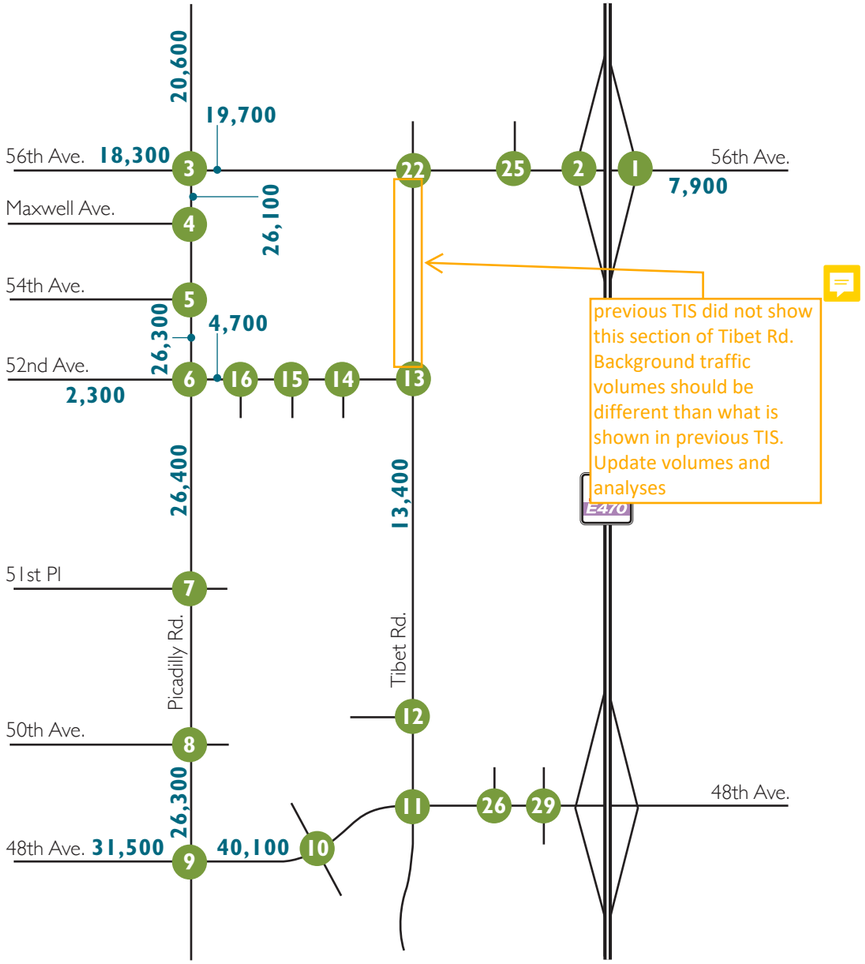
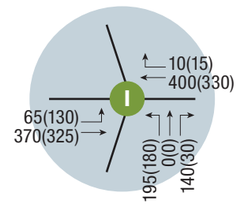
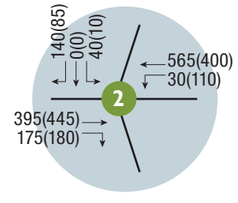
FIGURE 6

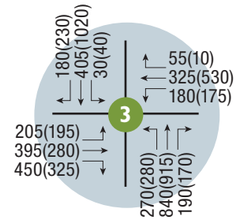
Short Term (2025)
Background Lane Geometry and Level of Service

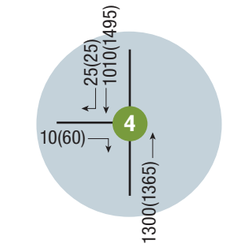
GVR 310 West TIS - JUL_23 121372-01 7/16/23

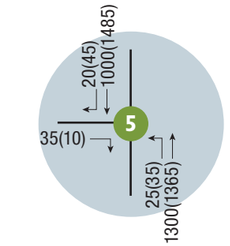


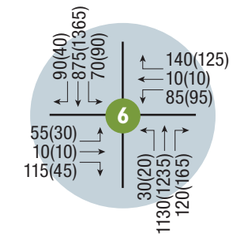


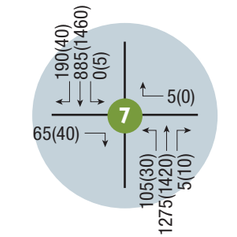


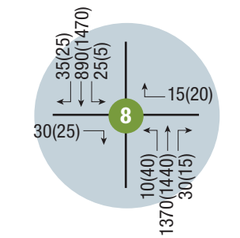


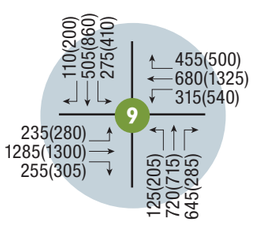


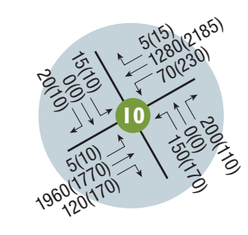


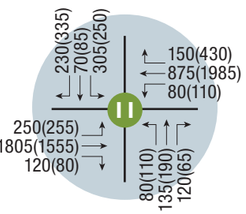


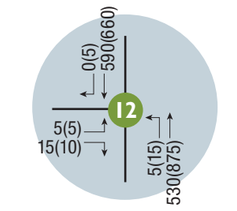


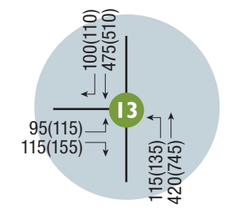


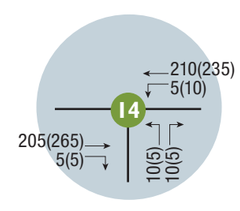


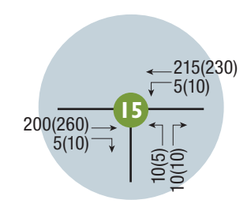


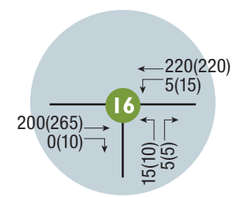


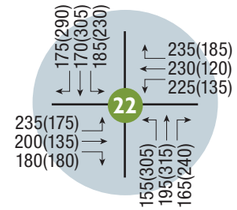


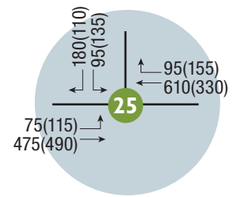


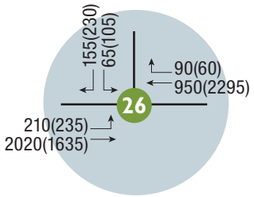


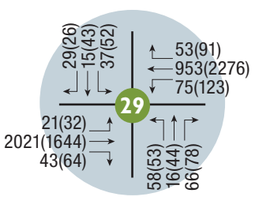












LEGEND

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

XXXX = Daily Traffic Volumes

FELSBURG HOLT & ULLEVIG

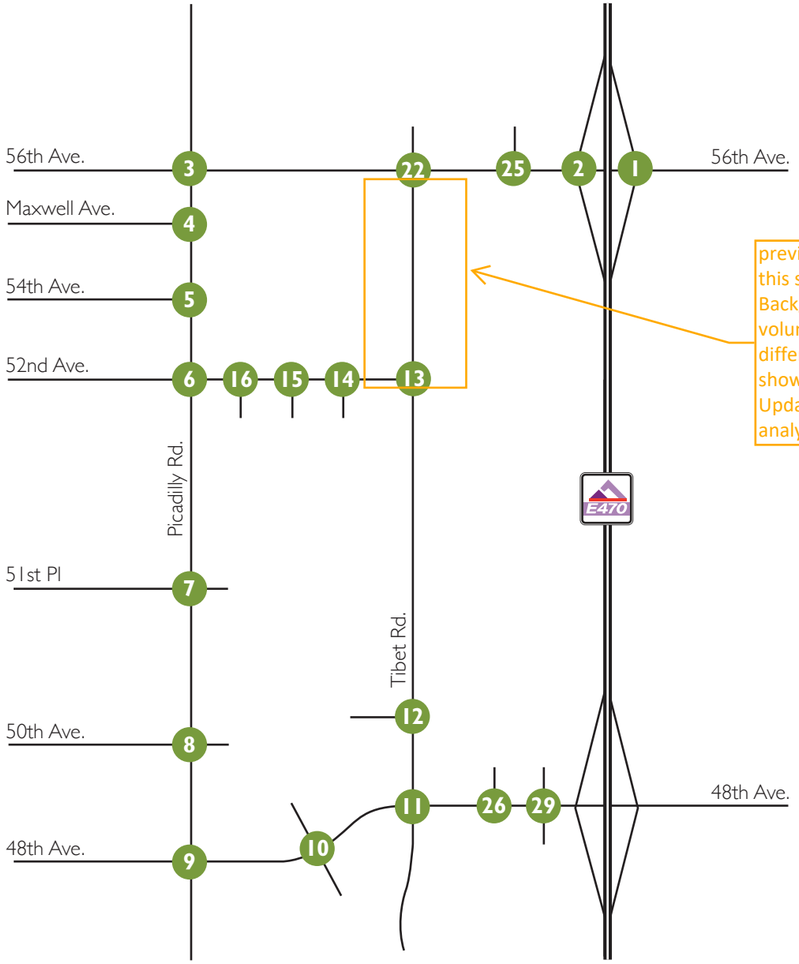
NOTE: Drawing Not to Scale

NORTH

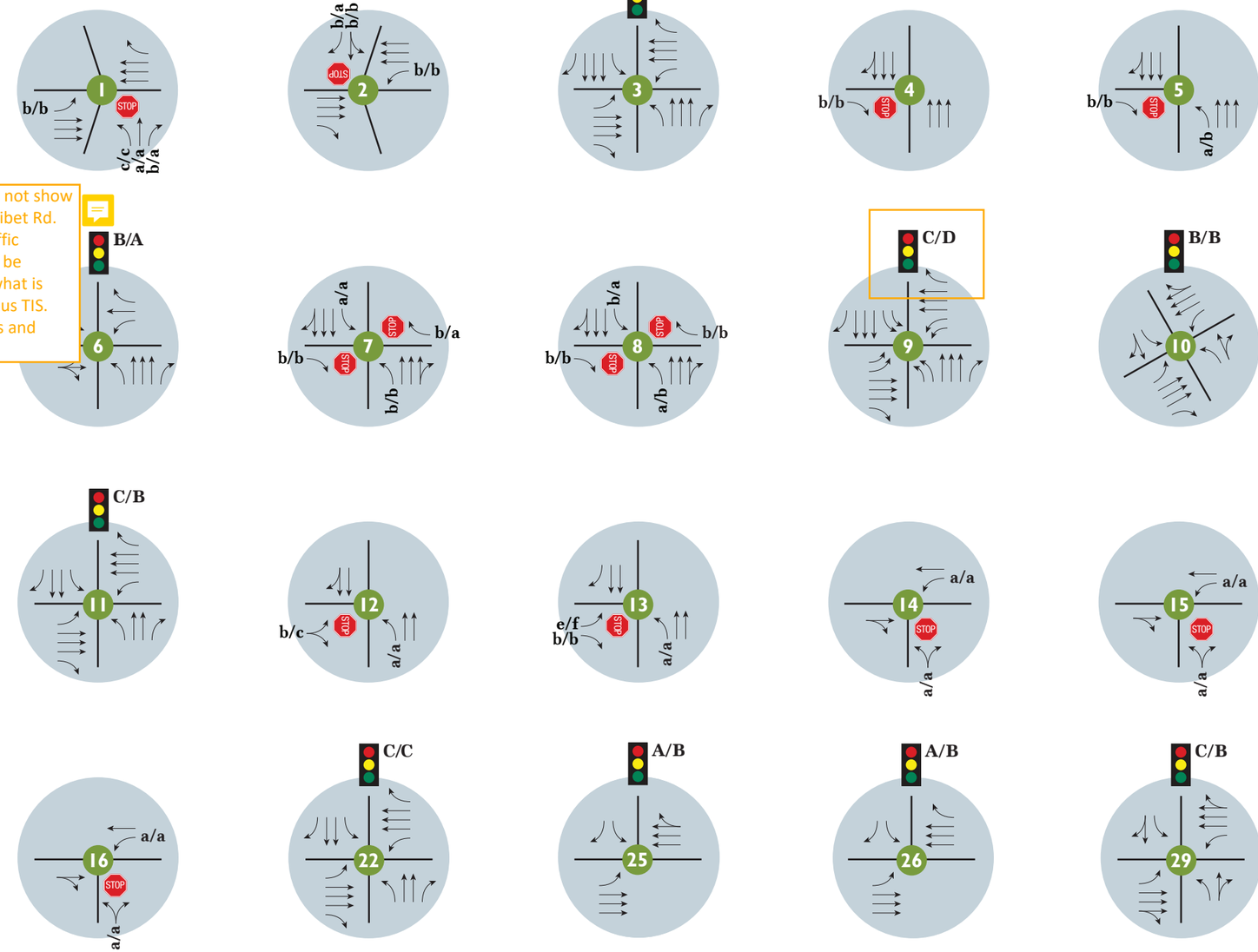
FIGURE 7

Long Term (2040) Background Traffic Volumes

GVR 310 West TIS - JUL_23 121372-01 7/19/23



previous TIS did not show this section of Tibet Rd. Background traffic volumes should be different than what is shown in previous TIS. Update volumes and analyses



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 - JUL_23 121372-01 7/19/23

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 assess the lane geometry and traffic control required. Note that the approaches to Picadilly Road at 50th Avenue (intersection #8), 51st Place (intersection #7), and Maxwell Place (intersection #4) are shown as ¾-movement, as is currently proposed.

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 23,200 and 34,000 VPD. Total daily traffic volumes along Green Valley Ranch Boulevard west of Picadilly Road are projected to be about 36,700 VPD. To the east, traffic volumes on 48th Avenue would increase to about 46,600 VPD. Tibet Road would carry up to 23,850 VPD.

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 & Tibet Road		✔		
56th Avenue & Picadilly Road		✔		
Picadilly Road & 48th Avenue	✔	✔	✔	✔
48th Avenue & Tibet Road	✔			✔

add intersection #s

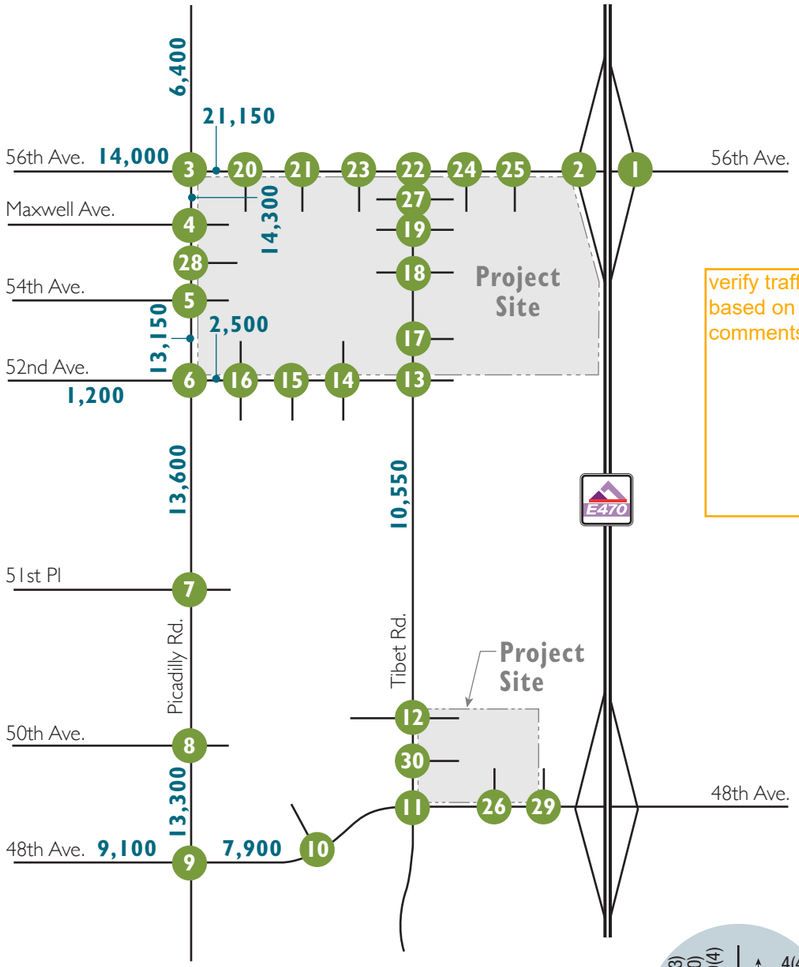
Projected future total daily traffic volumes were compared with threshold values contained in NEATS to provide a general assessment of through lane adequacy. Laneage recommendations in this report are based on operational intersection LOS findings and the daily volume threshold comparison is provided as a secondary reference only.

- The projected volumes on Tibet Road would remain within NEATS four-lane minor arterial criteria (LOS C threshold) in the Long-Range Total scenario.
- Traffic projections along 48th Avenue are consistent with the NEATS threshold for LOS C for six-lane major arterials in the Long-Range scenarios.
- 56th Avenue is projected to carry 31,350 vehicles per day. This volume is within the NEATS threshold for LOS C for six-lane major arterials, also meeting four-lane thresholds. Six lanes are recommended based on intersection traffic operations.
- Picadilly Road is projected to carry 34,000 vehicles per day. This volume is within the NEATS threshold for LOS C for six-lane major arterials, also meeting four-lane thresholds. Six lanes are recommended based on intersection traffic operations.

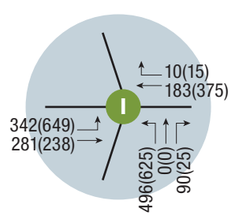
Table 3 outlines intersections anticipated to meet signal warrants and the respective timeframe. Signal warrant graphs are included in **Appendix H.**

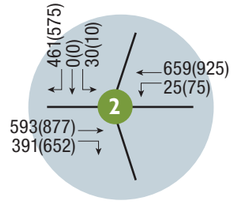
Table 3. Signal Warrant Results

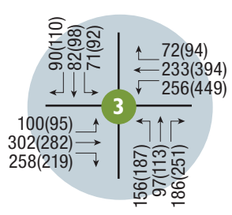
Intersection	Short Term Background	Long Term Background	Short Term Total	Long Term Total
56th Avenue & E-470 NB Ramps			✔	✔
56th Avenue & E-470 SB Ramps			✔	✔
56th Avenue & Tibet Road		✔	✔	✔
56th Avenue & Picadilly Road	✔	✔	✔	✔
Picadilly Road & 52nd Avenue		✔	✔	✔
Picadilly Road & 48th Avenue/Green Valley Ranch Boulevard		add intersection #s	✔	✔
48th Avenue & Filing 1 Access		✔		✔
48th Avenue & Tibet Road		✔	✔	✔
Tibet Road & 52nd Avenue				✔
Tibet Road & Access #18			✔	✔
48th Avenue & Access #26		✔		✔
Picadilly Road & 54th Avenue			✔	✔
56th Avenue & Access #21			✔	✔
56th Avenue & Access #25		✔	✔	✔
48th Avenue & Access #29		✔		✔
Tibet Road & Access #19				✔

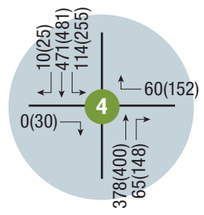


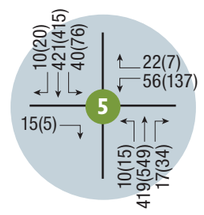
verify traffic volumes based on previous comments

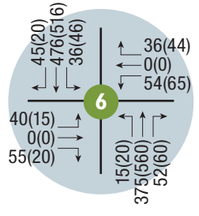


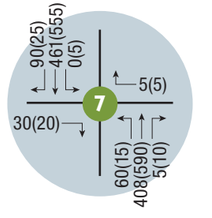


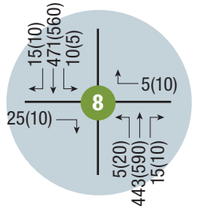


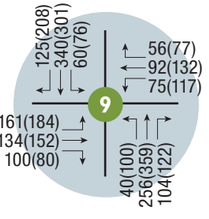


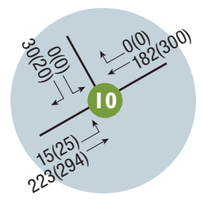


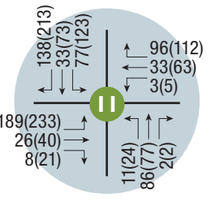


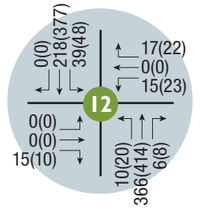


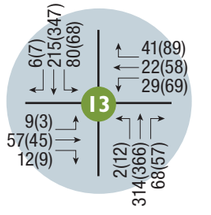


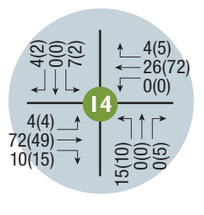


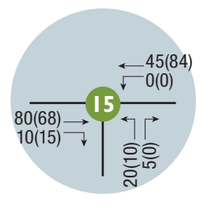


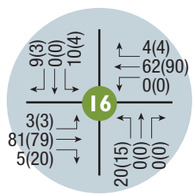


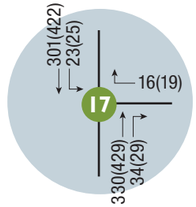


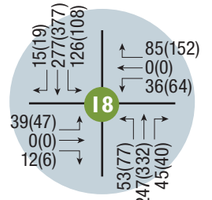


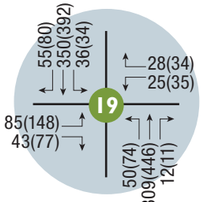


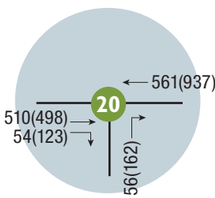


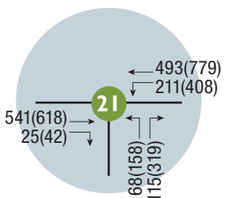


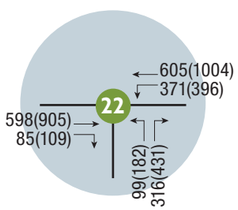


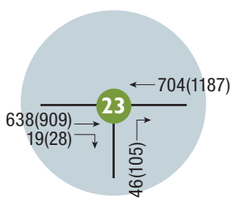


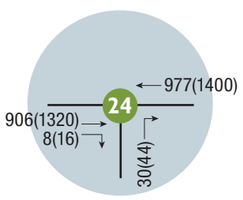


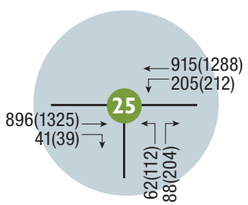


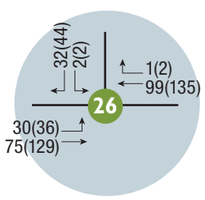


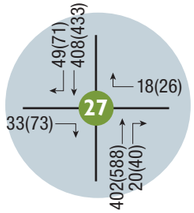


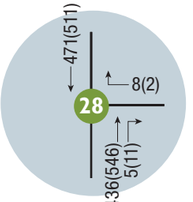


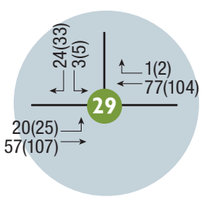


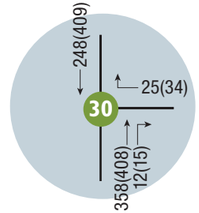












LEGEND

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

XXXX = Daily Traffic Volumes

FELSBURG HOLT & ULLEVIG

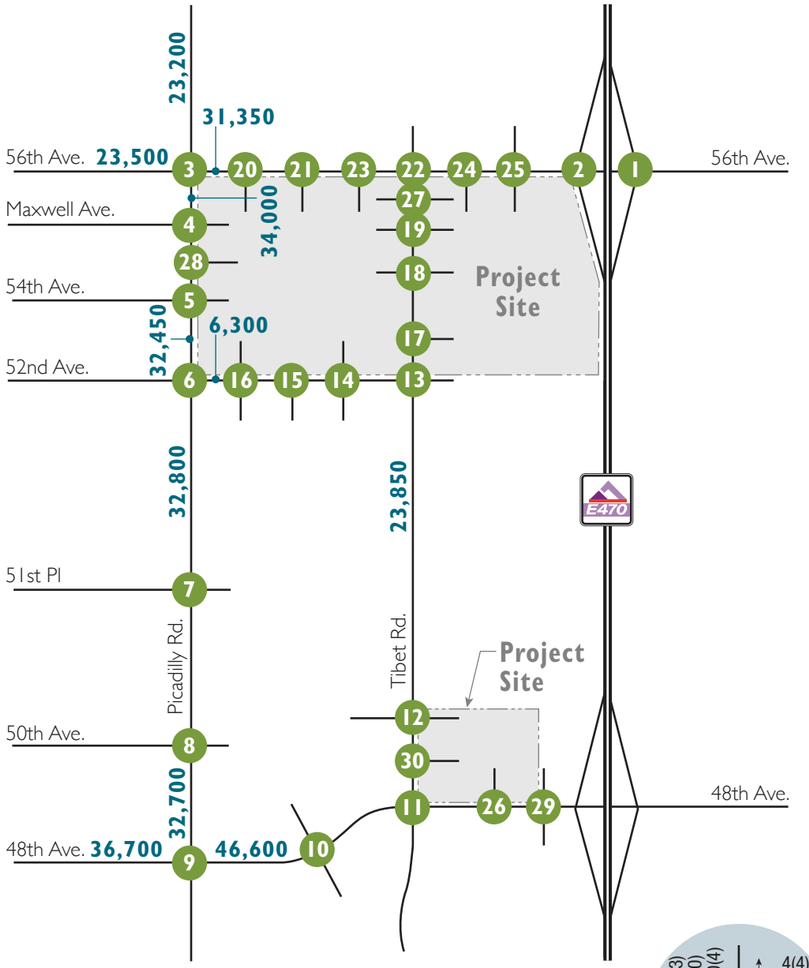
NORTH

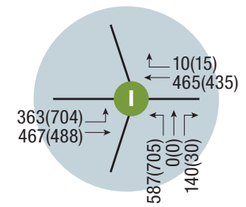
NOTE: Drawing Not to Scale

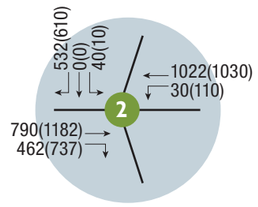
FIGURE 9

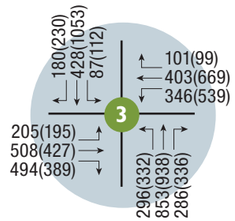
Short Term (2025) Total Traffic Volumes

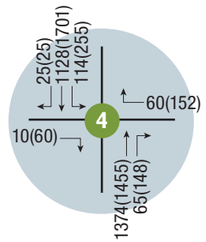
GVR 310 West TIS - JUL_23 121372-01 7/18/23

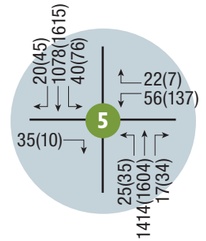


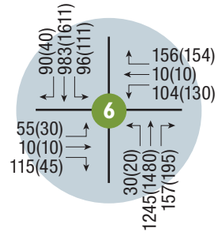


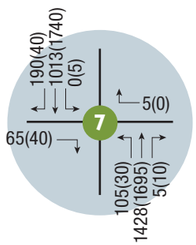


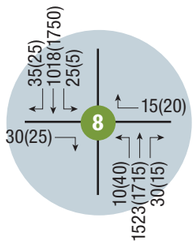


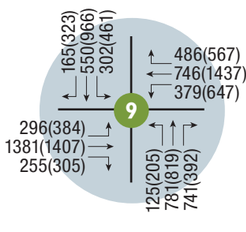


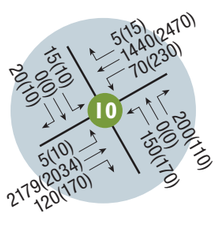


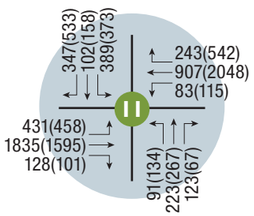


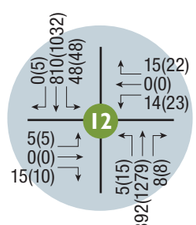


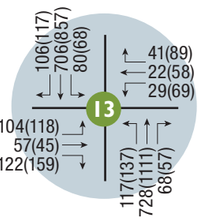


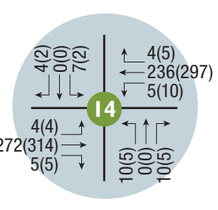


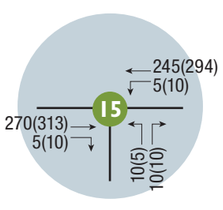


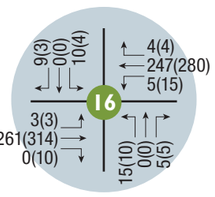


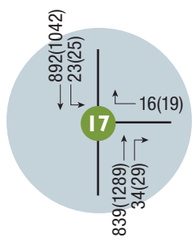


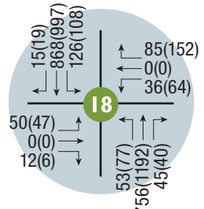


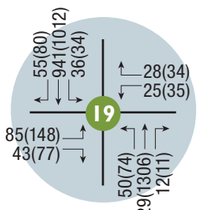


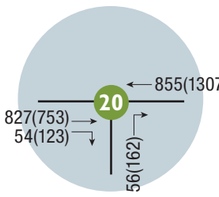


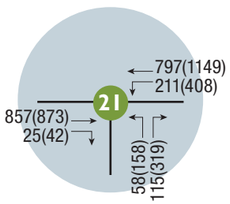


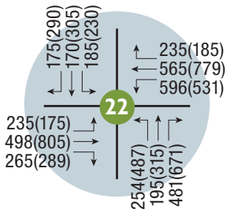


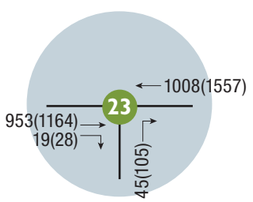


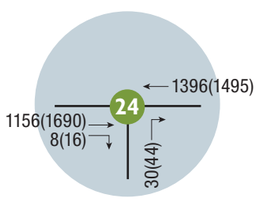


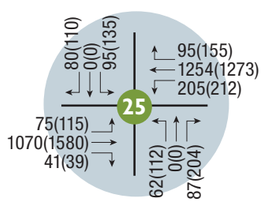


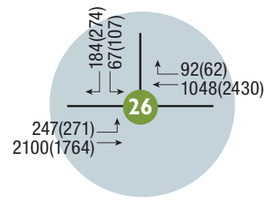


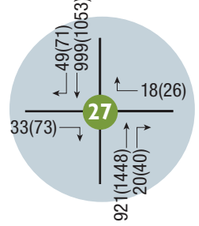


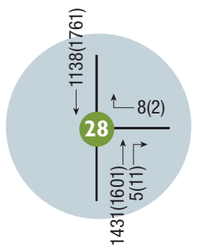


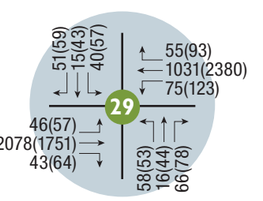


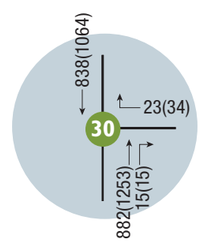












LEGEND

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

XXXX = Daily Traffic Volumes

FELSBURG HOLT & ULLEVIG

NORTH

NOTE: Drawing Not to Scale

FIGURE 10

Long Term (2040) Total Traffic Volumes

GVR 310 West TIS - JUL_23 121372-01 7/19/23

V. EVALUATION

V.A. Level of Service

Short-Range Future

The peak hour traffic volumes (**Figure 9**), intersection geometrics, and traffic control (**Figure 11**) were used as the basis for LOS analyses, the results of which are summarized on **Figure 11**. **Appendix F** 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 Maxwell Place would be restricted to ¾-movement on both 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.
- Exclusive right turn lanes should be provided at the below outlined access locations:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & Access #25	✔		✔	
56th Avenue & Access #23	✔			
56th Avenue & Access #21	✔		✔	
56th Avenue & Access #20	✔			
Picadilly Road & Maxwell Place			✔	✔
Picadilly Road & 54th Avenue			✔	
Tibet Road & 52nd Avenue			✔	
Tibet Road & Access #19				✔
Tibet Road & Access #27				✔

provide discussion/bases for the lane requirements

- Exclusive left turn lanes should be provided at the below outlined access locations:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & Access #25		✔	✔	
56th Avenue & Access #21		✔	✔	
Picadilly Road & Maxwell Place				✔
Picadilly Road & 54th Avenue	✔	✔	✔	✔
48th Avenue & Access #26	✔			
48th Avenue & Access #29	✔			
Tibet Road & 52nd Avenue	✔	✔		✔
Tibet Road & Access #18	✔	✔	✔	✔
Tibet Road & Access #19	✔	✔	✔	✔

- Tibet Road should be constructed to four-lane minor arterial standards north of 48th Avenue, transitioning to two travel lanes south of 48th Avenue.

- 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, the majority of unsignalized movements within the study area would remain acceptable, at LOS D or better with the exception of the following movements:

Tibet Road & 48th Avenue

- The northbound left turn movement is anticipated to operate at LOS E during the PM peak hour.
- The southbound left turn movement is anticipated to operate at LOS E during the PM peak hour.

Tibet Road & Access #18

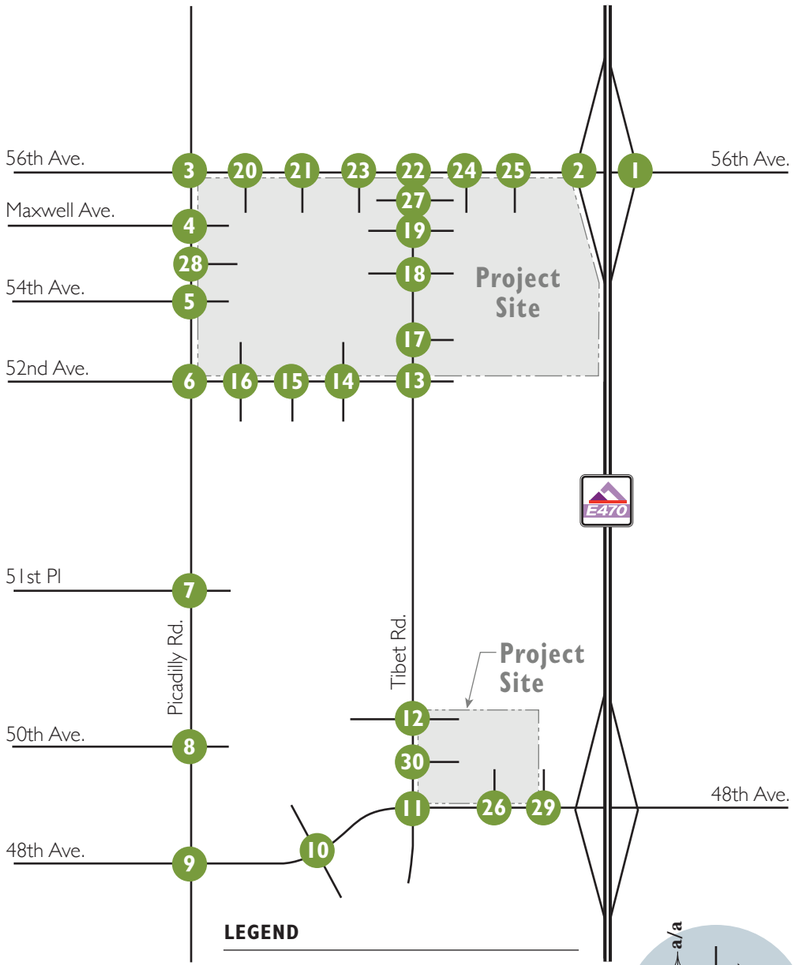
- The eastbound left turn movement is anticipated to operate at LOS F during the PM peak hour.
- The westbound left turn movement is anticipated to operate at LOS E during the PM peak hour.

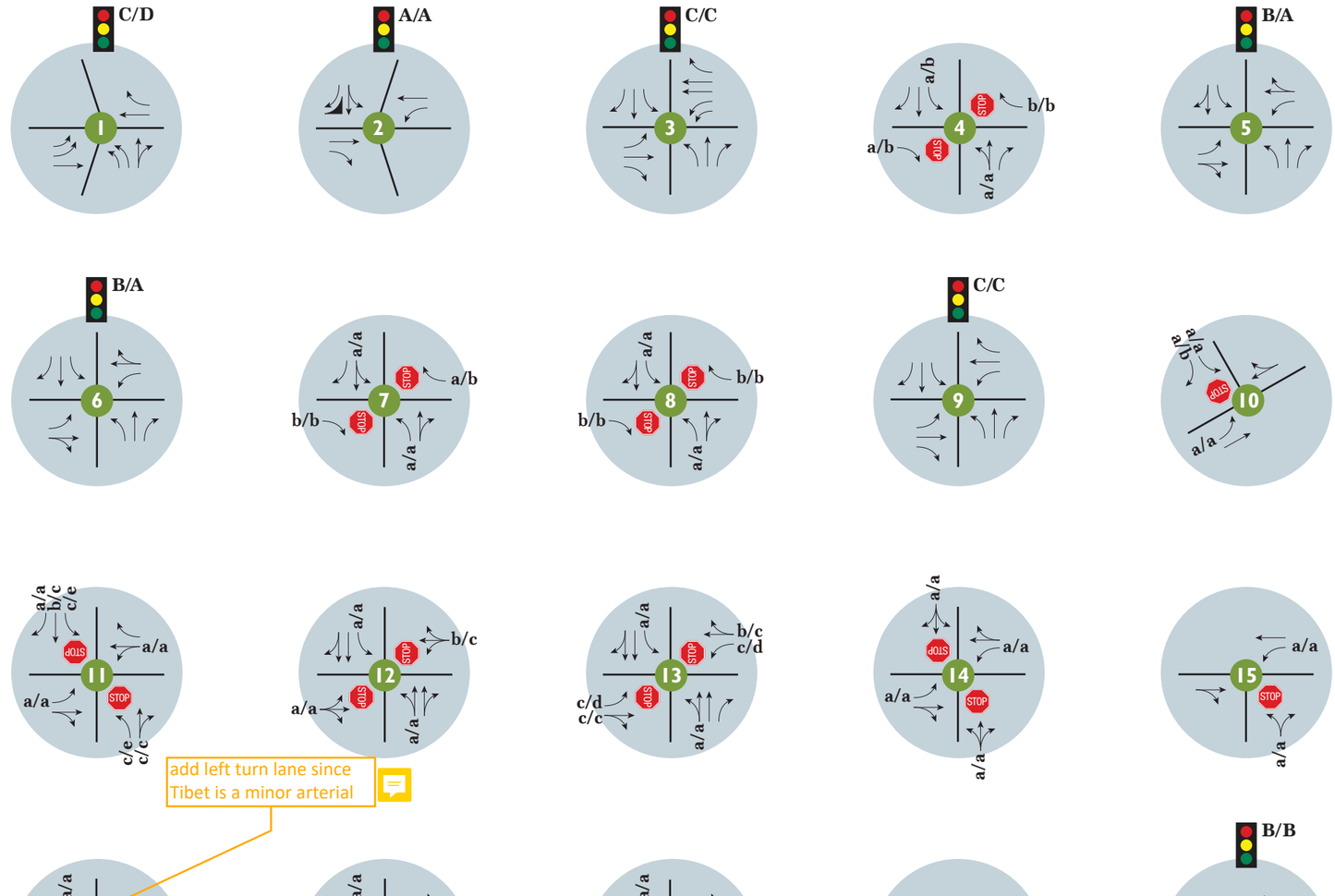
Tibet Road & Access #19

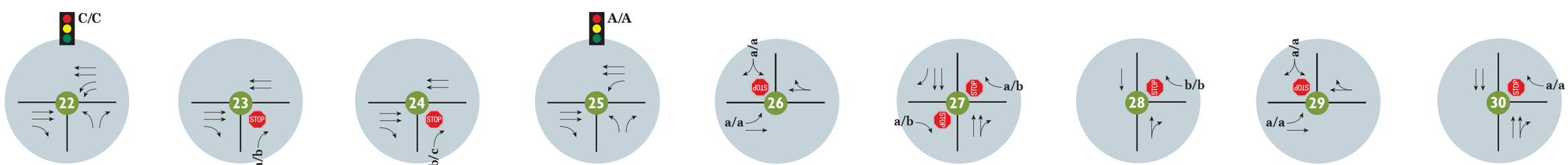
- The eastbound left turn movement is anticipated to operate at LOS F during the PM peak hour.

However, it is not uncommon for side street stop-controlled movements to experience longer than average delays during peak hours and the above intersections are not anticipated to meet signal warrant requirements by the short-term total scenario.

All signalized intersections are anticipated to operate at LOS D or better for all peak periods.







FELSBURG HOLT & ULLEVIG

NORTH

NOTE: Drawing Not to Scale

FIGURE 11
Short Term (2025)
Total Lane Geometry and Level of Service

GVR 310 West TIS - JUL_23 121372-01 7/18/23

Long-Range Future

The peak hour traffic volumes (**Figure 10**), 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 G** contains LOS worksheets. As shown, all signalized traffic operations are projected to remain acceptable, at LOS D or better.

The unsignalized ¾-movement 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 B or better) under STOP sign control. All operations are anticipated to experience LOS D or better with the exception of the following:

Tibet Rd & 48th Avenue

- Overall intersection would experience LOS E during the PM peak hour.

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 north of 48th Avenue.
- All internal site roadways would be constructed as two-lane, local streets.
- Exclusive right turn lanes should be provided at the below outlined access locations:

Intersection	Eastbound	Westbound	Northbound	Southbound
Tibet Road & 52nd Avenue			✔	✔
Tibet Road & Access #19				✔
Tibet Road & Access #27				✔

provide discussion/bases the lane requirements. Should be based on SHAC

- Exclusive left turn lanes should be tlined access locations:

Intersection		ound	Northbound	Southbound
56th Avenue & Access #25			✔	
56th Avenue & Access #21		✔	✔	
Picadilly Road & Maxwell Place				✔
Picadilly Road & 54th Avenue	✔	✔	✔	✔
48th Avenue & Access #26	✔			✔
48th Avenue & Access #29	✔	✔	✔	✔
Tibet Road & Filing17 Access		✔	✔	✔
Tibet Road & 52nd Avenue	✔	✔	✔	✔
Tibet Road & Access #18	✔	✔	✔	✔
Tibet Road & Access #19	✔	✔	✔	✔

- Where outlined, site accesses and intersections should be monitored/signalized when warranted.

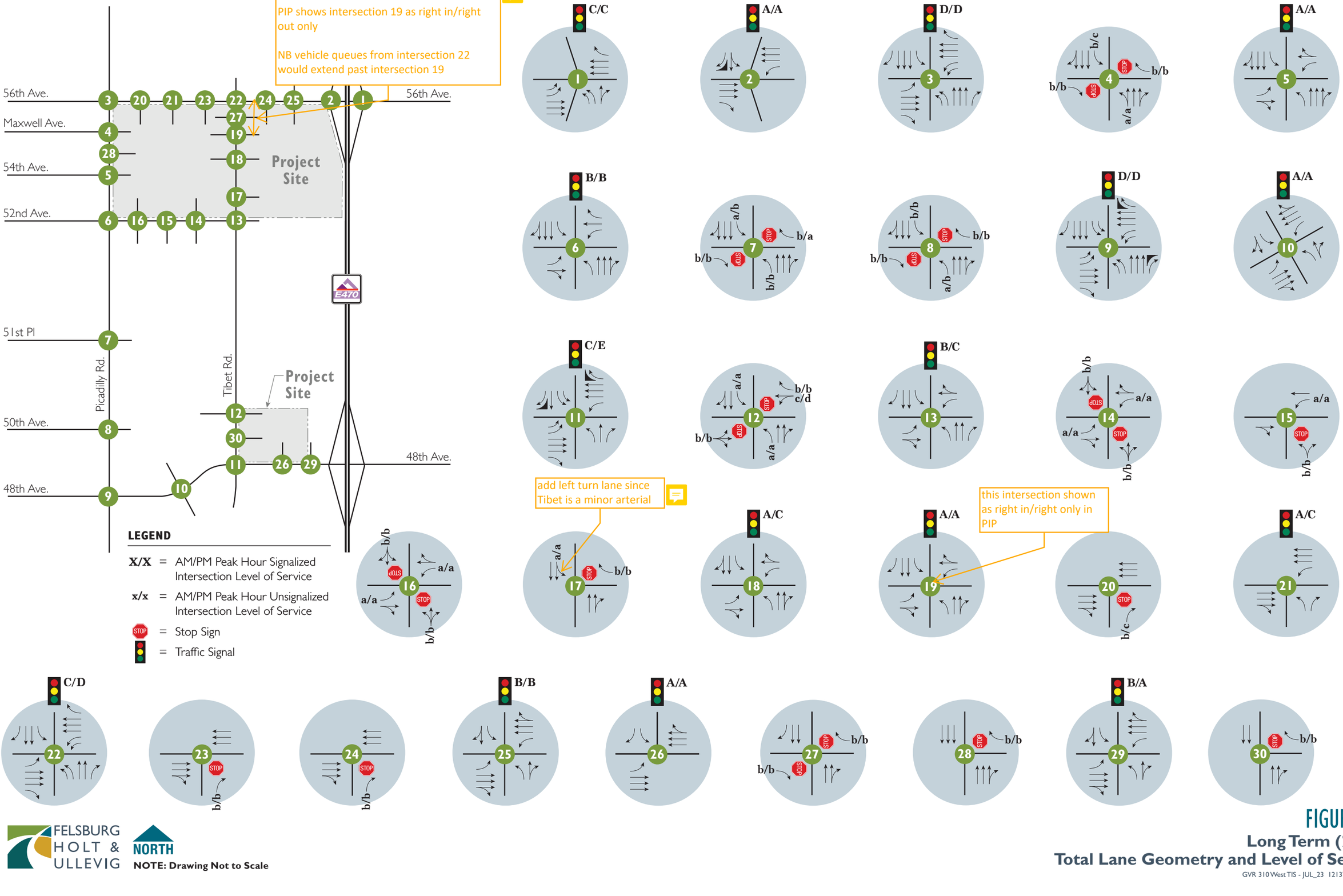


FIGURE 12

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

GVR 310 West TIS - JUL_23 121372-01 7/19/23

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 Tibet Road with Access #18, Picadilly Road with 54th Avenue, 56th Avenue with Access #25, and 56th Avenue with Access #21 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 Access #25
- 56th Avenue with Tibet Road
- 56th Avenue with Access #21
- 56th Avenue with Picadilly Road
- Picadilly Road with 54th Avenue
- Picadilly Road with 52nd Avenue
- Picadilly Road with 48th Avenue/Green Valley Ranch Boulevard
- 48th Avenue with Filing 1 Access
- 48th Avenue with Tibet Street
- 48th Avenue with Access #26
- 48th Avenue with Access #29
- Tibet Street with 52nd Avenue
- Tibet Street with Access #18
- Tibet Road with Access #19

add intersection #s

Traffic conditions should be monitored to determine the timing of traffic control improvements. Note that coordination with the Fulenwider development should be conducted in order to align the proposed intersection of 56th Avenue with Access #25 with a proposed full movement access to the Fulenwider development north of 56th Avenue.

The following intersections would be restricted to ¾ movements:

- Picadilly Road & Maxwell Place
- Picadilly Road & 51st Place
- Picadilly Road & 50th Avenue
- Tibet Road & Access #17

add intersection #s

The following intersections would be restricted to RIRO movements:

- 56th Avenue & Access #24
- 56th Avenue & Access #23
- 56th Avenue & Access #20

- Picadilly Road & Access #28
- Tibet Road & Access #30
- Tibet Road & Access #27

add intersection #s

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 4**. 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. The only queue that is anticipated to impede movements at upstream intersections would be the northbound right turn at the intersection of Tibet Street with 56th Avenue. Due to the excessive right turn volume for this movement, a channelized right turn with an acceleration lane should be considered to minimize queue spillback.

add text that upstream intersections will need to be restricted movement if queues are not mitigated

Table 4. Qu lized Intersections

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
1. 56th Avenue & E-470 NB Ramps	EB Left*	225 (350)	375	350
	EB Through	0 (0)	Continuous	Continuous
	WB Through	125 (150)	Continuous	Continuous
	WB Right	25 (25)	50	50
	NB Left*	375 (450)	375	450
	NB Through/Right	200 (50)	Continuous	Continuous
2. 56th Avenue & E-470 SB Ramps	EB Through	0 (25)	Continuous	Continuous
	EB Right	25 (25)	750	50
	WB Left	25 (25)	125	50
	WB Through	225 (275)	Continuous	Continuous
	SB Left/Through	50 (25)	Continuous	Continuous
	SB Right	0 (0)	Continuous	Continuous
25. 56th Avenue & Access #25	EB Left	50 (75)	Continuous	Continuous
	EB Through	25 (25)	Continuous	Continuous
	EB Through/Right	25 (50)	Continuous	Continuous
	WB Left	100 (125)	225	125
	WB Through	25 (25)	Continuous	Continuous
	WB Through/Right	25 (25)	Continuous	Continuous
	NB Left	100 (150)	125	150
	NB Through/Right	150 (325)	Continuous	Continuous
	SB Left	150 (175)	150	175
	SB Through/right	150 (175)	Continuous	Continuous
22. 56th Avenue & Tibet Street	EB Left	200 (150)	250	200
	EB Through	125 (175)	Continuous	Continuous
	EB Right	175 (150)	300	175
	WB Left*	350 (300)	300	350
	WB Through	75 (75)	Continuous	Continuous
	WB Right	75 (50)	250	75
	NB Left*	225 (375)	250	375

This queue would extend to intersections 19 and 27. The queue needs to be mitigated or these intersections would need to be right in only

Intersection	Movement		CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
	NB Through	150 (250)	Continuous	Continuous
	NB Right	575 (975)	675	975
	SB Left	225 (200)	250	225
	SB Through	125 (225)	Continuous	Continuous
	SB Right	225 (400)	300	400
21. 56th Avenue & Acces #21	EB Through	175 (375)	Continuous	Continuous
	EB Through/Right	200 (425)	Continuous	Continuous
	WB Left	100 (325)	425	325
	WB Through	25 (25)	Continuous	Continuous
	NB Left	75 (25)	175	75
	NB Right	175 (325)	Continuous	Continuous
3. 56th Avenue & Picadilly Road	EB Left	300 (325)	225	325
	EB Through	225 (200)	Continuous	Continuous
	EB Right	875 (600)	500	875
	WB Left*	250 (375)	275	375
	WB Through	175 (275)	Continuous	Continuous
	WB Right	125 (125)	125	125
	NB Left*	200 (250)	175	250
	NB Through	50 (225)	Continuous	Continuous
	NB Right	50 (175)	350	175
	SB Left	150 (200)	125	200
	SB Through	150 (375)	Continuous	Continuous
	SB Right	125 (200)	250	200
5. Picadilly Road & 54th Avenue	EB Left	0 (0)	50	50
	EB Through/right	75 (25)	Continuous	Continuous
	WB Left	100 (225)	150	225
	WB Through/right	50 (25)	Continuous	Continuous
	NB Left	25 (25)	50	50
	NB Through	25 (50)	Continuous	Continuous
	NB Through/right	25 (75)	Continuous	Continuous
	SB Left	25 (25)	100	50
	SB Through	25 (25)	Continuous	Continuous
	SB Through/right	25 (25)	Continuous	Continuous
6. Picadilly Road & 52nd Avenue	EB Left	100 (50)	75	100
	EB Through/Right	200 (100)	Continuous	Continuous
	WB Left	150 (200)	150	200
	WB Through	25 (25)	Continuous	Continuous
	WB Right	200 (200)	175	200
	NB Left	25 (25)	50	50
	NB Through	300 (325)	Continuous	Continuous
	NB Through/right	325 (350)	Continuous	Continuous
	SB Left	50 (50)	125	50
	SB Through	25 (25)	Continuous	Continuous
	SB Through/Right	25 (25)	Continuous	Continuous

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
9. Picadilly Road & 48th Avenue/Green Valley Ranch Boulevard	EB Left*	250 (275)	200	275
	EB Through	650 (650)	Continuous	Continuous
	EB Right	275 (325)	325	325
	WB Left*	250 (400)	325	400
	WB Through	200 (225)	Continuous	Continuous
	WB Right	0 (0)	575	50
	NB Left*	100 (200)	125	200
	NB Through	300 (400)	Continuous	Continuous
	NB Right	0 (0)	750	50
	SB Left*	275 (375)	250	375
	SB Through	200 (400)	Continuous	Continuous
	SB Right	150 (325)	325	325
10. 48th Avenue & Filing 1 Access	EB Left	0 (25)	50	50
	EB Through	25 (25)	Continuous	Continuous
	EB Through/Right	25 (25)	Continuous	Continuous
	WB Left	25 (325)	250	325
	WB Through	200 (350)	Continuous	Continuous
	WB Through/Right	225 (400)	Continuous	Continuous
	NB Left	75 (175)	175	175
	NB Through/Right	300 (175)	Continuous	Continuous
	SB Left	25 (25)	50	50
	SB Through/Right	50 (25)	Continuous	Continuous
11. 48th Avenue & Tibet Street	EB Left*	325 (400)	250	400
	EB Through	575 (450)	Continuous	Continuous
	EB Right	100 (75)	150	100
	WB Left	75 (175)	125	175
	WB Through	100 (750)	Continuous	Continuous
	WB Right	0 (0)	550	50
	NB Left	125 (225)	150	225
	NB Through	375 (850)	Continuous	Continuous
	NB Right	175 (100)	125	175
	SB Left*	275 (300)	200	300
	SB Through	125 (275)	Continuous	Continuous
	SB Right	0 (0)	550	50
13. Tibet Street & 52nd Avenue	EB Left	150 (150)	125	150
	EB Through/Right	300 (300)	Continuous	Continuous
	WB Left	50 (100)	75	100
	WB Through/Right	100 (225)	Continuous	Continuous
	NB Left	75 (75)	150	75
	NB Through	425 (650)	Continuous	Continuous
	NB Right	100 (75)	75	100
	SB Left	50 (50)	100	50
	SB Through	25 (150)	Continuous	Continuous
	SB Right	25 (50)	125	50

Intersection	Movement	Per Lane Queue Length (ft) AM (PM)	CDOT Storage Requirement (ft)	Recommended Storage Length (ft)
18. Tibet Street & Access #18	EB Left	75 (50)	50	75
	EB Through/Right	25 (25)	Continuous	Continuous
	WB Left	50 (75)	75	75
	WB Through/Right	150 (200)	Continuous	Continuous
	NB Left	100 (150)	100	150
	NB Through	25 (775)	Continuous	Continuous
	NB Through/right	25 (800)	Continuous	Continuous
	SB Left	50 (100)	150	100
	SB Through	25 (125)	Continuous	Continuous
	SB Through/right	25 (125)	Continuous	Continuous
19. Tibet Street & Access #19	EB Left	125 (225)	150	225
	EB Through/right	75 (100)	Continuous	Continuous
	WB Left	50 (75)	50	75
	WB Through/right	50 (75)	Continuous	Continuous
	NB Left	25 (25)	75	50
	NB Through	25 (25)	Continuous	Continuous
	NB Through/right	25 (25)	Continuous	Continuous
	SB Left	25 (25)	50	50
	SB Through	225 (300)	Continuous	Continuous
	SB Right	25 (50)	100	50
26. 48th Avenue & Access #26	EB Left	100 (350)	275	350
	EB Through	25 (175)	Continuous	Continuous
	WB Through	25 (50)	Continuous	Continuous
	WB Through/Right	25 (75)	Continuous	Continuous
	SB Left	100 (175)	125	175
	SB Right	450 (675)	Continuous	Continuous
29. 48th Avenue & Access #29	EB Left	25 (100)	75	100
	EB Through	150 (25)	Continuous	Continuous
	EB Through/right	200 (25)	Continuous	Continuous
	WB Left	75 (50)	125	75
	WB Through	275 (425)	Continuous	Continuous
	WB Through/right	275 (475)	Continuous	Continuous
	NB Left	75 (100)	75	100
	NB Through/Right	100 (200)	Continuous	Continuous
	SB Left	50 (100)	75	100
	SB Through/right	75 (150)	Continuous	Continuous

Impedes Upstream Intersection

* Dual Turn Lanes

Sight Distance

To enable motorists to make safe decisions, appropriate sight distance should be provided at the proposed site accesses to City of Aurora Standards (see Standard Details TE 13.1 and TE 13.2). Trees or other plantings 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 children. As this is a mixed-use 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 crossing if students need to walk from this development. Therefore, coordination with Denver Public Schools on potential safety improvements is suggested.

VI. CONCLUSIONS AND RECOMMENDATIONS

The approximate 290.57-acre Green Valley MP Amendment 2 site would consist of approximately 327 senior housing units, 54 units of single-family housing, 1,164 multifamily units, 683,700 square feet of retail space, and 386,400 square feet of office space. 650 senior housing units, 54 units of single-family housing, 761 multifamily units, 416,530 square feet of retail space, 584,600 square feet of office space, 72,500 square feet of commercial space, that may include a gas station, grocery store, recreation center, and hotel. Site vehicular access to the north portion of the site would be via 14 accesses: three on Picadilly Road (at 54th Avenue, Maxwell Place, and between maxwell place and 54th Avenue), four on Tibet Road, two on 52nd Avenue, and five on 56th Avenue. The southern site would have two full-movement accesses, one onto Tibet Street aligning with the Green Valley Ranch East Filing 17 access (Intersection #12) and one onto 48th Avenue (Intersection #26), and one Right-In/Right-Out (RIRO) access onto Tibet Street (Intersection #30).

The proposed development would generate approximately 52,000 new external vehicle trips per day with 2,739 and 4,364 during the AM and PM peak hours, respectively. 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.

contradicts statement below

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

- Site accesses would need a STOP sign exiting the site and, where outlined, signalized when warranted.
- The following intersections are anticipated to meet signal warrant requirements for the short-term total condition:
  - 56th Avenue & E-470 NB Ramps
  - 56th Avenue & E-470 SB Ramps
  - 56th Avenue & Tibet Road
  - 56th Avenue & Picadilly Road
  - Picadilly Road & 52nd Avenue
  - Picadilly Road & 48th Avenue/Green Valley Rach Boulevard
  - 48th Avenue & Filing 1 Access
  - 48th Avenue & Tibet Road
  - Tibet Road & 52nd Avenue
  - Tibet Road & Access #18
  - Tibet Road & Access #26
  - Picadilly Road & 54th Avenue
  - 56th Avenue & Access #21
  - 56th Avenue & Access #25
  - 48th Avenue & Access #29
  - Tibet Road & Access #19

add intersection #s

- 50th Avenue, 51st Place, and Maxwell Place would be restricted to ¾-movement on both 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.
- Exclusive right turn lanes should be provided at the below outlined access locations:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & Access #25	✔		✔	
56th Avenue & Access #23	✔			
56th Avenue & Access #21	✔		✔	
56th Avenue & Access #20	✔			
Picadilly Road & Maxwell Place			✔	✔
Picadilly Road & 54th Avenue			✔	
Tibet Road & 52nd Avenue			✔	
Tibet Road & Access #19				✔
Tibet Road & Access #27				✔

add intersection #s

- Exclusive left turn lanes should be provided at the below outlined access locations:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & Access #25		✔	✔	
56th Avenue & Access #21		✔	✔	
Picadilly Road & Maxwell Place				✔
Picadilly Road & 54th Avenue	✔	✔	✔	✔
48th Avenue & Access #26	✔			
48th Avenue & Access #29	✔			
Tibet Road & 52nd Avenue	✔	✔		✔
Tibet Road & Access #18	✔	✔	✔	✔
Tibet Road & Access #19	✔	✔	✔	✔

add intersection #s

- Tibet Road should be constructed to four-lane minor arterial standards north of 48th Avenue, transitioning to two travel lanes south of 48th Avenue.
- Picadilly Road, 48th Avenue, and 56th Avenue would ultimately be six-lane right-of-way should be preserved to accommodate the future widening of these roads.

contradicts statement above

VI.B. Long-Range Future

The following improvements would be required for the 2040 background conditions, with or without the proposed development:

- Dual left-turn lanes are required on all approaches at the intersection of 48th Avenue with Picadilly Road.

add intersection #s to re sheet

- Exclusive right-turn lanes should be provided at the following locations:

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

provide discussion/bases the lane requirements. Should be based on SHAC

- Exclusive left turn lanes should be pro tions:

Intersection	E	d	Northbound	Southbound
56th Avenue & E-470 NB Ramps			✔	
56th Avenue & E-470 SB Ramps		✔		
56th Avenue & Access #25	✔			✔
56th Avenue & Tibet Street		✔	✔	
Picadilly Road & 56th Avenue	✔	✔	✔	✔
Picadilly Road & 52nd Avenue	✔	✔	✔	✔
Picadilly Road & 51st Place			✔	✔
Picadilly Road & 50th Avenue			✔	✔
48th Avenue & Filing 1 Access	✔	✔	✔	✔
Tibet Road & 48th Avenue	✔	✔	✔	✔
48th Avenue & Access #26	✔			✔
48th Avenue & Access #29	✔	✔	✔	✔
Tibet Road & Filing 17 Access			✔	
Tibet Road & 52nd Avenue	✔		✔	

- Traffic conditions should be periodically monitored at the following intersections to determine the timing of traffic control improvements:
  - 56th Avenue with E470 NB Ramps
  - 56th Avenue with E470 SB Ramps
  - 56th Avenue with Picadilly Road
  - Picadilly Road with 52nd Avenue
  - Picadilly Road with 48th Avenue
  - 48th Avenue with Filing 1 Access
  - 56th Avenue & Access #25
  - 48th Avenue with Tibet Road
  - Tibet Road with 52nd Avenue
  - Tibet Road & Access #18
  - Tibet Road & 56th Avenue
  - 48th Avenue with Access #26
- Construct Picadilly Road as a six-lane arterial adjacent to the site.
- Tibet Road should be constructed as a four-lane arterial north of 48th Avenue.

add intersection #s to figure sheet

- 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 improvements would be required due to the Green Valley MP Amendment 2 development:

- A free flow channelized northbound right turn lane is recommended at the intersection of Tibet Street with 56th Avenue.

add text that upstream intersections will need to be restricted movement if queues are not mitigated

- The following intersections would warrant signalization in the long-term total scenario:
  - 56th Avenue & E-470 NB Ramps
  - 56th Avenue & E-470 SB Ramps
  - 56th Avenue 7 access #21
  - Picadilly Road & 54th Avenue
  - Tibet street & 52nd Avenue
  - Tibet Street & Access #18
  - Tibet Street & Access #19
- The following accesses would need exclusive left turn lanes:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & Access #25		✔	✔	
56th Avenue & Access #21		✔	✔	
Picadilly Road & Maxwell Place				✔
Picadilly Road & 54th Avenue	✔	✔	✔	✔
48th Avenue & Access #26	✔			✔
48th Avenue & Access #29	✔	✔	✔	✔
Tibet Road & Filing 17 Access		✔	✔	✔
Tibet Road & 52nd Avenue	✔	✔	✔	✔
Tibet Road & Access #18			✔	✔
Tibet Road & Access #19			✔	✔

provide discussion/bases for the lane requirements. Should be based on SHAC

- The following accesses would need [illegible]es:

Intersection	[illegible]ound	Northbound	Southbound
56th Avenue & Access #27			✔
56th Avenue & Access #19			✔
Tibet Street & 52nd Avenue		✔	✔

- Dual left turn lanes would be needed at the following locations to facilitate acceptable operations:

Intersection	Eastbound	Westbound	Northbound	Southbound
56th Avenue & E-470 NB Ramps	✔		✔	
56th Avenue & Tibet Street		✔	✔	
Picadilly Road & 56th Avenue		✔	✔	
48th Avenue & Tibet Street	✔			✔

add intersection 9

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

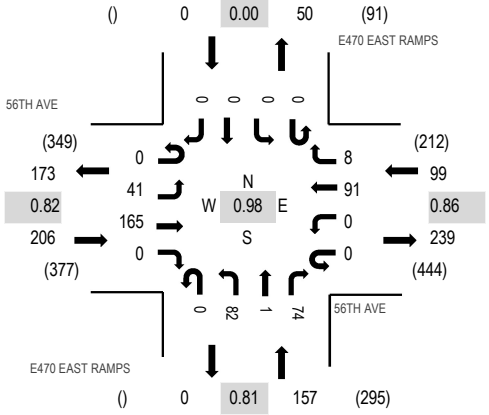
Date Start: 12-Oct-21
Site Code: 9
Station ID: 9
56TH AVE E.O. PICADILLY RD

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

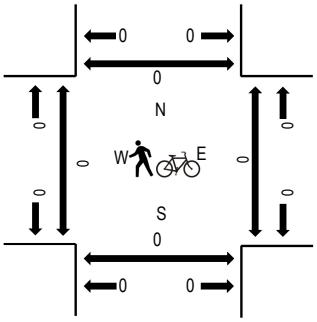
Location: 1 E470 EAST RAMPS & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:00 AM - 07:15 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



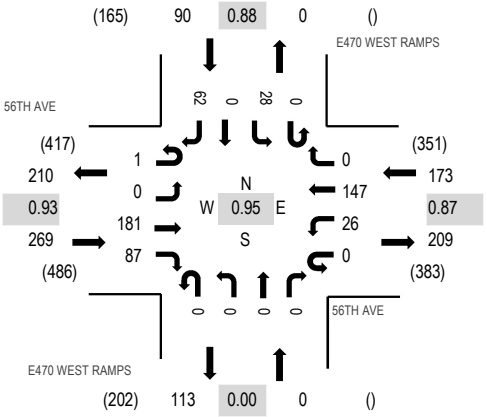
Traffic Counts

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

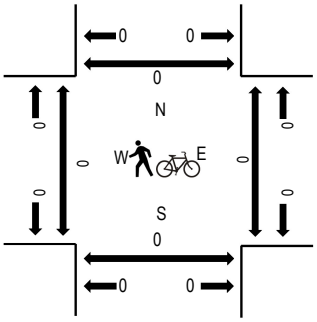
Location: 2 E470 WEST RAMPS & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



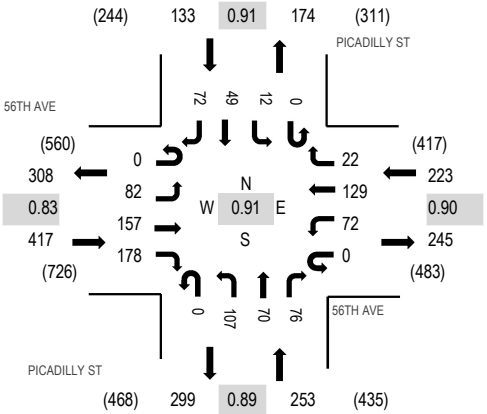
Traffic Counts

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

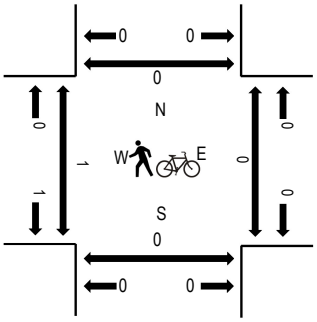
Location: 3 PICADILLY ST & 56TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

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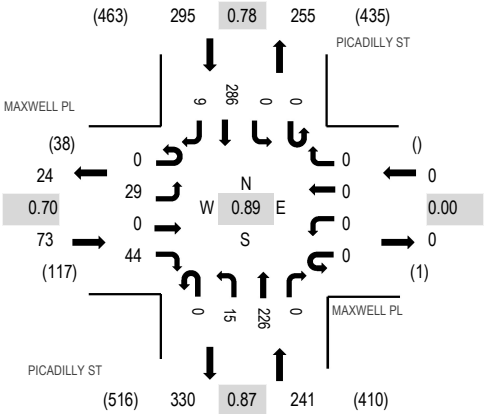
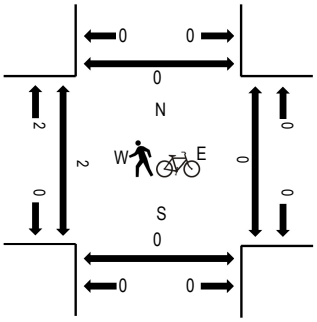
Location: 4 PICADILLY ST & MAXWELL PL AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

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
(303) 216-2439
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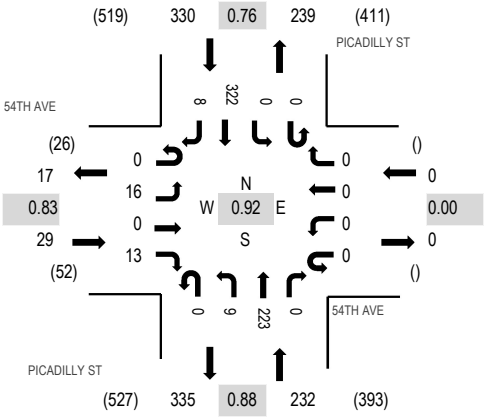
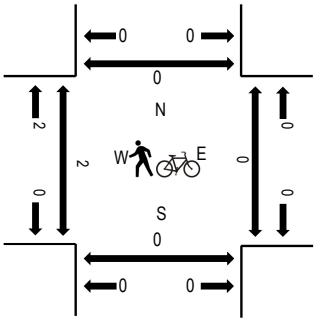
Location: 5 PICADILLY ST & 54TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



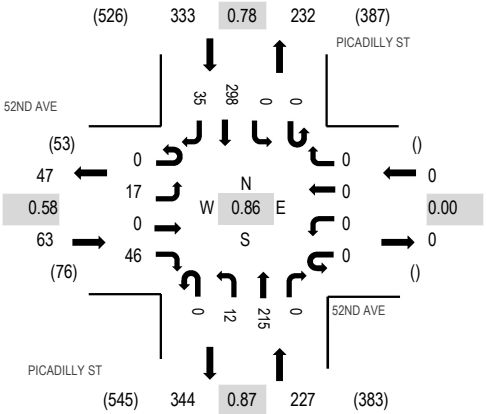
Traffic Counts

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
www.alltrafficdata.net

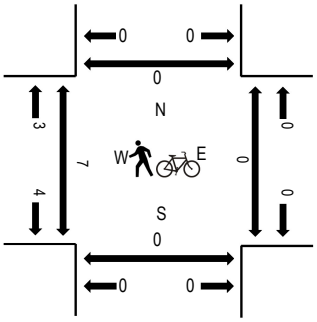
Location: 6 PICADILLY ST & 52ND AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

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
(303) 216-2439
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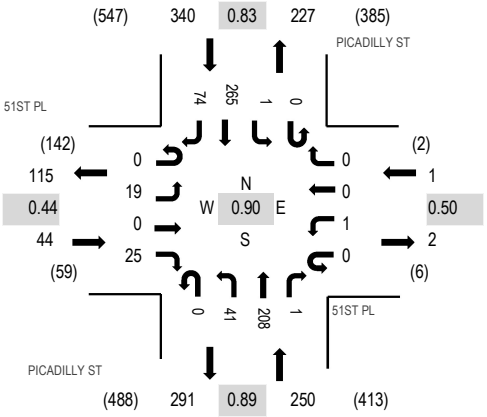
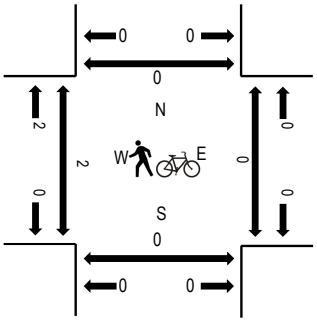
Location: 7 PICADILLY ST & 51ST PL AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

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
(303) 216-2439
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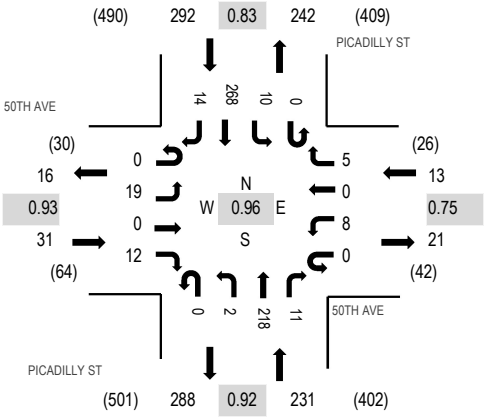
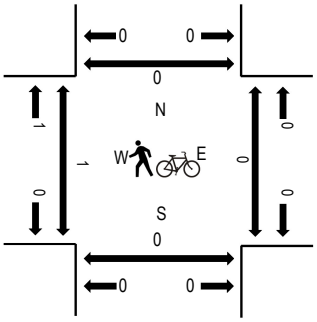
Location: 8 PICADILLY ST & 50TH AVE AM
Date: Thursday, October 14, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 08:00 AM - 08:15 AM

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
(303) 216-2439
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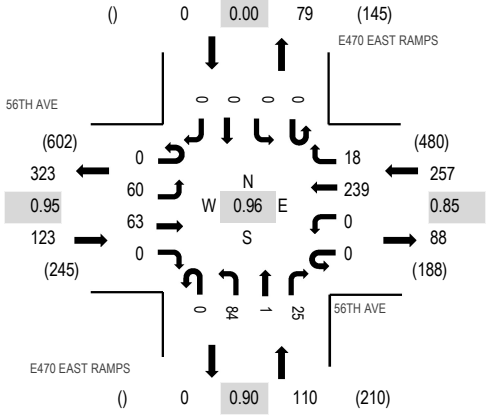
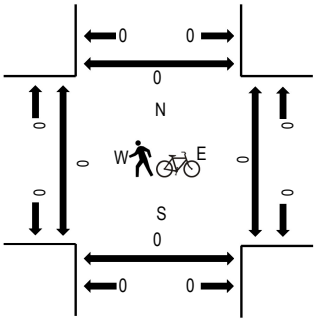
Location: 1 E470 EAST RAMPS & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

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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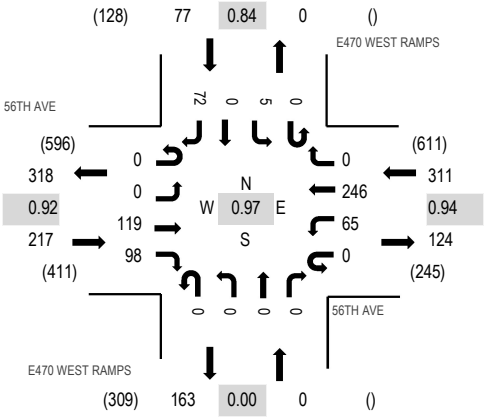
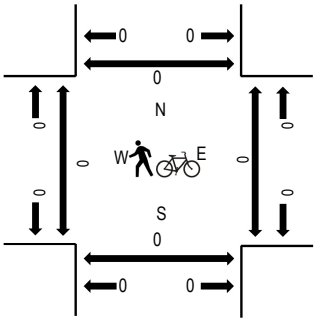
Location: 2 E470 WEST RAMPS & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes: 04:15 PM - 04:30 PM

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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(303) 216-2439
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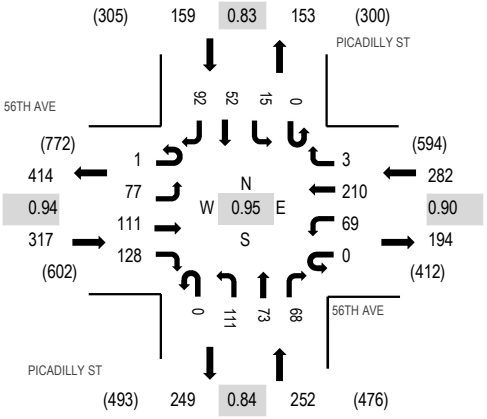
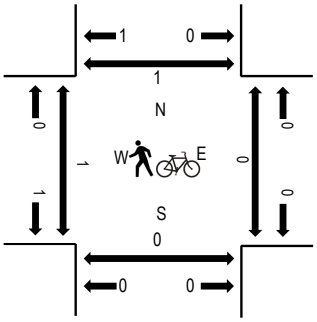
Location: 3 PICADILLY ST & 56TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



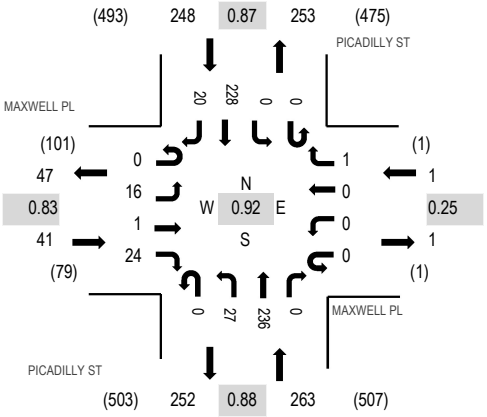
Traffic Counts

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

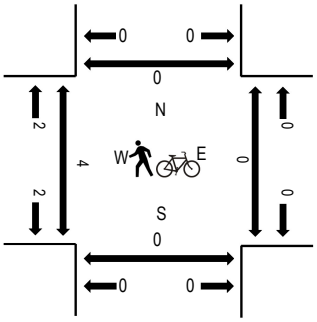
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

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



Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

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

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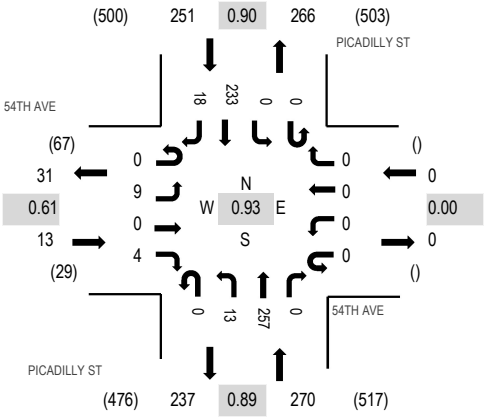
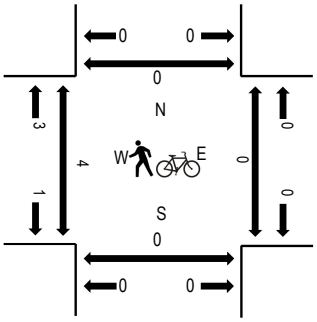
Location: 5 PICADILLY ST & 54TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



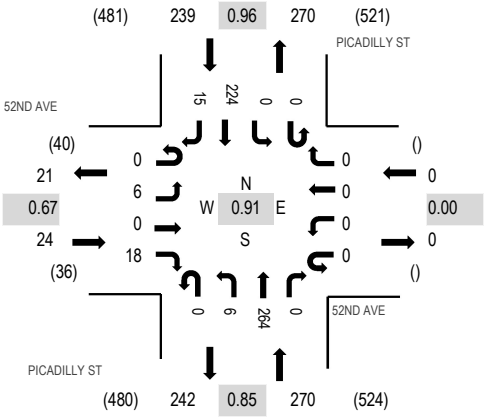
Traffic Counts

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

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

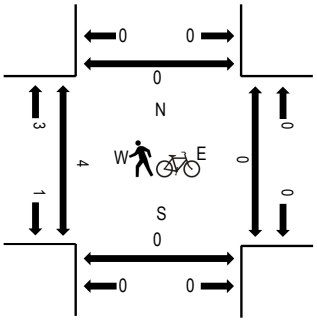
Location: 6 PICADILLY ST & 52ND AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



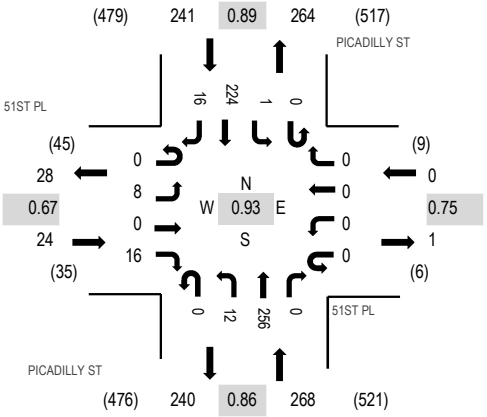
Traffic Counts

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

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

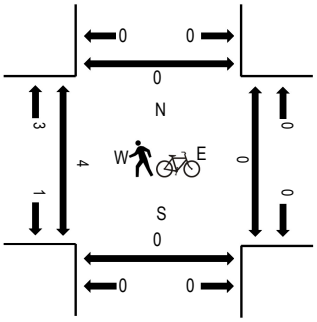
Location: 7 PICADILLY ST & 51ST PL PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:45 PM - 06:00 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



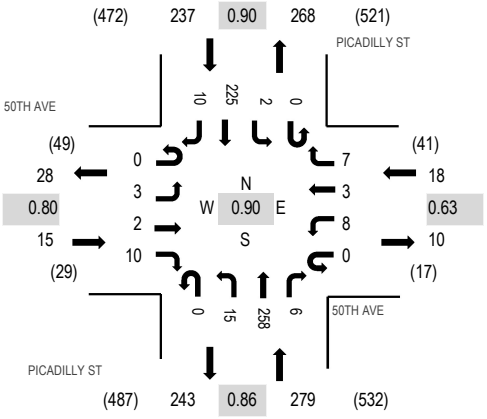
Traffic Counts

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

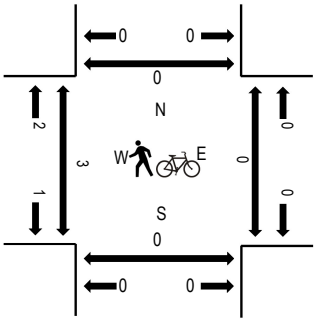
Location: 8 PICADILLY ST & 50TH AVE PM
Date: Thursday, October 14, 2021
Peak Hour: 05:00 PM - 06:00 PM
Peak 15-Minutes: 05:30 PM - 05:45 PM

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. INTERNAL CAPTURE WORKSHEET

Project Name:	310 West
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	536	536	1.00	81	81
Retail	1.00	682	682	1.00	447	447
Restaurant	1.00	58	58	1.00	55	55
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	172	172	1.00	492	492
Hotel	1.00	26	26	1.00	20	20

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		23	51	0	1	0
Retail	130		58	0	63	0
Restaurant	17	8		0	2	2
Cinema/Entertainment	0	0	0		0	0
Residential	10	5	98	0		0
Hotel	15	3	2	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		218	13	0	0	0
Retail	21		29	0	3	0
Restaurant	75	55		0	9	1
Cinema/Entertainment	0	0	0		0	0
Residential	16	116	12	0		0
Hotel	16	27	3	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	63	473	536	473	0	0
Retail	39	643	682	643	0	0
Restaurant	56	2	58	2	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	5	167	172	167	0	0
Hotel	1	25	26	25	0	0
All Other Land Uses[3]	0	242	242	242	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	36	45	81	45	0	0
Retail	53	394	447	394	0	0
Restaurant	28	27	55	27	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	27	465	492	465	0	0
Hotel	20	0	20	0	0	0
All Other Land Uses[3]	0	231	231	231	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Project Name:	310 West
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	123	123	1.00	496	496
Retail	1.00	1670	1670	1.00	1684	1684
Restaurant	1.00	47	47	1.00	41	41
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	510	510	1.00	304	304
Hotel	1.00	30	30	1.00	29	29

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		99	20	0	10	0
Retail	34		488	67	438	84
Restaurant	1	17		3	7	3
Cinema/Entertainment	0	0	0		0	0
Residential	12	128	64	0		9
Hotel	0	5	20	0	1	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		134	1	0	20	0
Retail	38		14	0	235	5
Restaurant	37	835		0	82	21
Cinema/Entertainment	7	67	1		20	0
Residential	70	167	7	0		4
Hotel	0	33	2	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	47	76	123	76	0	0
Retail	249	1421	1670	1421	0	0
Restaurant	24	23	47	23	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	252	258	510	258	0	0
Hotel	12	18	30	18	0	0
All Other Land Uses[3]	0	308	308	308	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	110	386	496	386	0	0
Retail	288	1396	1684	1396	0	0
Restaurant	28	13	41	13	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	151	153	304	153	0	0
Hotel	7	22	29	22	0	0
All Other Land Uses[3]	0	294	294	294	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

APPENDIX D. 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

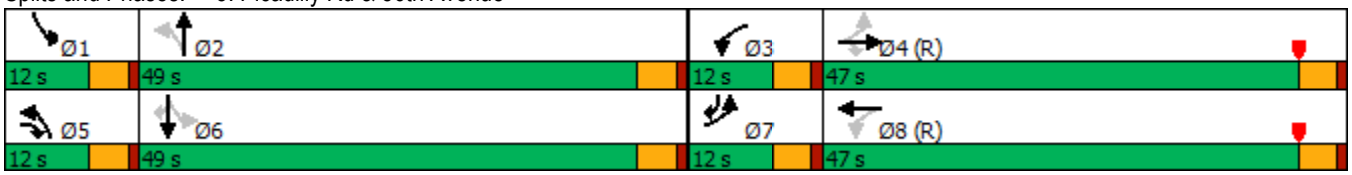
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1347	-	523	823
HCM Lane V/C Ratio	-	-	0.021	-	0.064	0.101
HCM Control Delay (s)	-	-	7.7	-	12.4	9.9
HCM Lane LOS	-	-	A	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.2	0.3

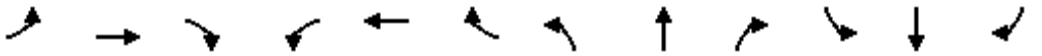
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	100	190	215	90	155	130	85	15	60	90
Future Volume (vph)	100	190	215	90	155	130	85	15	60	90
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	1	6	7
Permitted Phases	4		4	8		2		6		6
Detector Phase	7	4	5	3	8	5	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	12.0	47.0	12.0	12.0	47.0	12.0	49.0	12.0	49.0	12.0
Total Split (%)	10.0%	39.2%	10.0%	10.0%	39.2%	10.0%	40.8%	10.0%	40.8%	10.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 88.5 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





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

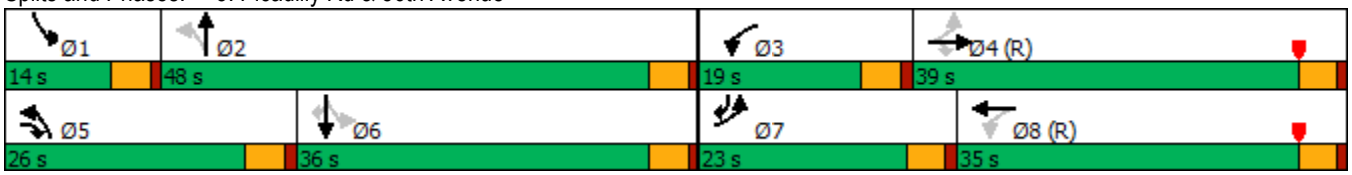
Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1424	-	409	713
HCM Lane V/C Ratio	-	-	0.059	-	0.027	0.078
HCM Control Delay (s)	-	-	7.7	-	14	10.5
HCM Lane LOS	-	-	A	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.1	0.3

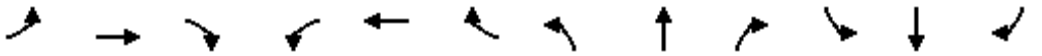
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	95	135	155	85	255	135	90	20	65	110
Future Volume (vph)	95	135	155	85	255	135	90	20	65	110
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	5	2	1	6	7
Permitted Phases	4		4	8		2		6		6
Detector Phase	7	4	5	3	8	5	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	22.5	9.5	22.5	9.5
Total Split (s)	23.0	39.0	26.0	19.0	35.0	26.0	48.0	14.0	36.0	23.0
Total Split (%)	19.2%	32.5%	21.7%	15.8%	29.2%	21.7%	40.0%	11.7%	30.0%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89.5 (75%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





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	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	15	0	10	10	5
Future Vol, veh/h	0	15	0	10	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	0	11	11	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	17	0	20	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	11	-
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	-	997	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1012	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1600	-	997	1073
Mov Cap-2 Maneuver	-	-	-	-	997	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1012	-

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)	1021	-	-	1600	-
HCM Lane V/C Ratio	0.016	-	-	-	-
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	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	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	30	20	0	30	15	0
Future Vol, veh/h	30	20	0	30	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	0	33	17	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	77	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	33	-
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	-	926	1026
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	989	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	926	1026
Mov Cap-2 Maneuver	-	-	-	-	926	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	989	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	926	-	-	1550	-
HCM Lane V/C Ratio	0.018	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

APPENDIX E. LONG-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	65	370	0	0	400	10	195	0	140	0	0	0
Future Vol, veh/h	65	370	0	0	400	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	411	0	0	444	11	217	0	156	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	455	0	-	-	-	0	733	1010	206
Stage 1	-	-	-	-	-	-	555	555	-
Stage 2	-	-	-	-	-	-	178	455	-
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	711	-	0	0	-	-	549	324	*848
Stage 1	-	-	0	0	-	-	640	657	-
Stage 2	-	-	0	0	-	-	767	567	-
Platoon blocked, %		-			-	-	1	1	1
Mov Cap-1 Maneuver	711	-	-	-	-	-	494	0	*848
Mov Cap-2 Maneuver	-	-	-	-	-	-	494	0	-
Stage 1	-	-	-	-	-	-	575	0	-
Stage 2	-	-	-	-	-	-	767	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	494	-	848	711	-	-	-
HCM Lane V/C Ratio	0.439	-	0.183	0.102	-	-	-
HCM Control Delay (s)	17.9	0	10.2	10.6	-	-	-
HCM Lane LOS	C	A	B	B	-	-	-
HCM 95th %tile Q(veh)	2.2	-	0.7	0.3	-	-	-

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

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	0	395	175	30	565	0	0	0	0	40	0	140
Future Vol, veh/h	0	395	175	30	565	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	-	1083244544		-	-	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	439	194	33	628	0	0	0	0	44	0	156

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	439	0	0	870	1133	314
Stage 1	-	-	-	-	-	-	694	694	-
Stage 2	-	-	-	-	-	-	176	439	-
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	-	-	723	-	0	466	271	*848
Stage 1	0	-	-	-	-	0	522	564	-
Stage 2	0	-	-	-	-	0	769	576	-
Platoon blocked, %		-	-		-		1	1	1
Mov Cap-1 Maneuver	-	-	-	723	-	-	445	0	*848
Mov Cap-2 Maneuver	-	-	-	-	-	-	445	0	-
Stage 1	-	-	-	-	-	-	522	0	-
Stage 2	-	-	-	-	-	-	734	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	11
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	723	-	445	848
HCM Lane V/C Ratio	-	-	0.046	-	0.1	0.183
HCM Control Delay (s)	-	-	10.2	-	14	10.2
HCM Lane LOS	-	-	B	-	B	B
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3	0.7

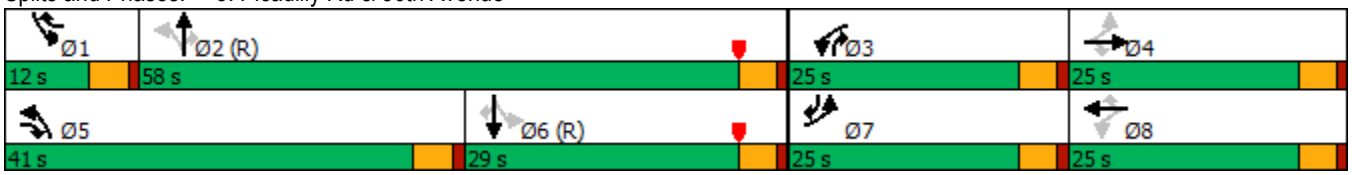
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

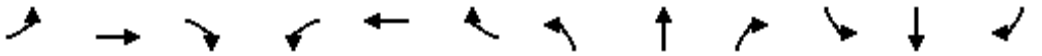
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	395	450	180	325	55	270	840	190	30	405	180
Future Volume (vph)	205	395	450	180	325	55	270	840	190	30	405	180
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	25.0	25.0	41.0	25.0	25.0	12.0	41.0	58.0	25.0	12.0	29.0	25.0
Total Split (%)	20.8%	20.8%	34.2%	20.8%	20.8%	10.0%	34.2%	48.3%	20.8%	10.0%	24.2%	20.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 91 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





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	372	872	435	314	806	294	567	2757	1032	296	2370	933
Arrive On Green	0.12	0.17	0.17	0.11	0.16	0.16	0.03	0.18	0.18	0.03	0.46	0.46
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	12.6	9.4	20.5	11.1	7.7	3.9	9.6	19.2	10.4	1.2	6.2	7.1
Cycle Q Clear(g_c), s	12.6	9.4	20.5	11.1	7.7	3.9	9.6	19.2	10.4	1.2	6.2	7.1
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	372	872	435	314	806	294	567	2757	1032	296	2370	933
V/C Ratio(X)	0.61	0.50	1.15	0.64	0.45	0.21	0.53	0.34	0.20	0.11	0.19	0.21
Avail Cap(c_a), veh/h	455	872	435	420	872	315	924	2757	1032	358	2370	933
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	35.8	45.1	43.5	36.5	45.8	41.4	13.8	30.6	16.3	16.2	18.9	11.6
Incr Delay (d2), s/veh	1.7	0.5	90.8	2.1	0.4	0.3	0.8	0.3	0.4	0.2	0.2	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	9.3	7.0	33.5	8.5	5.8	2.7	7.6	13.7	7.4	0.8	4.4	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	45.6	134.4	38.6	46.2	41.7	14.6	30.9	16.7	16.4	19.1	12.1
LnGrp LOS	D	D	F	D	D	D	B	C	B	B	B	B
Approach Vol, veh/h		1167			622			1444			683	
Approach Delay, s/veh		82.0			43.3			25.4			16.9	
Approach LOS		F			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	69.3	17.9	25.0	16.9	60.2	19.4	23.4
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	20.5	20.5	36.5	24.5	20.5	20.5
Max Q Clear Time (g_c+I1), s	3.2	21.2	13.1	22.5	11.6	9.1	14.6	9.7
Green Ext Time (p_c), s	0.0	8.0	0.3	0.0	0.8	3.1	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	43.7
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	-	-

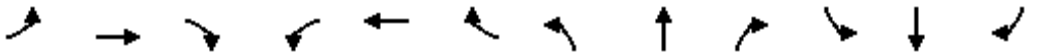
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	10	85	10	140	30	1130	70	875
Future Volume (vph)	55	10	85	10	140	30	1130	70	875
Turn Type	Perm	NA	pm+pt	NA	pm+ov	Prot	NA	pm+pt	NA
Protected Phases		4	3	8	1	5	2	1	6
Permitted Phases	4		8		8			6	
Detector Phase	4	4	3	8	1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5	22.5
Total Split (s)	34.0	34.0	13.0	47.0	16.0	13.0	57.0	16.0	60.0
Total Split (%)	28.3%	28.3%	10.8%	39.2%	13.3%	10.8%	47.5%	13.3%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 8 (7%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 6: Picadilly Rd & 52nd Ave



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	193	14	161	196	385	387	50	3016	319	328	3077	316
Arrive On Green	0.11	0.11	0.11	0.06	0.21	0.21	0.03	0.64	0.64	0.08	1.00	1.00
Sat Flow, veh/h	1218	127	1477	1781	1870	1585	1781	4689	496	1781	4705	483
Grp Volume(v), veh/h	61	0	139	94	11	156	33	912	477	78	703	369
Grp Sat Flow(s),veh/h/ln	1218	0	1604	1781	1870	1585	1781	1702	1781	1781	1702	1783
Q Serve(g_s), s	5.6	0.0	10.1	5.4	0.6	9.9	2.2	15.7	15.7	1.8	0.0	0.0
Cycle Q Clear(g_c), s	5.6	0.0	10.1	5.4	0.6	9.9	2.2	15.7	15.7	1.8	0.0	0.0
Prop In Lane	1.00		0.92	1.00		1.00	1.00		0.28	1.00		0.27
Lane Grp Cap(c), veh/h	193	0	174	196	385	387	50	2189	1145	328	2226	1166
V/C Ratio(X)	0.32	0.00	0.80	0.48	0.03	0.40	0.67	0.42	0.42	0.24	0.32	0.32
Avail Cap(c_a), veh/h	360	0	394	216	662	623	126	2189	1145	430	2226	1166
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	50.2	0.0	52.2	42.7	38.1	38.0	57.8	10.4	10.4	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.0	8.0	1.8	0.0	0.7	14.3	0.6	1.1	0.4	0.4	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	3.2	0.0	7.9	4.5	0.5	7.1	2.1	9.7	10.3	1.1	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.1	0.0	60.2	44.6	38.1	38.7	72.1	11.0	11.6	7.7	0.4	0.7
LnGrp LOS	D	A	E	D	D	D	E	B	B	A	A	A
Approach Vol, veh/h		200			261			1422			1150	
Approach Delay, s/veh		57.4			40.8			12.6			1.0	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	81.7	11.6	17.5	7.8	83.0		29.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	11.5	52.5	8.5	29.5	8.5	55.5		42.5				
Max Q Clear Time (g_c+I1), s	3.8	17.7	7.4	12.1	4.2	2.0		11.9				
Green Ext Time (p_c), s	0.1	12.7	0.0	0.9	0.0	9.5		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.6									
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	-	-

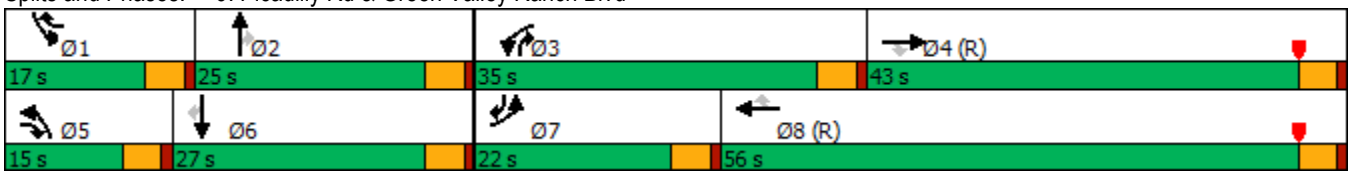
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

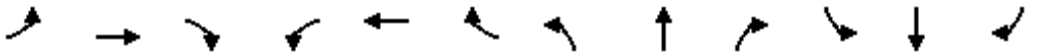
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	1285	255	315	680	455	125	720	645	275	505	110
Future Volume (vph)	235	1285	255	315	680	455	125	720	645	275	505	110
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	22.0	43.0	15.0	35.0	56.0	17.0	15.0	25.0	35.0	17.0	27.0	22.0
Total Split (%)	18.3%	35.8%	12.5%	29.2%	46.7%	14.2%	12.5%	20.8%	29.2%	14.2%	22.5%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 4 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd





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	327	2311	807	424	2455	927	196	872		359	1113	495
Arrive On Green	0.09	0.45	0.45	0.21	0.80	0.80	0.06	0.17	0.00	0.10	0.22	0.22
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	25.5	12.8	11.6	4.6	12.9	4.7	18.5	0.0	10.4	11.6	6.9
Cycle Q Clear(g_c), s	8.9	25.5	12.8	11.6	4.6	12.9	4.7	18.5	0.0	10.4	11.6	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	327	2311	807	424	2455	927	196	872		359	1113	495
V/C Ratio(X)	0.80	0.62	0.35	0.83	0.31	0.55	0.71	0.92		0.85	0.50	0.25
Avail Cap(c_a), veh/h	504	2311	807	878	2455	927	302	872		360	1113	495
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	25.0	17.6	46.5	6.6	4.9	55.6	48.9	0.0	52.9	41.2	30.7
Incr Delay (d2), s/veh	5.0	1.2	1.2	3.8	0.3	2.1	4.7	14.4	0.0	17.6	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.3	15.5	8.4	8.2	2.7	5.2	3.9	13.7	0.0	9.1	8.4	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.2	26.2	18.8	50.2	6.9	7.1	60.3	63.3	0.0	70.5	41.6	31.0
LnGrp LOS	E	C	B	D	A	A	E	E		E	D	C
Approach Vol, veh/h		1972			1612			939			989	
Approach Delay, s/veh		29.4			16.3			62.9			49.2	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	25.0	19.2	58.8	11.3	30.6	15.9	62.2
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	12.5	20.5	30.5	38.5	10.5	22.5	17.5	51.5
Max Q Clear Time (g_c+I1), s	12.4	20.5	13.6	27.5	6.7	13.6	10.9	14.9
Green Ext Time (p_c), s	0.0	0.0	1.1	7.5	0.1	2.7	0.5	8.5

Intersection Summary	
HCM 6th Ctrl Delay	34.8
HCM 6th LOS	C

Notes

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

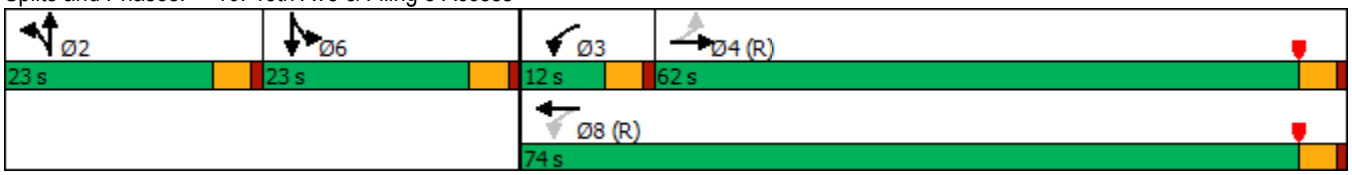
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

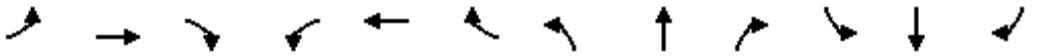
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	5	1960	70	1280	150	0	15	0
Future Volume (vph)	5	1960	70	1280	150	0	15	0
Turn Type	Perm	NA	pm+pt	NA	Split	NA	Split	NA
Protected Phases		4	3	8	2	2	6	6
Permitted Phases	4		8					
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	62.0	62.0	12.0	74.0	23.0	23.0	23.0	23.0
Total Split (%)	51.7%	51.7%	10.0%	61.7%	19.2%	19.2%	19.2%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 32 (27%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 10: 48th Ave & Filing 5 Access





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	282	3086	187	228	3690	16	275	0	244	54	0	48
Arrive On Green	1.00	1.00	1.00	0.04	0.70	0.70	0.15	0.00	0.15	0.03	0.00	0.03
Sat Flow, veh/h	375	4922	299	1781	5248	22	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	6	1502	809	78	922	506	167	0	222	17	0	22
Grp Sat Flow(s),veh/h/ln	375	1702	1817	1781	1702	1866	1781	0	1585	1781	0	1585
Q Serve(g_s), s	0.1	0.0	0.0	1.7	13.2	13.2	10.5	0.0	16.5	1.1	0.0	1.6
Cycle Q Clear(g_c), s	4.2	0.0	0.0	1.7	13.2	13.2	10.5	0.0	16.5	1.1	0.0	1.6
Prop In Lane	1.00		0.16	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	282	2134	1139	228	2393	1312	275	0	244	54	0	48
V/C Ratio(X)	0.02	0.70	0.71	0.34	0.39	0.39	0.61	0.00	0.91	0.31	0.00	0.46
Avail Cap(c_a), veh/h	282	2134	1139	271	2393	1312	275	0	244	275	0	244
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)	0.34	0.34	0.34	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	6.4	7.3	7.3	47.4	0.0	49.9	57.0	0.0	57.2
Incr Delay (d2), s/veh	0.0	0.7	1.3	0.9	0.5	0.9	3.8	0.0	34.2	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	0.4	0.7	1.2	8.1	8.9	8.6	0.0	13.7	1.0	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.2	0.7	1.3	7.3	7.7	8.1	51.2	0.0	84.1	60.2	0.0	63.9
LnGrp LOS	A	A	A	A	A	A	D	A	F	E	A	E
Approach Vol, veh/h		2317			1506			389			39	
Approach Delay, s/veh		0.9			7.8			70.0			62.3	
Approach LOS		A			A			E			E	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		23.0	9.1	79.7		8.1		88.9				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.5	7.5	57.5		18.5		69.5				
Max Q Clear Time (g_c+I1), s		18.5	3.7	6.2		3.6		15.2				
Green Ext Time (p_c), s		0.0	0.0	32.6		0.1		14.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.2									
HCM 6th LOS			B									

Notes

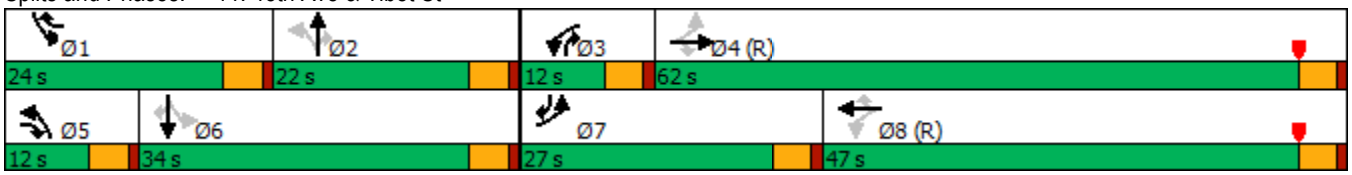
User approved pedestrian interval to be less than phase max green.

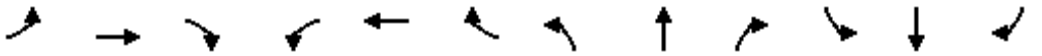
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	1805	120	80	875	150	80	135	120	305	70	230
Future Volume (vph)	250	1805	120	80	875	150	80	135	120	305	70	230
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	27.0	62.0	12.0	12.0	47.0	24.0	12.0	22.0	12.0	24.0	34.0	27.0
Total Split (%)	22.5%	51.7%	10.0%	10.0%	39.2%	20.0%	10.0%	18.3%	10.0%	20.0%	28.3%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 64 (53%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 11: 48th Ave & Tibet St





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	470	2792	958	178	2508	1036	269	359	223	417	731	477
Arrive On Green	0.10	0.55	0.55	0.08	0.98	0.98	0.06	0.10	0.10	0.16	0.21	0.21
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	8.8	35.2	4.3	3.0	0.6	0.2	5.3	4.8	9.4	19.5	2.1	16.2
Cycle Q Clear(g_c), s	8.8	35.2	4.3	3.0	0.6	0.2	5.3	4.8	9.4	19.5	2.1	16.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	470	2792	958	178	2508	1036	269	359	223	417	731	477
V/C Ratio(X)	0.59	0.72	0.14	0.50	0.39	0.16	0.33	0.42	0.60	0.81	0.11	0.54
Avail Cap(c_a), veh/h	634	2792	958	219	2508	1036	277	518	294	417	874	541
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	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	20.3	10.2	19.3	0.5	0.2	44.7	50.6	48.4	39.0	38.7	35.0
Incr Delay (d2), s/veh	1.2	1.6	0.3	2.0	0.4	0.3	0.7	0.8	2.5	11.7	0.1	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	6.4	20.0	2.8	2.2	0.5	0.3	4.3	3.9	7.0	15.4	1.7	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.4	21.9	10.5	21.3	1.0	0.6	45.4	51.4	50.9	50.7	38.8	35.9
LnGrp LOS	B	C	B	C	A	A	D	D	D	D	D	D
Approach Vol, veh/h		2417			1228			372			673	
Approach Delay, s/veh		20.2			2.4			49.8			43.7	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	16.6	9.3	70.1	11.4	29.2	15.9	63.5
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	19.5	17.5	7.5	57.5	7.5	29.5	22.5	42.5
Max Q Clear Time (g_c+I1), s	21.5	11.4	5.0	37.2	7.3	18.2	10.8	2.6
Green Ext Time (p_c), s	0.0	0.7	0.0	15.4	0.0	1.0	0.6	9.4

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.3

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	253	668	927	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	251	668	927	-	-	-
Mov Cap-2 Maneuver	251	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	927	-	472	-	-
HCM Lane V/C Ratio	0.006	-	0.047	-	-
HCM Control Delay (s)	8.9	-	13	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	95	115	115	420	475	100
Future Vol, veh/h	95	115	115	420	475	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	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	106	128	128	467	528	111

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1018	264	639	0	-	0
Stage 1	528	-	-	-	-	-
Stage 2	490	-	-	-	-	-
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	233	734	941	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	201	734	941	-	-	-
Mov Cap-2 Maneuver	201	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	581	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	941	-	201	734	-	-
HCM Lane V/C Ratio	0.136	-	0.525	0.174	-	-
HCM Control Delay (s)	9.4	-	41.2	10.9	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.5	-	2.7	0.6	-	-

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	-	721	*1023
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1441	-	718	*1023
Mov Cap-2 Maneuver	-	-	-	-	718	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	844	-	-	1441	-
HCM Lane V/C Ratio	0.026	-	-	0.004	-
HCM Control Delay (s)	9.4	-	-	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	-	725	*1023
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1449	-	722	*1023
Mov Cap-2 Maneuver	-	-	-	-	722	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	876	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	847	-	-	1449	-
HCM Lane V/C Ratio	0.026	-	-	0.004	-
HCM Control Delay (s)	9.4	-	-	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	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	-	726	*1023
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1456	-	723	*1023
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	874	-

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)	780	-	-	1456	-
HCM Lane V/C Ratio	0.028	-	-	0.004	-
HCM Control Delay (s)	9.8	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

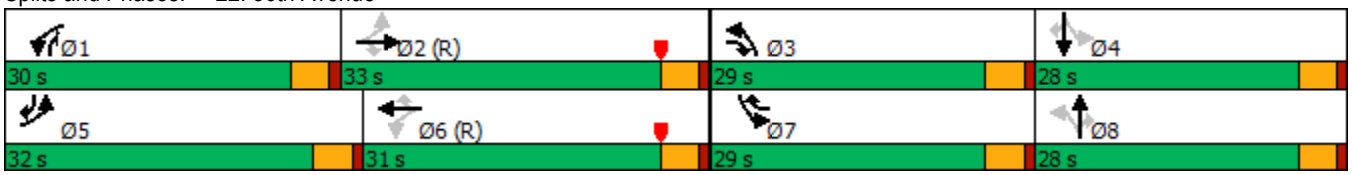
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

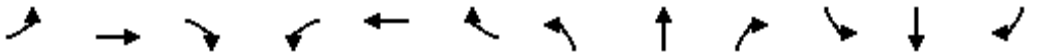
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	200	180	225	230	235	155	195	165	185	170	175
Future Volume (vph)	235	200	180	225	230	235	155	195	165	185	170	175
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	32.0	33.0	29.0	30.0	31.0	29.0	29.0	28.0	30.0	29.0	28.0	32.0
Total Split (%)	26.7%	27.5%	24.2%	25.0%	25.8%	24.2%	24.2%	23.3%	25.0%	24.2%	23.3%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	Max	None	C-Max	None	Max	None	None	None	Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 22: 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	200	180	225	230	235	155	195	165	185	170	175
Future Volume (veh/h)	235	200	180	225	230	235	155	195	165	185	170	175
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	222	200	250	256	261	172	217	183	206	189	194
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	591	1735	862	615	1703	704	604	1028	633	485	696	495
Arrive On Green	0.12	0.34	0.34	0.04	0.11	0.11	0.20	0.29	0.29	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	261	222	200	250	256	261	172	217	183	206	189	194
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.3	3.6	7.9	10.6	5.4	15.5	7.5	5.5	9.4	10.9	5.4	11.5
Cycle Q Clear(g_c), s	11.3	3.6	7.9	10.6	5.4	15.5	7.5	5.5	9.4	10.9	5.4	11.5
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	591	1735	862	615	1703	704	604	1028	633	485	696	495
V/C Ratio(X)	0.44	0.13	0.23	0.41	0.15	0.37	0.28	0.21	0.29	0.42	0.27	0.39
Avail Cap(c_a), veh/h	792	1735	862	798	1703	704	604	1028	633	652	696	495
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	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	27.3	14.3	23.4	38.0	30.5	22.9	32.3	24.5	32.6	41.0	32.3
Incr Delay (d2), s/veh	0.5	0.2	0.6	0.4	0.2	1.5	1.2	0.1	0.2	0.6	1.0	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	8.4	2.7	5.3	8.7	4.3	11.1	6.0	4.3	6.5	8.4	4.5	8.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	27.5	14.9	23.8	38.2	32.0	24.1	32.4	24.7	33.2	41.9	34.7
LnGrp LOS	C	C	B	C	D	C	C	C	C	C	D	C
Approach Vol, veh/h		683			767			572			589	
Approach Delay, s/veh		21.7			31.4			27.4			36.5	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.7	45.3	29.0	28.0	18.5	44.5	17.8	39.2
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	25.5	28.5	24.5	23.5	27.5	26.5	24.5	23.5
Max Q Clear Time (g_c+I1), s	12.6	9.9	9.5	13.5	13.3	17.5	12.9	11.4
Green Ext Time (p_c), s	0.6	2.0	0.4	1.3	0.6	1.8	0.4	1.6

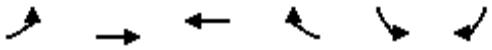
Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	75	475	610	95	80
Future Volume (vph)	75	475	610	95	80
Turn Type	pm+pt	NA	NA	Prot	pt+ov
Protected Phases	5	2	6	4	4 5
Permitted Phases	2				
Detector Phase	5	2	6	4	4 5
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	22.5	
Total Split (s)	23.0	79.0	56.0	41.0	
Total Split (%)	19.2%	65.8%	46.7%	34.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 25: 56th Avenue



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	475	610	95	95	80
Future Volume (veh/h)	75	475	610	95	95	80
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	83	528	678	106	106	89
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	631	4317	3430	530	142	188
Arrive On Green	0.08	1.00	0.77	0.77	0.08	0.08
Sat Flow, veh/h	1781	5274	4629	690	1781	1585
Grp Volume(v), veh/h	83	528	516	268	106	89
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1746	1781	1585
Q Serve(g_s), s	1.0	0.0	5.0	5.0	7.0	6.3
Cycle Q Clear(g_c), s	1.0	0.0	5.0	5.0	7.0	6.3
Prop In Lane	1.00			0.40	1.00	1.00
Lane Grp Cap(c), veh/h	631	4317	2617	1343	142	188
V/C Ratio(X)	0.13	0.12	0.20	0.20	0.75	0.47
Avail Cap(c_a), veh/h	836	4317	2617	1343	542	544
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	3.8	3.8	54.1	49.4
Incr Delay (d2), s/veh	0.1	0.1	0.2	0.3	7.6	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	2.8	3.0	6.2	9.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	2.2	0.1	3.9	4.1	61.7	51.2
LnGrp LOS	A	A	A	A	E	D
Approach Vol, veh/h		611	784		195	
Approach Delay, s/veh		0.3	4.0		56.9	
Approach LOS		A	A		E	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		106.0		14.0	9.2	96.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		74.5		36.5	18.5	51.5
Max Q Clear Time (g_c+I1), s		2.0		9.0	3.0	7.0
Green Ext Time (p_c), s		3.6		0.6	0.1	6.2

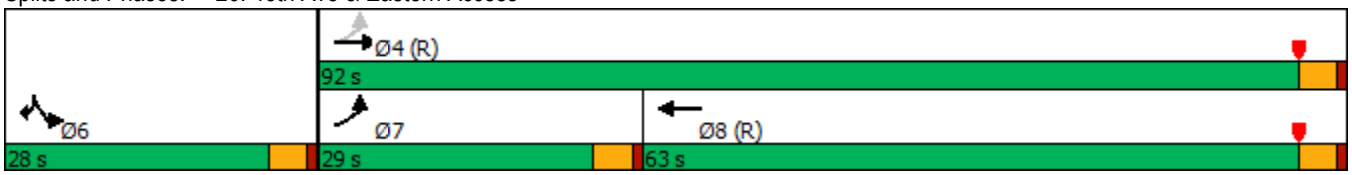
Intersection Summary	
HCM 6th Ctrl Delay	9.1
HCM 6th LOS	A

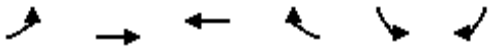
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	210	2020	950	65	155
Future Volume (vph)	210	2020	950	65	155
Turn Type	pm+pt	NA	NA	Prot	Prot
Protected Phases	7	4	8	6	6
Permitted Phases	4				
Detector Phase	7	4	8	6	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	29.0	92.0	63.0	28.0	28.0
Total Split (%)	24.2%	76.7%	52.5%	23.3%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 26: 48th Ave & Eastern Access





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	506	4075	3330	315	226	201
Arrive On Green	0.12	1.00	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	5274	4913	449	1781	1585
Grp Volume(v), veh/h	233	2244	757	399	72	172
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1790	1781	1585
Q Serve(g_s), s	4.4	0.0	0.0	0.0	4.4	12.8
Cycle Q Clear(g_c), s	4.4	0.0	0.0	0.0	4.4	12.8
Prop In Lane	1.00			0.25	1.00	1.00
Lane Grp Cap(c), veh/h	506	4075	2389	1256	226	201
V/C Ratio(X)	0.46	0.55	0.32	0.32	0.32	0.85
Avail Cap(c_a), veh/h	765	4075	2389	1256	349	310
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.59	0.59	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	3.3	0.0	0.0	0.0	47.7	51.3
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.6	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	0.2	0.4	3.6	17.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	3.7	0.3	0.3	0.6	48.5	64.5
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h		2477	1156		244	
Approach Delay, s/veh		0.6	0.4		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	2.0
Green Ext Time (p_c), s			42.7		0.5	0.6	10.6

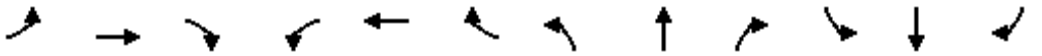
Intersection Summary		
HCM 6th Ctrl Delay		4.3
HCM 6th LOS		A

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	21	2021	75	953	58	16	37	15
Future Volume (vph)	21	2021	75	953	58	16	37	15
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	78.0	15.0	81.0	27.0	27.0	27.0	27.0
Total Split (%)	10.0%	65.0%	12.5%	67.5%	22.5%	22.5%	22.5%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22.5 (19%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 29: 48th Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	2021	43	75	953	53	58	16	66	37	15	29
Future Volume (veh/h)	21	2021	43	75	953	53	58	16	66	37	15	29
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	23	2246	48	83	1059	59	64	18	73	41	17	32
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	264	2152	46	179	2156	120	579	139	563	536	249	470
Arrive On Green	0.04	0.84	0.84	0.04	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1781	5145	110	1781	4949	275	1356	323	1311	1306	581	1093
Grp Volume(v), veh/h	23	1484	810	83	728	390	64	0	91	41	0	49
Grp Sat Flow(s),veh/h/ln	1781	1702	1851	1781	1702	1821	1356	0	1634	1306	0	1674
Q Serve(g_s), s	0.9	50.2	50.2	3.2	18.4	18.5	3.7	0.0	4.0	2.5	0.0	2.1
Cycle Q Clear(g_c), s	0.9	50.2	50.2	3.2	18.4	18.5	9.3	0.0	4.0	10.3	0.0	2.1
Prop In Lane	1.00		0.06	1.00		0.15	1.00		0.80	1.00		0.65
Lane Grp Cap(c), veh/h	264	1424	774	179	1483	793	579	0	702	536	0	719
V/C Ratio(X)	0.09	1.04	1.05	0.46	0.49	0.49	0.11	0.00	0.13	0.08	0.00	0.07
Avail Cap(c_a), veh/h	335	2085	1134	265	2170	1161	579	0	702	536	0	719
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)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.1	9.8	9.8	20.1	24.3	24.3	24.0	0.0	20.7	25.0	0.0	20.1
Incr Delay (d2), s/veh	0.1	28.6	35.1	1.9	0.3	0.5	0.4	0.0	0.4	0.3	0.0	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	0.7	14.4	17.3	2.5	11.9	12.7	2.3	0.0	2.9	1.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	38.4	44.9	22.0	24.6	24.8	24.4	0.0	21.1	25.3	0.0	20.3
LnGrp LOS	B	F	F	C	C	C	C	A	C	C	A	C
Approach Vol, veh/h		2317			1201			155			90	
Approach Delay, s/veh		40.5			24.5			22.4			22.6	
Approach LOS		D			C			C			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		46.5	9.3	64.2		46.5	7.2	66.3				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		22.5	10.5	73.5		22.5	7.5	76.5				
Max Q Clear Time (g_c+I1), s		11.3	5.2	52.2		12.3	2.9	20.5				
Green Ext Time (p_c), s		0.5	0.1	16.9		0.2	0.0	10.1				

Intersection Summary	
HCM 6th Ctrl Delay	34.2
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	325	0	0	330	15	180	0	30	0	0	0
Future Vol, veh/h	130	325	0	0	330	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	361	0	0	367	17	200	0	33	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	384	0	-	-	-	0	796	1033	181
Stage 1	-	-	-	-	-	-	649	649	-
Stage 2	-	-	-	-	-	-	147	384	-
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	767	-	0	0	-	-	509	313	*848
Stage 1	-	-	0	0	-	-	558	593	-
Stage 2	-	-	0	0	-	-	795	610	-
Platoon blocked, %		-			-	-	1	1	1
Mov Cap-1 Maneuver	767	-	-	-	-	-	414	0	*848
Mov Cap-2 Maneuver	-	-	-	-	-	-	414	0	-
Stage 1	-	-	-	-	-	-	453	0	-
Stage 2	-	-	-	-	-	-	795	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.1	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	WBT	WBR
Capacity (veh/h)	414	-	848	767	-	-	-
HCM Lane V/C Ratio	0.483	-	0.039	0.188	-	-	-
HCM Control Delay (s)	21.6	0	9.4	10.8	-	-	-
HCM Lane LOS	C	A	A	B	-	-	-
HCM 95th %tile Q(veh)	2.6	-	0.1	0.7	-	-	-

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

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	445	180	110	400	0	0	0	0	10	0	85
Future Vol, veh/h	0	445	180	110	400	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	-	1083244544	-	-	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	494	200	122	444	0	0	0	0	11	0	94

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	494	0	0	886	1182	222
Stage 1	-	-	-	-	-	-	688	688	-
Stage 2	-	-	-	-	-	-	198	494	-
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	-	-	682	-	0	499	278	*826
Stage 1	0	-	-	-	-	0	594	617	-
Stage 2	0	-	-	-	-	0	750	545	-
Platoon blocked, %		-	-		-		1	1	1
Mov Cap-1 Maneuver	-	-	-	682	-	-	410	0	*826
Mov Cap-2 Maneuver	-	-	-	-	-	-	410	0	-
Stage 1	-	-	-	-	-	-	594	0	-
Stage 2	-	-	-	-	-	-	616	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.5	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	682	-	410	826
HCM Lane V/C Ratio	-	-	0.179	-	0.027	0.114
HCM Control Delay (s)	-	-	11.4	-	14	9.9
HCM Lane LOS	-	-	B	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	-	0.1	0.4

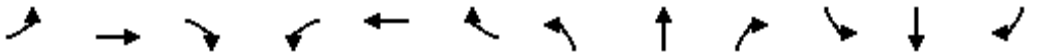
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	280	325	175	530	10	280	915	170	40	1020	230
Future Volume (vph)	195	280	325	175	530	10	280	915	170	40	1020	230
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	23.0	28.0	31.0	19.0	24.0	12.0	31.0	61.0	19.0	12.0	42.0	23.0
Total Split (%)	19.2%	23.3%	25.8%	15.8%	20.0%	10.0%	25.8%	50.8%	15.8%	10.0%	35.0%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 71 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue



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	330	1000	485	356	942	343	365	2644	986	275	2246	881
Arrive On Green	0.12	0.20	0.20	0.10	0.18	0.18	0.04	0.17	0.17	0.03	0.44	0.44
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	11.7	6.3	23.5	10.4	12.8	0.7	10.4	21.2	9.7	1.6	19.2	10.3
Cycle Q Clear(g_c), s	11.7	6.3	23.5	10.4	12.8	0.7	10.4	21.2	9.7	1.6	19.2	10.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	330	1000	485	356	942	343	365	2644	986	275	2246	881
V/C Ratio(X)	0.66	0.31	0.74	0.55	0.63	0.03	0.85	0.38	0.19	0.16	0.50	0.29
Avail Cap(c_a), veh/h	399	1000	485	385	942	343	562	2644	986	329	2246	881
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	34.4	41.3	37.4	34.2	45.1	37.1	22.3	32.8	17.9	17.8	24.2	14.1
Incr Delay (d2), s/veh	2.9	0.2	6.2	1.3	1.3	0.0	7.6	0.4	0.4	0.3	0.8	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	8.9	4.6	15.2	8.0	9.1	0.5	9.2	14.9	6.8	1.2	12.1	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	41.5	43.6	35.5	46.4	37.1	29.9	33.2	18.3	18.1	25.0	15.0
LnGrp LOS	D	D	D	D	D	D	C	C	B	B	C	B
Approach Vol, veh/h		889			794			1517			1433	
Approach Delay, s/veh		41.3			43.6			30.7			23.0	
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	66.6	17.0	28.0	17.7	57.3	18.4	26.6
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	7.5	56.5	14.5	23.5	26.5	37.5	18.5	19.5
Max Q Clear Time (g_c+I1), s	3.6	23.2	12.4	25.5	12.4	21.2	13.7	14.8
Green Ext Time (p_c), s	0.0	8.9	0.1	0.0	0.8	7.8	0.2	1.5

Intersection Summary	
HCM 6th Ctrl Delay	32.6
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	1495	25
Future Vol, veh/h	0	60	0	1365	1495	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	1661	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	845	-	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	*558	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %		1		-	-	-
Mov Cap-1 Maneuver	-	*558	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	558	-	-
HCM Lane V/C Ratio	-	0.119	-	-
HCM Control Delay (s)	-	12.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

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	-	-

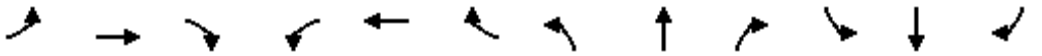
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	30	10	95	10	125	20	1235	90	1365
Future Volume (vph)	30	10	95	10	125	20	1235	90	1365
Turn Type	Perm	NA	pm+pt	NA	pm+ov	Prot	NA	pm+pt	NA
Protected Phases		4	3	8	1	5	2	1	6
Permitted Phases	4		8		8			6	
Detector Phase	4	4	3	8	1	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	9.5	22.5	9.5	22.5
Total Split (s)	25.0	25.0	16.0	41.0	18.0	12.0	61.0	18.0	67.0
Total Split (%)	20.8%	20.8%	13.3%	34.2%	15.0%	10.0%	50.8%	15.0%	55.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 9 (8%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 6: Picadilly Rd & 52nd Ave



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	129	16	75	209	304	321	39	3120	416	314	3586	104
Arrive On Green	0.06	0.06	0.06	0.07	0.16	0.16	0.02	0.68	0.68	0.08	1.00	1.00
Sat Flow, veh/h	1237	294	1336	1781	1870	1585	1781	4557	608	1781	5100	148
Grp Volume(v), veh/h	33	0	61	106	11	139	22	1025	530	100	1013	548
Grp Sat Flow(s),veh/h/ln	1237	0	1630	1781	1870	1585	1781	1702	1761	1781	1702	1844
Q Serve(g_s), s	3.1	0.0	4.4	6.5	0.6	9.2	1.5	16.3	16.3	2.0	0.0	0.0
Cycle Q Clear(g_c), s	3.1	0.0	4.4	6.5	0.6	9.2	1.5	16.3	16.3	2.0	0.0	0.0
Prop In Lane	1.00		0.82	1.00		1.00	1.00		0.35	1.00		0.08
Lane Grp Cap(c), veh/h	129	0	91	209	304	321	39	2331	1206	314	2394	1297
V/C Ratio(X)	0.26	0.00	0.67	0.51	0.04	0.43	0.57	0.44	0.44	0.32	0.42	0.42
Avail Cap(c_a), veh/h	271	0	278	256	569	546	111	2331	1206	443	2394	1297
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	55.0	0.0	55.6	47.2	42.3	41.8	58.1	8.5	8.5	6.1	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	8.3	1.9	0.0	0.9	12.6	0.6	1.2	0.6	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	5.4	0.5	6.6	1.4	9.7	10.3	1.2	0.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.0	0.0	63.8	49.1	42.4	42.7	70.7	9.1	9.7	6.7	0.6	1.0
LnGrp LOS	E	A	E	D	D	D	E	A	A	A	A	A
Approach Vol, veh/h		94			256			1577			1661	
Approach Delay, s/veh		61.1			45.3			10.2			1.1	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	86.7	12.8	11.2	7.1	88.9		24.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	13.5	56.5	11.5	20.5	7.5	62.5		36.5				
Max Q Clear Time (g_c+I1), s	4.0	18.3	8.5	6.4	3.5	2.0		11.2				
Green Ext Time (p_c), s	0.1	15.5	0.1	0.3	0.0	17.5		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	9.8
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	-	-

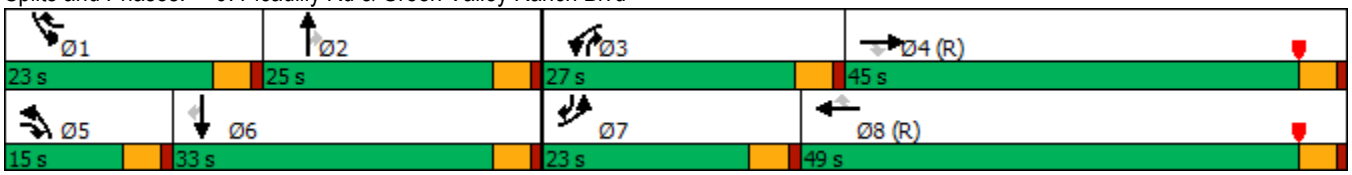
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

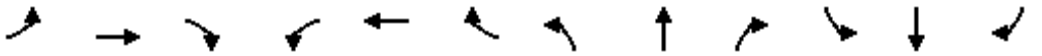
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	1300	305	540	1325	500	205	715	285	410	860	200
Future Volume (vph)	280	1300	305	540	1325	500	205	715	285	410	860	200
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	23.0	45.0	15.0	27.0	49.0	23.0	15.0	25.0	27.0	23.0	33.0	23.0
Total Split (%)	19.2%	37.5%	12.5%	22.5%	40.8%	19.2%	12.5%	20.8%	22.5%	19.2%	27.5%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 11 (9%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd





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	378	1759	676	648	2158	904	283	869		511	1205	548
Arrive On Green	0.11	0.34	0.34	0.19	0.42	0.42	0.08	0.17	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	31.0	18.7	20.5	28.1	27.9	7.8	18.3	0.0	15.5	21.1	12.8
Cycle Q Clear(g_c), s	10.6	31.0	18.7	20.5	28.1	27.9	7.8	18.3	0.0	15.5	21.1	12.8
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	378	1759	676	648	2158	904	283	869		511	1205	548
V/C Ratio(X)	0.82	0.82	0.50	0.93	0.68	0.61	0.81	0.91		0.89	0.79	0.41
Avail Cap(c_a), veh/h	533	1759	676	648	2158	904	302	872		533	1213	550
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	0.69	0.69	0.69	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	35.9	25.1	47.9	28.1	17.1	54.1	48.9	0.0	50.2	43.1	29.9
Incr Delay (d2), s/veh	7.1	4.4	2.6	14.8	1.2	2.2	13.9	13.9	0.0	16.8	3.7	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	8.5	19.3	11.9	14.4	16.0	14.5	7.0	13.6	0.0	12.4	14.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.4	40.4	27.7	62.7	29.3	19.2	68.1	62.8	0.0	67.0	46.8	30.4
LnGrp LOS	E	D	C	E	C	B	E	E		E	D	C
Approach Vol, veh/h		2094			2628			1022			1634	
Approach Delay, s/veh		41.2			34.8			64.0			50.2	
Approach LOS		D			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.2	24.9	27.0	45.8	14.3	32.8	17.6	55.2
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	18.5	20.5	22.5	40.5	10.5	28.5	18.5	44.5
Max Q Clear Time (g_c+I1), s	17.5	20.3	22.5	33.0	9.8	23.1	12.6	30.1
Green Ext Time (p_c), s	0.2	0.1	0.0	5.6	0.1	3.1	0.6	10.1

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

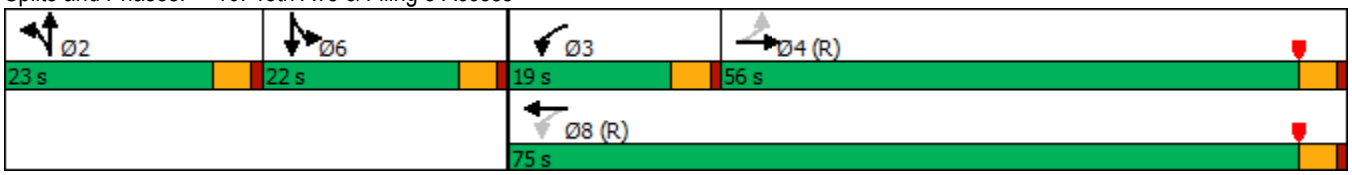
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

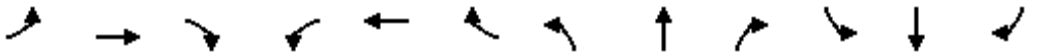
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	1770	230	2185	170	0	10	0
Future Volume (vph)	10	1770	230	2185	170	0	10	0
Turn Type	Perm	NA	pm+pt	NA	Split	NA	Split	NA
Protected Phases		4	3	8	2	2	6	6
Permitted Phases	4		8					
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	56.0	56.0	19.0	75.0	23.0	23.0	22.0	22.0
Total Split (%)	46.7%	46.7%	15.8%	62.5%	19.2%	19.2%	18.3%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 10: 48th Ave & Filing 5 Access





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	3018	288	297	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	4741	452	1781	5231	37	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	11	1408	748	256	1579	866	189	0	122	11	0	11
Grp Sat Flow(s),veh/h/ln	139	1702	1789	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	16.4	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		0.25	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	132	2167	1139	297	2523	1382	222	0	198	39	0	34
V/C Ratio(X)	0.08	0.65	0.66	0.86	0.63	0.63	0.85	0.00	0.62	0.29	0.00	0.32
Avail Cap(c_a), veh/h	132	2167	1139	393	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)	0.52	0.52	0.52	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	13.5	7.5	7.5	51.4	0.0	49.8	57.8	0.0	57.8
Incr Delay (d2), s/veh	0.6	0.8	1.6	14.0	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	0.4	0.9	7.9	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	0.8	1.6	27.5	8.7	9.7	70.0	0.0	52.9	61.8	0.0	63.1
LnGrp LOS	A	A	A	C	A	A	E	A	D	E	A	E
Approach Vol, veh/h		2167			2701			311			22	
Approach Delay, s/veh		1.1			10.8			63.3			62.4	
Approach LOS		A			B			E			E	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		19.5	12.6	80.9		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	14.5	51.5		17.5		70.5				
Max Q Clear Time (g_c+I1), s		14.5	7.6	18.4		2.8		28.9				
Green Ext Time (p_c), s		0.5	0.4	23.0		0.0		30.1				

Intersection Summary												
HCM 6th Ctrl Delay			10.1									
HCM 6th LOS			B									

Notes

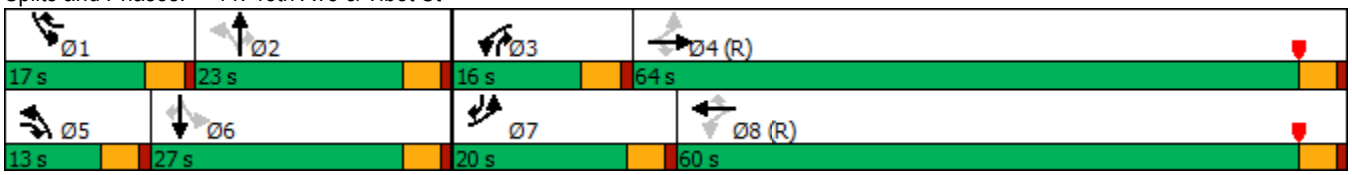
User approved pedestrian interval to be less than phase max green.

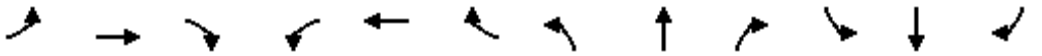
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	1555	80	110	1985	430	110	190	65	250	85	335
Future Volume (vph)	255	1555	80	110	1985	430	110	190	65	250	85	335
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	20.0	64.0	13.0	16.0	60.0	17.0	13.0	23.0	16.0	17.0	27.0	20.0
Total Split (%)	16.7%	53.3%	10.8%	13.3%	50.0%	14.2%	10.8%	19.2%	13.3%	14.2%	22.5%	16.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 89 (74%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 11: 48th Ave & Tibet St





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	313	2761	970	236	2533	951	387	548	325	364	666	449
Arrive On Green	0.10	0.54	0.54	0.10	0.99	0.99	0.07	0.15	0.15	0.10	0.19	0.19
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	9.1	28.2	2.8	4.1	3.0	0.6	6.8	6.4	4.5	12.5	2.6	22.5
Cycle Q Clear(g_c), s	9.1	28.2	2.8	4.1	3.0	0.6	6.8	6.4	4.5	12.5	2.6	22.5
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	313	2761	970	236	2533	951	387	548	325	364	666	449
V/C Ratio(X)	0.90	0.63	0.09	0.52	0.87	0.50	0.32	0.39	0.22	0.76	0.14	0.83
Avail Cap(c_a), veh/h	373	2761	970	317	2533	951	387	548	325	364	666	449
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	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	19.1	9.6	16.0	0.2	0.1	38.7	45.6	39.7	40.1	40.7	40.3
Incr Delay (d2), s/veh	22.4	1.1	0.2	0.9	2.3	1.0	0.5	0.4	0.3	9.3	0.1	12.3
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	9.3	16.6	1.8	2.8	1.3	0.6	5.5	5.2	3.3	4.9	2.1	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.4	20.2	9.8	16.9	2.6	1.1	39.1	46.1	40.1	49.4	40.8	52.6
LnGrp LOS	D	C	A	B	A	A	D	D	D	D	D	D
Approach Vol, veh/h		2100			2806			405			744	
Approach Delay, s/veh		22.6			2.9			42.9			49.9	
Approach LOS		C			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	23.0	10.6	69.4	13.0	27.0	16.0	64.0
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	12.5	18.5	11.5	59.5	8.5	22.5	15.5	55.5
Max Q Clear Time (g_c+I1), s	14.5	8.4	6.1	30.2	8.8	24.5	11.1	5.0
Green Ext Time (p_c), s	0.0	1.1	0.1	16.9	0.0	0.0	0.4	35.6

Intersection Summary	
HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	0.3

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	163	627	863	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	160	627	863	-	-	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	426	-	-	-	-	-
Stage 2	561	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	863	-	318	-	-
HCM Lane V/C Ratio	0.019	-	0.052	-	-
HCM Control Delay (s)	9.3	-	16.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	10.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	115	155	135	745	510	110
Future Vol, veh/h	115	155	135	745	510	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	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	128	172	150	828	567	122

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1281	284	689	0	-	0
Stage 1	567	-	-	-	-	-
Stage 2	714	-	-	-	-	-
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	157	713	901	-	-	-
Stage 1	531	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	131	713	901	-	-	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	446	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	65	1.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	901	-	131	713	-	-
HCM Lane V/C Ratio	0.166	-	0.975	0.242	-	-
HCM Control Delay (s)	9.8	-	136.9	11.7	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.6	-	6.7	0.9	-	-

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	-

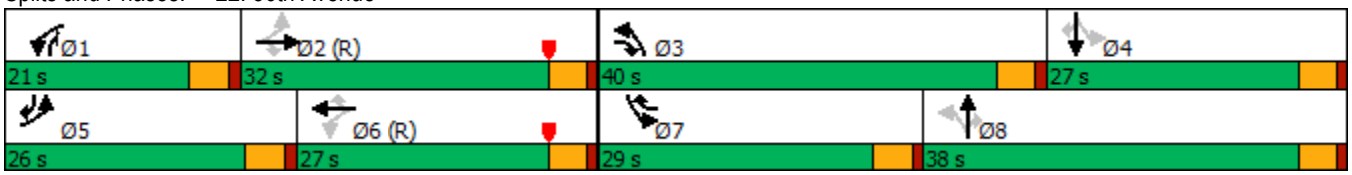
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

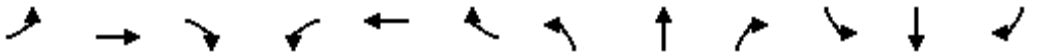
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	135	180	135	120	185	305	315	240	230	305	290
Future Volume (vph)	175	135	180	135	120	185	305	315	240	230	305	290
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	26.0	32.0	40.0	21.0	27.0	29.0	40.0	38.0	21.0	29.0	27.0	26.0
Total Split (%)	21.7%	26.7%	33.3%	17.5%	22.5%	24.2%	33.3%	31.7%	17.5%	24.2%	22.5%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 22: 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	135	180	135	120	185	305	315	240	230	305	290
Future Volume (veh/h)	175	135	180	135	120	185	305	315	240	230	305	290
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	194	150	200	150	133	206	339	350	267	256	339	322
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	616	2169	945	598	2090	862	444	797	461	412	666	427
Arrive On Green	0.08	0.42	0.42	0.07	0.41	0.41	0.17	0.22	0.22	0.13	0.19	0.19
Sat Flow, veh/h	1781	5106	1585	1781	5106	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	194	150	200	150	133	206	339	350	267	256	339	322
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1702	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	7.5	2.1	7.0	5.8	1.9	8.2	17.6	10.2	17.2	13.7	10.3	22.4
Cycle Q Clear(g_c), s	7.5	2.1	7.0	5.8	1.9	8.2	17.6	10.2	17.2	13.7	10.3	22.4
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	616	2169	945	598	2090	862	444	797	461	412	666	427
V/C Ratio(X)	0.32	0.07	0.21	0.25	0.06	0.24	0.76	0.44	0.58	0.62	0.51	0.75
Avail Cap(c_a), veh/h	789	2169	945	725	2090	862	666	992	548	536	666	427
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	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	20.5	11.2	18.0	21.5	14.4	30.1	40.0	36.3	32.4	43.8	40.2
Incr Delay (d2), s/veh	0.3	0.1	0.5	0.2	0.1	0.6	2.9	0.4	1.2	1.5	0.6	7.4
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	5.3	1.5	4.6	4.4	1.4	5.5	12.5	8.0	11.1	10.1	8.1	14.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	20.5	11.7	18.2	21.6	15.0	33.0	40.4	37.5	33.9	44.4	47.6
LnGrp LOS	B	C	B	B	C	B	C	D	D	C	D	D
Approach Vol, veh/h		544			489			956			917	
Approach Delay, s/veh		16.3			17.8			37.0			42.6	
Approach LOS		B			B			D			D	

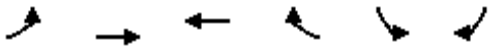
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	55.5	25.1	27.0	14.3	53.6	20.6	31.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	16.5	27.5	35.5	22.5	21.5	22.5	24.5	33.5
Max Q Clear Time (g_c+I1), s	7.8	9.0	19.6	24.4	9.5	10.2	15.7	19.2
Green Ext Time (p_c), s	0.2	1.4	0.9	0.0	0.4	1.2	0.5	2.8

Intersection Summary	
HCM 6th Ctrl Delay	31.7
HCM 6th LOS	C

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	115	490	330	135	110
Future Volume (vph)	115	490	330	135	110
Turn Type	pm+pt	NA	NA	Prot	pt+ov
Protected Phases	5	2	6	4	4 5
Permitted Phases	2				
Detector Phase	5	2	6	4	4 5
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	22.5	
Total Split (s)	29.0	79.0	50.0	41.0	
Total Split (%)	24.2%	65.8%	41.7%	34.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 25: 56th Avenue



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	490	330	155	135	110
Future Volume (veh/h)	115	490	330	155	135	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	544	367	172	150	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	559	3170	1853	819	542	560
Arrive On Green	0.02	0.20	0.53	0.53	0.30	0.30
Sat Flow, veh/h	1781	5274	3636	1531	1781	1585
Grp Volume(v), veh/h	128	544	360	179	150	122
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1595	1781	1585
Q Serve(g_s), s	3.7	10.5	6.6	7.1	7.7	6.5
Cycle Q Clear(g_c), s	3.7	10.5	6.6	7.1	7.7	6.5
Prop In Lane	1.00			0.96	1.00	1.00
Lane Grp Cap(c), veh/h	559	3170	1819	852	542	560
V/C Ratio(X)	0.23	0.17	0.20	0.21	0.28	0.22
Avail Cap(c_a), veh/h	836	3170	1819	852	542	560
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	22.3	14.5	14.6	31.7	27.2
Incr Delay (d2), s/veh	0.2	0.1	0.2	0.6	1.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	8.2	4.7	4.8	6.3	11.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.3	22.4	14.8	15.2	33.0	28.1
LnGrp LOS	B	C	B	B	C	C
Approach Vol, veh/h		672	539		272	
Approach Delay, s/veh		20.3	14.9		30.8	
Approach LOS		C	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		79.0		41.0	10.4	68.6
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		74.5		36.5	24.5	45.5
Max Q Clear Time (g_c+I1), s		12.5		9.7	5.7	9.1
Green Ext Time (p_c), s		4.3		0.8	0.3	4.0

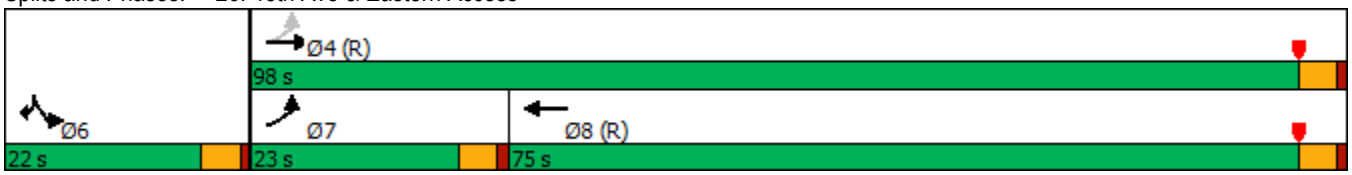
Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

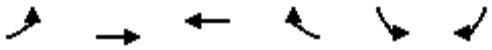
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	235	1635	2295	105	230
Future Volume (vph)	235	1635	2295	105	230
Turn Type	pm+pt	NA	NA	Prot	Prot
Protected Phases	7	4	8	6	6
Permitted Phases	4				
Detector Phase	7	4	8	6	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5
Total Split (s)	23.0	98.0	75.0	22.0	22.0
Total Split (%)	19.2%	81.7%	62.5%	18.3%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115.5 (96%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 26: 48th Ave & Eastern Access





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	3978	3362	88	260	231
Arrive On Green	0.17	1.00	1.00	1.00	0.15	0.15
Sat Flow, veh/h	1781	5274	5285	134	1781	1585
Grp Volume(v), veh/h	261	1817	1692	925	117	256
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1846	1781	1585
Q Serve(g_s), s	7.6	0.0	0.0	0.0	7.2	17.5
Cycle Q Clear(g_c), s	7.6	0.0	0.0	0.0	7.2	17.5
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	287	3978	2237	1213	260	231
V/C Ratio(X)	0.91	0.46	0.76	0.76	0.45	1.11
Avail Cap(c_a), veh/h	411	3978	2237	1213	260	231
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.56	0.56	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	0.0	0.0	46.9	51.2
Incr Delay (d2), s/veh	14.2	0.3	1.4	2.6	1.2	91.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.3	0.2	0.8	1.6	5.9	28.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.2	0.3	1.4	2.6	48.1	142.3
LnGrp LOS	C	A	A	A	D	F
Approach Vol, veh/h		2078	2617		373	
Approach Delay, s/veh		4.5	1.8		112.7	
Approach LOS		A	A		F	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			98.0		22.0	14.6	83.4
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			93.5		17.5	18.5	70.5
Max Q Clear Time (g_c+I1), s			2.0		19.5	9.6	2.0
Green Ext Time (p_c), s			27.6		0.0	0.5	46.8

Intersection Summary		
HCM 6th Ctrl Delay		11.1
HCM 6th LOS		B

Notes

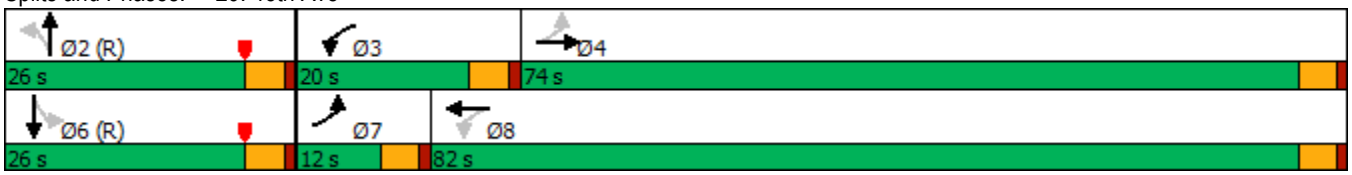
User approved pedestrian interval to be less than phase max green.

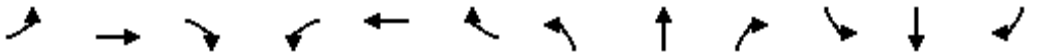
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	32	1644	123	2276	53	44	52	43
Future Volume (vph)	32	1644	123	2276	53	44	52	43
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases	7	4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	7	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	74.0	20.0	82.0	26.0	26.0	26.0	26.0
Total Split (%)	10.0%	61.7%	16.7%	68.3%	21.7%	21.7%	21.7%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 21.5 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 29: 48th Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	1644	64	123	2276	91	53	44	78	52	43	26
Future Volume (veh/h)	32	1644	64	123	2276	91	53	44	78	52	43	26
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	36	1827	71	137	2529	101	59	49	87	58	48	29
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	136	2982	116	286	3075	122	342	150	266	288	271	164
Arrive On Green	0.06	1.00	1.00	0.05	0.61	0.61	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1781	5043	196	1781	5039	200	1322	604	1073	1253	1092	660
Grp Volume(v), veh/h	36	1232	666	137	1702	928	59	0	136	58	0	77
Grp Sat Flow(s),veh/h/ln	1781	1702	1835	1781	1702	1834	1322	0	1677	1253	0	1752
Q Serve(g_s), s	0.9	0.0	0.0	3.6	46.7	47.9	4.4	0.0	8.0	4.8	0.0	4.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.6	46.7	47.9	8.6	0.0	8.0	12.7	0.0	4.1
Prop In Lane	1.00		0.11	1.00		0.11	1.00		0.64	1.00		0.38
Lane Grp Cap(c), veh/h	136	2013	1085	286	2077	1119	342	0	416	288	0	435
V/C Ratio(X)	0.26	0.61	0.61	0.48	0.82	0.83	0.17	0.00	0.33	0.20	0.00	0.18
Avail Cap(c_a), veh/h	196	2013	1085	431	2198	1185	342	0	416	288	0	435
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)	0.89	0.89	0.89	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	0.0	8.5	18.2	18.5	38.8	0.0	36.9	42.1	0.0	35.5
Incr Delay (d2), s/veh	0.9	0.5	0.9	1.2	2.5	4.9	1.1	0.0	2.1	1.6	0.0	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	0.9	0.2	0.5	2.6	24.8	27.9	2.8	0.0	6.3	2.9	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	0.5	0.9	9.7	20.7	23.3	39.9	0.0	39.0	43.7	0.0	36.4
LnGrp LOS	C	A	A	A	C	C	D	A	D	D	A	D
Approach Vol, veh/h		1934			2767			195			135	
Approach Delay, s/veh		1.0			21.0			39.3			39.5	
Approach LOS		A			C			D			D	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		34.3	10.3	75.5		34.3	8.0	77.7				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s		21.5	15.5	69.5		21.5	7.5	77.5				
Max Q Clear Time (g_c+I1), s		10.6	5.6	2.0		14.7	2.9	49.9				
Green Ext Time (p_c), s		0.7	0.2	26.0		0.3	0.0	23.3				

Intersection Summary												
HCM 6th Ctrl Delay			14.5									
HCM 6th LOS			B									

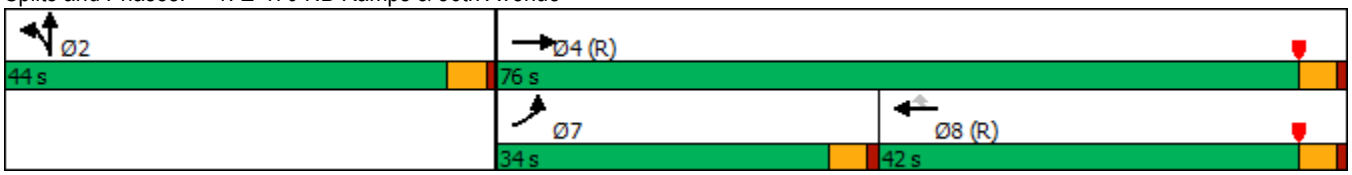
APPENDIX F. SHORT-RANGE FUTURE TOTAL TRAFFIC LOS

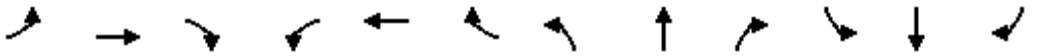
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	342	281	183	10	496	0
Future Volume (vph)	342	281	183	10	496	0
Turn Type	Prot	NA	NA	Perm	Split	NA
Protected Phases	7	4	8		2	2
Permitted Phases				8		
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	34.0	76.0	42.0	42.0	44.0	44.0
Total Split (%)	28.3%	63.3%	35.0%	35.0%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 61 (51%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: E-470 NB Ramps & 56th Avenue





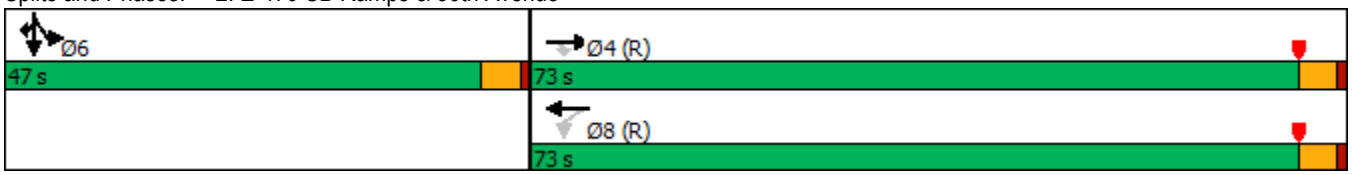
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	342	281	0	0	183	10	496	0	90	0	0	0
Future Volume (veh/h)	342	281	0	0	183	10	496	0	90	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking 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	380	312	0	0	203	11	551	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	457	1372	0	0	1054	893	662	0	304			
Arrive On Green	0.18	0.98	0.00	0.00	0.56	0.56	0.19	0.00	0.19			
Sat Flow, veh/h	3456	1870	0	0	1870	1585	3456	0	1585			
Grp Volume(v), veh/h	380	312	0	0	203	11	551	0	100			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1870	1585	1728	0	1585			
Q Serve(g_s), s	12.7	0.6	0.0	0.0	6.4	0.4	18.4	0.0	6.5			
Cycle Q Clear(g_c), s	12.7	0.6	0.0	0.0	6.4	0.4	18.4	0.0	6.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	457	1372	0	0	1054	893	662	0	304			
V/C Ratio(X)	0.83	0.23	0.00	0.00	0.19	0.01	0.83	0.00	0.33			
Avail Cap(c_a), veh/h	850	1372	0	0	1054	893	1138	0	522			
HCM Platoon Ratio	1.33	1.33	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	48.2	0.4	0.0	0.0	12.8	11.5	46.6	0.0	41.8			
Incr Delay (d2), s/veh	3.4	0.3	0.0	0.0	0.4	0.0	2.8	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.8	0.5	0.0	0.0	4.7	0.2	12.8	0.0	4.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	0.7	0.0	0.0	13.2	11.5	49.4	0.0	42.5			
LnGrp LOS	D	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		692			214			651				
Approach Delay, s/veh		28.6			13.1			48.4				
Approach LOS		C			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		27.5		92.5			20.4	72.1				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		39.5		71.5			29.5	37.5				
Max Q Clear Time (g_c+I1), s		20.4		2.6			14.7	8.4				
Green Ext Time (p_c), s		2.6		1.8			1.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			34.7									
HCM 6th LOS			C									

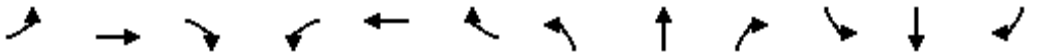
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	593	391	25	659	0	461
Future Volume (vph)	593	391	25	659	0	461
Turn Type	NA	Perm	Perm	NA	NA	Prot
Protected Phases	4			8	6	6
Permitted Phases		4	8			
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	73.0	73.0	73.0	73.0	47.0	47.0
Total Split (%)	60.8%	60.8%	60.8%	60.8%	39.2%	39.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 111 (93%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 2: E-470 SB Ramps & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	593	391	25	659	0	0	0	0	30	0	461
Future Volume (veh/h)	0	593	391	25	659	0	0	0	0	30	0	461
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	659	434	28	732	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	1678	1422	523	1678	0				50	0	
Arrive On Green	0.00	1.00	1.00	0.60	0.60	0.00				0.03	0.00	0.00
Sat Flow, veh/h	0	1870	1585	516	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	659	434	28	732	0				33	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	0.0	0.0	2.7	25.4	0.0				2.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	2.7	25.4	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	1678	1422	523	1678	0				50	0	
V/C Ratio(X)	0.00	0.39	0.31	0.05	0.44	0.00				0.67	0.00	
Avail Cap(c_a), veh/h	0	1678	1422	523	1678	0				631	0	
HCM Platoon Ratio	1.00	2.00	2.00	0.67	0.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.91	0.91	0.77	0.77	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.0	7.5	0.0				57.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.5	0.1	0.6	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	0.5	0.4	0.0	15.2	0.0				2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.6	0.5	3.1	8.2	0.0				72.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				E	A	
Approach Vol, veh/h		1093			760						33	
Approach Delay, s/veh		0.6			8.0						72.1	
Approach LOS		A			A						E	

Timer - Assigned Phs		4		6		8						
Phs Duration (G+Y+Rc), s		112.2		7.8		112.2						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		68.5		42.5		68.5						
Max Q Clear Time (g_c+I1), s		2.0		4.2		27.4						
Green Ext Time (p_c), s		6.7		0.1		5.8						

Intersection Summary		
HCM 6th Ctrl Delay	4.8	
HCM 6th LOS	A	

Notes

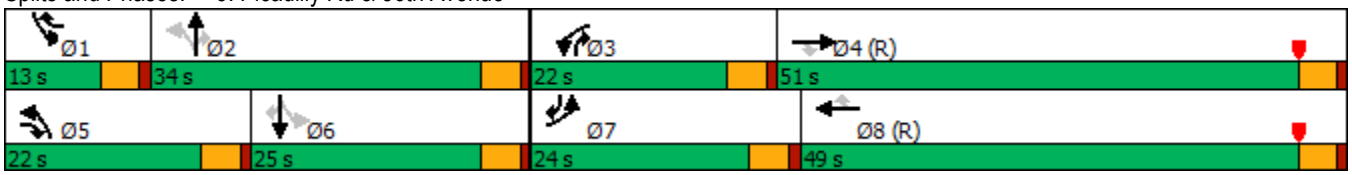
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

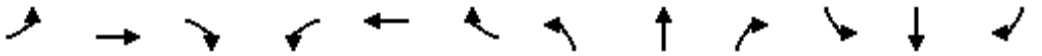
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	302	258	256	233	72	156	97	186	71	82	90
Future Volume (vph)	100	302	258	256	233	72	156	97	186	71	82	90
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	24.0	51.0	22.0	22.0	49.0	13.0	22.0	34.0	22.0	13.0	25.0	24.0
Total Split (%)	20.0%	42.5%	18.3%	18.3%	40.8%	10.8%	18.3%	28.3%	18.3%	10.8%	20.8%	20.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 27 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	302	258	256	233	72	156	97	186	71	82	90
Future Volume (veh/h)	100	302	258	256	233	72	156	97	186	71	82	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	336	287	284	259	80	173	108	207	79	91	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	138	1041	1046	349	2062	1003	295	262	382	243	167	264
Arrive On Green	0.08	0.56	0.56	0.10	0.58	0.58	0.03	0.05	0.05	0.05	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	3456	3554	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	111	336	287	284	259	80	173	108	207	79	91	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	7.4	11.7	9.0	9.7	4.0	2.3	10.3	6.7	13.8	4.8	5.6	6.7
Cycle Q Clear(g_c), s	7.4	11.7	9.0	9.7	4.0	2.3	10.3	6.7	13.8	4.8	5.6	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	138	1041	1046	349	2062	1003	295	262	382	243	167	264
V/C Ratio(X)	0.81	0.32	0.27	0.81	0.13	0.08	0.59	0.41	0.54	0.33	0.55	0.38
Avail Cap(c_a), veh/h	289	1041	1046	504	2062	1003	370	460	550	275	320	393
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	54.5	14.4	8.5	52.8	11.4	8.5	45.1	52.4	44.1	46.3	52.3	44.5
Incr Delay (d2), s/veh	10.4	0.8	0.6	6.6	0.1	0.2	1.9	1.0	1.2	0.8	2.8	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	6.5	8.4	5.2	7.8	2.7	1.4	8.6	6.0	9.9	3.8	4.9	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.9	15.2	9.1	59.4	11.5	8.7	47.0	53.5	45.3	47.0	55.1	45.4
LnGrp LOS	E	B	A	E	B	A	D	D	D	D	E	D
Approach Vol, veh/h		734			623			488			270	
Approach Delay, s/veh		20.4			33.0			47.7			49.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	21.3	16.6	71.3	16.9	15.2	13.8	74.1
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	8.5	29.5	17.5	46.5	17.5	20.5	19.5	44.5
Max Q Clear Time (g_c+I1), s	6.8	15.8	11.7	13.7	12.3	8.7	9.4	6.0
Green Ext Time (p_c), s	0.0	1.0	0.5	2.9	0.2	0.5	0.2	1.8

Intersection Summary	
HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	60	0	378	65	114	471	10
Future Vol, veh/h	0	0	0	0	0	60	0	378	65	114	471	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	-	-	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	0	0	0	0	0	67	0	420	72	127	523	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	523	-	-	420	534	0	0	492	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	*685	0	0	*764	*1025	-	-	1079	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*685	-	-	*764	*1025	-	-	1079	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.2	0	1.7
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 1025	-	-	-	764	1079	-	-
HCM Lane V/C Ratio	-	-	-	-	0.087	0.117	-	-
HCM Control Delay (s)	0	-	-	0	10.2	8.8	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.4	-	-

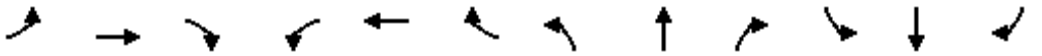
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	0	56	0	10	419	17	40	421
Future Volume (vph)	0	56	0	10	419	17	40	421
Turn Type	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	3	8		2		1	6
Permitted Phases		8		2		2	6	
Detector Phase	4	3	8	2	2	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	14.0	37.0	71.0	71.0	71.0	12.0	83.0
Total Split (%)	19.2%	11.7%	30.8%	59.2%	59.2%	59.2%	10.0%	69.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 5: Picadilly Rd & 54th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	56	0	22	10	419	17	40	421	10
Future Volume (veh/h)	0	0	15	56	0	22	10	419	17	40	421	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	0	0	17	62	0	24	11	466	19	44	468	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	60	0	49	166	0	177	741	1391	1178	717	1480	35
Arrive On Green	0.00	0.00	0.03	0.04	0.00	0.11	0.74	0.74	0.74	0.06	1.00	1.00
Sat Flow, veh/h	1387	0	1585	1781	0	1585	916	1870	1585	1781	1820	43
Grp Volume(v), veh/h	0	0	17	62	0	24	11	466	19	44	0	479
Grp Sat Flow(s),veh/h/ln	1387	0	1585	1781	0	1585	916	1870	1585	1781	0	1863
Q Serve(g_s), s	0.0	0.0	1.3	3.9	0.0	1.6	0.4	10.2	0.4	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	1.3	3.9	0.0	1.6	0.4	10.2	0.4	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	60	0	49	166	0	177	741	1391	1178	717	0	1514
V/C Ratio(X)	0.00	0.00	0.35	0.37	0.00	0.14	0.01	0.34	0.02	0.06	0.00	0.32
Avail Cap(c_a), veh/h	231	0	244	230	0	429	741	1391	1178	771	0	1514
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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	56.9	51.4	0.0	48.0	4.0	5.3	4.0	3.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	4.1	1.4	0.0	0.3	0.0	0.7	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	1.0	3.3	0.0	1.2	0.1	6.3	0.2	0.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	61.1	52.8	0.0	48.4	4.0	5.9	4.0	3.2	0.0	0.5
LnGrp LOS	A	A	E	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		17			86			496			523	
Approach Delay, s/veh		61.1			51.6			5.8			0.8	
Approach LOS		E			D			A			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	8.3	93.7	9.7	8.2		102.1		17.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	7.5	66.5	9.5	18.5		78.5		32.5				
Max Q Clear Time (g_c+I1), s	2.6	12.2	5.9	3.3		2.0		3.6				
Green Ext Time (p_c), s	0.0	3.2	0.0	0.0		3.2		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			7.8									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	0	55	54	0	36	15	375	52	36	476	45
Future Vol, veh/h	40	0	55	54	0	36	15	375	52	36	476	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	-	-	200	-	-	200	-	100	200	-	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	44	0	61	60	0	40	17	417	58	40	529	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1109	1118	529	1116	1110	417	579	0	0	475	0	0
Stage 1	609	609	-	451	451	-	-	-	-	-	-	-
Stage 2	500	509	-	665	659	-	-	-	-	-	-	-
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	169	177	*685	166	180	636	989	-	-	1087	-	-
Stage 1	580	518	-	588	571	-	-	-	-	-	-	-
Stage 2	553	538	-	520	479	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	152	168	*685	145	171	636	989	-	-	1087	-	-
Mov Cap-2 Maneuver	152	168	-	145	171	-	-	-	-	-	-	-
Stage 1	570	499	-	578	561	-	-	-	-	-	-	-
Stage 2	509	529	-	456	461	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.3	32.2	0.3	0.5
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	989	-	-	152	685	145	636	1087	-	-
HCM Lane V/C Ratio	0.017	-	-	0.292	0.089	0.414	0.063	0.037	-	-
HCM Control Delay (s)	8.7	-	-	38.2	10.8	46.3	11	8.4	-	-
HCM Lane LOS	A	-	-	E	B	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	0.3	1.8	0.2	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	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	5	60	408	5	0	461	90
Future Vol, veh/h	0	0	30	0	0	5	60	408	5	0	461	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	-	-	-	-	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	6	67	453	6	0	512	100

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	512	-	-	456	612	0	0	459	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	*711	0	0	*737	942	-	-	*1104	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*711	-	-	*737	942	-	-	*1104	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	9.9	1.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	942	-	-	711	737	* 1104	-	-
HCM Lane V/C Ratio	0.071	-	-	0.047	0.008	-	-	-
HCM Control Delay (s)	9.1	-	-	10.3	9.9	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	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	25	0	0	5	5	443	15	10	471	15
Future Vol, veh/h	0	0	25	0	0	5	5	443	15	10	471	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	492	17	11	523	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	532	-	-	501	540	0	0	509	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	547	0	0	*721	1028	-	-	1070	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %						1		-	-	1	-	-
Mov Cap-1 Maneuver	-	-	547	-	-	*721	1028	-	-	1070	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	10	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1028	-	-	547	721	1070	-	-
HCM Lane V/C Ratio	0.005	-	-	0.051	0.008	0.01	-	-
HCM Control Delay (s)	8.5	-	-	11.9	10	8.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

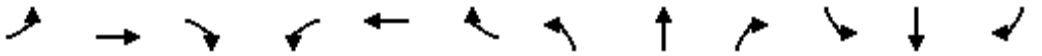
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	134	100	75	92	56	40	256	104	60	340	125
Future Volume (vph)	161	134	100	75	92	56	40	256	104	60	340	125
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	26.0	38.0	14.0	14.0	26.0	12.0	14.0	56.0	14.0	12.0	54.0	26.0
Total Split (%)	21.7%	31.7%	11.7%	11.7%	21.7%	10.0%	11.7%	46.7%	11.7%	10.0%	45.0%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd/48th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	134	100	75	92	56	40	256	104	60	340	125
Future Volume (veh/h)	161	134	100	75	92	56	40	256	104	60	340	125
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	179	149	111	83	102	62	44	284	116	67	378	139
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	279	238	252	217	139	177	597	1178	1087	681	1188	1179
Arrive On Green	0.11	0.13	0.13	0.06	0.07	0.07	0.03	0.63	0.63	0.04	0.64	0.64
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	179	149	111	83	102	62	44	284	116	67	378	139
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.7	9.1	7.6	5.1	6.4	4.3	1.0	8.0	3.0	1.6	11.1	3.0
Cycle Q Clear(g_c), s	10.7	9.1	7.6	5.1	6.4	4.3	1.0	8.0	3.0	1.6	11.1	3.0
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	279	238	252	217	139	177	597	1178	1087	681	1188	1179
V/C Ratio(X)	0.64	0.63	0.44	0.38	0.73	0.35	0.07	0.24	0.11	0.10	0.32	0.12
Avail Cap(c_a), veh/h	405	522	493	259	335	343	681	1178	1087	726	1188	1179
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	43.1	49.7	45.6	47.7	54.4	49.3	7.5	9.7	6.4	7.2	10.0	4.3
Incr Delay (d2), s/veh	2.5	2.7	1.2	1.1	7.3	1.2	0.1	0.5	0.2	0.1	0.7	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	8.5	7.8	5.5	4.2	5.9	3.2	0.7	5.7	1.8	1.0	7.8	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	52.4	46.8	48.8	61.6	50.5	7.6	10.2	6.6	7.3	10.7	4.5
LnGrp LOS	D	D	D	D	E	D	A	B	A	A	B	A
Approach Vol, veh/h		439			247			444			584	
Approach Delay, s/veh		48.2			54.5			9.0			8.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	80.1	11.2	19.8	8.3	80.7	17.5	13.4
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	51.5	9.5	33.5	9.5	49.5	21.5	21.5
Max Q Clear Time (g_c+I1), s	3.6	10.0	7.1	11.1	3.0	13.1	12.7	8.4
Green Ext Time (p_c), s	0.0	2.0	0.0	1.1	0.0	2.8	0.3	0.5

Intersection Summary	
HCM 6th Ctrl Delay	25.5
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	223	182	0	0	30
Future Vol, veh/h	15	223	182	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	248	202	0	0	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	202	0	-	0	484	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	282	-
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	1370	-	-	-	585	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	813	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1370	-	-	-	578	839
Mov Cap-2 Maneuver	-	-	-	-	578	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	813	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1370	-	-	-	-	839
HCM Lane V/C Ratio	0.012	-	-	-	-	0.04
HCM Control Delay (s)	7.7	-	-	-	0	9.5
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	189	26	8	3	33	96	11	86	2	77	33	138
Future Vol, veh/h	189	26	8	3	33	96	11	86	2	77	33	138
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	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	210	29	9	3	37	107	12	96	2	86	37	153

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	144	0	0	38	0	0	646	604	34	546	501	37
Stage 1	-	-	-	-	-	-	454	454	-	43	43	-
Stage 2	-	-	-	-	-	-	192	150	-	503	458	-
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	1438	-	-	1572	-	-	385	412	1039	448	472	1035
Stage 1	-	-	-	-	-	-	586	569	-	971	859	-
Stage 2	-	-	-	-	-	-	810	773	-	551	567	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1438	-	-	1572	-	-	271	351	1039	315	402	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	351	-	315	402	-
Stage 1	-	-	-	-	-	-	500	486	-	829	857	-
Stage 2	-	-	-	-	-	-	659	771	-	377	484	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.7	0.2	18.9	13.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	271	356	1438	-	-	1572	-	-	315	402	1035
HCM Lane V/C Ratio	0.045	0.275	0.146	-	-	0.002	-	-	0.272	0.091	0.148
HCM Control Delay (s)	18.9	18.9	7.9	-	-	7.3	0	-	20.6	14.9	9.1
HCM Lane LOS	C	C	A	-	-	A	A	-	C	B	A
HCM 95th %tile Q(veh)	0.1	1.1	0.5	-	-	0	-	-	1.1	0.3	0.5

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	15	15	0	17	10	366	6	39	218	0
Future Vol, veh/h	0	0	15	15	0	17	10	366	6	39	218	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	17	0	19	11	407	7	43	242	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	554	764	121	640	761	207	242	0	0	414	0	0
Stage 1	328	328	-	433	433	-	-	-	-	-	-	-
Stage 2	226	436	-	207	328	-	-	-	-	-	-	-
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	415	332	908	360	334	799	1322	-	-	1141	-	-
Stage 1	659	646	-	571	580	-	-	-	-	-	-	-
Stage 2	756	578	-	776	646	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	390	316	908	340	318	799	1322	-	-	1141	-	-
Mov Cap-2 Maneuver	390	316	-	340	318	-	-	-	-	-	-	-
Stage 1	652	621	-	565	574	-	-	-	-	-	-	-
Stage 2	730	572	-	733	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	12.9	0.2	1.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1322	-	-	908	489	1141	-	-
HCM Lane V/C Ratio	0.008	-	-	0.018	0.073	0.038	-	-
HCM Control Delay (s)	7.7	0	-	9	12.9	8.3	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	57	12	29	22	41	2	314	68	80	215	6
Future Vol, veh/h	9	57	12	29	22	41	2	314	68	80	215	6
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	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	63	13	32	24	46	2	349	76	89	239	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	612	850	123	682	777	175	246	0	0	425	0	0
Stage 1	421	421	-	353	353	-	-	-	-	-	-	-
Stage 2	191	429	-	329	424	-	-	-	-	-	-	-
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	377	296	905	336	327	838	1317	-	-	1131	-	-
Stage 1	581	587	-	637	629	-	-	-	-	-	-	-
Stage 2	792	582	-	658	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	314	272	905	256	301	838	1317	-	-	1131	-	-
Mov Cap-2 Maneuver	314	272	-	256	301	-	-	-	-	-	-	-
Stage 1	580	541	-	636	628	-	-	-	-	-	-	-
Stage 2	718	581	-	527	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20	15.6	0	2.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1317	-	-	314	310	256	516	1131	-	-
HCM Lane V/C Ratio	0.002	-	-	0.032	0.247	0.126	0.136	0.079	-	-
HCM Control Delay (s)	7.7	0	-	16.8	20.4	21.1	13.1	8.5	-	-
HCM Lane LOS	A	A	-	C	C	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1	0.4	0.5	0.3	-	-

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	4	72	10	0	26	4	15	0	0	7	0	4
Future Vol, veh/h	4	72	10	0	26	4	15	0	0	7	0	4
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	80	11	0	29	4	17	0	0	8	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	91	0	0	127	127	86	125	130	31
Stage 1	-	-	-	-	-	-	94	94	-	31	31	-
Stage 2	-	-	-	-	-	-	33	33	-	94	99	-
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	1579	-	-	1504	-	-	846	764	973	849	761	1043
Stage 1	-	-	-	-	-	-	913	817	-	986	869	-
Stage 2	-	-	-	-	-	-	983	868	-	913	813	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1504	-	-	841	762	973	847	759	1043
Mov Cap-2 Maneuver	-	-	-	-	-	-	841	762	-	847	759	-
Stage 1	-	-	-	-	-	-	910	815	-	983	869	-
Stage 2	-	-	-	-	-	-	979	868	-	911	811	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	9.4	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	841	1579	-	-	1504	-	-	909
HCM Lane V/C Ratio	0.02	0.003	-	-	-	-	-	0.013
HCM Control Delay (s)	9.4	7.3	-	-	0	-	-	9
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	80	10	0	45	20	5
Future Vol, veh/h	80	10	0	45	20	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	89	11	0	50	22	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	100	0	145	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	50	-
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	-	-	1493	-	847	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	972	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	847	962
Mov Cap-2 Maneuver	-	-	-	-	847	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	972	-

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)	868	-	-	1493	-
HCM Lane V/C Ratio	0.032	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	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	3	81	5	0	62	4	20	0	0	10	0	9
Future Vol, veh/h	3	81	5	0	62	4	20	0	0	10	0	9
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	3	90	6	0	69	4	22	0	0	11	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	73	0	0	96	0	0	175	172	93	170	173	71
Stage 1	-	-	-	-	-	-	99	99	-	71	71	-
Stage 2	-	-	-	-	-	-	76	73	-	99	102	-
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	1527	-	-	1498	-	-	788	721	964	794	720	991
Stage 1	-	-	-	-	-	-	907	813	-	939	836	-
Stage 2	-	-	-	-	-	-	933	834	-	907	811	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1527	-	-	1498	-	-	779	720	964	793	719	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	779	720	-	793	719	-
Stage 1	-	-	-	-	-	-	905	811	-	937	836	-
Stage 2	-	-	-	-	-	-	924	834	-	905	809	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	9.8	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	1527	-	-	1498	-	-	876
HCM Lane V/C Ratio	0.029	0.002	-	-	-	-	-	0.024
HCM Control Delay (s)	9.8	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	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	16	330	34	23	301
Future Vol, veh/h	0	16	330	34	23	301
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	18	367	38	26	334

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	203	0	0	405	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	804	-	-	1150	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	804	-	-	1150	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	804	1150	-
HCM Lane V/C Ratio	-	-	0.022	0.022	-
HCM Control Delay (s)	-	-	9.6	8.2	0.1
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	0	12	36	0	85	53	247	45	126	277	15
Future Vol, veh/h	39	0	12	36	0	85	53	247	45	126	277	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	-	-	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	43	0	13	40	0	94	59	274	50	140	308	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	852	1039	163	851	1022	162	325	0	0	324	0	0
Stage 1	597	597	-	417	417	-	-	-	-	-	-	-
Stage 2	255	442	-	434	605	-	-	-	-	-	-	-
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	253	229	853	253	235	854	1231	-	-	1233	-	-
Stage 1	456	490	-	584	590	-	-	-	-	-	-	-
Stage 2	727	575	-	570	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	198	193	853	219	198	854	1231	-	-	1233	-	-
Mov Cap-2 Maneuver	198	193	-	219	198	-	-	-	-	-	-	-
Stage 1	434	434	-	556	562	-	-	-	-	-	-	-
Stage 2	616	547	-	497	431	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.8	14.3	1.2	2.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1231	-	-	198	853	219	854	1233	-	-
HCM Lane V/C Ratio	0.048	-	-	0.219	0.016	0.183	0.111	0.114	-	-
HCM Control Delay (s)	8.1	-	-	28.2	9.3	25.1	9.7	8.3	-	-
HCM Lane LOS	A	-	-	D	A	D	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.8	0	0.7	0.4	0.4	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	85	0	43	25	0	28	50	309	12	36	350	55
Future Vol, veh/h	85	0	43	25	0	28	50	309	12	36	350	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	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	94	0	48	28	0	31	56	343	13	40	389	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	753	937	195	737	992	178	450	0	0	356	0	0
Stage 1	469	469	-	462	462	-	-	-	-	-	-	-
Stage 2	284	468	-	275	530	-	-	-	-	-	-	-
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	298	263	814	307	244	834	1107	-	-	1199	-	-
Stage 1	544	559	-	549	563	-	-	-	-	-	-	-
Stage 2	699	560	-	708	525	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	269	241	814	271	224	834	1107	-	-	1199	-	-
Mov Cap-2 Maneuver	269	241	-	271	224	-	-	-	-	-	-	-
Stage 1	516	541	-	521	534	-	-	-	-	-	-	-
Stage 2	639	531	-	644	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.2	14.4	1.1	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1107	-	-	269	814	271	834	1199	-	-
HCM Lane V/C Ratio	0.05	-	-	0.351	0.059	0.103	0.037	0.033	-	-
HCM Control Delay (s)	8.4	-	-	25.5	9.7	19.8	9.5	8.1	-	-
HCM Lane LOS	A	-	-	D	A	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.5	0.2	0.3	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	510	54	0	561	0	56
Future Vol, veh/h	510	54	0	561	0	56
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	567	60	0	623	0	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	284
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	713
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	713
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	713	-	-	-
HCM Lane V/C Ratio	0.087	-	-	-
HCM Control Delay (s)	10.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	541	25	211	493	68	115
Future Volume (vph)	541	25	211	493	68	115
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov
Protected Phases	2		1	6	4	4 1
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4 1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	
Total Split (s)	56.0	56.0	34.0	90.0	30.0	
Total Split (%)	46.7%	46.7%	28.3%	75.0%	25.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 21: Acess #21 & 56th Avenue

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	541	25	211	493	68	115
Future Volume (veh/h)	541	25	211	493	68	115
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	601	28	234	548	76	128
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	2163	965	611	2532	379	442
Arrive On Green	0.61	0.61	0.02	0.24	0.21	0.21
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	601	28	234	548	76	128
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	9.6	0.8	5.3	14.9	4.2	7.6
Cycle Q Clear(g_c), s	9.6	0.8	5.3	14.9	4.2	7.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2163	965	611	2532	379	442
V/C Ratio(X)	0.28	0.03	0.38	0.22	0.20	0.29
Avail Cap(c_a), veh/h	2163	965	931	2532	379	442
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	9.4	7.7	18.9	38.9	33.9
Incr Delay (d2), s/veh	0.3	0.1	0.4	0.2	1.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.3	0.5	3.9	11.5	3.6	12.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.4	9.4	8.1	19.1	40.1	35.6
LnGrp LOS	B	A	A	B	D	D
Approach Vol, veh/h	629			782	204	
Approach Delay, s/veh	11.3			15.8	37.3	
Approach LOS	B			B	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.5	77.5		30.0		90.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	29.5	51.5		25.5		85.5
Max Q Clear Time (g_c+I1), s	7.3	11.6		9.6		16.9
Green Ext Time (p_c), s	0.6	4.2		0.5		4.3

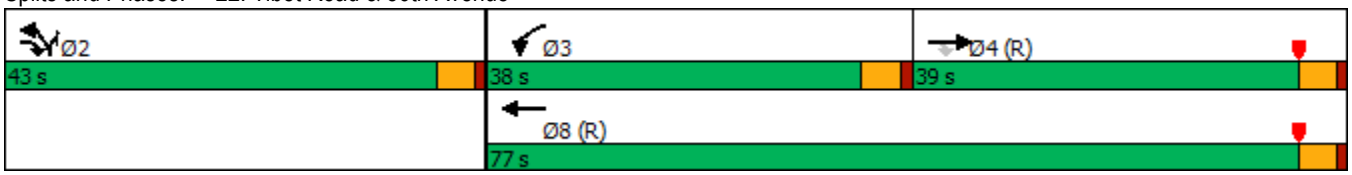
Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

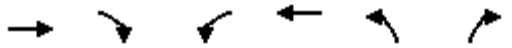
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	598	85	371	605	99	316
Future Volume (vph)	598	85	371	605	99	316
Turn Type	NA	pm+ov	Prot	NA	Prot	Prot
Protected Phases	4	2	3	8	2	2
Permitted Phases		4				
Detector Phase	4	2	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	39.0	43.0	38.0	77.0	43.0	43.0
Total Split (%)	32.5%	35.8%	31.7%	64.2%	35.8%	35.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max	None	None	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 13 (11%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 22: Tibet Road & 56th Avenue





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	598	85	371	605	99	316
Future Volume (veh/h)	598	85	371	605	99	316
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	664	94	412	672	110	351
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	1793	1184	486	2426	432	384
Arrive On Green	0.17	0.17	0.28	1.00	0.24	0.24
Sat Flow, veh/h	3647	1585	3456	3647	1781	1585
Grp Volume(v), veh/h	664	94	412	672	110	351
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1777	1781	1585
Q Serve(g_s), s	19.9	3.1	13.5	0.0	6.0	25.9
Cycle Q Clear(g_c), s	19.9	3.1	13.5	0.0	6.0	25.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1793	1184	486	2426	432	384
V/C Ratio(X)	0.37	0.08	0.85	0.28	0.25	0.91
Avail Cap(c_a), veh/h	1793	1184	965	2426	571	509
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	7.1	41.9	0.0	36.7	44.2
Incr Delay (d2), s/veh	0.6	0.1	4.2	0.3	0.3	17.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.6	4.2	9.0	0.2	4.8	17.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.7	7.3	46.1	0.3	37.0	61.8
LnGrp LOS	C	A	D	A	D	E
Approach Vol, veh/h	758			1084	461	
Approach Delay, s/veh	30.4			17.7	55.9	
Approach LOS	C			B	E	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		33.6	21.4	65.0		86.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		38.5	33.5	34.5		72.5
Max Q Clear Time (g_c+I1), s		27.9	15.5	21.9		2.0
Green Ext Time (p_c), s		1.2	1.4	3.6		5.5

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	638	19	0	704	0	46
Future Vol, veh/h	638	19	0	704	0	46
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	709	21	0	782	0	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	355
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	*823
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*823
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	823	-	-	-
HCM Lane V/C Ratio	0.062	-	-	-
HCM Control Delay (s)	9.7	-	-	-
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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	906	8	0	977	0	30
Future Vol, veh/h	906	8	0	977	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	-	-	-	-	-	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	1007	9	0	1086	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	508
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	*721
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*721
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	721	-	-	-
HCM Lane V/C Ratio	0.046	-	-	-
HCM Control Delay (s)	10.2	-	-	-
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

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	896	41	205	915	62	88
Future Volume (vph)	896	41	205	915	62	88
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov
Protected Phases	2		1	6	4	4 1
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4 1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	
Total Split (s)	66.0	66.0	28.0	94.0	26.0	
Total Split (%)	55.0%	55.0%	23.3%	78.3%	21.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 25: Acces #25 & 56th Avenue

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↱	↰	↑↑	↰	↱
Traffic Volume (veh/h)	896	41	205	915	62	88
Future Volume (veh/h)	896	41	205	915	62	88
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	996	46	228	1017	69	98
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	2285	1019	525	2650	319	388
Arrive On Green	1.00	1.00	0.13	1.00	0.18	0.18
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	996	46	228	1017	69	98
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	0.0	0.0	5.3	0.0	4.0	6.0
Cycle Q Clear(g_c), s	0.0	0.0	5.3	0.0	4.0	6.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2285	1019	525	2650	319	388
V/C Ratio(X)	0.44	0.05	0.43	0.38	0.22	0.25
Avail Cap(c_a), veh/h	2285	1019	757	2650	319	388
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.62	0.62	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	4.9	0.0	42.1	36.5
Incr Delay (d2), s/veh	0.6	0.1	0.4	0.3	1.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	2.8	0.2	3.4	9.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.6	0.1	5.3	0.3	43.6	38.1
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h	1042			1245	167	
Approach Delay, s/veh	0.6			1.2	40.4	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.3	81.7		26.0		94.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	23.5	61.5		21.5		89.5
Max Q Clear Time (g_c+I1), s	7.3	2.0		8.0		2.0
Green Ext Time (p_c), s	0.6	8.3		0.4		9.9

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

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	75	99	1	2	32
Future Vol, veh/h	30	75	99	1	2	32
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	83	110	1	2	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	111	0	-	0	260	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	149	-
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	1479	-	-	-	729	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	879	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1479	-	-	-	713	942
Mov Cap-2 Maneuver	-	-	-	-	713	-
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1479	-	-	-	925
HCM Lane V/C Ratio	0.023	-	-	-	0.041
HCM Control Delay (s)	7.5	-	-	-	9.1
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

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	33	0	0	18	0	402	20	0	408	49
Future Vol, veh/h	0	0	33	0	0	18	0	402	20	0	408	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	-	-	0	-	-	0	-	-	-	-	-	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	37	0	0	20	0	447	22	0	453	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	227	-	-	235	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	776	0	0	767	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	776	-	-	767	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	9.8	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	776	767	-	-
HCM Lane V/C Ratio	-	-	0.047	0.026	-	-
HCM Control Delay (s)	-	-	9.9	9.8	-	-
HCM Lane LOS	-	-	A	A	-	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	436	5	0	471
Future Vol, veh/h	0	8	436	5	0	471
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	9	484	6	0	523

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	487	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	581	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	581	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	581	-
HCM Lane V/C Ratio	-	-	0.015	-
HCM Control Delay (s)	-	-	11.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	57	77	1	3	24
Future Vol, veh/h	20	57	77	1	3	24
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	63	86	1	3	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	87	0	-	0	194	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	107	-
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	1509	-	-	-	795	971
Stage 1	-	-	-	-	936	-
Stage 2	-	-	-	-	917	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1509	-	-	-	783	971
Mov Cap-2 Maneuver	-	-	-	-	783	-
Stage 1	-	-	-	-	922	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1509	-	-	-	946
HCM Lane V/C Ratio	0.015	-	-	-	0.032
HCM Control Delay (s)	7.4	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	25	358	12	0	248
Future Vol, veh/h	0	25	358	12	0	248
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	28	398	13	0	276

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	206	0	0	-	-
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	800	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	800	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

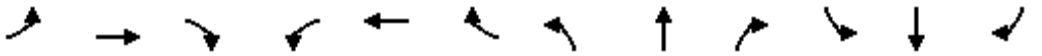
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	800	-
HCM Lane V/C Ratio	-	-	0.035	-
HCM Control Delay (s)	-	-	9.7	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	649	238	375	15	625	0
Future Volume (vph)	649	238	375	15	625	0
Turn Type	Prot	NA	NA	Perm	Split	NA
Protected Phases	7	4	8		2	2
Permitted Phases				8		
Detector Phase	7	4	8	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	35.0	85.0	50.0	50.0	35.0	35.0
Total Split (%)	29.2%	70.8%	41.7%	41.7%	29.2%	29.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 55 (46%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: E-470 NB Ramps & 56th Avenue



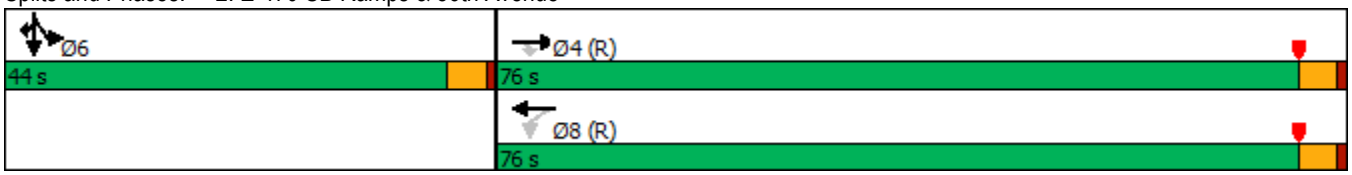
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	649	238	0	0	375	15	625	0	25	0	0	0
Future Volume (veh/h)	649	238	0	0	375	15	625	0	25	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking 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	721	264	0	0	417	17	694	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	803	1312	0	0	807	684	773	0	355			
Arrive On Green	0.08	0.23	0.00	0.00	0.43	0.43	0.22	0.00	0.22			
Sat Flow, veh/h	3456	1870	0	0	1870	1585	3456	0	1585			
Grp Volume(v), veh/h	721	264	0	0	417	17	694	0	28			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1870	1585	1728	0	1585			
Q Serve(g_s), s	24.8	13.7	0.0	0.0	19.6	0.7	23.4	0.0	1.7			
Cycle Q Clear(g_c), s	24.8	13.7	0.0	0.0	19.6	0.7	23.4	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	803	1312	0	0	807	684	773	0	355			
V/C Ratio(X)	0.90	0.20	0.00	0.00	0.52	0.02	0.90	0.00	0.08			
Avail Cap(c_a), veh/h	878	1312	0	0	807	684	878	0	403			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.36	0.36	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	54.0	19.0	0.0	0.0	25.0	19.6	45.2	0.0	36.8			
Incr Delay (d2), s/veh	4.6	0.1	0.0	0.0	2.4	0.1	11.1	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	15.4	9.4	0.0	0.0	13.6	0.5	16.7	0.0	1.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	19.1	0.0	0.0	27.3	19.7	56.3	0.0	36.9			
LnGrp LOS	E	B	A	A	C	B	E	A	D			
Approach Vol, veh/h		985			434			722				
Approach Delay, s/veh		48.0			27.0			55.6				
Approach LOS		D			C			E				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		31.3		88.7			32.4	56.3				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		30.5		80.5			30.5	45.5				
Max Q Clear Time (g_c+I1), s		25.4		15.7			26.8	21.6				
Green Ext Time (p_c), s		1.4		1.5			1.1	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			46.3									
HCM 6th LOS			D									

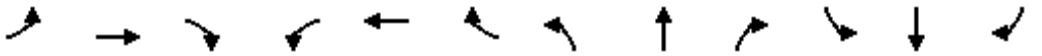
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	877	652	75	925	0	575
Future Volume (vph)	877	652	75	925	0	575
Turn Type	NA	Perm	Perm	NA	NA	Prot
Protected Phases	4			8	6	6
Permitted Phases		4	8			
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	76.0	76.0	76.0	76.0	44.0	44.0
Total Split (%)	63.3%	63.3%	63.3%	63.3%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 2: E-470 SB Ramps & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	877	652	75	925	0	0	0	0	10	0	575
Future Volume (veh/h)	0	877	652	75	925	0	0	0	0	10	0	575
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	974	724	83	1028	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	1446	296	1706	0				23	0	
Arrive On Green	0.00	0.91	0.91	0.91	0.91	0.00				0.01	0.00	0.00
Sat Flow, veh/h	0	1870	1585	289	1870	0				1781	0	1585
Grp Volume(v), veh/h	0	974	724	83	1028	0				11	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1585	289	1870	0				1781	0	1585
Q Serve(g_s), s	0.0	11.4	8.9	8.9	12.9	0.0				0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	11.4	8.9	20.3	12.9	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	1446	296	1706	0				23	0	
V/C Ratio(X)	0.00	0.57	0.50	0.28	0.60	0.00				0.48	0.00	
Avail Cap(c_a), veh/h	0	1706	1446	296	1706	0				586	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	0.72	0.72	0.60	0.60	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	1.0	0.9	2.8	1.0	0.0				58.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.0	0.9	1.4	1.0	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	0.9	0.6	0.7	0.8	0.0				0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.0	1.7	4.2	2.0	0.0				73.8	0.0	0.0
LnGrp LOS	A	A	A	A	A	A				E	A	
Approach Vol, veh/h		1698			1111						11	
Approach Delay, s/veh		1.9			2.1						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				71.5		39.5		71.5				
Max Q Clear Time (g_c+I1), s				13.4		2.7		22.3				
Green Ext Time (p_c), s				15.0		0.0		13.9				

Intersection Summary												
HCM 6th Ctrl Delay			2.3									
HCM 6th LOS			A									

Notes

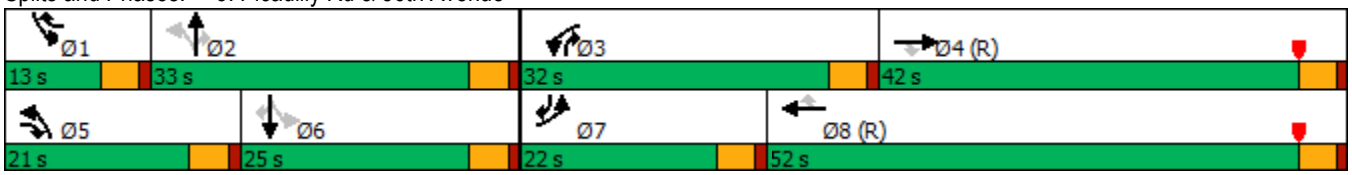
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

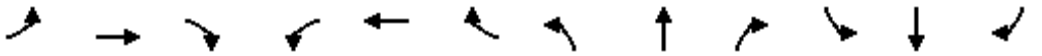
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	300	227	484	438	103	192	118	267	102	102	110
Future Volume (vph)	95	300	227	484	438	103	192	118	267	102	102	110
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	22.0	42.0	21.0	32.0	52.0	13.0	21.0	33.0	32.0	13.0	25.0	22.0
Total Split (%)	18.3%	35.0%	17.5%	26.7%	43.3%	10.8%	17.5%	27.5%	26.7%	10.8%	20.8%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 34 (28%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	300	227	484	438	103	192	118	267	102	102	110
Future Volume (veh/h)	95	300	227	484	438	103	192	118	267	102	102	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	333	252	538	487	114	213	131	297	113	113	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	132	796	862	616	1883	950	353	330	563	299	239	320
Arrive On Green	0.07	0.43	0.43	0.18	0.53	0.53	0.20	0.29	0.29	0.07	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	106	333	252	538	487	114	213	131	297	113	113	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	7.0	14.9	10.4	18.2	9.0	3.7	12.0	6.7	18.1	6.5	6.7	8.0
Cycle Q Clear(g_c), s	7.0	14.9	10.4	18.2	9.0	3.7	12.0	6.7	18.1	6.5	6.7	8.0
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	132	796	862	616	1883	950	353	330	563	299	239	320
V/C Ratio(X)	0.80	0.42	0.29	0.87	0.26	0.12	0.60	0.40	0.53	0.38	0.47	0.38
Avail Cap(c_a), veh/h	260	796	862	792	1883	950	387	444	659	302	320	388
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	54.7	24.1	14.9	48.0	15.4	10.4	34.1	37.2	26.4	41.3	48.6	41.4
Incr Delay (d2), s/veh	10.7	1.6	0.9	8.7	0.3	0.3	2.3	0.8	0.8	0.8	1.4	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	6.3	10.9	6.7	13.1	6.3	2.3	8.4	5.3	9.4	5.2	5.7	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	25.7	15.7	56.7	15.7	10.6	36.3	38.0	27.1	42.1	50.0	42.1
LnGrp LOS	E	C	B	E	B	B	D	D	C	D	D	D
Approach Vol, veh/h		691			1139			641			348	
Approach Delay, s/veh		28.1			34.5			32.4			44.7	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	25.7	25.9	55.6	18.7	19.9	13.4	68.1
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	8.5	28.5	27.5	37.5	16.5	20.5	17.5	47.5
Max Q Clear Time (g_c+I1), s	8.5	20.1	20.2	16.9	14.0	10.0	9.0	11.0
Green Ext Time (p_c), s	0.0	1.1	1.2	2.6	0.1	0.6	0.1	3.5

Intersection Summary	
HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	152	0	400	148	255	481	25
Future Vol, veh/h	0	0	30	0	0	152	0	400	148	255	481	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	-	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	169	0	444	164	283	534	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	534	-	-	444	562	0	0	608	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	*685	0	0	764	1012	-	-	940	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*685	-	-	764	1012	-	-	940	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	11	0	3.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1012	-	-	685	764	940	-	-
HCM Lane V/C Ratio	-	-	-	0.049	0.221	0.301	-	-
HCM Control Delay (s)	0	-	-	10.5	11	10.5	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	1.3	-	-

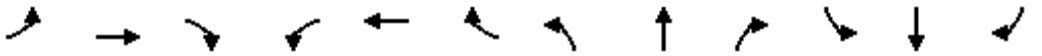
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	0	137	0	15	549	34	76	415
Future Volume (vph)	0	137	0	15	549	34	76	415
Turn Type	NA	pm+pt	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases	4	3	8		2		1	6
Permitted Phases		8		2		2	6	
Detector Phase	4	3	8	2	2	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	16.0	39.0	69.0	69.0	69.0	12.0	81.0
Total Split (%)	19.2%	13.3%	32.5%	57.5%	57.5%	57.5%	10.0%	67.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 5: Picadilly Rd & 54th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	137	0	7	15	549	34	76	415	20
Future Volume (veh/h)	0	0	5	137	0	7	15	549	34	76	415	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	0	0	6	152	0	8	17	610	38	84	461	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	60	0	25	247	0	236	698	1308	1109	564	1374	66
Arrive On Green	0.00	0.00	0.02	0.10	0.00	0.15	0.70	0.70	0.70	0.08	1.00	1.00
Sat Flow, veh/h	1407	0	1585	1781	0	1585	912	1870	1585	1781	1771	84
Grp Volume(v), veh/h	0	0	6	152	0	8	17	610	38	84	0	483
Grp Sat Flow(s),veh/h/ln	1407	0	1585	1781	0	1585	912	1870	1585	1781	0	1855
Q Serve(g_s), s	0.0	0.0	0.4	9.8	0.0	0.5	0.7	17.5	0.9	1.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.4	9.8	0.0	0.5	0.7	17.5	0.9	1.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	60	0	25	247	0	236	698	1308	1109	564	0	1440
V/C Ratio(X)	0.00	0.00	0.24	0.61	0.00	0.03	0.02	0.47	0.03	0.15	0.00	0.34
Avail Cap(c_a), veh/h	255	0	244	247	0	456	698	1308	1109	605	0	1440
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)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	58.4	49.9	0.0	43.7	5.5	8.0	5.6	5.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	5.0	4.5	0.0	0.1	0.1	1.2	0.1	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.4	8.2	0.0	0.4	0.2	10.7	0.5	0.8	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	63.4	54.4	0.0	43.7	5.6	9.2	5.6	5.4	0.0	0.6
LnGrp LOS	A	A	E	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		6			160			665			567	
Approach Delay, s/veh		63.4			53.8			8.9			1.3	
Approach LOS		E			D			A			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	9.2	88.4	16.0	6.4		97.6		22.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	7.5	64.5	11.5	18.5		76.5		34.5				
Max Q Clear Time (g_c+I1), s	3.5	19.5	11.8	2.4		2.0		2.5				
Green Ext Time (p_c), s	0.1	4.6	0.0	0.0		3.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	20	65	0	44	20	560	60	46	516	20
Future Vol, veh/h	15	0	20	65	0	44	20	560	60	46	516	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	-	-	200	-	-	200	-	100	200	-	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	17	0	22	72	0	49	22	622	67	51	573	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1399	1408	573	1363	1363	622	595	0	0	689	0	0
Stage 1	675	675	-	666	666	-	-	-	-	-	-	-
Stage 2	724	733	-	697	697	-	-	-	-	-	-	-
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	80	92	*659	88	102	487	977	-	-	905	-	-
Stage 1	522	473	-	449	457	-	-	-	-	-	-	-
Stage 2	417	426	-	500	457	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1		1	-	-		-	-
Mov Cap-1 Maneuver	67	85	*659	80	94	487	977	-	-	905	-	-
Mov Cap-2 Maneuver	67	85	-	80	94	-	-	-	-	-	-	-
Stage 1	510	447	-	439	446	-	-	-	-	-	-	-
Stage 2	367	416	-	456	431	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.6	103.8	0.3	0.7
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	977	-	-	67	659	80	487	905	-	-
HCM Lane V/C Ratio	0.023	-	-	0.249	0.034	0.903	0.1	0.056	-	-
HCM Control Delay (s)	8.8	-	-	75.7	10.7	165.1	13.2	9.2	-	-
HCM Lane LOS	A	-	-	F	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.1	4.7	0.3	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	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	590	10	5	555	25
Future Vol, veh/h	0	0	20	0	0	5	15	590	10	5	555	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	-	-	-	-	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	22	0	0	6	17	656	11	6	617	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	617	-	-	662	645	0	0	667	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	*607	0	0	*581	*908	-	-	*869	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*607	-	-	*581	*908	-	-	*869	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.2	11.3	0.2	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 908	-	-	607	581	* 869	-	-
HCM Lane V/C Ratio	0.018	-	-	0.037	0.01	0.006	-	-
HCM Control Delay (s)	9	-	-	11.2	11.3	9.2	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0	0	-	-

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

Intersection	
Int Delay, s/veh	0.4

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	590	10	5	560	10
Future Vol, veh/h	0	0	10	0	0	10	20	590	10	5	560	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	656	11	6	622	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	628	-	-	662	633	0	0	667	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	483	0	0	*593	950	-	-	*888	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %						1		-	-	1	-	-
Mov Cap-1 Maneuver	-	-	483	-	-	*593	950	-	-	*888	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	11.2	0.3	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	950	-	-	483	593	* 888	-	-
HCM Lane V/C Ratio	0.023	-	-	0.023	0.019	0.006	-	-
HCM Control Delay (s)	8.9	-	-	12.6	11.2	9.1	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	-	-

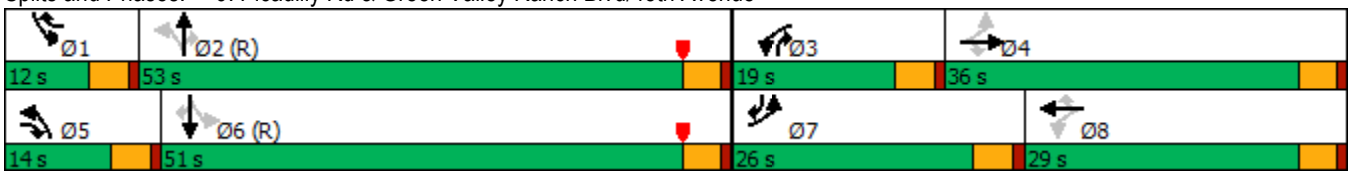
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

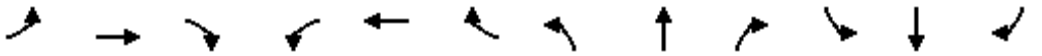
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	152	80	117	132	77	100	359	122	76	301	208
Future Volume (vph)	184	152	80	117	132	77	100	359	122	76	301	208
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	26.0	36.0	14.0	19.0	29.0	12.0	14.0	53.0	19.0	12.0	51.0	26.0
Total Split (%)	21.7%	30.0%	11.7%	15.8%	24.2%	10.0%	11.7%	44.2%	15.8%	10.0%	42.5%	21.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 88 (73%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd/48th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	152	80	117	132	77	100	359	122	76	301	208
Future Volume (veh/h)	184	152	80	117	132	77	100	359	122	76	301	208
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	204	169	89	130	147	86	111	399	136	84	334	231
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	298	257	283	262	187	221	557	1108	1067	549	1105	1124
Arrive On Green	0.12	0.14	0.14	0.08	0.10	0.10	0.04	0.59	0.59	0.04	0.59	0.59
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	204	169	89	130	147	86	111	399	136	84	334	231
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.9	10.3	5.9	7.7	9.2	5.9	2.9	13.3	3.7	2.2	10.7	6.0
Cycle Q Clear(g_c), s	11.9	10.3	5.9	7.7	9.2	5.9	2.9	13.3	3.7	2.2	10.7	6.0
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	298	257	283	262	187	221	557	1108	1067	549	1105	1124
V/C Ratio(X)	0.69	0.66	0.31	0.50	0.78	0.39	0.20	0.36	0.13	0.15	0.30	0.21
Avail Cap(c_a), veh/h	406	491	481	333	382	386	625	1108	1067	590	1105	1124
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	40.3	49.1	42.9	43.6	52.7	47.0	9.2	12.7	7.0	9.4	12.2	5.9
Incr Delay (d2), s/veh	2.8	2.9	0.6	1.4	7.1	1.1	0.2	0.9	0.2	0.1	0.7	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	9.2	8.6	4.2	6.3	8.2	4.3	1.9	9.3	2.2	1.5	7.8	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.1	51.9	43.6	45.0	59.8	48.1	9.4	13.6	7.2	9.5	12.9	6.4
LnGrp LOS	D	D	D	D	E	D	A	B	A	A	B	A
Approach Vol, veh/h		462			363			646			649	
Approach Delay, s/veh		46.4			51.7			11.5			10.2	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	75.6	14.2	21.0	9.4	75.4	18.7	16.5
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	7.5	48.5	14.5	31.5	9.5	46.5	21.5	24.5
Max Q Clear Time (g_c+I1), s	4.2	15.3	9.7	12.3	4.9	12.7	13.9	11.2
Green Ext Time (p_c), s	0.0	2.9	0.1	1.1	0.1	2.8	0.3	0.8

Intersection Summary	
HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	294	300	0	0	20
Future Vol, veh/h	25	294	300	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	327	333	0	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	333	0	-	0	716	333
Stage 1	-	-	-	-	333	-
Stage 2	-	-	-	-	383	-
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	1226	-	-	-	417	709
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	746	-
Platoon blocked, %		-	-	-	1	
Mov Cap-1 Maneuver	1226	-	-	-	407	709
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	746	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1226	-	-	-	-	709
HCM Lane V/C Ratio	0.023	-	-	-	-	0.031
HCM Control Delay (s)	8	-	-	-	0	10.2
HCM Lane LOS	A	-	-	-	A	B
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.1

Intersection	
Int Delay, s/veh	13.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	233	40	21	5	63	112	24	77	2	123	73	213
Future Vol, veh/h	233	40	21	5	63	112	24	77	2	123	73	213
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	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	259	44	23	6	70	124	27	86	2	137	81	237

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	194	0	0	67	0	0	877	780	56	700	667	70
Stage 1	-	-	-	-	-	-	574	574	-	82	82	-
Stage 2	-	-	-	-	-	-	303	206	-	618	585	-
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	1379	-	-	1535	-	-	269	327	1011	354	380	993
Stage 1	-	-	-	-	-	-	504	503	-	926	827	-
Stage 2	-	-	-	-	-	-	706	731	-	477	498	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1379	-	-	1535	-	-	140	265	1011	228	307	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	265	-	228	307	-
Stage 1	-	-	-	-	-	-	409	408	-	752	824	-
Stage 2	-	-	-	-	-	-	483	728	-	306	404	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.5	0.2	27.4	21.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	140	270	1379	-	-	1535	-	-	228	307	993
HCM Lane V/C Ratio	0.19	0.325	0.188	-	-	0.004	-	-	0.599	0.264	0.238
HCM Control Delay (s)	36.7	24.6	8.2	-	-	7.4	0	-	41.9	20.9	9.8
HCM Lane LOS	E	C	A	-	-	A	A	-	E	C	A
HCM 95th %tile Q(veh)	0.7	1.4	0.7	-	-	0	-	-	3.4	1	0.9

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	23	0	22	20	414	8	48	377	0
Future Vol, veh/h	0	0	10	23	0	22	20	414	8	48	377	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	26	0	24	22	460	9	53	419	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	799	1038	210	825	1034	235	419	0	0	469	0	0
Stage 1	525	525	-	509	509	-	-	-	-	-	-	-
Stage 2	274	513	-	316	525	-	-	-	-	-	-	-
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	276	229	796	265	231	767	1137	-	-	1089	-	-
Stage 1	504	528	-	515	536	-	-	-	-	-	-	-
Stage 2	709	534	-	670	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	252	212	796	247	214	767	1137	-	-	1089	-	-
Mov Cap-2 Maneuver	252	212	-	247	214	-	-	-	-	-	-	-
Stage 1	491	502	-	502	522	-	-	-	-	-	-	-
Stage 2	669	520	-	628	502	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	16.3	0.5	1
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	796	369	1089	-	-
HCM Lane V/C Ratio	0.02	-	-	0.014	0.136	0.049	-	-
HCM Control Delay (s)	8.2	0.1	-	9.6	16.3	8.5	-	-
HCM Lane LOS	A	A	-	A	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.5	0.2	-	-

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	3	45	9	69	58	89	12	366	57	68	347	7
Future Vol, veh/h	3	45	9	69	58	89	12	366	57	68	347	7
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	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	3	50	10	77	64	99	13	407	63	76	386	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	804	1038	197	803	979	204	394	0	0	470	0	0
Stage 1	542	542	-	433	433	-	-	-	-	-	-	-
Stage 2	262	496	-	370	546	-	-	-	-	-	-	-
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	274	229	811	275	249	803	1161	-	-	1088	-	-
Stage 1	492	518	-	571	580	-	-	-	-	-	-	-
Stage 2	720	544	-	622	516	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	176	210	811	208	228	803	1161	-	-	1088	-	-
Mov Cap-2 Maneuver	176	210	-	208	228	-	-	-	-	-	-	-
Stage 1	485	482	-	562	571	-	-	-	-	-	-	-
Stage 2	552	536	-	512	480	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.9	23.8	0.3	1.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1161	-	-	176	240	208	402	1088	-	-
HCM Lane V/C Ratio	0.011	-	-	0.019	0.25	0.369	0.406	0.069	-	-
HCM Control Delay (s)	8.1	0.1	-	25.8	24.9	32.1	19.9	8.6	-	-
HCM Lane LOS	A	A	-	D	C	D	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1	1.6	1.9	0.2	-	-

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	4	49	15	0	72	5	10	0	5	2	0	2
Future Vol, veh/h	4	49	15	0	72	5	10	0	5	2	0	2
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	54	17	0	80	6	11	0	6	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	86	0	0	71	0	0	155	157	63	157	162	83
Stage 1	-	-	-	-	-	-	71	71	-	83	83	-
Stage 2	-	-	-	-	-	-	84	86	-	74	79	-
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	1510	-	-	1529	-	-	812	735	1002	809	730	976
Stage 1	-	-	-	-	-	-	939	836	-	925	826	-
Stage 2	-	-	-	-	-	-	924	824	-	935	829	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1510	-	-	1529	-	-	809	733	1002	803	728	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	809	733	-	803	728	-
Stage 1	-	-	-	-	-	-	936	833	-	922	826	-
Stage 2	-	-	-	-	-	-	922	824	-	927	827	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	9.2	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	865	1510	-	-	1529	-	-	881
HCM Lane V/C Ratio	0.019	0.003	-	-	-	-	-	0.005
HCM Control Delay (s)	9.2	7.4	-	-	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	68	15	0	84	10	0
Future Vol, veh/h	68	15	0	84	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	76	17	0	93	11	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	93	0	178	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	93	-
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	-	-	1501	-	812	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1501	-	812	974
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	812	-	-	1501	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	9.5	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	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	3	79	20	0	90	4	15	0	0	4	0	3
Future Vol, veh/h	3	79	20	0	90	4	15	0	0	4	0	3
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	3	88	22	0	100	4	17	0	0	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	104	0	0	110	0	0	209	209	99	207	218	102
Stage 1	-	-	-	-	-	-	105	105	-	102	102	-
Stage 2	-	-	-	-	-	-	104	104	-	105	116	-
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	1488	-	-	1480	-	-	748	688	957	751	680	953
Stage 1	-	-	-	-	-	-	901	808	-	904	811	-
Stage 2	-	-	-	-	-	-	902	809	-	901	800	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1488	-	-	1480	-	-	744	687	957	749	679	953
Mov Cap-2 Maneuver	-	-	-	-	-	-	744	687	-	749	679	-
Stage 1	-	-	-	-	-	-	899	806	-	902	811	-
Stage 2	-	-	-	-	-	-	899	809	-	899	798	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	10	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	744	1488	-	-	1480	-	-	825
HCM Lane V/C Ratio	0.022	0.002	-	-	-	-	-	0.009
HCM Control Delay (s)	10	7.4	-	-	0	-	-	9.4
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	19	429	29	25	422
Future Vol, veh/h	0	19	429	29	25	422
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	21	477	32	28	469

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	255	0	0	509	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	744	-	-	1052	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	744	-	-	1052	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	744	1052	-
HCM Lane V/C Ratio	-	-	0.028	0.026	-
HCM Control Delay (s)	-	-	10	8.5	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	0	6	64	0	152	77	332	40	108	377	19
Future Vol, veh/h	47	0	6	64	0	152	77	332	40	108	377	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	0	-	-	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	52	0	7	71	0	169	86	369	44	120	419	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1027	1255	220	1013	1243	207	440	0	0	413	0	0
Stage 1	670	670	-	563	563	-	-	-	-	-	-	-
Stage 2	357	585	-	450	680	-	-	-	-	-	-	-
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	189	170	784	193	173	799	1116	-	-	1142	-	-
Stage 1	413	454	-	478	507	-	-	-	-	-	-	-
Stage 2	633	496	-	558	449	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	129	140	784	166	143	799	1116	-	-	1142	-	-
Mov Cap-2 Maneuver	129	140	-	166	143	-	-	-	-	-	-	-
Stage 1	381	406	-	441	468	-	-	-	-	-	-	-
Stage 2	461	458	-	495	402	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46	20	1.5	1.8
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1116	-	-	129	784	166	799	1142	-	-
HCM Lane V/C Ratio	0.077	-	-	0.405	0.009	0.428	0.211	0.105	-	-
HCM Control Delay (s)	8.5	-	-	50.7	9.6	42	10.7	8.5	-	-
HCM Lane LOS	A	-	-	F	A	E	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.7	0	1.9	0.8	0.4	-	-

Intersection	
Int Delay, s/veh	11.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	148	0	77	35	0	34	74	446	11	34	392	80
Future Vol, veh/h	148	0	77	35	0	34	74	446	11	34	392	80
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	-	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	164	0	86	39	0	38	82	496	12	38	436	89

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	924	1184	218	960	1267	254	525	0	0	508	0	0
Stage 1	512	512	-	666	666	-	-	-	-	-	-	-
Stage 2	412	672	-	294	601	-	-	-	-	-	-	-
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	224	188	786	211	168	745	1038	-	-	1053	-	-
Stage 1	513	535	-	415	456	-	-	-	-	-	-	-
Stage 2	588	453	-	690	488	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	194	167	786	172	149	745	1038	-	-	1053	-	-
Mov Cap-2 Maneuver	194	167	-	172	149	-	-	-	-	-	-	-
Stage 1	472	516	-	382	420	-	-	-	-	-	-	-
Stage 2	514	417	-	593	470	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	56.1	21.2	1.2	0.6
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1038	-	-	194	786	172	745	1053	-	-
HCM Lane V/C Ratio	0.079	-	-	0.848	0.109	0.226	0.051	0.036	-	-
HCM Control Delay (s)	8.8	-	-	80.1	10.1	31.9	10.1	8.5	-	-
HCM Lane LOS	A	-	-	F	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	6.2	0.4	0.8	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	498	123	0	937	0	162
Future Vol, veh/h	498	123	0	937	0	162
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	553	137	0	1041	0	180

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	277
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	720
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	720
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.7
HCM LOS			B

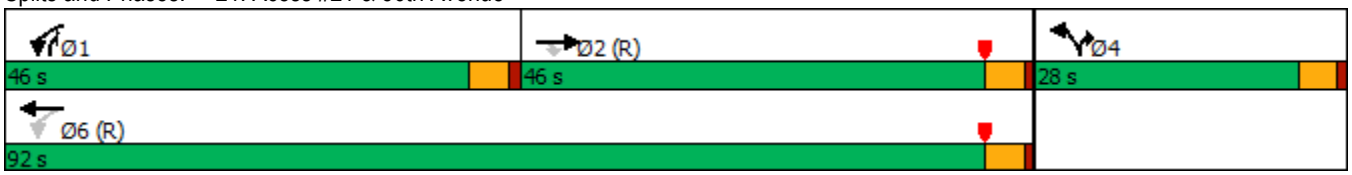
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	720	-	-	-
HCM Lane V/C Ratio	0.25	-	-	-
HCM Control Delay (s)	11.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1	-	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	618	42	408	779	158	319
Future Volume (vph)	618	42	408	779	158	319
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov
Protected Phases	2		1	6	4	4 1
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4 1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	
Total Split (s)	46.0	46.0	46.0	92.0	28.0	
Total Split (%)	38.3%	38.3%	38.3%	76.7%	23.3%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 21: Acess #21 & 56th Avenue



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	618	42	408	779	158	319
Future Volume (veh/h)	618	42	408	779	158	319
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	687	47	453	866	176	354
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	1916	855	642	2591	349	552
Arrive On Green	0.54	0.54	0.31	1.00	0.20	0.20
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	687	47	453	866	176	354
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	13.3	1.7	14.9	0.0	10.6	22.5
Cycle Q Clear(g_c), s	13.3	1.7	14.9	0.0	10.6	22.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1916	855	642	2591	349	552
V/C Ratio(X)	0.36	0.06	0.71	0.33	0.50	0.64
Avail Cap(c_a), veh/h	1916	855	986	2591	349	552
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.8	13.1	7.6	0.0	43.1	32.8
Incr Delay (d2), s/veh	0.5	0.1	1.4	0.3	5.1	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.9	1.1	6.2	0.2	8.9	27.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.3	13.3	9.0	0.3	48.2	38.4
LnGrp LOS	B	B	A	A	D	D
Approach Vol, veh/h	734			1319	530	
Approach Delay, s/veh	16.1			3.3	41.7	
Approach LOS	B			A	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	22.8	69.2		28.0		92.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	41.5	41.5		23.5		87.5
Max Q Clear Time (g_c+I1), s	16.9	15.3		24.5		2.0
Green Ext Time (p_c), s	1.5	4.7		0.0		7.8

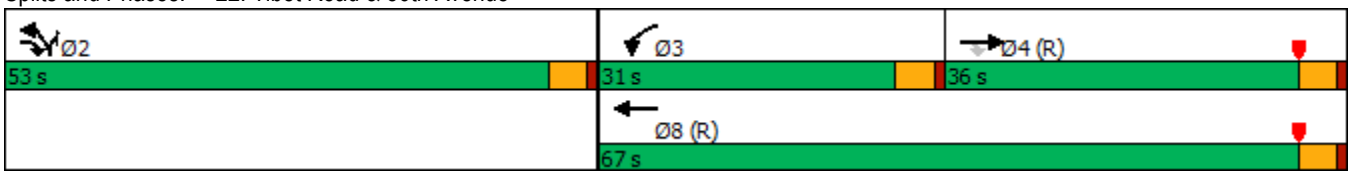
Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	905	109	396	1004	182	431
Future Volume (vph)	905	109	396	1004	182	431
Turn Type	NA	pm+ov	Prot	NA	Prot	Prot
Protected Phases	4	2	3	8	2	2
Permitted Phases		4				
Detector Phase	4	2	3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	36.0	53.0	31.0	67.0	53.0	53.0
Total Split (%)	30.0%	44.2%	25.8%	55.8%	44.2%	44.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max	Max	None	C-Max	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 80 (67%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 22: Tibet Road & 56th Avenue



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	905	109	396	1004	182	431
Future Volume (veh/h)	905	109	396	1004	182	431
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	1006	121	440	1116	202	479
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	1183	1168	520	1851	720	641
Arrive On Green	0.67	0.67	0.15	0.52	0.40	0.40
Sat Flow, veh/h	3647	1585	3456	3647	1781	1585
Grp Volume(v), veh/h	1006	121	440	1116	202	479
Grp Sat Flow(s),veh/h/ln	1777	1585	1728	1777	1781	1585
Q Serve(g_s), s	26.2	1.4	14.9	26.3	9.1	31.0
Cycle Q Clear(g_c), s	26.2	1.4	14.9	26.3	9.1	31.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1183	1168	520	1851	720	641
V/C Ratio(X)	0.85	0.10	0.85	0.60	0.28	0.75
Avail Cap(c_a), veh/h	1183	1168	763	1851	720	641
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	17.7	2.2	49.6	20.1	24.0	30.5
Incr Delay (d2), s/veh	7.7	0.2	5.9	1.5	1.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.0	2.2	11.1	16.5	7.3	18.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.5	2.3	55.6	21.5	25.0	38.3
LnGrp LOS	C	A	E	C	C	D
Approach Vol, veh/h	1127			1556	681	
Approach Delay, s/veh	23.0			31.2	34.4	
Approach LOS	C			C	C	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		53.0	22.5	44.5		67.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s		48.5	26.5	31.5		62.5
Max Q Clear Time (g_c+I1), s		33.0	16.9	28.2		28.3
Green Ext Time (p_c), s		2.2	1.2	2.0		10.2

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	909	28	0	1187	0	105
Future Vol, veh/h	909	28	0	1187	0	105
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	1010	31	0	1319	0	117

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	505
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	*721
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*721
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	721	-	-	-
HCM Lane V/C Ratio	0.162	-	-	-
HCM Control Delay (s)	11	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.6	-	-	-

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1320	16	0	1400	0	44
Future Vol, veh/h	1320	16	0	1400	0	44
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	1467	18	0	1556	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	743
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	358
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	358
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	358	-	-	-
HCM Lane V/C Ratio	0.137	-	-	-
HCM Control Delay (s)	16.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1325	39	212	1288	112	204
Future Volume (vph)	1325	39	212	1288	112	204
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov
Protected Phases	2		1	6	4	4 1
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4 1
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	
Total Split (s)	72.0	72.0	25.0	97.0	23.0	
Total Split (%)	60.0%	60.0%	20.8%	80.8%	19.2%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	None	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 25: Acces #25 & 56th Avenue

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1325	39	212	1288	112	204
Future Volume (veh/h)	1325	39	212	1288	112	204
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	1472	43	236	1431	124	227
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	2391	1066	410	2739	275	340
Arrive On Green	1.00	1.00	0.08	1.00	0.15	0.15
Sat Flow, veh/h	3647	1585	1781	3647	1781	1585
Grp Volume(v), veh/h	1472	43	236	1431	124	227
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1777	1781	1585
Q Serve(g_s), s	0.0	0.0	4.7	0.0	7.6	15.7
Cycle Q Clear(g_c), s	0.0	0.0	4.7	0.0	7.6	15.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2391	1066	410	2739	275	340
V/C Ratio(X)	0.62	0.04	0.58	0.52	0.45	0.67
Avail Cap(c_a), veh/h	2391	1066	606	2739	275	340
HCM Platoon Ratio	2.00	2.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.13	0.13	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	4.3	0.0	46.1	43.2
Incr Delay (d2), s/veh	1.2	0.1	0.2	0.0	5.3	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	2.2	0.0	6.8	20.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	1.2	0.1	4.5	0.0	51.4	53.1
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h	1515			1667	351	
Approach Delay, s/veh	1.2			0.7	52.5	
Approach LOS	A			A	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.8	85.2		23.0		97.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	20.5	67.5		18.5		92.5
Max Q Clear Time (g_c+I1), s	6.7	2.0		17.7		2.0
Green Ext Time (p_c), s	0.6	19.0		0.1		18.3

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	129	135	2	2	44
Future Vol, veh/h	36	129	135	2	2	44
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	40	143	150	2	2	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	152	0	-	0	374	151
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	223	-
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	1429	-	-	-	627	895
Stage 1	-	-	-	-	877	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1429	-	-	-	609	895
Mov Cap-2 Maneuver	-	-	-	-	609	-
Stage 1	-	-	-	-	852	-
Stage 2	-	-	-	-	814	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1429	-	-	-	877
HCM Lane V/C Ratio	0.028	-	-	-	0.058
HCM Control Delay (s)	7.6	-	-	-	9.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

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	73	0	0	26	0	588	40	0	433	71
Future Vol, veh/h	0	0	73	0	0	26	0	588	40	0	433	71
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
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	81	0	0	29	0	653	44	0	481	79

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	241	-	-	349	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	760	0	0	647	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	760	-	-	647	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	10.8	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	760	647	-	-
HCM Lane V/C Ratio	-	-	0.107	0.045	-	-
HCM Control Delay (s)	-	-	10.3	10.8	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	546	11	0	511
Future Vol, veh/h	0	2	546	11	0	511
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	2	607	12	0	568

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	613	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	492	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	492	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	492	-
HCM Lane V/C Ratio	-	-	0.005	-
HCM Control Delay (s)	-	-	12.4	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	107	104	2	5	33
Future Vol, veh/h	25	107	104	2	5	33
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	28	119	116	2	6	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	118	0	-	0	292	117
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	175	-
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	1470	-	-	-	699	935
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1470	-	-	-	686	935
Mov Cap-2 Maneuver	-	-	-	-	686	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	855	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1470	-	-	-	892
HCM Lane V/C Ratio	0.019	-	-	-	0.047
HCM Control Delay (s)	7.5	-	-	-	9.2
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	34	408	15	0	409
Future Vol, veh/h	0	34	408	15	0	409
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	38	453	17	0	454

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	235	0	0	-	-
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	767	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	767	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	767	-
HCM Lane V/C Ratio	-	-	0.049	-
HCM Control Delay (s)	-	-	9.9	-
HCM Lane LOS	-	-	A	-
HCM 95th %tile Q(veh)	-	-	0.2	-

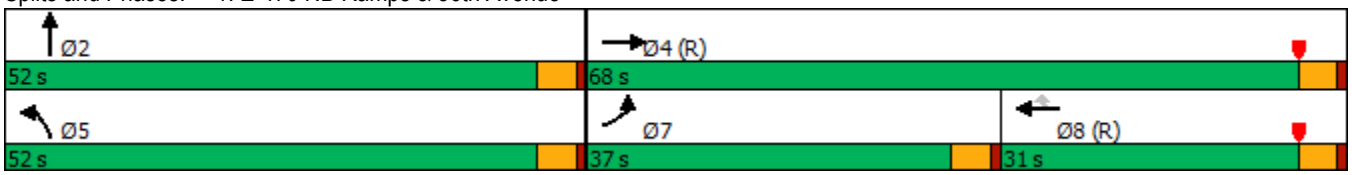
APPENDIX G. LONG-RANGE FUTURE TOTAL TRAFFIC LOS

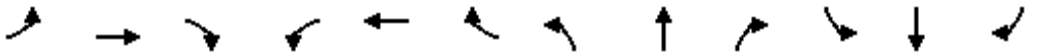
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	363	467	465	10	587	0
Future Volume (vph)	363	467	465	10	587	0
Turn Type	Prot	NA	NA	Perm	Prot	NA
Protected Phases	7	4	8		5	2
Permitted Phases				8		
Detector Phase	7	4	8	8	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	37.0	68.0	31.0	31.0	52.0	52.0
Total Split (%)	30.8%	56.7%	25.8%	25.8%	43.3%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 85 (71%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 1: E-470 NB Ramps & 56th Avenue





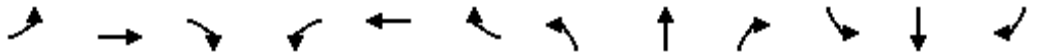
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	467	0	0	465	10	587	0	140	0	0	0
Future Volume (veh/h)	363	467	0	0	465	10	587	0	140	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
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	403	519	0	0	517	11	652	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	475	3567	0	0	2673	830	783	0	359			
Arrive On Green	0.27	1.00	0.00	0.00	0.52	0.52	0.23	0.00	0.23			
Sat Flow, veh/h	3456	5274	0	0	5274	1585	3456	0	1585			
Grp Volume(v), veh/h	403	519	0	0	517	11	652	0	156			
Grp Sat Flow(s),veh/h/ln	1728	1702	0	0	1702	1585	1728	0	1585			
Q Serve(g_s), s	13.2	0.0	0.0	0.0	6.4	0.4	21.6	0.0	10.1			
Cycle Q Clear(g_c), s	13.2	0.0	0.0	0.0	6.4	0.4	21.6	0.0	10.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	475	3567	0	0	2673	830	783	0	359			
V/C Ratio(X)	0.85	0.15	0.00	0.00	0.19	0.01	0.83	0.00	0.43			
Avail Cap(c_a), veh/h	936	3567	0	0	2673	830	1368	0	627			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.3	0.0	0.0	0.0	15.2	13.7	44.2	0.0	39.8			
Incr Delay (d2), s/veh	4.1	0.1	0.0	0.0	0.2	0.0	2.4	0.0	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			
%ile BackOfQ(95%),veh/ln	8.6	0.0	0.0	0.0	4.3	0.3	14.5	0.0	7.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	0.1	0.0	0.0	15.3	13.7	46.7	0.0	40.6			
LnGrp LOS	D	A	A	A	B	B	D	A	D			
Approach Vol, veh/h		922			528			808				
Approach Delay, s/veh		20.4			15.3			45.5				
Approach LOS		C			B			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		31.7		88.3			21.0	67.3				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		47.5		63.5			32.5	26.5				
Max Q Clear Time (g_c+I1), s		23.6		2.0			15.2	8.4				
Green Ext Time (p_c), s		3.6		3.6			1.3	3.0				
Intersection Summary												
HCM 6th Ctrl Delay			28.2									
HCM 6th LOS			C									

Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	790	462	30	1022	0	532
Future Volume (vph)	790	462	30	1022	0	532
Turn Type	NA	Perm	pm+pt	NA	NA	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	64.0	64.0	12.0	76.0	44.0	44.0
Total Split (%)	53.3%	53.3%	10.0%	63.3%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 2: E-470 SB Ramps & 56th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱	↰	↑↑↑						↲	↱
Traffic Volume (veh/h)	0	790	462	30	1022	0	0	0	0	40	0	532
Future Volume (veh/h)	0	790	462	30	1022	0	0	0	0	40	0	532
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	878	513	33	1136	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	2709	841	316	3042	0				586	0	
Arrive On Green	0.00	1.00	1.00	0.03	0.60	0.00				0.33	0.00	0.00
Sat Flow, veh/h	0	5274	1585	1781	5274	0				1781	0	1585
Grp Volume(v), veh/h	0	878	513	33	1136	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	0.0	0.0	1.0	13.9	0.0				2.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	13.9	0.0				2.0	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	2709	841	316	3042	0				586	0	
V/C Ratio(X)	0.00	0.32	0.61	0.10	0.37	0.00				0.08	0.00	
Avail Cap(c_a), veh/h	0	2709	841	377	3042	0				586	0	
HCM Platoon Ratio	1.00	2.00	2.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.92	0.92	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	11.1	12.6	0.0				27.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.3	0.1	0.3	0.0				0.2	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	0.0	0.1	0.7	8.4	0.0				1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.3	11.2	12.9	0.0				27.9	0.0	0.0
LnGrp LOS	A	A	A	B	B	A				C	A	
Approach Vol, veh/h		1391			1169						44	
Approach Delay, s/veh		0.1			12.9						27.9	
Approach LOS		A			B						C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	7.8	68.2		44.0		76.0						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	7.5	59.5		39.5		71.5						
Max Q Clear Time (g_c+I1), s	3.0	2.0		4.0		15.9						
Green Ext Time (p_c), s	0.0	9.7		0.2		9.5						

Intersection Summary												
HCM 6th Ctrl Delay			6.3									
HCM 6th LOS			A									

Notes

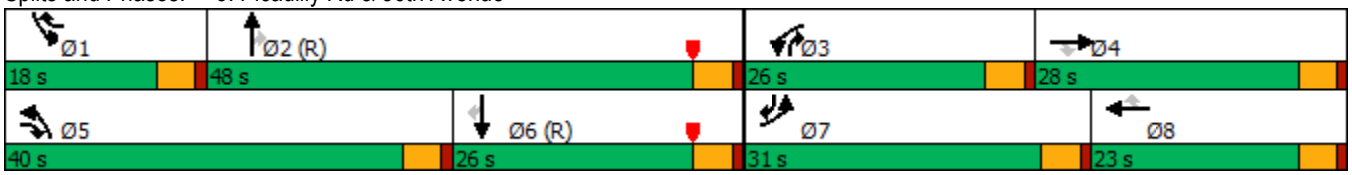
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

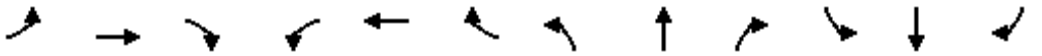
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	508	494	346	403	101	296	853	286	87	428	180
Future Volume (vph)	205	508	494	346	403	101	296	853	286	87	428	180
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	31.0	28.0	40.0	26.0	23.0	18.0	40.0	48.0	26.0	18.0	26.0	31.0
Total Split (%)	25.8%	23.3%	33.3%	21.7%	19.2%	15.0%	33.3%	40.0%	21.7%	15.0%	21.7%	25.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 94 (78%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	508	494	346	403	101	296	853	286	87	428	180
Future Volume (veh/h)	205	508	494	346	403	101	296	853	286	87	428	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	564	549	384	448	112	329	948	318	97	476	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	259	1000	494	454	928	396	401	2321	929	121	2077	875
Arrive On Green	0.15	0.20	0.20	0.13	0.18	0.18	0.23	0.91	0.91	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	228	564	549	384	448	112	329	948	318	97	476	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	15.1	12.0	23.5	13.0	9.4	6.8	10.8	3.2	2.8	6.4	7.3	7.8
Cycle Q Clear(g_c), s	15.1	12.0	23.5	13.0	9.4	6.8	10.8	3.2	2.8	6.4	7.3	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	259	1000	494	454	928	396	401	2321	929	121	2077	875
V/C Ratio(X)	0.88	0.56	1.11	0.85	0.48	0.28	0.82	0.41	0.34	0.80	0.23	0.23
Avail Cap(c_a), veh/h	393	1000	494	619	928	396	1022	2321	929	200	2077	875
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	50.2	43.6	41.3	50.9	44.0	36.3	44.9	3.1	1.8	55.1	23.3	13.8
Incr Delay (d2), s/veh	13.8	0.7	74.3	7.9	0.4	0.4	4.2	0.5	1.0	11.3	0.3	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	12.0	8.6	34.1	10.0	7.0	4.7	7.7	1.7	1.5	5.8	5.3	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.1	44.4	115.6	58.8	44.4	36.7	49.1	3.7	2.8	66.4	23.6	14.4
LnGrp LOS	E	D	F	E	D	D	D	A	A	E	C	B
Approach Vol, veh/h		1341			944			1595			773	
Approach Delay, s/veh		76.9			49.4			12.9			26.6	
Approach LOS		E			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	59.0	20.3	28.0	18.4	53.3	22.0	26.3
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	13.5	43.5	21.5	23.5	35.5	21.5	26.5	18.5
Max Q Clear Time (g_c+I1), s	8.4	5.2	15.0	25.5	12.8	9.8	17.1	11.4
Green Ext Time (p_c), s	0.1	9.1	0.7	0.0	1.1	2.9	0.4	1.8

Intersection Summary	
HCM 6th Ctrl Delay	41.0
HCM 6th LOS	D

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	0	0	60	0	1374	65	114	1128	25
Future Vol, veh/h	0	0	10	0	0	60	0	1374	65	114	1128	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	-	-	-	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	67	0	1527	72	127	1253	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	641	-	-	800	1281	0	0	1599	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	*646	0	0	*602	*812	-	-	696	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*646	-	-	*602	*812	-	-	696	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	11.7	0	1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 812	-	-	646	602	696	-	-
HCM Lane V/C Ratio	-	-	-	0.017	0.111	0.182	-	-
HCM Control Delay (s)	0	-	-	10.7	11.7	11.3	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.7	-	-

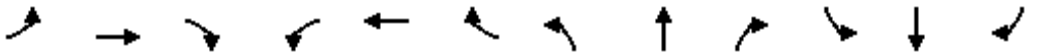
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	0	56	0	25	1414	40	1078
Future Volume (vph)	0	56	0	25	1414	40	1078
Turn Type	NA	pm+pt	NA	Perm	NA	pm+pt	NA
Protected Phases	4	3	8		2	1	6
Permitted Phases		8		2		6	
Detector Phase	4	3	8	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	24.0	13.0	37.0	70.0	70.0	13.0	83.0
Total Split (%)	20.0%	10.8%	30.8%	58.3%	58.3%	10.8%	69.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 5: Picadilly Rd & 54th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	35	56	0	22	25	1414	17	40	1078	20
Future Volume (veh/h)	0	0	35	56	0	22	25	1414	17	40	1078	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	0	0	39	62	0	24	28	1571	19	44	1198	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	60	0	58	154	0	186	398	3838	46	354	4169	77
Arrive On Green	0.00	0.00	0.04	0.04	0.00	0.12	1.00	1.00	1.00	0.06	1.00	1.00
Sat Flow, veh/h	1387	0	1585	1781	0	1585	457	5200	63	1781	5163	95
Grp Volume(v), veh/h	0	0	39	62	0	24	28	1028	562	44	790	430
Grp Sat Flow(s),veh/h/ln	1387	0	1585	1781	0	1585	457	1702	1859	1781	1702	1853
Q Serve(g_s), s	0.0	0.0	2.9	3.9	0.0	1.6	0.0	0.0	0.0	0.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.9	3.9	0.0	1.6	0.0	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	60	0	58	154	0	186	398	2512	1372	354	2749	1497
V/C Ratio(X)	0.00	0.00	0.67	0.40	0.00	0.13	0.07	0.41	0.41	0.12	0.29	0.29
Avail Cap(c_a), veh/h	235	0	258	203	0	429	398	2512	1372	423	2749	1497
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)	0.00	0.00	1.00	1.00	0.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	57.1	50.8	0.0	47.5	0.0	0.0	0.0	2.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	12.6	1.7	0.0	0.3	0.3	0.4	0.8	0.2	0.3	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	0.0	0.0	2.5	3.3	0.0	1.2	0.1	0.3	0.5	0.3	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	69.6	52.5	0.0	47.8	0.3	0.4	0.8	2.9	0.3	0.5
LnGrp LOS	A	A	E	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		39			86			1618			1264	
Approach Delay, s/veh		69.6			51.2			0.5			0.4	
Approach LOS		E			D			A			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	8.3	93.1	9.7	8.9		101.4		18.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	8.5	65.5	8.5	19.5		78.5		32.5				
Max Q Clear Time (g_c+I1), s	2.6	2.0	5.9	4.9		2.0		3.6				
Green Ext Time (p_c), s	0.0	17.0	0.0	0.1		10.3		0.1				

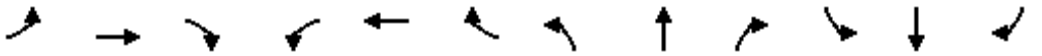
Intersection Summary												
HCM 6th Ctrl Delay			2.8									
HCM 6th LOS			A									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	55	10	104	10	156	30	1245	96	983
Future Volume (vph)	55	10	104	10	156	30	1245	96	983
Turn Type	Perm	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases		4	3	8	1		2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	1	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	25.0	25.0	17.0	42.0	19.0	59.0	59.0	19.0	78.0
Total Split (%)	20.8%	20.8%	14.2%	35.0%	15.8%	49.2%	49.2%	15.8%	65.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 6: Picadilly Rd & 52nd Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	10	115	104	10	156	30	1245	157	96	983	90
Future Volume (veh/h)	55	10	115	104	10	156	30	1245	157	96	983	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	116	11	173	33	1383	174	107	1092	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	188	14	157	215	404	406	357	2899	365	289	3376	309
Arrive On Green	0.11	0.11	0.11	0.07	0.22	0.22	0.63	0.63	0.63	0.08	1.00	1.00
Sat Flow, veh/h	1200	127	1477	1781	1870	1585	470	4593	578	1781	4761	436
Grp Volume(v), veh/h	61	0	139	116	11	173	33	1025	532	107	781	411
Grp Sat Flow(s),veh/h/ln	1200	0	1604	1781	1870	1585	470	1702	1766	1781	1702	1792
Q Serve(g_s), s	5.7	0.0	10.2	6.7	0.6	10.9	3.3	19.1	19.1	2.4	0.0	0.0
Cycle Q Clear(g_c), s	5.7	0.0	10.2	6.7	0.6	10.9	3.3	19.1	19.1	2.4	0.0	0.0
Prop In Lane	1.00		0.92	1.00		1.00	1.00		0.33	1.00		0.24
Lane Grp Cap(c), veh/h	188	0	171	215	404	406	357	2149	1115	289	2414	1271
V/C Ratio(X)	0.33	0.00	0.81	0.54	0.03	0.43	0.09	0.48	0.48	0.37	0.32	0.32
Avail Cap(c_a), veh/h	265	0	274	273	584	560	357	2149	1115	432	2414	1271
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	0.97	0.97	0.97
Uniform Delay (d), s/veh	50.5	0.0	52.5	42.3	37.1	37.3	8.8	11.7	11.7	8.5	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	9.4	2.1	0.0	0.7	0.5	0.8	1.5	0.8	0.3	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	3.2	0.0	8.0	5.6	0.5	7.7	0.7	11.5	12.1	1.6	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	0.0	61.9	44.4	37.1	38.0	9.3	12.4	13.1	9.3	0.3	0.7
LnGrp LOS	D	A	E	D	D	D	A	B	B	A	A	A
Approach Vol, veh/h		200			300			1590			1299	
Approach Delay, s/veh		58.7			40.4			12.6			1.2	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	9.4	80.2	13.1	17.3		89.6		30.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	14.5	54.5	12.5	20.5		73.5		37.5				
Max Q Clear Time (g_c+I1), s	4.4	21.1	8.7	12.2		2.0		12.9				
Green Ext Time (p_c), s	0.2	15.4	0.1	0.6		11.3		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			13.4									
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	1428	5	0	1013	190
Future Vol, veh/h	0	0	65	0	0	5	105	1428	5	0	1013	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	1587	6	0	1126	211

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	669	-	-	797	1337	0	0	1593	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	*690	0	0	*580	634	-	-	*729	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*690	-	-	*580	634	-	-	*729	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	11.3	0.8	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	634	-	-	690	580	* 729	-	-
HCM Lane V/C Ratio	0.184	-	-	0.105	0.01	-	-	-
HCM Control Delay (s)	12	-	-	10.8	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	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	30	0	0	15	10	1523	30	25	1018	35
Future Vol, veh/h	0	0	30	0	0	15	10	1523	30	25	1018	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	1692	33	28	1131	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	585	-	-	863	1170	0	0	1725	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	*696	0	0	*567	776	-	-	705	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*696	-	-	*567	776	-	-	705	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	11.5	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	776	-	-	696	567	705	-	-
HCM Lane V/C Ratio	0.014	-	-	0.048	0.029	0.039	-	-
HCM Control Delay (s)	9.7	-	-	10.4	11.5	10.3	-	-
HCM Lane LOS	A	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.1	-	-

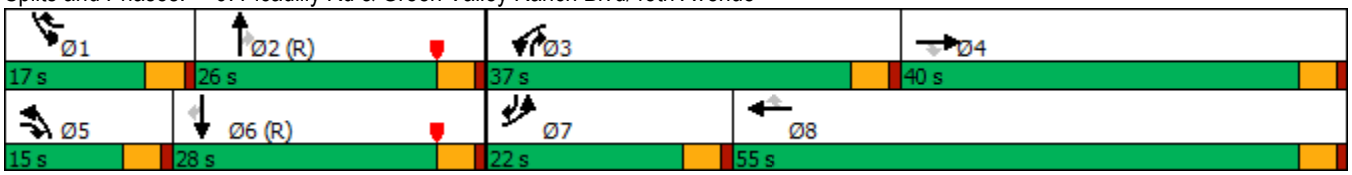
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

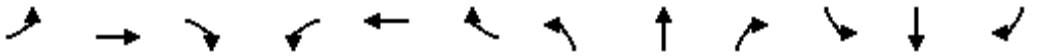
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	1381	255	379	746	486	125	781	741	302	550	165
Future Volume (vph)	296	1381	255	379	746	486	125	781	741	302	550	165
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	22.0	40.0	15.0	37.0	55.0	17.0	15.0	26.0	37.0	17.0	28.0	22.0
Total Split (%)	18.3%	33.3%	12.5%	30.8%	45.8%	14.2%	12.5%	21.7%	30.8%	14.2%	23.3%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 60 (50%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd/48th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	296	1381	255	379	746	486	125	781	741	302	550	165
Future Volume (veh/h)	296	1381	255	379	746	486	125	781	741	302	550	165
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	329	1534	283	421	829	0	139	868	0	336	611	183
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	393	1511	559	498	1665		196	1562		360	1804	741
Arrive On Green	0.11	0.30	0.30	0.24	0.54	0.00	0.06	0.31	0.00	0.10	0.35	0.35
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	329	1534	283	421	829	0	139	868	0	336	611	183
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	11.2	35.5	16.9	13.9	12.2	0.0	4.7	17.1	0.0	11.6	10.5	8.3
Cycle Q Clear(g_c), s	11.2	35.5	16.9	13.9	12.2	0.0	4.7	17.1	0.0	11.6	10.5	8.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	1511	559	498	1665		196	1562		360	1804	741
V/C Ratio(X)	0.84	1.02	0.51	0.85	0.50		0.71	0.56		0.93	0.34	0.25
Avail Cap(c_a), veh/h	504	1511	559	936	2149		302	1562		360	1804	741
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	52.1	42.3	30.6	44.3	21.2	0.0	55.6	34.8	0.0	53.3	28.5	19.3
Incr Delay (d2), s/veh	9.4	27.1	0.7	3.6	0.2	0.0	4.7	1.4	0.0	30.9	0.5	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	9.1	25.6	10.6	9.2	7.2	0.0	3.9	11.5	0.0	10.7	7.7	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.5	69.3	31.4	47.9	21.4	0.0	60.3	36.3	0.0	84.2	29.0	20.1
LnGrp LOS	E	F	C	D	C		E	D		F	C	C
Approach Vol, veh/h		2146			1250			1007			1130	
Approach Delay, s/veh		63.1			30.3			39.6			44.0	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	41.2	21.8	40.0	11.3	46.9	18.2	43.6
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	12.5	21.5	32.5	35.5	10.5	23.5	17.5	50.5
Max Q Clear Time (g_c+I1), s	13.6	19.1	15.9	37.5	6.7	12.5	13.2	14.2
Green Ext Time (p_c), s	0.0	1.3	1.4	0.0	0.1	3.4	0.5	6.5

Intersection Summary	
HCM 6th Ctrl Delay	47.5
HCM 6th LOS	D

Notes

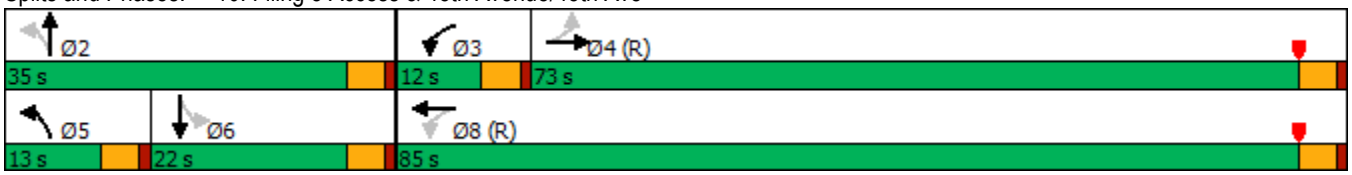
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

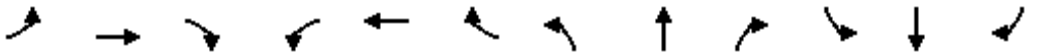
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	5	2179	70	1440	150	0	15	0
Future Volume (vph)	5	2179	70	1440	150	0	15	0
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	3	8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	73.0	73.0	12.0	85.0	13.0	35.0	22.0	22.0
Total Split (%)	60.8%	60.8%	10.0%	70.8%	10.8%	29.2%	18.3%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 54 (45%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 10: Filing 5 Access & 48th Avenue/48th Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2179	120	70	1440	5	150	0	200	15	0	20
Future Volume (veh/h)	5	2179	120	70	1440	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	2421	133	78	1600	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	266	3379	184	213	3979	15	250	0	265	97	0	93
Arrive On Green	1.00	1.00	1.00	0.04	0.76	0.76	0.07	0.00	0.17	0.06	0.00	0.06
Sat Flow, veh/h	316	4956	270	1781	5251	20	1781	0	1585	1159	0	1585
Grp Volume(v), veh/h	6	1655	899	78	1037	569	167	0	222	17	0	22
Grp Sat Flow(s),veh/h/ln	316	1702	1822	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	8.5	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	8.5	0.0	16.3	5.0	0.0	1.6
Prop In Lane	1.00		0.15	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	2321	1242	213	2579	1415	250	0	265	97	0	93
V/C Ratio(X)	0.02	0.71	0.72	0.37	0.40	0.40	0.67	0.00	0.84	0.18	0.00	0.24
Avail Cap(c_a), veh/h	266	2321	1242	256	2579	1415	250	0	403	197	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)	0.09	0.09	0.09	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	49.0	0.0	48.4	57.1	0.0	53.9
Incr Delay (d2), s/veh	0.0	0.2	0.3	1.0	0.5	0.9	6.7	0.0	9.2	0.9	0.0	1.3
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	0.0	0.1	0.2	1.0	7.3	8.1	2.1	0.0	11.5	1.0	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.1	0.2	0.3	5.4	5.5	5.9	55.8	0.0	57.6	58.0	0.0	55.2
LnGrp LOS	A	A	A	A	A	A	E	A	E	E	A	E
Approach Vol, veh/h		2560			1684			389			39	
Approach Delay, s/veh		0.2			5.7			56.8			56.4	
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	13.0	11.6		95.4				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		30.5	7.5	68.5	8.5	17.5		80.5				
Max Q Clear Time (g_c+I1), s		18.3	3.4	5.7	10.5	7.0		14.7				
Green Ext Time (p_c), s		1.0	0.0	43.0	0.0	0.1		18.6				

Intersection Summary												
HCM 6th Ctrl Delay			7.4									
HCM 6th LOS			A									

Notes

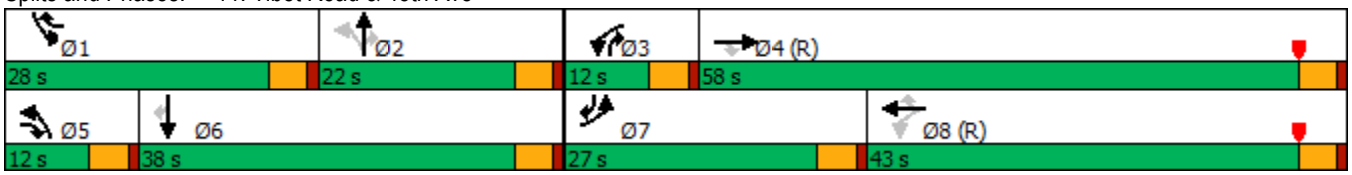
User approved pedestrian interval to be less than phase max green.

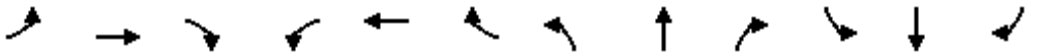
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	1835	128	83	907	243	91	223	123	389	102	347
Future Volume (vph)	431	1835	128	83	907	243	91	223	123	389	102	347
Turn Type	Prot	NA	pm+ov	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4	8		8	2		2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	27.0	58.0	12.0	12.0	43.0	28.0	12.0	22.0	12.0	28.0	38.0	27.0
Total Split (%)	22.5%	48.3%	10.0%	10.0%	35.8%	23.3%	10.0%	18.3%	10.0%	23.3%	31.7%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 83 (69%), Referenced to phase 4:EBT and 8:WBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 11: Tibet Road & 48th Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	431	1835	128	83	907	243	91	223	123	389	102	347
Future Volume (veh/h)	431	1835	128	83	907	243	91	223	123	389	102	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	479	2039	142	92	1008	0	101	248	137	432	113	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	548	2622	912	175	2044		357	273	303	503	429	
Arrive On Green	0.16	0.51	0.51	0.09	0.80	0.00	0.06	0.15	0.15	0.19	0.30	0.00
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	1781	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	479	2039	142	92	1008	0	101	248	137	432	113	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1781	1870	1585	1728	1870	1585
Q Serve(g_s), s	16.3	38.8	5.0	3.7	7.8	0.0	5.7	15.7	9.2	14.5	5.5	0.0
Cycle Q Clear(g_c), s	16.3	38.8	5.0	3.7	7.8	0.0	5.7	15.7	9.2	14.5	5.5	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	548	2622	912	175	2044		357	273	303	503	429	
V/C Ratio(X)	0.87	0.78	0.16	0.53	0.49		0.28	0.91	0.45	0.86	0.26	
Avail Cap(c_a), veh/h	648	2622	912	206	2044		358	273	303	677	522	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.3	23.6	11.9	23.5	8.0	0.0	39.9	50.5	43.0	47.2	34.0	0.0
Incr Delay (d2), s/veh	11.3	2.3	0.4	2.2	0.8	0.0	0.4	31.9	1.1	8.4	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	12.4	22.1	3.3	2.8	3.9	0.0	4.6	14.8	6.7	10.8	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	26.0	12.2	25.7	8.7	0.0	40.3	82.3	44.0	55.6	34.4	0.0
LnGrp LOS	E	C	B	C	A		D	F	D	E	C	
Approach Vol, veh/h		2660			1100			486			545	
Approach Delay, s/veh		31.5			10.2			62.8			51.2	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	22.0	9.9	66.1	11.9	32.0	23.5	52.5
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	23.5	17.5	7.5	53.5	7.5	33.5	22.5	38.5
Max Q Clear Time (g_c+I1), s	16.5	17.7	5.7	40.8	7.7	7.5	18.3	9.8
Green Ext Time (p_c), s	0.9	0.0	0.0	10.5	0.0	0.6	0.8	8.3

Intersection Summary	
HCM 6th Ctrl Delay	32.0
HCM 6th LOS	C

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	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	15	14	0	15	5	892	8	48	810	0
Future Vol, veh/h	5	0	15	14	0	15	5	892	8	48	810	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	16	0	17	6	991	9	53	900	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1514	2018	450	1564	2014	500	900	0	0	1000	0	0
Stage 1	1006	1006	-	1008	1008	-	-	-	-	-	-	-
Stage 2	508	1012	-	556	1006	-	-	-	-	-	-	-
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	*344	*272	*737	*344	*276	*711	*1102	-	-	*1063	-	-
Stage 1	*635	*569	-	*670	*587	-	-	-	-	-	-	-
Stage 2	*670	*587	-	*695	*569	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	1	-	-	1	-	-
Mov Cap-1 Maneuver	*321	*257	*737	*322	*261	*711	*1102	-	-	*1063	-	-
Mov Cap-2 Maneuver	*321	*257	-	*322	*261	-	-	-	-	-	-	-
Stage 1	*632	*541	-	*667	*584	-	-	-	-	-	-	-
Stage 2	*651	*584	-	*645	*541	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	13.3	0	0.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	* 1102	-	-	557	322	711	* 1063	-	-
HCM Lane V/C Ratio	0.005	-	-	0.04	0.048	0.023	0.05	-	-
HCM Control Delay (s)	8.3	-	-	11.7	16.7	10.2	8.6	-	-
HCM Lane LOS	A	-	-	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	0.2	-	-

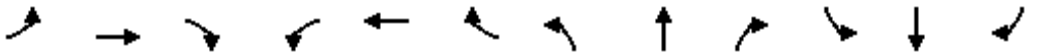
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	104	57	29	22	117	728	68	80	706	106
Future Volume (vph)	104	57	29	22	117	728	68	80	706	106
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2		1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5
Total Split (s)	18.0	32.0	12.0	26.0	19.0	62.0	62.0	14.0	57.0	18.0
Total Split (%)	15.0%	26.7%	10.0%	21.7%	15.8%	51.7%	51.7%	11.7%	47.5%	15.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 13: Tibet Road & 52nd Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	57	122	29	22	41	117	728	68	80	706	106
Future Volume (veh/h)	104	57	122	29	22	41	117	728	68	80	706	106
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	116	63	136	32	24	46	130	809	76	89	784	118
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	266	75	162	137	55	106	530	2278	1016	411	2268	1127
Arrive On Green	0.02	0.05	0.05	0.03	0.10	0.10	0.01	0.21	0.21	0.08	1.00	1.00
Sat Flow, veh/h	1781	527	1138	1781	573	1099	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	116	0	199	32	0	70	130	809	76	89	784	118
Grp Sat Flow(s),veh/h/ln	1781	0	1665	1781	0	1673	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.8	0.0	14.2	1.9	0.0	4.7	3.0	23.3	4.6	2.1	0.0	0.0
Cycle Q Clear(g_c), s	6.8	0.0	14.2	1.9	0.0	4.7	3.0	23.3	4.6	2.1	0.0	0.0
Prop In Lane	1.00		0.68	1.00		0.66	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	266	0	237	137	0	161	530	2278	1016	411	2268	1127
V/C Ratio(X)	0.44	0.00	0.84	0.23	0.00	0.43	0.25	0.36	0.07	0.22	0.35	0.10
Avail Cap(c_a), veh/h	336	0	382	199	0	300	669	2278	1016	482	2268	1127
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	55.8	47.2	0.0	51.1	6.8	26.2	18.8	8.7	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	8.9	0.9	0.0	1.8	0.2	0.4	0.1	0.3	0.4	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	5.9	0.0	11.3	1.6	0.0	3.7	2.1	16.7	3.1	1.3	0.2	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	64.8	48.1	0.0	53.0	7.0	26.6	18.9	9.0	0.4	0.2
LnGrp LOS	D	A	E	D	A	D	A	C	B	A	A	A
Approach Vol, veh/h		315			102			1015			991	
Approach Delay, s/veh		57.9			51.4			23.5			1.2	
Approach LOS		E			D			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	81.4	7.8	21.5	9.6	81.1	13.3	16.1
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	9.5	57.5	7.5	27.5	14.5	52.5	13.5	21.5
Max Q Clear Time (g_c+I1), s	4.1	25.3	3.9	16.2	5.0	2.0	8.8	6.7
Green Ext Time (p_c), s	0.1	6.9	0.0	0.8	0.2	7.2	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	20.0
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	4	272	5	5	236	4	10	0	10	7	0	4
Future Vol, veh/h	4	272	5	5	236	4	10	0	10	7	0	4
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	302	6	6	262	4	11	0	11	8	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	308	0	0	591	591	305	595	592	264
Stage 1	-	-	-	-	-	-	313	313	-	276	276	-
Stage 2	-	-	-	-	-	-	278	278	-	319	316	-
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	1334	-	-	1287	-	-	597	528	861	592	528	893
Stage 1	-	-	-	-	-	-	802	705	-	828	727	-
Stage 2	-	-	-	-	-	-	825	726	-	795	703	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	1334	-	-	1287	-	-	591	524	861	580	524	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	591	524	-	580	524	-
Stage 1	-	-	-	-	-	-	800	703	-	825	724	-
Stage 2	-	-	-	-	-	-	818	722	-	782	701	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	10.3	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	701	1334	-	-	1287	-	-	665
HCM Lane V/C Ratio	0.032	0.003	-	-	0.004	-	-	0.018
HCM Control Delay (s)	10.3	7.7	-	-	7.8	-	-	10.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	270	5	5	245	10	10
Future Vol, veh/h	270	5	5	245	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	300	6	6	272	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	306	0	587	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	284	-
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	-	-	1290	-	520	863
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	822	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1290	-	517	863
Mov Cap-2 Maneuver	-	-	-	-	517	-
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	818	-

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)	647	-	-	1290	-
HCM Lane V/C Ratio	0.034	-	-	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	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	261	0	5	247	4	15	0	5	10	0	9
Future Vol, veh/h	3	261	0	5	247	4	15	0	5	10	0	9
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	3	290	0	6	274	4	17	0	6	11	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	290	0	0	589	586	290	587	584	276
Stage 1	-	-	-	-	-	-	296	296	-	288	288	-
Stage 2	-	-	-	-	-	-	293	290	-	299	296	-
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	1319	-	-	*1299	-	-	*600	*534	*868	*603	*536	877
Stage 1	-	-	-	-	-	-	*818	*717	-	*813	*717	-
Stage 2	-	-	-	-	-	-	*807	*716	-	*818	*717	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	1319	-	-	*1299	-	-	*590	*530	*868	*596	*532	877
Mov Cap-2 Maneuver	-	-	-	-	-	-	*590	*530	-	*596	*532	-
Stage 1	-	-	-	-	-	-	*817	*715	-	*811	*714	-
Stage 2	-	-	-	-	-	-	*794	*712	-	*811	*715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	10.8	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	641	1319	-	-	* 1299	-	-	703
HCM Lane V/C Ratio	0.035	0.003	-	-	0.004	-	-	0.03
HCM Control Delay (s)	10.8	7.7	-	-	7.8	-	-	10.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

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

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	16	839	34	23	892
Future Vol, veh/h	0	16	839	34	23	892
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	18	932	38	26	991

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	485	0	0	970	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	*737	-	-	1089	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	-	-	1	-
Mov Cap-1 Maneuver	-	*737	-	-	1089	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	737	1089	-
HCM Lane V/C Ratio	-	-	0.024	0.023	-
HCM Control Delay (s)	-	-	10	8.4	0.2
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

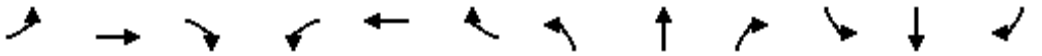
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	0	36	0	53	756	126	868
Future Volume (vph)	50	0	36	0	53	756	126	868
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8				6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	12.0	23.0	23.0	34.0	16.0	58.0	16.0	58.0
Total Split (%)	10.0%	19.2%	19.2%	28.3%	13.3%	48.3%	13.3%	48.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 18: Tibet Road & Access #18



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	12	36	0	85	53	756	45	126	868	15
Future Volume (veh/h)	50	0	12	36	0	85	53	756	45	126	868	15
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	56	0	13	40	0	94	59	840	50	140	964	17
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	154	0	119	228	0	124	76	2358	140	566	2469	44
Arrive On Green	0.04	0.00	0.07	0.04	0.00	0.08	0.09	1.00	1.00	0.08	1.00	1.00
Sat Flow, veh/h	1781	0	1585	1781	0	1585	1781	3408	203	1781	3573	63
Grp Volume(v), veh/h	56	0	13	40	0	94	59	438	452	140	479	502
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1834	1781	1777	1859
Q Serve(g_s), s	3.5	0.0	0.9	2.4	0.0	7.0	3.9	0.0	0.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.9	2.4	0.0	7.0	3.9	0.0	0.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	154	0	119	228	0	124	76	1229	1269	566	1228	1285
V/C Ratio(X)	0.36	0.00	0.11	0.18	0.00	0.76	0.78	0.36	0.36	0.25	0.39	0.39
Avail Cap(c_a), veh/h	197	0	244	429	0	390	171	1229	1269	662	1228	1285
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91
Uniform Delay (d), s/veh	48.9	0.0	51.8	47.9	0.0	54.2	54.3	0.0	0.0	4.5	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.4	0.4	0.0	9.2	15.6	0.8	0.8	0.2	0.9	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	2.9	0.0	0.7	2.0	0.0	5.6	3.6	0.5	0.5	1.6	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.3	0.0	52.2	48.3	0.0	63.4	69.9	0.8	0.8	4.7	0.9	0.8
LnGrp LOS	D	A	D	D	A	E	E	A	A	A	A	A
Approach Vol, veh/h		69			134			949			1121	
Approach Delay, s/veh		50.7			58.9			5.1			1.3	
Approach LOS		D			E			A			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	87.5	9.5	13.5	9.6	87.4	9.1	13.9
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	11.5	53.5	18.5	18.5	11.5	53.5	7.5	29.5
Max Q Clear Time (g_c+I1), s	4.9	2.0	4.4	2.9	5.9	2.0	5.5	9.0
Green Ext Time (p_c), s	0.2	7.0	0.0	0.0	0.0	8.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

Notes

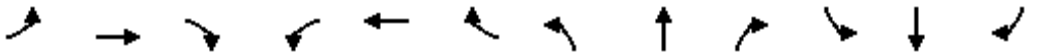
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	85	0	25	0	50	829	36	941	55
Future Volume (vph)	85	0	25	0	50	829	36	941	55
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5
Total Split (s)	14.0	38.0	24.0	24.0	13.0	82.0	69.0	69.0	69.0
Total Split (%)	11.7%	31.7%	20.0%	20.0%	10.8%	68.3%	57.5%	57.5%	57.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 19: Tibet Road & Access #19



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	0	43	25	0	28	50	829	12	36	941	55
Future Volume (veh/h)	85	0	43	25	0	28	50	829	12	36	941	55
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	94	0	48	28	0	31	56	921	13	40	1046	61
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	202	0	224	115	0	64	485	2812	40	486	2528	1127
Arrive On Green	0.06	0.00	0.14	0.04	0.00	0.04	0.07	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1781	0	1585	1357	0	1585	1781	3587	51	599	3554	1585
Grp Volume(v), veh/h	94	0	48	28	0	31	56	456	478	40	1046	61
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1357	0	1585	1781	1777	1861	599	1777	1585
Q Serve(g_s), s	5.9	0.0	3.2	2.4	0.0	2.3	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.9	0.0	3.2	2.4	0.0	2.3	0.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	202	0	224	115	0	64	485	1393	1459	486	2528	1127
V/C Ratio(X)	0.47	0.00	0.21	0.24	0.00	0.48	0.12	0.33	0.33	0.08	0.41	0.05
Avail Cap(c_a), veh/h	230	0	442	281	0	258	548	1393	1459	486	2528	1127
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	1.00	1.00	0.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	45.7	56.4	0.0	56.3	3.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.5	1.1	0.0	5.5	0.1	0.6	0.6	0.3	0.5	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	4.9	0.0	2.3	1.6	0.0	1.8	0.5	0.4	0.4	0.1	0.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.8	0.0	46.1	57.5	0.0	61.9	3.5	0.6	0.6	0.3	0.5	0.1
LnGrp LOS	D	A	D	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		142			59			990			1147	
Approach Delay, s/veh		49.2			59.8			0.7			0.5	
Approach LOS		D			E			A			A	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		98.6		21.4	8.7	89.8	12.1	9.4				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		77.5		33.5	8.5	64.5	9.5	19.5				
Max Q Clear Time (g_c+I1), s		2.0		5.2	2.9	2.0	7.9	4.4				
Green Ext Time (p_c), s		7.6		0.2	0.0	11.3	0.0	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			5.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	827	54	0	855	0	56
Future Vol, veh/h	827	54	0	855	0	56
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	919	60	0	950	0	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	490
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	448
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	448
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	448	-	-	-
HCM Lane V/C Ratio	0.139	-	-	-
HCM Control Delay (s)	14.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	857	211	797	58	115
Future Volume (vph)	857	211	797	58	115
Turn Type	NA	pm+pt	NA	Prot	Prot
Protected Phases	2	1	6	4	4
Permitted Phases		6			
Detector Phase	2	1	6	4	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5
Total Split (s)	55.0	35.0	90.0	30.0	30.0
Total Split (%)	45.8%	29.2%	75.0%	25.0%	25.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 53.5 (45%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 21: Access #21 & 56th Avenue

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	857	25	211	797	58	115
Future Volume (veh/h)	857	25	211	797	58	115
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	952	28	234	886	64	128
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	3070	90	483	3638	379	337
Arrive On Green	0.60	0.60	0.15	1.00	0.21	0.21
Sat Flow, veh/h	5266	150	1781	5274	1781	1585
Grp Volume(v), veh/h	635	345	234	886	64	128
Grp Sat Flow(s),veh/h/ln	1702	1843	1781	1702	1781	1585
Q Serve(g_s), s	11.0	11.0	6.1	0.0	3.5	8.3
Cycle Q Clear(g_c), s	11.0	11.0	6.1	0.0	3.5	8.3
Prop In Lane		0.08	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2050	1110	483	3638	379	337
V/C Ratio(X)	0.31	0.31	0.48	0.24	0.17	0.38
Avail Cap(c_a), veh/h	2050	1110	806	3638	379	337
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.7	11.7	7.2	0.0	38.6	40.5
Incr Delay (d2), s/veh	0.4	0.7	0.8	0.2	1.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.0	7.8	3.4	0.1	3.0	6.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.1	12.4	7.9	0.2	39.6	43.7
LnGrp LOS	B	B	A	A	D	D
Approach Vol, veh/h	980			1120	192	
Approach Delay, s/veh	12.2			1.8	42.3	
Approach LOS	B			A	D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	13.2	76.8		30.0		90.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	30.5	50.5		25.5		85.5
Max Q Clear Time (g_c+I1), s	8.1	13.0		10.3		2.0
Green Ext Time (p_c), s	0.7	6.8		0.5		7.9

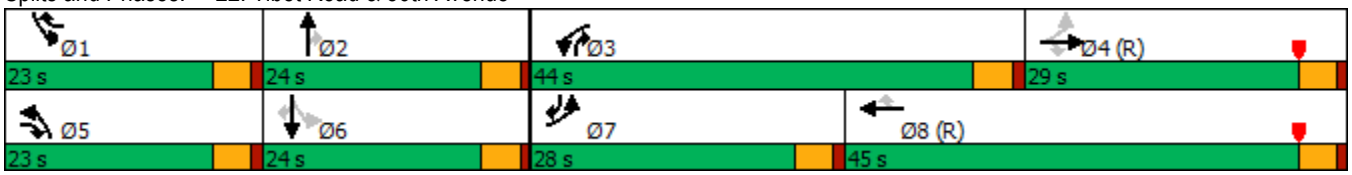
Intersection Summary		
HCM 6th Ctrl Delay		9.6
HCM 6th LOS		A

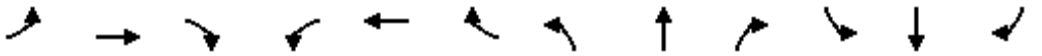
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	498	265	596	565	235	254	195	481	185	170	175
Future Volume (vph)	235	498	265	596	565	235	254	195	481	185	170	175
Turn Type	pm+pt	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	28.0	29.0	23.0	44.0	45.0	23.0	23.0	24.0	44.0	23.0	24.0	28.0
Total Split (%)	23.3%	24.2%	19.2%	36.7%	37.5%	19.2%	19.2%	20.0%	36.7%	19.2%	20.0%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 22: Tibet Road & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	498	265	596	565	235	254	195	481	185	170	175
Future Volume (veh/h)	235	498	265	596	565	235	254	195	481	185	170	175
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	553	294	662	628	261	282	217	534	206	189	194
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	550	1829	730	747	2347	908	353	577	600	382	617	457
Arrive On Green	0.19	0.60	0.60	0.36	0.77	0.77	0.03	0.05	0.05	0.11	0.17	0.17
Sat Flow, veh/h	1781	5106	1585	3456	5106	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	261	553	294	662	628	261	282	217	534	206	189	194
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	11.2	6.4	10.9	21.6	4.3	5.0	9.7	7.1	19.5	11.4	5.6	11.9
Cycle Q Clear(g_c), s	11.2	6.4	10.9	21.6	4.3	5.0	9.7	7.1	19.5	11.4	5.6	11.9
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	550	1829	730	747	2347	908	353	577	600	382	617	457
V/C Ratio(X)	0.47	0.30	0.40	0.89	0.27	0.29	0.80	0.38	0.89	0.54	0.31	0.42
Avail Cap(c_a), veh/h	695	1829	730	1138	2347	908	533	577	600	455	617	457
HCM Platoon Ratio	1.67	1.67	1.67	1.67	1.67	1.67	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	17.9	16.8	12.8	37.0	8.0	5.2	56.7	50.9	38.1	35.8	43.3	34.7
Incr Delay (d2), s/veh	0.6	0.4	1.7	5.8	0.3	0.8	5.0	0.4	15.3	1.2	0.3	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	7.1	4.1	6.3	13.4	2.7	2.8	8.3	6.0	22.8	8.8	4.5	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	17.2	14.4	42.8	8.3	6.0	61.8	51.3	53.5	37.0	43.6	35.3
LnGrp LOS	B	B	B	D	A	A	E	D	D	D	D	D
Approach Vol, veh/h		1108			1551			1033			589	
Approach Delay, s/veh		16.8			22.6			55.3			38.5	
Approach LOS		B			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.1	24.0	30.4	47.5	16.8	25.3	18.2	59.7
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	18.5	19.5	39.5	24.5	18.5	19.5	23.5	40.5
Max Q Clear Time (g_c+I1), s	13.4	21.5	23.6	12.9	11.7	13.9	13.2	7.0
Green Ext Time (p_c), s	0.3	0.0	2.3	3.5	0.5	0.9	0.5	6.0

Intersection Summary	
HCM 6th Ctrl Delay	31.2
HCM 6th LOS	C

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	953	19	0	1008	0	45
Future Vol, veh/h	953	19	0	1008	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
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	1059	21	0	1120	0	50

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	540
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	*697
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*697
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	697	-	-	-
HCM Lane V/C Ratio	0.072	-	-	-
HCM Control Delay (s)	10.6	-	-	-
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

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1156	8	0	1396	0	30
Future Vol, veh/h	1156	8	0	1396	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	-	-	-	-	-	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	1284	9	0	1551	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	647
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	*653
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*653
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	653	-	-	-
HCM Lane V/C Ratio	0.051	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

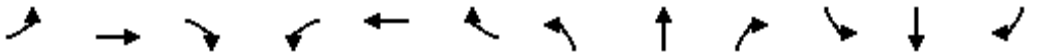
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	75	1070	205	1254	62	0	95	0
Future Volume (vph)	75	1070	205	1254	62	0	95	0
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	12.0	27.0	12.0	27.0	69.0	29.0	52.0	12.0
Total Split (%)	10.0%	22.5%	10.0%	22.5%	57.5%	24.2%	43.3%	10.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 25: Access #25 & 56th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1070	41	205	1254	95	62	0	87	95	0	80
Future Volume (veh/h)	75	1070	41	205	1254	95	62	0	87	95	0	80
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	83	1189	46	228	1393	106	69	0	97	106	0	89
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	353	3213	124	459	3196	243	210	0	127	212	0	162
Arrive On Green	0.08	1.00	1.00	0.13	1.00	1.00	0.05	0.00	0.08	0.07	0.00	0.10
Sat Flow, veh/h	1781	5044	195	1781	4840	368	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	83	802	433	228	980	519	69	0	97	106	0	89
Grp Sat Flow(s),veh/h/ln	1781	1702	1835	1781	1702	1804	1781	0	1585	1781	0	1585
Q Serve(g_s), s	1.9	0.0	0.0	5.7	0.0	0.0	4.2	0.0	7.2	6.4	0.0	6.4
Cycle Q Clear(g_c), s	1.9	0.0	0.0	5.7	0.0	0.0	4.2	0.0	7.2	6.4	0.0	6.4
Prop In Lane	1.00		0.11	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	353	2168	1169	459	2248	1191	210	0	127	212	0	162
V/C Ratio(X)	0.24	0.37	0.37	0.50	0.44	0.44	0.33	0.00	0.77	0.50	0.00	0.55
Avail Cap(c_a), veh/h	394	2168	1169	459	2248	1191	1082	0	324	791	0	162
HCM Platoon Ratio	2.00	2.00	2.00	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	0.77	0.77	0.77	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.3	0.0	0.0	5.8	0.0	0.0	47.5	0.0	54.1	46.1	0.0	51.2
Incr Delay (d2), s/veh	0.3	0.5	0.9	0.6	0.5	0.9	0.9	0.0	9.2	1.8	0.0	12.6
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	1.1	0.3	0.5	3.2	0.3	0.5	3.5	0.0	5.8	5.3	0.0	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.7	0.5	0.9	6.4	0.5	0.9	48.4	0.0	63.3	47.9	0.0	63.9
LnGrp LOS	A	A	A	A	A	A	D	A	E	D	A	E
Approach Vol, veh/h		1318			1727			166			195	
Approach Delay, s/veh		1.0			1.4			57.1			55.2	
Approach LOS		A			A			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	80.9	10.3	16.8	9.2	83.8	13.0	14.1
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	22.5	64.5	7.5	7.5	22.5	47.5	24.5
Max Q Clear Time (g_c+I1), s	7.7	2.0	6.2	8.4	3.9	2.0	8.4	9.2
Green Ext Time (p_c), s	0.0	7.8	0.2	0.0	0.0	10.9	0.3	0.4

Intersection Summary	
HCM 6th Ctrl Delay	7.0
HCM 6th LOS	A

Notes

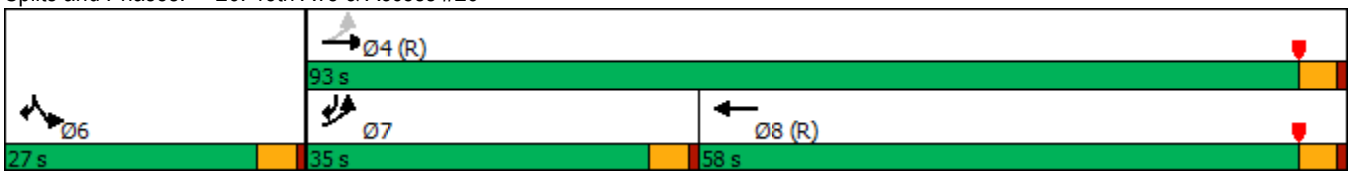
User approved pedestrian interval to be less than phase max green.

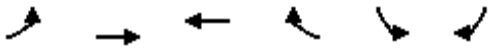
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	247	2100	1048	67	184
Future Volume (vph)	247	2100	1048	67	184
Turn Type	pm+pt	NA	NA	Prot	pt+ov
Protected Phases	7	4	8	6	6 7
Permitted Phases	4				
Detector Phase	7	4	8	6	6 7
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	22.5	
Total Split (s)	35.0	93.0	58.0	27.0	
Total Split (%)	29.2%	77.5%	48.3%	22.5%	
Yellow Time (s)	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Splits and Phases: 26: 48th Ave & Access #26





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	247	2100	1048	92	67	184
Future Volume (veh/h)	247	2100	1048	92	67	184
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	274	2333	1164	102	74	204
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	475	3766	2961	259	334	425
Arrive On Green	0.16	1.00	1.00	1.00	0.19	0.19
Sat Flow, veh/h	1781	5274	4949	419	1781	1585
Grp Volume(v), veh/h	274	2333	829	437	74	204
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1795	1781	1585
Q Serve(g_s), s	6.9	0.0	0.0	0.0	4.2	13.0
Cycle Q Clear(g_c), s	6.9	0.0	0.0	0.0	4.2	13.0
Prop In Lane	1.00			0.23	1.00	1.00
Lane Grp Cap(c), veh/h	475	3766	2109	1112	334	425
V/C Ratio(X)	0.58	0.62	0.39	0.39	0.22	0.48
Avail Cap(c_a), veh/h	784	3766	2109	1112	334	425
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	5.3	0.0	0.0	0.0	41.3	36.9
Incr Delay (d2), s/veh	0.5	0.4	0.5	1.0	1.5	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.2	0.3	0.6	3.6	18.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.9	0.4	0.5	1.0	42.9	40.7
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h		2607	1266		278	
Approach Delay, s/veh		0.9	0.7		41.3	
Approach LOS		A	A		D	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	93.0	27.0	14.2	78.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	88.5	22.5	30.5	53.5
Max Q Clear Time (g_c+I1), s	2.0	15.0	8.9	2.0
Green Ext Time (p_c), s	46.5	0.5	0.8	12.1

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

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	33	0	0	18	0	921	20	0	999	49
Future Vol, veh/h	0	0	33	0	0	18	0	921	20	0	999	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	-	-	0	-	-	0	-	-	-	-	-	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	37	0	0	20	0	1023	22	0	1110	54

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	555	-	-	523	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*659	0	0	*711	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	-	-	*659	-	-	*711	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	10.2	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	659	711	-	-
HCM Lane V/C Ratio	-	-	0.056	0.028	-	-
HCM Control Delay (s)	-	-	10.8	10.2	-	-
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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	8	1431	5	0	1138
Future Vol, veh/h	0	8	1431	5	0	1138
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	9	1590	6	0	1264

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	798	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	*580	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*580	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	580	-
HCM Lane V/C Ratio	-	-	0.015	-
HCM Control Delay (s)	-	-	11.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

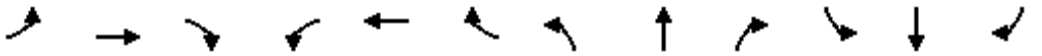
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	46	2078	75	1031	58	16	40	15
Future Volume (vph)	46	2078	75	1031	58	16	40	15
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	78.0	78.0	15.0	93.0	27.0	27.0	27.0	27.0
Total Split (%)	65.0%	65.0%	12.5%	77.5%	22.5%	22.5%	22.5%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 22.5 (19%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 29: Access #29 & 48th Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	2078	43	75	1031	55	58	16	66	40	15	51
Future Volume (veh/h)	46	2078	43	75	1031	55	58	16	66	40	15	51
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	51	2309	48	83	1146	61	64	18	73	44	17	57
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	258	2422	50	185	2715	144	506	122	496	490	143	478
Arrive On Green	0.94	0.94	0.94	0.04	0.55	0.55	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	463	5148	107	1781	4963	264	1326	323	1311	1306	377	1265
Grp Volume(v), veh/h	51	1525	832	83	786	421	64	0	91	44	0	74
Grp Sat Flow(s),veh/h/ln	463	1702	1851	1781	1702	1823	1326	0	1634	1306	0	1643
Q Serve(g_s), s	2.4	30.4	31.6	2.8	16.3	16.3	4.0	0.0	4.4	2.8	0.0	3.5
Cycle Q Clear(g_c), s	7.5	30.4	31.6	2.8	16.3	16.3	9.0	0.0	4.4	8.7	0.0	3.5
Prop In Lane	1.00		0.06	1.00		0.14	1.00		0.80	1.00		0.77
Lane Grp Cap(c), veh/h	258	1602	871	185	1862	997	506	0	618	490	0	621
V/C Ratio(X)	0.20	0.95	0.96	0.45	0.42	0.42	0.13	0.00	0.15	0.09	0.00	0.12
Avail Cap(c_a), veh/h	324	2085	1134	271	2510	1344	506	0	618	490	0	621
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)	0.76	0.76	0.76	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.6	2.8	2.8	16.0	16.0	16.0	27.7	0.0	24.6	28.0	0.0	24.3
Incr Delay (d2), s/veh	0.3	7.3	12.2	1.7	0.2	0.3	0.5	0.0	0.5	0.4	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	5.3	7.4	2.2	10.4	11.0	2.5	0.0	3.2	1.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.8	10.1	15.0	17.7	16.2	16.3	28.3	0.0	25.1	28.3	0.0	24.7
LnGrp LOS	A	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		2408			1290			155			118	
Approach Delay, s/veh		11.6			16.3			26.4			26.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		46.8	9.2	64.0		46.8		73.2				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		22.5	10.5	73.5		22.5		88.5				
Max Q Clear Time (g_c+I1), s		11.0	4.8	33.6		10.7		18.3				
Green Ext Time (p_c), s		0.5	0.1	29.0		0.3		11.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	23	882	15	0	838
Future Vol, veh/h	0	23	882	15	0	838
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	26	980	17	0	931

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	499	0	0	-	-
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	*711	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*711	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	711	-
HCM Lane V/C Ratio	-	-	0.036	-
HCM Control Delay (s)	-	-	10.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

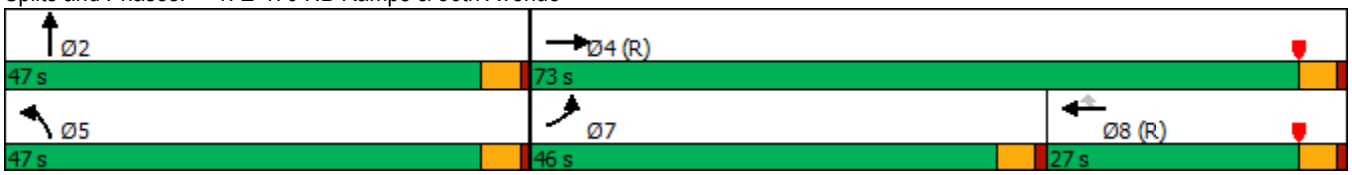
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

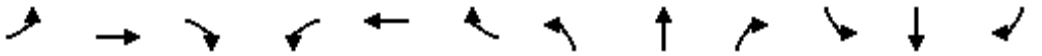
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Configurations						
Traffic Volume (vph)	704	488	435	15	705	0
Future Volume (vph)	704	488	435	15	705	0
Turn Type	Prot	NA	NA	Perm	Prot	NA
Protected Phases	7	4	8		5	2
Permitted Phases				8		
Detector Phase	7	4	8	8	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	46.0	73.0	27.0	27.0	47.0	47.0
Total Split (%)	38.3%	60.8%	22.5%	22.5%	39.2%	39.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 69 (58%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: E-470 NB Ramps & 56th Avenue





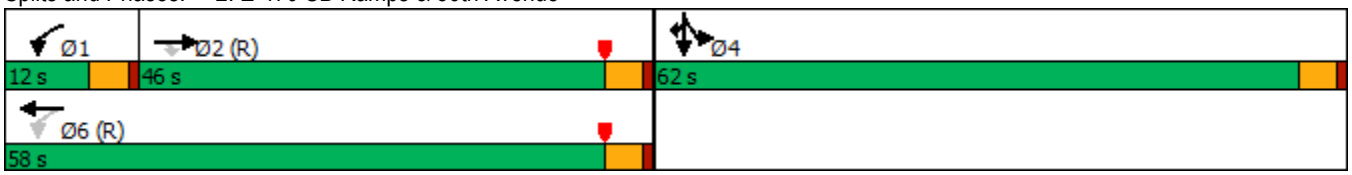
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	704	488	0	0	435	15	705	0	30	0	0	0
Future Volume (veh/h)	704	488	0	0	435	15	705	0	30	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking 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	782	542	0	0	483	17	783	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	864	3404	0	0	1936	601	893	0	409			
Arrive On Green	0.42	1.00	0.00	0.00	0.38	0.38	0.26	0.00	0.26			
Sat Flow, veh/h	3456	5274	0	0	5274	1585	3456	0	1585			
Grp Volume(v), veh/h	782	542	0	0	483	17	783	0	33			
Grp Sat Flow(s),veh/h/ln	1728	1702	0	0	1702	1585	1728	0	1585			
Q Serve(g_s), s	25.4	0.0	0.0	0.0	7.8	0.8	26.1	0.0	1.9			
Cycle Q Clear(g_c), s	25.4	0.0	0.0	0.0	7.8	0.8	26.1	0.0	1.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	864	3404	0	0	1936	601	893	0	409			
V/C Ratio(X)	0.91	0.16	0.00	0.00	0.25	0.03	0.88	0.00	0.08			
Avail Cap(c_a), veh/h	1195	3404	0	0	1936	601	1224	0	561			
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.66	0.66	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.6	0.0	0.0	0.0	25.5	23.4	42.7	0.0	33.7			
Incr Delay (d2), s/veh	5.4	0.1	0.0	0.0	0.3	0.1	5.7	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	13.1	0.0	0.0	0.0	5.6	0.6	17.4	0.0	1.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	0.1	0.0	0.0	25.8	23.5	48.4	0.0	33.8			
LnGrp LOS	D	A	A	A	C	C	D	A	C			
Approach Vol, veh/h		1324			500			816				
Approach Delay, s/veh		23.0			25.8			47.8				
Approach LOS		C			C			D				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		35.5		84.5			34.5	50.0				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		42.5		68.5			41.5	22.5				
Max Q Clear Time (g_c+I1), s		28.1		2.0			27.4	9.8				
Green Ext Time (p_c), s		2.9		3.7			2.6	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			31.2									
HCM 6th LOS			C									

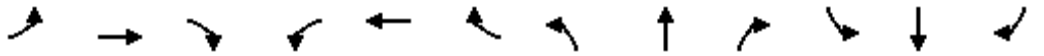
Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1182	737	110	1030	0	610
Future Volume (vph)	1182	737	110	1030	0	610
Turn Type	NA	Perm	pm+pt	NA	NA	Prot
Protected Phases	2		1	6	4	4
Permitted Phases		2	6			
Detector Phase	2	2	1	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	46.0	46.0	12.0	58.0	62.0	62.0
Total Split (%)	38.3%	38.3%	10.0%	48.3%	51.7%	51.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 2: E-470 SB Ramps & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱	↰	↑↑↑						↲	↱
Traffic Volume (veh/h)	0	1182	737	110	1030	0	0	0	0	10	0	610
Future Volume (veh/h)	0	1182	737	110	1030	0	0	0	0	10	0	610
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	1313	819	122	1144	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	1322	291	4658	0				23	0	
Arrive On Green	0.00	1.00	1.00	0.01	0.30	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	1313	819	122	1144	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	0.0	0.0	0.9	20.3	0.0				0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	20.3	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	1322	291	4658	0				23	0	
V/C Ratio(X)	0.00	0.31	0.62	0.42	0.25	0.00				0.48	0.00	
Avail Cap(c_a), veh/h	0	4257	1322	329	4658	0				854	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	0.57	0.57	0.75	0.75	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.8	10.8	0.0				58.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	1.3	0.7	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	0.1	0.8	0.1	10.5	0.0				0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	1.3	1.6	10.9	0.0				73.8	0.0	0.0
LnGrp LOS	A	A	A	A	B	A				E	A	
Approach Vol, veh/h		2132			1266						11	
Approach Delay, s/veh		0.5			10.0						73.8	
Approach LOS		A			A						E	

Timer - Assigned Phs	1	2		4		6
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	41.5		57.5		53.5
Max Q Clear Time (g_c+I1), s	2.9	2.0		2.7		22.3
Green Ext Time (p_c), s	0.1	18.0		0.0		8.8

Intersection Summary	
HCM 6th Ctrl Delay	4.3
HCM 6th LOS	A

Notes

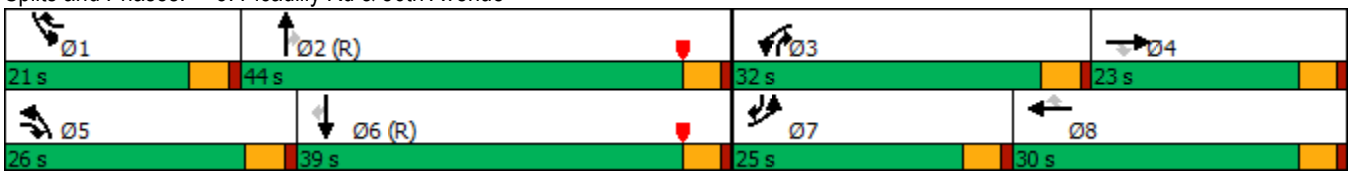
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

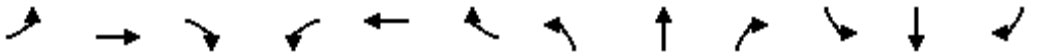
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	427	389	539	669	99	332	938	336	112	1053	230
Future Volume (vph)	195	427	389	539	669	99	332	938	336	112	1053	230
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	25.0	23.0	26.0	32.0	30.0	21.0	26.0	44.0	32.0	21.0	39.0	25.0
Total Split (%)	20.8%	19.2%	21.7%	26.7%	25.0%	17.5%	21.7%	36.7%	26.7%	17.5%	32.5%	20.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Picadilly Rd & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	195	427	389	539	669	99	332	938	336	112	1053	230
Future Volume (veh/h)	195	427	389	539	669	99	332	938	336	112	1053	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	474	432	599	743	110	369	1042	373	124	1170	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	246	787	445	673	1077	469	437	2125	968	151	1912	812
Arrive On Green	0.14	0.15	0.15	0.19	0.21	0.21	0.17	0.55	0.55	0.08	0.37	0.37
Sat Flow, veh/h	1781	5106	1585	3456	5106	1585	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	217	474	432	599	743	110	369	1042	373	124	1170	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	14.3	10.4	18.5	20.3	16.1	6.3	12.4	15.0	12.2	8.2	22.3	11.3
Cycle Q Clear(g_c), s	14.3	10.4	18.5	20.3	16.1	6.3	12.4	15.0	12.2	8.2	22.3	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	246	787	445	673	1077	469	437	2125	968	151	1912	812
V/C Ratio(X)	0.88	0.60	0.97	0.89	0.69	0.23	0.84	0.49	0.39	0.82	0.61	0.32
Avail Cap(c_a), veh/h	304	787	445	792	1085	471	619	2125	968	245	1912	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	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	50.8	47.3	42.7	47.1	43.7	32.0	48.8	19.0	8.8	54.0	30.4	17.0
Incr Delay (d2), s/veh	21.6	1.3	35.1	10.9	1.9	0.3	7.4	0.8	1.2	10.8	1.5	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	12.2	7.8	23.1	14.5	11.0	4.3	9.3	9.0	6.5	7.3	14.1	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.3	48.6	77.7	58.0	45.6	32.2	56.1	19.8	9.9	64.8	31.9	18.0
LnGrp LOS	E	D	E	E	D	C	E	B	A	E	C	B
Approach Vol, veh/h		1123			1452			1784			1550	
Approach Delay, s/veh		64.4			49.7			25.3			32.3	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.7	54.4	27.9	23.0	19.7	49.4	21.1	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	16.5	39.5	27.5	18.5	21.5	34.5	20.5	25.5
Max Q Clear Time (g_c+I1), s	10.2	17.0	22.3	20.5	14.4	24.3	16.3	18.1
Green Ext Time (p_c), s	0.1	8.9	1.1	0.0	0.8	5.9	0.2	2.9

Intersection Summary	
HCM 6th Ctrl Delay	40.5
HCM 6th LOS	D

Notes

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

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	0	60	0	0	152	0	1455	148	255	1701	25
Future Vol, veh/h	0	0	60	0	0	152	0	1455	148	255	1701	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	-	-	-	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	169	0	1617	164	283	1890	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	959	-	-	891	1918	0	0	1781	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	*514	0	0	*580	*646	-	-	591	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*514	-	-	*580	*646	-	-	591	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	13.7	0	2.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 646	-	-	514	580	591	-	-
HCM Lane V/C Ratio	-	-	-	0.13	0.291	0.479	-	-
HCM Control Delay (s)	0	-	-	13	13.7	16.6	-	-
HCM Lane LOS	A	-	-	B	B	C	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.2	2.6	-	-

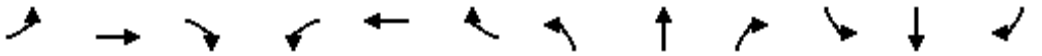
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	0	137	0	35	1604	76	1615
Future Volume (vph)	0	137	0	35	1604	76	1615
Turn Type	NA	pm+pt	NA	Perm	NA	pm+pt	NA
Protected Phases	4	3	8		2	1	6
Permitted Phases		8		2		6	
Detector Phase	4	3	8	2	2	1	6
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	15.0	38.0	68.0	68.0	14.0	82.0
Total Split (%)	19.2%	12.5%	31.7%	56.7%	56.7%	11.7%	68.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead		Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	
Recall Mode	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 5: Picadilly Rd & 54th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	10	137	0	7	35	1604	34	76	1615	45
Future Volume (veh/h)	0	0	10	137	0	7	35	1604	34	76	1615	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	0	0	11	152	0	8	39	1782	38	84	1794	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	60	0	31	234	0	229	236	3621	77	300	3985	111
Arrive On Green	0.00	0.00	0.02	0.09	0.00	0.14	0.94	0.94	0.94	0.08	1.00	1.00
Sat Flow, veh/h	1407	0	1585	1781	0	1585	251	5145	110	1781	5107	142
Grp Volume(v), veh/h	0	0	11	152	0	8	39	1179	641	84	1196	648
Grp Sat Flow(s),veh/h/ln	1407	0	1585	1781	0	1585	251	1702	1851	1781	1702	1845
Q Serve(g_s), s	0.0	0.0	0.8	9.8	0.0	0.5	1.5	4.9	4.9	1.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.8	9.8	0.0	0.5	1.5	4.9	4.9	1.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.08
Lane Grp Cap(c), veh/h	60	0	31	234	0	229	236	2396	1302	300	2657	1440
V/C Ratio(X)	0.00	0.00	0.35	0.65	0.00	0.03	0.16	0.49	0.49	0.28	0.45	0.45
Avail Cap(c_a), veh/h	249	0	244	234	0	442	236	2396	1302	371	2657	1440
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	58.1	50.4	0.0	44.1	1.2	1.3	1.3	3.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	6.8	6.2	0.0	0.1	1.2	0.6	1.1	0.5	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	0.0	0.0	0.7	8.4	0.0	0.4	0.2	2.0	2.5	0.8	0.4	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	64.8	56.6	0.0	44.2	2.4	1.9	2.4	4.3	0.6	1.0
LnGrp LOS	A	A	E	E	A	D	A	A	A	A	A	A
Approach Vol, veh/h		11			160			1859			1928	
Approach Delay, s/veh		64.8			56.0			2.1			0.9	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	9.2	89.0	15.0	6.8		98.2		21.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	9.5	63.5	10.5	18.5		77.5		33.5				
Max Q Clear Time (g_c+I1), s	3.4	6.9	11.8	2.8		2.0		2.5				
Green Ext Time (p_c), s	0.1	22.8	0.0	0.0		22.2		0.0				

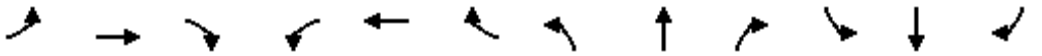
Intersection Summary												
HCM 6th Ctrl Delay			3.8									
HCM 6th LOS			A									

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	30	10	130	10	154	20	1480	111	1611
Future Volume (vph)	30	10	130	10	154	20	1480	111	1611
Turn Type	Perm	NA	pm+pt	NA	pm+ov	Perm	NA	pm+pt	NA
Protected Phases		4	3	8	1		2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	3	8	1	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5
Total Split (s)	23.0	23.0	16.0	39.0	19.0	62.0	62.0	19.0	81.0
Total Split (%)	19.2%	19.2%	13.3%	32.5%	15.8%	51.7%	51.7%	15.8%	67.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 6: Picadilly Rd & 52nd Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	10	45	130	10	154	20	1480	195	111	1611	40
Future Volume (veh/h)	30	10	45	130	10	154	20	1480	195	111	1611	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	144	11	171	22	1644	217	123	1790	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	127	16	74	245	342	355	228	3030	399	250	3804	93
Arrive On Green	0.06	0.06	0.06	0.09	0.18	0.18	0.66	0.66	0.66	0.05	0.99	0.99
Sat Flow, veh/h	1202	294	1336	1781	1870	1585	253	4566	601	1781	5126	126
Grp Volume(v), veh/h	33	0	61	144	11	171	22	1224	637	123	1188	646
Grp Sat Flow(s),veh/h/ln	1202	0	1630	1781	1870	1585	253	1702	1762	1781	1702	1848
Q Serve(g_s), s	3.2	0.0	4.4	8.8	0.6	11.3	3.8	22.7	22.8	2.5	1.0	1.0
Cycle Q Clear(g_c), s	3.2	0.0	4.4	8.8	0.6	11.3	3.8	22.7	22.8	2.5	1.0	1.0
Prop In Lane	1.00		0.82	1.00		1.00	1.00		0.34	1.00		0.07
Lane Grp Cap(c), veh/h	127	0	91	245	342	355	228	2259	1169	250	2526	1371
V/C Ratio(X)	0.26	0.00	0.67	0.59	0.03	0.48	0.10	0.54	0.54	0.49	0.47	0.47
Avail Cap(c_a), veh/h	245	0	251	256	538	521	228	2259	1169	392	2526	1371
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	0.88	0.88	0.88
Uniform Delay (d), s/veh	55.0	0.0	55.6	46.0	40.3	40.5	7.4	10.6	10.6	9.9	0.2	0.2
Incr Delay (d2), s/veh	1.1	0.0	8.4	3.2	0.0	1.0	0.8	0.9	1.8	1.3	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	7.5	0.5	8.0	0.5	13.0	13.8	1.9	0.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.1	0.0	64.0	49.2	40.3	41.5	8.3	11.5	12.5	11.2	0.8	1.2
LnGrp LOS	E	A	E	D	D	D	A	B	B	B	A	A
Approach Vol, veh/h		94			326			1883			1957	
Approach Delay, s/veh		61.2			44.9			11.8			1.6	
Approach LOS		E			D			B			A	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	9.4	84.1	15.3	11.2		93.6		26.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s	14.5	57.5	11.5	18.5		76.5		34.5				
Max Q Clear Time (g_c+I1), s	4.5	24.8	10.8	6.4		3.0		13.3				
Green Ext Time (p_c), s	0.2	19.3	0.0	0.3		24.8		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			10.7									
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	1695	10	5	1740	40
Future Vol, veh/h	0	0	40	0	0	0	30	1695	10	5	1740	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	1883	11	6	1933	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	989	-	-	947	1977	0	0	1894	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	*514	0	0	*514	*646	-	-	*646	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*514	-	-	*514	*646	-	-	*646	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	0	0.2	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 646	-	-	514	-	* 646	-	-
HCM Lane V/C Ratio	0.052	-	-	0.086	-	0.009	-	-
HCM Control Delay (s)	10.9	-	-	12.7	0	10.6	-	-
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	1715	15	5	1750	25
Future Vol, veh/h	0	0	25	0	0	20	40	1715	15	5	1750	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	1906	17	6	1944	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	986	-	-	962	1972	0	0	1923	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	*524	0	0	*524	610	-	-	*658	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1			1	1	-	-	1	-	-
Mov Cap-1 Maneuver	-	-	*524	-	-	*524	610	-	-	*658	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	12.2	0.3	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	524	524	* 658	-	-
HCM Lane V/C Ratio	0.073	-	-	0.053	0.042	0.008	-	-
HCM Control Delay (s)	11.4	-	-	12.3	12.2	10.5	-	-
HCM Lane LOS	B	-	-	B	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-

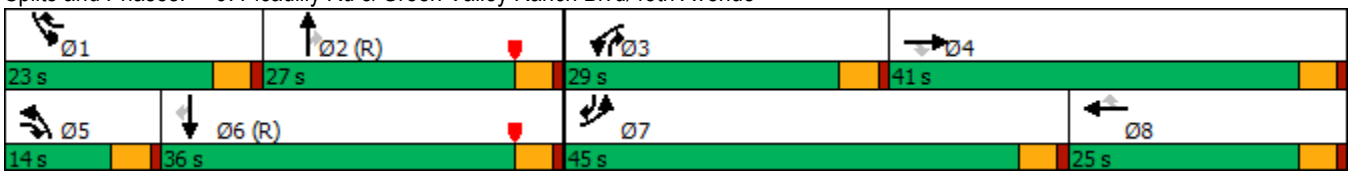
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

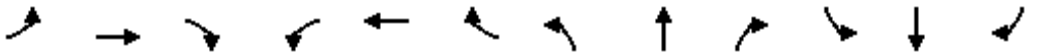
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	1407	305	647	1437	567	205	819	392	461	966	323
Future Volume (vph)	384	1407	305	647	1437	567	205	819	392	461	966	323
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	22.5
Total Split (s)	45.0	41.0	14.0	29.0	25.0	23.0	14.0	27.0	29.0	23.0	36.0	45.0
Total Split (%)	37.5%	34.2%	11.7%	24.2%	20.8%	19.2%	11.7%	22.5%	24.2%	19.2%	30.0%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max	None	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 119 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 9: Picadilly Rd & Green Valley Ranch Blvd/48th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	384	1407	305	647	1437	567	205	819	392	461	966	323
Future Volume (veh/h)	384	1407	305	647	1437	567	205	819	392	461	966	323
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	427	1563	339	719	1597	0	228	910	0	512	1073	359
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	515	1553	608	706	1834		274	957		533	1340	652
Arrive On Green	0.15	0.30	0.30	0.41	0.72	0.00	0.08	0.19	0.00	0.15	0.26	0.26
Sat Flow, veh/h	3456	5106	1585	3456	5106	1585	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	427	1563	339	719	1597	0	228	910	0	512	1073	359
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1728	1702	1585	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	14.4	36.5	20.1	24.5	28.2	0.0	7.8	21.1	0.0	17.7	23.5	20.7
Cycle Q Clear(g_c), s	14.4	36.5	20.1	24.5	28.2	0.0	7.8	21.1	0.0	17.7	23.5	20.7
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	515	1553	608	706	1834		274	957		533	1340	652
V/C Ratio(X)	0.83	1.01	0.56	1.02	0.87		0.83	0.95		0.96	0.80	0.55
Avail Cap(c_a), veh/h	1166	1553	608	706	1834		274	957		533	1340	652
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	0.64	0.64	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	41.8	29.0	35.5	14.8	0.0	54.5	48.2	0.0	50.4	41.3	26.9
Incr Delay (d2), s/veh	3.5	24.4	1.1	32.0	3.2	0.0	19.3	19.3	0.0	29.3	5.1	3.3
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	10.6	25.6	12.3	15.7	8.6	0.0	7.3	15.8	0.0	14.7	15.5	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	66.1	30.2	67.5	18.0	0.0	73.8	67.5	0.0	79.7	46.4	30.2
LnGrp LOS	D	F	C	F	B		E	E		E	D	C
Approach Vol, veh/h		2329			2316			1138			1944	
Approach Delay, s/veh		58.5			33.4			68.8			52.2	
Approach LOS		E			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	27.0	29.0	41.0	14.0	36.0	22.4	47.6
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	18.5	22.5	24.5	36.5	9.5	31.5	40.5	20.5
Max Q Clear Time (g_c+I1), s	19.7	23.1	26.5	38.5	9.8	25.5	16.4	30.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	3.8	1.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

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

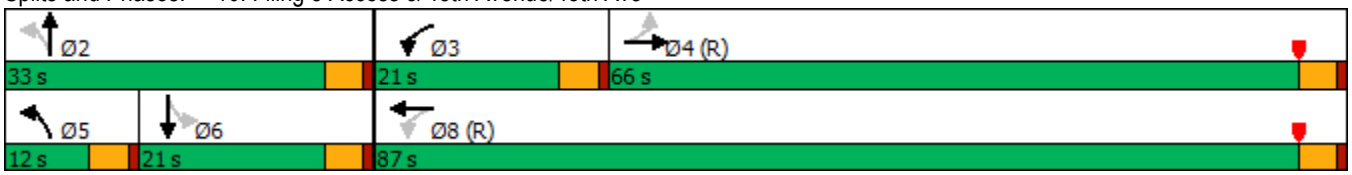
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

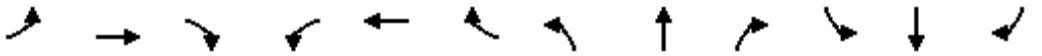
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	2034	230	2470	170	0	10	0
Future Volume (vph)	10	2034	230	2470	170	0	10	0
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	3	8	5	2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	5	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	9.5	22.5	22.5	22.5
Total Split (s)	66.0	66.0	21.0	87.0	12.0	33.0	21.0	21.0
Total Split (%)	55.0%	55.0%	17.5%	72.5%	10.0%	27.5%	17.5%	17.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 112 (93%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 10: Filing 5 Access & 48th Avenue/48th Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2034	170	230	2470	15	170	0	110	10	0	10
Future Volume (veh/h)	10	2034	170	230	2470	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	2260	189	256	2744	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	115	3223	266	287	4103	25	220	0	224	112	0	66
Arrive On Green	1.00	1.00	1.00	0.08	0.78	0.78	0.06	0.00	0.14	0.04	0.00	0.04
Sat Flow, veh/h	101	4806	397	1781	5236	32	1781	0	1585	1269	0	1585
Grp Volume(v), veh/h	11	1592	857	256	1782	979	189	0	122	11	0	11
Grp Sat Flow(s),veh/h/ln	101	1702	1799	1781	1702	1865	1781	0	1585	1269	0	1585
Q Serve(g_s), s	2.9	0.0	0.0	6.6	28.5	28.7	7.5	0.0	8.6	1.0	0.0	0.8
Cycle Q Clear(g_c), s	18.0	0.0	0.0	6.6	28.5	28.7	7.5	0.0	8.6	1.0	0.0	0.8
Prop In Lane	1.00		0.22	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	115	2283	1206	287	2668	1461	220	0	224	112	0	66
V/C Ratio(X)	0.10	0.70	0.71	0.89	0.67	0.67	0.86	0.00	0.54	0.10	0.00	0.17
Avail Cap(c_a), veh/h	115	2283	1206	398	2668	1461	220	0	376	235	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)	0.26	0.26	0.26	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.7	0.0	0.0	20.8	5.9	5.9	53.2	0.0	47.9	55.6	0.0	55.5
Incr Delay (d2), s/veh	0.4	0.5	0.9	16.9	1.3	2.5	27.3	0.0	2.1	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	0.1	0.3	0.6	12.8	13.4	15.1	6.7	0.0	6.4	0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.1	0.5	0.9	37.7	7.2	8.4	80.4	0.0	50.0	56.0	0.0	56.7
LnGrp LOS	A	A	A	D	A	A	F	A	D	E	A	E
Approach Vol, veh/h		2460			3017			311			22	
Approach Delay, s/veh		0.6			10.2			68.5			56.4	
Approach LOS		A			B			E			E	

Timer - Assigned Phs		2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s		21.5	13.6	85.0	12.0	9.5		98.5				
Change Period (Y+Rc), s		4.5	4.5	4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		28.5	16.5	61.5	7.5	16.5		82.5				
Max Q Clear Time (g_c+I1), s		10.6	8.6	20.0	9.5	3.0		30.7				
Green Ext Time (p_c), s		0.6	0.5	31.2	0.0	0.0		40.9				

Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

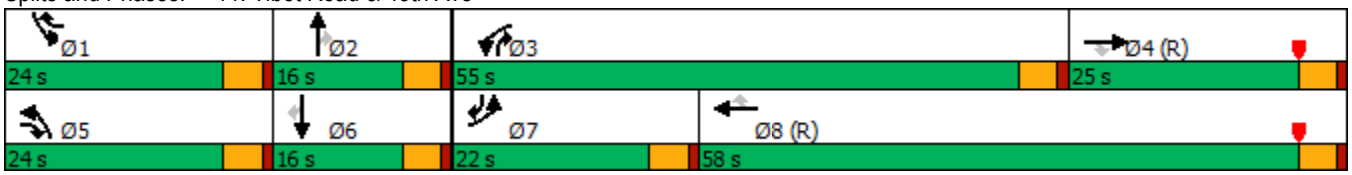
User approved pedestrian interval to be less than phase max green.

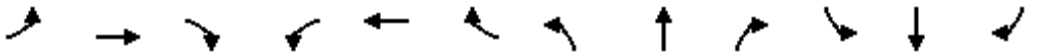
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	458	1595	101	115	2048	542	134	267	67	373	158	533
Future Volume (vph)	458	1595	101	115	2048	542	134	267	67	373	158	533
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	22.0	25.0	24.0	55.0	58.0	24.0	24.0	16.0	55.0	24.0	16.0	22.0
Total Split (%)	18.3%	20.8%	20.0%	45.8%	48.3%	20.0%	20.0%	13.3%	45.8%	20.0%	13.3%	18.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 48 (40%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated

Splits and Phases: 11: Tibet Road & 48th Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	458	1595	101	115	2048	542	134	267	67	373	158	533
Future Volume (veh/h)	458	1595	101	115	2048	542	134	267	67	373	158	533
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	509	1772	112	128	2276	0	149	297	74	414	176	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	504	2678	990	160	2392		178	179	294	483	254	
Arrive On Green	0.15	0.52	0.52	0.03	0.15	0.00	0.10	0.10	0.10	0.05	0.04	0.00
Sat Flow, veh/h	3456	5106	1585	1781	5106	1585	1781	1870	1585	3456	1870	1585
Grp Volume(v), veh/h	509	1772	112	128	2276	0	149	297	74	414	176	0
Grp Sat Flow(s),veh/h/ln	1728	1702	1585	1781	1702	1585	1781	1870	1585	1728	1870	1585
Q Serve(g_s), s	17.5	30.3	3.4	8.6	53.0	0.0	9.9	11.5	4.8	14.3	11.1	0.0
Cycle Q Clear(g_c), s	17.5	30.3	3.4	8.6	53.0	0.0	9.9	11.5	4.8	14.3	11.1	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	504	2678	990	160	2392		178	179	294	483	254	
V/C Ratio(X)	1.01	0.66	0.11	0.80	0.95		0.84	1.66	0.25	0.86	0.69	
Avail Cap(c_a), veh/h	504	2678	990	750	2392		289	179	294	562	254	
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	0.35	0.35	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	51.2	20.8	9.1	57.1	49.4	0.0	53.0	54.3	41.7	56.0	54.8	0.0
Incr Delay (d2), s/veh	42.6	1.3	0.2	3.3	4.3	0.0	10.8	319.1	0.4	11.1	7.8	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	15.9	17.7	2.2	6.2	30.0	0.0	8.6	33.7	3.5	11.9	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.9	22.1	9.3	60.4	53.7	0.0	63.9	373.4	42.2	67.2	62.7	0.0
LnGrp LOS	F	C	A	E	D		E	F	D	E	E	
Approach Vol, veh/h		2393			2404			520			590	
Approach Delay, s/veh		36.8			54.1			237.6			65.8	
Approach LOS		D			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	16.0	15.3	67.4	16.5	20.8	22.0	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	19.5	11.5	50.5	20.5	19.5	11.5	17.5	53.5
Max Q Clear Time (g_c+I1), s	16.3	13.5	10.6	32.3	11.9	13.1	19.5	55.0
Green Ext Time (p_c), s	0.5	0.0	0.4	0.0	0.2	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	64.4
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	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	10	23	0	22	15	1279	8	48	1032	5
Future Vol, veh/h	5	0	10	23	0	22	15	1279	8	48	1032	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	26	0	24	17	1421	9	53	1147	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2001	2720	577	2140	2719	715	1153	0	0	1430	0	0
Stage 1	1256	1256	-	1460	1460	-	-	-	-	-	-	-
Stage 2	745	1464	-	680	1259	-	-	-	-	-	-	-
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	*333	*16	*659	*185	*16	*554	*985	-	-	*829	-	-
Stage 1	*521	*478	-	*523	*458	-	-	-	-	-	-	-
Stage 2	*523	*458	-	*621	*476	-	-	-	-	-	-	-
Platoon blocked, %	1	1	1	1	1	1	1	-	-	1	-	-
Mov Cap-1 Maneuver	*299	*14	*659	*171	*14	*554	*985	-	-	*829	-	-
Mov Cap-2 Maneuver	*299	*14	-	*171	*14	-	-	-	-	-	-	-
Stage 1	*512	*447	-	*514	*450	-	-	-	-	-	-	-
Stage 2	*491	*450	-	*571	*445	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	20.9	0.1	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	* 985	-	-	470	171	554	* 829	-	-
HCM Lane V/C Ratio	0.017	-	-	0.035	0.149	0.044	0.064	-	-
HCM Control Delay (s)	8.7	-	-	12.9	29.7	11.8	9.6	-	-
HCM Lane LOS	A	-	-	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.5	0.1	0.2	-	-

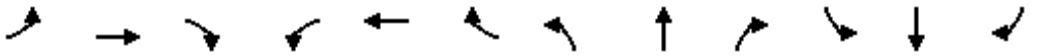
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	118	45	69	58	137	1111	57	68	857	117
Future Volume (vph)	118	45	69	58	137	1111	57	68	857	117
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov
Protected Phases	7	4	3	8	5	2		1	6	7
Permitted Phases	4		8		2		2	6		6
Detector Phase	7	4	3	8	5	2	2	1	6	7
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	22.5	9.5	22.5	9.5
Total Split (s)	16.0	29.0	12.0	25.0	17.0	67.0	67.0	12.0	62.0	16.0
Total Split (%)	13.3%	24.2%	10.0%	20.8%	14.2%	55.8%	55.8%	10.0%	51.7%	13.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	None	C-Max	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated

Splits and Phases: 13: Tibet Road & 52nd Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	45	159	69	58	89	137	1111	57	68	857	117
Future Volume (veh/h)	118	45	159	69	58	89	137	1111	57	68	857	117
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	131	50	177	77	64	99	152	1234	63	76	952	130
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	241	56	199	174	84	130	414	2154	961	253	2112	1066
Arrive On Green	0.13	0.26	0.26	0.05	0.13	0.13	0.02	0.20	0.20	0.05	0.79	0.79
Sat Flow, veh/h	1781	361	1279	1781	662	1024	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	131	0	227	77	0	163	152	1234	63	76	952	130
Grp Sat Flow(s),veh/h/ln	1781	0	1640	1781	0	1686	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	7.5	0.0	16.0	4.5	0.0	11.2	3.9	37.6	3.9	2.0	10.5	1.9
Cycle Q Clear(g_c), s	7.5	0.0	16.0	4.5	0.0	11.2	3.9	37.6	3.9	2.0	10.5	1.9
Prop In Lane	1.00		0.78	1.00		0.61	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	0	255	174	0	214	414	2154	961	253	2112	1066
V/C Ratio(X)	0.54	0.00	0.89	0.44	0.00	0.76	0.37	0.57	0.07	0.30	0.45	0.12
Avail Cap(c_a), veh/h	272	0	335	197	0	288	510	2154	961	296	2112	1066
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	43.4	43.2	0.0	50.6	9.2	34.0	20.4	14.9	6.2	3.5
Incr Delay (d2), s/veh	1.9	0.0	20.1	1.7	0.0	8.0	0.5	1.1	0.1	0.7	0.7	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	5.8	0.0	11.7	3.7	0.0	8.9	2.9	25.3	2.6	1.4	5.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	0.0	63.5	44.9	0.0	58.6	9.8	35.1	20.6	15.6	6.9	3.7
LnGrp LOS	D	A	E	D	A	E	A	D	C	B	A	A
Approach Vol, veh/h		358			240			1449			1158	
Approach Delay, s/veh		55.0			54.2			31.8			7.1	
Approach LOS		E			D			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	77.3	10.5	23.2	10.5	75.8	13.9	19.7
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	7.5	62.5	7.5	24.5	12.5	57.5	11.5	20.5
Max Q Clear Time (g_c+I1), s	4.0	39.6	6.5	18.0	5.9	12.5	9.5	13.2
Green Ext Time (p_c), s	0.0	10.3	0.0	0.7	0.2	9.3	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

Notes

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

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	4	314	5	10	297	5	5	0	5	2	0	2
Future Vol, veh/h	4	314	5	10	297	5	5	0	5	2	0	2
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	349	6	11	330	6	6	0	6	2	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	336	0	0	355	0	0	716	718	352	718	718	333
Stage 1	-	-	-	-	-	-	360	360	-	355	355	-
Stage 2	-	-	-	-	-	-	356	358	-	363	363	-
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	1260	-	-	1234	-	-	501	445	820	498	445	*842
Stage 1	-	-	-	-	-	-	764	674	-	770	679	-
Stage 2	-	-	-	-	-	-	770	676	-	761	672	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	1260	-	-	1234	-	-	495	439	820	490	439	*842
Mov Cap-2 Maneuver	-	-	-	-	-	-	495	439	-	490	439	-
Stage 1	-	-	-	-	-	-	762	672	-	768	673	-
Stage 2	-	-	-	-	-	-	761	670	-	753	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.3	10.9	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	617	1260	-	-	1234	-	-	619
HCM Lane V/C Ratio	0.018	0.004	-	-	0.009	-	-	0.007
HCM Control Delay (s)	10.9	7.9	-	-	7.9	-	-	10.9
HCM Lane LOS	B	A	-	-	A	-	-	B
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

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	313	10	10	294	5	10
Future Vol, veh/h	313	10	10	294	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	348	11	11	327	6	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	359	0	703	354
Stage 1	-	-	-	-	354	-
Stage 2	-	-	-	-	349	-
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	-	-	1229	-	524	817
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %	-	-	1	-	1	1
Mov Cap-1 Maneuver	-	-	1229	-	520	817
Mov Cap-2 Maneuver	-	-	-	-	520	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	773	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	686	-	-	1229	-
HCM Lane V/C Ratio	0.024	-	-	0.009	-
HCM Control Delay (s)	10.4	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	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	3	314	10	15	280	4	10	0	5	4	0	3
Future Vol, veh/h	3	314	10	15	280	4	10	0	5	4	0	3
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	3	349	11	17	311	4	11	0	6	4	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	360	0	0	710	710	355	711	713	313
Stage 1	-	-	-	-	-	-	361	361	-	347	347	-
Stage 2	-	-	-	-	-	-	349	349	-	364	366	-
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	1278	-	-	1227	-	-	485	438	815	484	435	849
Stage 1	-	-	-	-	-	-	763	673	-	762	677	-
Stage 2	-	-	-	-	-	-	760	675	-	759	669	-
Platoon blocked, %	1	-	-	1	-	-	1	1	1	1	1	1
Mov Cap-1 Maneuver	1278	-	-	1227	-	-	478	431	815	475	428	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	478	431	-	475	428	-
Stage 1	-	-	-	-	-	-	762	672	-	761	667	-
Stage 2	-	-	-	-	-	-	746	665	-	753	668	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	11.7	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	554	1278	-	-	1227	-	-	586
HCM Lane V/C Ratio	0.03	0.003	-	-	0.014	-	-	0.013
HCM Control Delay (s)	11.7	7.8	-	-	8	-	-	11.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	19	1289	29	25	1042
Future Vol, veh/h	0	19	1289	29	25	1042
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	21	1432	32	28	1158

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	732	0	0	1464	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	*528	-	-	*790	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		1	-	-	1	-
Mov Cap-1 Maneuver	-	*528	-	-	*790	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.1	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	528	* 790	-
HCM Lane V/C Ratio	-	-	0.04	0.035	-
HCM Control Delay (s)	-	-	12.1	9.7	0.5
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

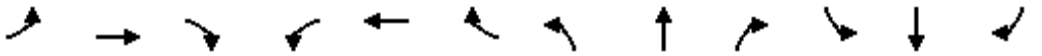
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	47	0	64	0	77	1192	108	997
Future Volume (vph)	47	0	64	0	77	1192	108	997
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	pm+pt	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases	4		8				6	
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	22.5	9.5	22.5	9.5	22.5
Total Split (s)	12.0	26.0	12.0	26.0	19.0	65.0	17.0	63.0
Total Split (%)	10.0%	21.7%	10.0%	21.7%	15.8%	54.2%	14.2%	52.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 115.5 (96%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 18: Tibet Road & Access #18



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	0	6	64	0	152	77	1192	40	108	997	19
Future Volume (veh/h)	47	0	6	64	0	152	77	1192	40	108	997	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	52	0	7	71	0	169	86	1324	44	120	1108	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	399	0	484	557	0	492	110	1584	53	189	1581	30
Arrive On Green	0.03	0.00	0.31	0.04	0.00	0.31	0.02	0.15	0.15	0.11	0.89	0.89
Sat Flow, veh/h	1781	0	1585	1781	0	1585	1781	3510	117	1781	3567	68
Grp Volume(v), veh/h	52	0	7	71	0	169	86	670	698	120	552	577
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1585	1781	1777	1849	1781	1777	1858
Q Serve(g_s), s	2.4	0.0	0.4	3.3	0.0	9.9	5.8	44.0	44.1	4.4	11.2	11.2
Cycle Q Clear(g_c), s	2.4	0.0	0.4	3.3	0.0	9.9	5.8	44.0	44.1	4.4	11.2	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	399	0	484	557	0	492	110	802	835	189	788	824
V/C Ratio(X)	0.13	0.00	0.01	0.13	0.00	0.34	0.78	0.84	0.84	0.63	0.70	0.70
Avail Cap(c_a), veh/h	449	0	484	597	0	492	215	896	932	279	866	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	27.3	0.0	29.1	26.8	0.0	31.9	58.0	46.7	46.8	25.1	4.4	4.4
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.1	0.0	1.9	11.4	6.3	6.2	3.0	2.0	1.9
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	1.8	0.0	0.3	2.5	0.0	7.3	5.5	30.2	31.2	3.3	4.2	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.0	29.2	26.9	0.0	33.8	69.4	53.1	52.9	28.1	6.4	6.3
LnGrp LOS	C	A	C	C	A	C	E	D	D	C	A	A
Approach Vol, veh/h		59			240			1454			1249	
Approach Delay, s/veh		27.7			31.8			54.0			8.4	
Approach LOS		C			C			D			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	58.7	9.3	41.1	11.9	57.7	8.6	41.8
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	12.5	60.5	7.5	21.5	14.5	58.5	7.5	21.5
Max Q Clear Time (g_c+I1), s	6.4	46.1	5.3	2.4	7.8	13.2	4.4	11.9
Green Ext Time (p_c), s	0.1	8.1	0.0	0.0	0.1	9.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

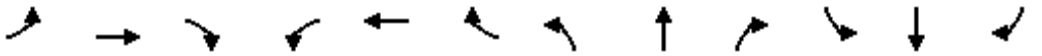
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	148	0	35	0	74	1306	34	1012	80
Future Volume (vph)	148	0	35	0	74	1306	34	1012	80
Turn Type	pm+pt	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases	7	4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	7	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5
Total Split (s)	18.0	41.0	23.0	23.0	14.0	79.0	65.0	65.0	65.0
Total Split (%)	15.0%	34.2%	19.2%	19.2%	11.7%	65.8%	54.2%	54.2%	54.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead		Lag	Lag	Lead		Lag	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 19: Tibet Road & Access #19



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	0	77	35	0	34	74	1306	11	34	1012	80
Future Volume (veh/h)	148	0	77	35	0	34	74	1306	11	34	1012	80
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	164	0	86	39	0	38	82	1451	12	38	1124	89
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	273	0	295	122	0	75	434	2669	22	300	2354	1050
Arrive On Green	0.10	0.00	0.19	0.05	0.00	0.05	0.08	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1781	0	1585	1311	0	1585	1781	3612	30	363	3554	1585
Grp Volume(v), veh/h	164	0	86	39	0	38	82	714	749	38	1124	89
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1311	0	1585	1781	1777	1865	363	1777	1585
Q Serve(g_s), s	10.2	0.0	5.6	3.5	0.0	2.8	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.2	0.0	5.6	3.5	0.0	2.8	1.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	273	0	295	122	0	75	434	1313	1378	300	2354	1050
V/C Ratio(X)	0.60	0.00	0.29	0.32	0.00	0.51	0.19	0.54	0.54	0.13	0.48	0.08
Avail Cap(c_a), veh/h	293	0	482	262	0	244	506	1313	1378	300	2354	1050
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	1.00	1.00	0.00	1.00	0.50	0.50	0.50	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	0.0	42.0	56.1	0.0	55.8	4.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.5	1.5	0.0	5.2	0.1	0.8	0.8	0.9	0.7	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	8.3	0.0	4.0	2.2	0.0	2.2	1.0	0.5	0.5	0.1	0.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	0.0	42.6	57.6	0.0	61.0	4.9	0.8	0.8	0.9	0.7	0.2
LnGrp LOS	D	A	D	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		250			77			1545			1251	
Approach Delay, s/veh		46.9			59.3			1.0			0.7	
Approach LOS		D			E			A			A	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		93.2		26.8	9.2	84.0	16.7	10.2				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		74.5		36.5	9.5	60.5	13.5	18.5				
Max Q Clear Time (g_c+I1), s		2.0		7.6	3.6	2.0	12.2	5.5				
Green Ext Time (p_c), s		16.8		0.5	0.1	13.4	0.1	0.2				

Intersection Summary												
HCM 6th Ctrl Delay			6.0									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	753	123	0	1307	0	162
Future Vol, veh/h	753	123	0	1307	0	162
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	837	137	0	1452	0	180

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	487
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	450
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	450
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.2
HCM LOS			C

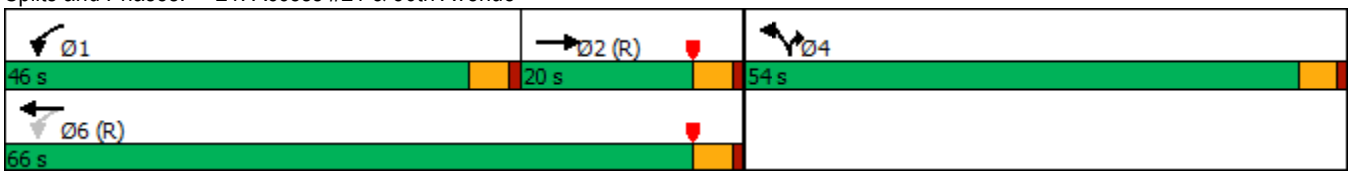
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	450	-	-	-
HCM Lane V/C Ratio	0.4	-	-	-
HCM Control Delay (s)	18.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Traffic Volume (vph)	873	408	1149	156	319
Future Volume (vph)	873	408	1149	156	319
Turn Type	NA	pm+pt	NA	Prot	Prot
Protected Phases	2	1	6	4	4
Permitted Phases		6			
Detector Phase	2	1	6	4	4
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	9.5	22.5	22.5	22.5
Total Split (s)	20.0	46.0	66.0	54.0	54.0
Total Split (%)	16.7%	38.3%	55.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	C-Max	None	C-Max	Max	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 44.5 (37%), Referenced to phase 2:EBT and 6:WBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 21: Access #21 & 56th Avenue



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	873	42	408	1149	156	319
Future Volume (veh/h)	873	42	408	1149	156	319
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	970	47	453	1277	173	354
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	1284	62	491	2617	735	654
Arrive On Green	0.26	0.26	0.44	1.00	0.41	0.41
Sat Flow, veh/h	5158	241	1781	5274	1781	1585
Grp Volume(v), veh/h	661	356	453	1277	173	354
Grp Sat Flow(s),veh/h/ln	1702	1827	1781	1702	1781	1585
Q Serve(g_s), s	21.5	21.5	22.8	0.0	7.6	20.3
Cycle Q Clear(g_c), s	21.5	21.5	22.8	0.0	7.6	20.3
Prop In Lane		0.13	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	876	470	491	2617	735	654
V/C Ratio(X)	0.76	0.76	0.92	0.49	0.24	0.54
Avail Cap(c_a), veh/h	876	470	719	2617	735	654
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	41.1	18.2	0.0	22.9	26.7
Incr Delay (d2), s/veh	6.0	10.8	13.3	0.7	0.8	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.8	16.5	12.3	0.3	6.0	12.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.1	51.9	31.5	0.7	23.7	29.9
LnGrp LOS	D	D	C	A	C	C
Approach Vol, veh/h	1017			1730	527	
Approach Delay, s/veh	48.8			8.7	27.8	
Approach LOS	D			A	C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.6	35.4		54.0		66.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	41.5	15.5		49.5		61.5
Max Q Clear Time (g_c+I1), s	24.8	23.5		22.3		2.0
Green Ext Time (p_c), s	1.3	0.0		1.8		13.4

Intersection Summary		
HCM 6th Ctrl Delay		24.2
HCM 6th LOS		C

Notes

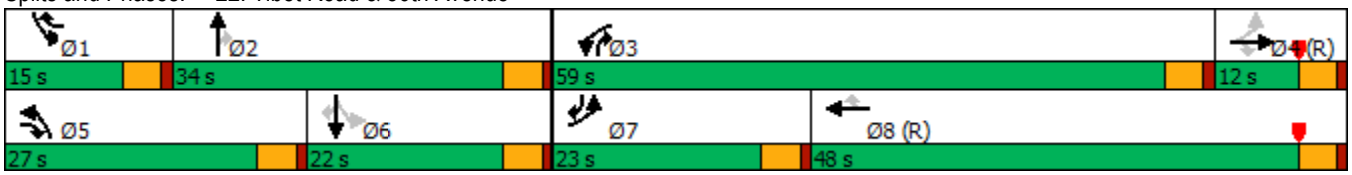
User approved pedestrian interval to be less than phase max green.

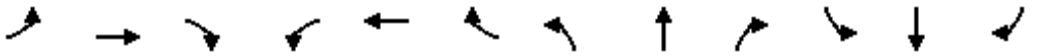
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	805	289	531	779	185	487	315	671	230	305	290
Future Volume (vph)	175	805	289	531	779	185	487	315	671	230	305	290
Turn Type	pm+pt	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4			8			2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5	9.5
Total Split (s)	23.0	12.0	27.0	59.0	48.0	15.0	27.0	34.0	59.0	15.0	22.0	23.0
Total Split (%)	19.2%	10.0%	22.5%	49.2%	40.0%	12.5%	22.5%	28.3%	49.2%	12.5%	18.3%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	C-Max	None	None	None	None	None	None	None

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 22: Tibet Road & 56th Avenue





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	805	289	531	779	185	487	315	671	230	305	290
Future Volume (veh/h)	175	805	289	531	779	185	487	315	671	230	305	290
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	194	894	321	590	866	206	541	350	746	256	339	322
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	394	1646	790	671	2167	811	608	874	698	294	560	396
Arrive On Green	0.18	0.64	0.64	0.39	0.85	0.85	0.06	0.08	0.08	0.09	0.16	0.16
Sat Flow, veh/h	1781	5106	1585	3456	5106	1585	3456	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	194	894	321	590	866	206	541	350	746	256	339	322
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1728	1702	1585	1728	1777	1585	1781	1777	1585
Q Serve(g_s), s	8.8	11.5	10.7	19.0	4.7	2.7	18.7	11.2	29.5	10.5	10.7	18.9
Cycle Q Clear(g_c), s	8.8	11.5	10.7	19.0	4.7	2.7	18.7	11.2	29.5	10.5	10.7	18.9
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	394	1646	790	671	2167	811	608	874	698	294	560	396
V/C Ratio(X)	0.49	0.54	0.41	0.88	0.40	0.25	0.89	0.40	1.07	0.87	0.61	0.81
Avail Cap(c_a), veh/h	504	1646	790	1569	2167	811	648	874	698	294	560	396
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	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	20.8	16.5	9.3	35.4	5.6	3.9	55.4	46.7	38.4	42.5	47.1	42.4
Incr Delay (d2), s/veh	1.0	1.3	1.6	3.9	0.6	0.8	13.9	0.3	54.1	23.3	1.9	12.3
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	5.7	6.2	5.3	11.2	2.5	1.7	15.0	9.2	38.7	8.0	8.5	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	17.8	10.9	39.3	6.1	4.7	69.3	47.0	92.5	65.8	48.9	54.7
LnGrp LOS	C	B	B	D	A	A	E	D	F	E	D	D
Approach Vol, veh/h		1409			1662			1637			917	
Approach Delay, s/veh		16.8			17.7			75.1			55.7	
Approach LOS		B			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	34.0	27.8	43.2	25.6	23.4	15.6	55.4
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	10.5	29.5	54.5	7.5	22.5	17.5	18.5	43.5
Max Q Clear Time (g_c+I1), s	12.5	31.5	21.0	13.5	20.7	20.9	10.8	6.7
Green Ext Time (p_c), s	0.0	0.0	2.3	0.0	0.4	0.0	0.3	8.2

Intersection Summary	
HCM 6th Ctrl Delay	40.4
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1164	28	0	1557	0	105
Future Vol, veh/h	1164	28	0	1557	0	105
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	1293	31	0	1730	0	117

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	662
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	*646
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		1
Mov Cap-1 Maneuver	-	-	-	-	-	*646
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	646	-	-	-
HCM Lane V/C Ratio	0.181	-	-	-
HCM Control Delay (s)	11.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1690	16	0	1495	0	44
Future Vol, veh/h	1690	16	0	1495	0	44
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	1878	18	0	1661	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	948
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	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	524	-	-	-
HCM Lane V/C Ratio	0.093	-	-	-
HCM Control Delay (s)	12.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

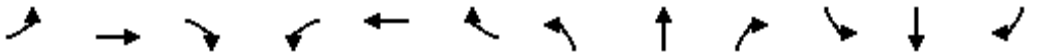
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	1580	212	1273	112	0	135	0
Future Volume (vph)	115	1580	212	1273	112	0	135	0
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	9.5	22.5	9.5	22.5
Total Split (s)	17.0	55.0	25.0	63.0	13.0	23.0	17.0	27.0
Total Split (%)	14.2%	45.8%	20.8%	52.5%	10.8%	19.2%	14.2%	22.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 25: Access #25 & 56th Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	1580	39	212	1273	155	112	0	204	135	0	110
Future Volume (veh/h)	115	1580	39	212	1273	155	112	0	204	135	0	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	128	1756	43	236	1414	172	124	0	227	150	0	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	316	2595	64	345	2489	303	338	0	275	252	0	297
Arrive On Green	0.10	1.00	1.00	0.17	1.00	1.00	0.07	0.00	0.17	0.08	0.00	0.19
Sat Flow, veh/h	1781	5126	125	1781	4613	561	1781	0	1585	1781	0	1585
Grp Volume(v), veh/h	128	1166	633	236	1043	543	124	0	227	150	0	122
Grp Sat Flow(s),veh/h/ln	1781	1702	1848	1781	1702	1769	1781	0	1585	1781	0	1585
Q Serve(g_s), s	4.2	0.0	0.0	7.8	0.0	0.0	6.8	0.0	16.6	8.2	0.0	8.1
Cycle Q Clear(g_c), s	4.2	0.0	0.0	7.8	0.0	0.0	6.8	0.0	16.6	8.2	0.0	8.1
Prop In Lane	1.00		0.07	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	1723	935	345	1837	955	338	0	275	252	0	297
V/C Ratio(X)	0.41	0.68	0.68	0.68	0.57	0.57	0.37	0.00	0.83	0.60	0.00	0.41
Avail Cap(c_a), veh/h	409	1723	935	497	1837	955	338	0	275	286	0	297
HCM Platoon Ratio	2.00	2.00	2.00	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	0.73	0.73	0.73	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	0.0	0.0	10.0	0.0	0.0	37.0	0.0	47.9	37.4	0.0	42.9
Incr Delay (d2), s/veh	0.8	2.2	3.9	1.8	0.9	1.8	0.7	0.0	18.3	2.6	0.0	4.2
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	2.7	0.9	1.8	4.8	0.4	0.9	5.4	0.0	12.6	6.8	0.0	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.8	2.2	3.9	11.7	0.9	1.8	37.7	0.0	66.2	40.0	0.0	47.1
LnGrp LOS	B	A	A	B	A	A	D	A	E	D	A	D
Approach Vol, veh/h		1927			1822			351			272	
Approach Delay, s/veh		3.4			2.6			56.1			43.2	
Approach LOS		A			A			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	65.2	13.0	27.0	10.8	69.2	14.7	25.3
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	20.5	50.5	8.5	22.5	12.5	58.5	12.5	18.5
Max Q Clear Time (g_c+I1), s	9.8	2.0	8.8	10.1	6.2	2.0	10.2	18.6
Green Ext Time (p_c), s	0.5	18.1	0.0	0.5	0.1	18.0	0.1	0.0

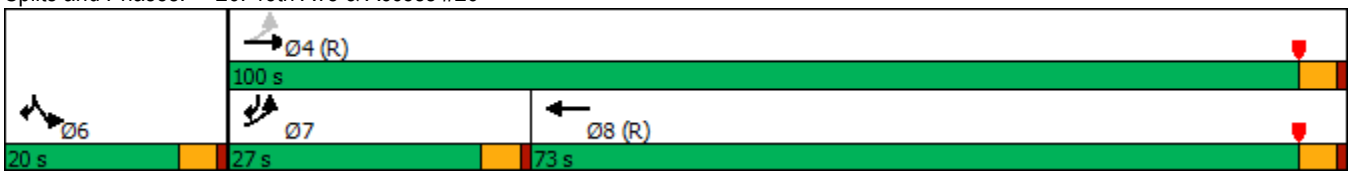
Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

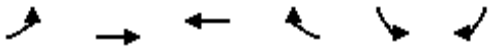
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	271	1764	2430	107	274
Future Volume (vph)	271	1764	2430	107	274
Turn Type	pm+pt	NA	NA	Prot	pt+ov
Protected Phases	7	4	8	6	6 7
Permitted Phases	4				
Detector Phase	7	4	8	6	6 7
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	22.5	22.5	22.5	
Total Split (s)	27.0	100.0	73.0	20.0	
Total Split (%)	22.5%	83.3%	60.8%	16.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Max	C-Max	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated

Splits and Phases: 26: 48th Ave & Access #26





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	271	1764	2430	62	107	274
Future Volume (veh/h)	271	1764	2430	62	107	274
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	301	1960	2700	69	119	304
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	333	4064	3282	83	230	391
Arrive On Green	0.12	0.80	1.00	1.00	0.13	0.13
Sat Flow, veh/h	1781	5274	5289	130	1781	1585
Grp Volume(v), veh/h	301	1960	1789	980	119	304
Grp Sat Flow(s),veh/h/ln	1781	1702	1702	1847	1781	1585
Q Serve(g_s), s	11.5	15.3	0.0	0.0	7.5	15.5
Cycle Q Clear(g_c), s	11.5	15.3	0.0	0.0	7.5	15.5
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	333	4064	2182	1184	230	391
V/C Ratio(X)	0.90	0.48	0.82	0.83	0.52	0.78
Avail Cap(c_a), veh/h	458	4064	2182	1184	230	391
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.61	0.61	0.64	0.64	1.00	1.00
Uniform Delay (d), s/veh	30.1	4.1	0.0	0.0	48.8	42.1
Incr Delay (d2), s/veh	11.3	0.3	2.3	4.4	8.1	14.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.4	6.9	1.3	2.6	6.9	26.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.4	4.3	2.3	4.4	56.8	56.3
LnGrp LOS	D	A	A	A	E	E
Approach Vol, veh/h		2261	2769		423	
Approach Delay, s/veh		9.2	3.1		56.4	
Approach LOS		A	A		E	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	100.0	20.0	18.6	81.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	95.5	15.5	22.5	68.5
Max Q Clear Time (g_c+I1), s	17.3	17.5	13.5	2.0
Green Ext Time (p_c), s	31.2	0.0	0.6	49.7

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Notes

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

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	73	0	0	26	0	1448	40	0	1053	71
Future Vol, veh/h	0	0	73	0	0	26	0	1448	40	0	1053	71
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
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	81	0	0	29	0	1609	44	0	1170	79

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	585	-	-	827	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	*633	0	0	*476	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	-	-	*633	-	-	*476	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	13.1	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	633	476	-	-
HCM Lane V/C Ratio	-	-	0.128	0.061	-	-
HCM Control Delay (s)	-	-	11.5	13.1	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.4	0.2	-	-

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

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	1601	11	0	1761
Future Vol, veh/h	0	2	1601	11	0	1761
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	2	1779	12	0	1957

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	896	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	*536	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*536	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	536	-
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	11.7	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

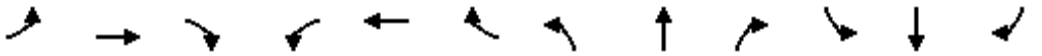
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	57	1751	123	2380	53	44	57	43
Future Volume (vph)	57	1751	123	2380	53	44	57	43
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA
Protected Phases		4	3	8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	3	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	84.0	84.0	12.0	96.0	24.0	24.0	24.0	24.0
Total Split (%)	70.0%	70.0%	10.0%	80.0%	20.0%	20.0%	20.0%	20.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lag	Lag	Lead					
Lead-Lag Optimize?	Yes	Yes	Yes					
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 18.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 29: Access #29 & 48th Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1751	64	123	2380	93	53	44	78	57	43	59
Future Volume (veh/h)	57	1751	64	123	2380	93	53	44	78	57	43	59
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	63	1946	71	137	2644	103	59	49	87	63	48	66
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	106	3350	122	274	3739	144	220	111	197	200	131	180
Arrive On Green	1.00	1.00	1.00	0.04	0.74	0.74	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	102	5057	184	1781	5045	195	1279	604	1073	1253	713	981
Grp Volume(v), veh/h	63	1309	708	137	1776	971	59	0	136	63	0	114
Grp Sat Flow(s),veh/h/ln	102	1702	1837	1781	1702	1835	1279	0	1677	1253	0	1694
Q Serve(g_s), s	54.0	0.0	0.0	2.8	33.9	34.9	5.1	0.0	8.6	5.6	0.0	7.1
Cycle Q Clear(g_c), s	79.5	0.0	0.0	2.8	33.9	34.9	12.1	0.0	8.6	14.3	0.0	7.1
Prop In Lane	1.00		0.10	1.00		0.11	1.00		0.64	1.00		0.58
Lane Grp Cap(c), veh/h	106	2255	1217	274	2523	1360	220	0	308	200	0	311
V/C Ratio(X)	0.59	0.58	0.58	0.50	0.70	0.71	0.27	0.00	0.44	0.31	0.00	0.37
Avail Cap(c_a), veh/h	106	2255	1217	312	2596	1399	220	0	308	200	0	311
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)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	0.0	5.1	8.4	8.5	48.2	0.0	43.5	49.8	0.0	42.9
Incr Delay (d2), s/veh	7.5	0.3	0.6	1.4	0.8	1.7	3.0	0.0	4.5	4.1	0.0	3.3
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	3.7	0.2	0.4	1.9	16.4	18.3	3.3	0.0	7.2	3.6	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.3	0.6	6.5	9.2	10.2	51.2	0.0	48.0	53.9	0.0	46.2
LnGrp LOS	C	A	A	A	A	B	D	A	D	D	A	D
Approach Vol, veh/h		2080			2884			195			177	
Approach Delay, s/veh		1.2			9.5			49.0			48.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		26.6	9.4	84.0		26.6		93.4				
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5		4.5				
Max Green Setting (Gmax), s		19.5	7.5	79.5		19.5		91.5				
Max Q Clear Time (g_c+I1), s		14.1	4.8	81.5		16.3		36.9				
Green Ext Time (p_c), s		0.4	0.1	0.0		0.2		42.4				

Intersection Summary	
HCM 6th Ctrl Delay	9.0
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	34	1253	15	0	1064
Future Vol, veh/h	0	34	1253	15	0	1064
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	38	1392	17	0	1182

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	705	0	0	-	-
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	*554	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		1	-	-		-
Mov Cap-1 Maneuver	-	*554	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	554	-
HCM Lane V/C Ratio	-	-	0.068	-
HCM Control Delay (s)	-	-	12	-
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

APPENDIX H. SIGNAL WARRANTS

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & 56th Avenue
2025_No Build

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	775	728	680	633	585	538	490	443
Highest Apprch. Minor Street	140 (112)	268	252	235	219	202	186	169	153

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	775	728	680	633	585	538	490	443
Highest Apprch. Minor Street	70 (56)	268	252	235	219	202	186	169	153

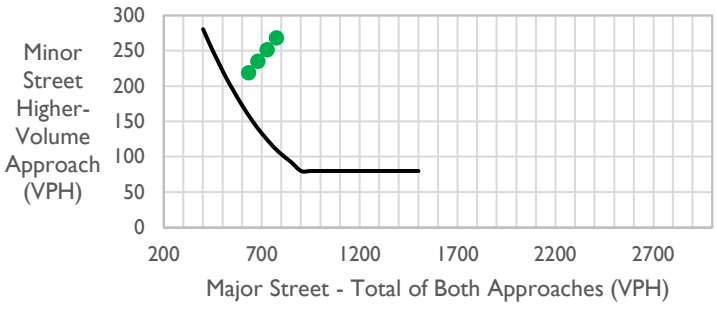
WARRANT 1, Condition A and Condition B

56% Satisfied	No

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	775	268
2nd Highest	728	252
3rd Highest	680	235
4th Highest	633	219



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	775	268

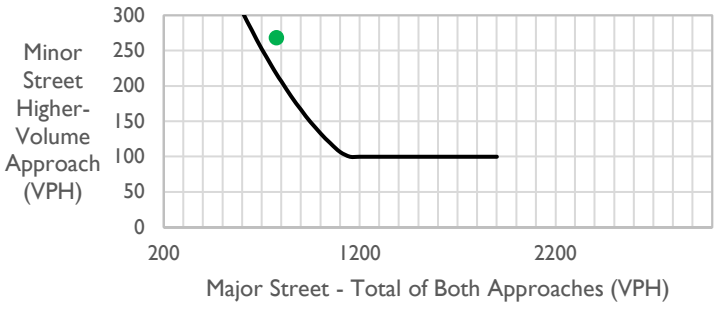
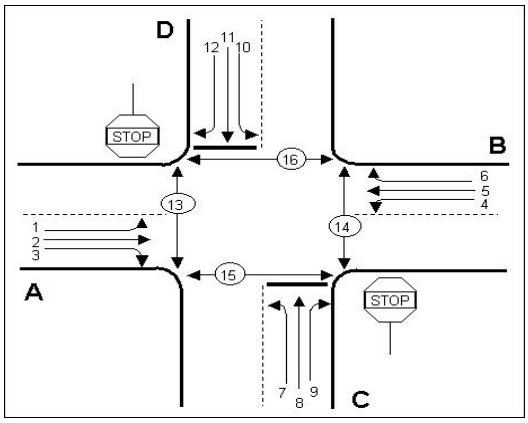


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & 56th Avenue
2025_No Build



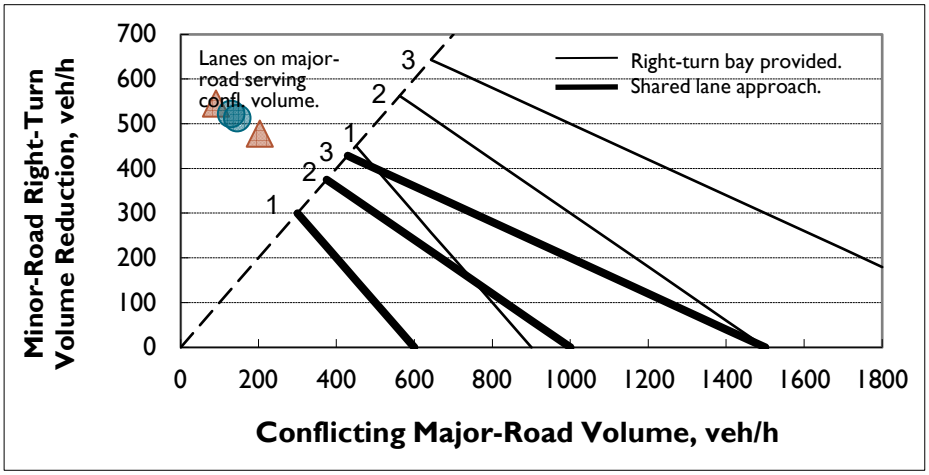
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	190	135
	3	Right	215	155
Major B	5	Through	155	255
	6	Right	25	5
Minor C	7	Left	130	135
	8	Through	85	90
	9	Right	90	85
Minor D	10	Left	15	20
	11	Through	60	65
	12	Right	90	110

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	203	145
Conflicting major-road volume (Vc12):	90	130
Right-turn volume reduction (Vr9):	479	513
Right-turn volume reduction (Vr12):	546	522
Adjusted right-turn volume reduction (Vr9):	90	85
Adjusted right-turn volume reduction (Vr12):	90	110
Adjusted minor-road volume:	215	225

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & Green Valley Ranch Blvd / 48th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Green Valley Ranch Blvd / 48th Aver
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% EB, 50% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1166	1095	1023	952	880	809	737	666
Highest Apprch. Minor Street	140 (112)	376	353	330	307	284	261	238	215

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1166	1095	1023	952	880	809	737	666
Highest Apprch. Minor Street	70 (56)	376	353	330	307	284	261	238	215

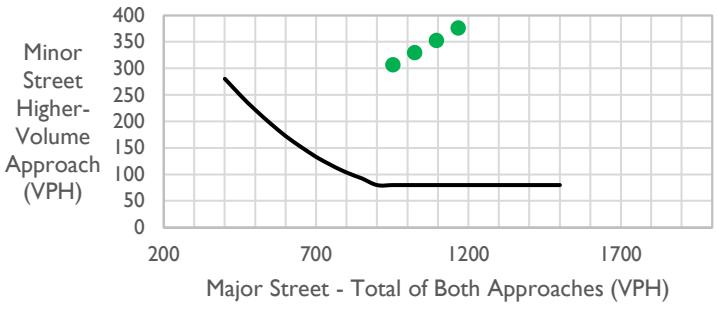
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1166	376
2nd Highest	1095	353
3rd Highest	1023	330
4th Highest	952	307



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1166	376

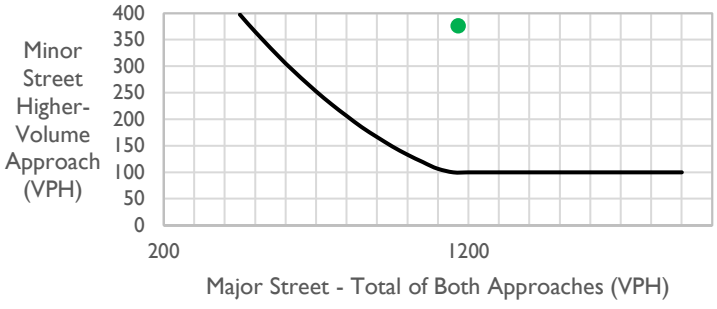
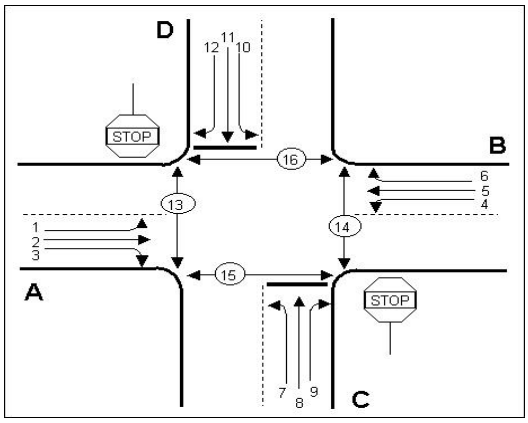


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & Green Valley Ranch Blvd / 48th Avenue
2025_Build



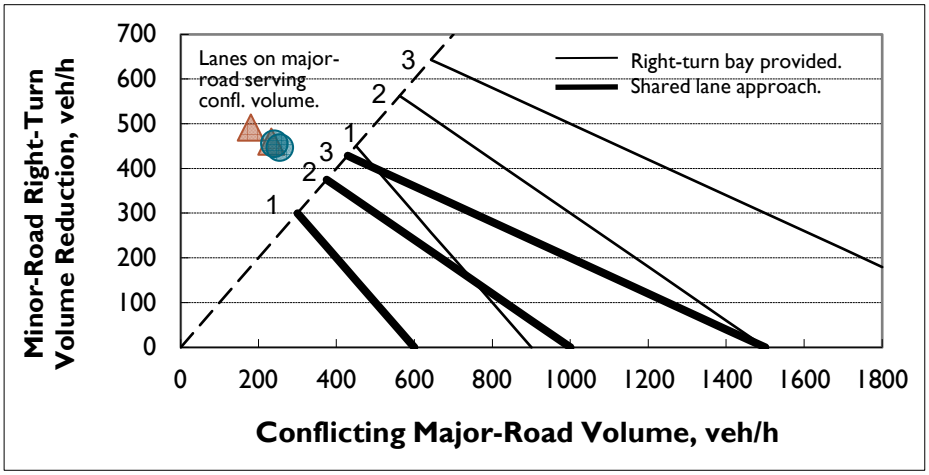
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	256	359
	3	Right	104	122
Major B	5	Through	340	301
	6	Right	125	208
Minor C	7	Left	75	117
	8	Through	92	132
	9	Right	56	77
Minor D	10	Left	161	184
	11	Through	134	152
	12	Right	100	80

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	180	241
Conflicting major-road volume (Vc12):	233	255
Right-turn volume reduction (Vr9):	492	456
Right-turn volume reduction (Vr12):	461	447
Adjusted right-turn volume reduction (Vr9):	56	77
Adjusted right-turn volume reduction (Vr12):	100	80
Adjusted minor-road volume:	295	336

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & 52nd Ave
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: 52nd Ave
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1222	1147	1072	997	922	848	773	698
Highest Apprch. Minor Street	140 (112)	98	92	86	80	74	68	62	56

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1222	1147	1072	997	922	848	773	698
Highest Apprch. Minor Street	70 (56)	98	92	86	80	74	68	62	56

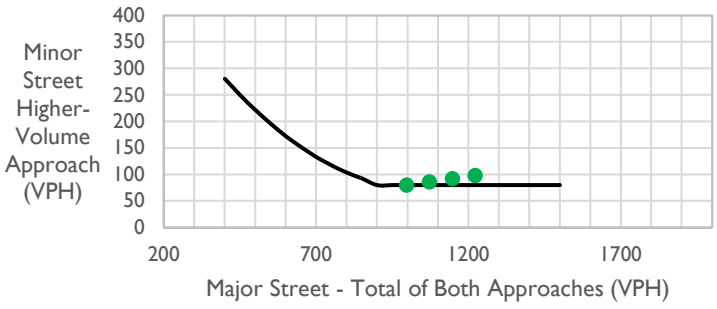
WARRANT 1, Condition A and Condition B

56% Satisfied	No

WARRANT 2, Four Hour Volume

70% Satisfied	No

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1222	98
2nd Highest	1147	92
3rd Highest	1072	86
4th Highest	997	80



WARRANT 3, Peak Hour Volume

70% Satisfied	No

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1222	98

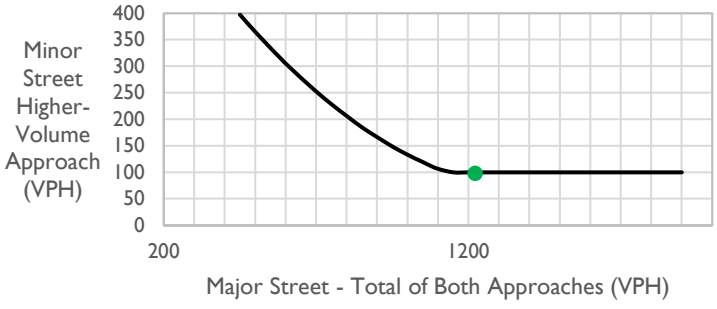
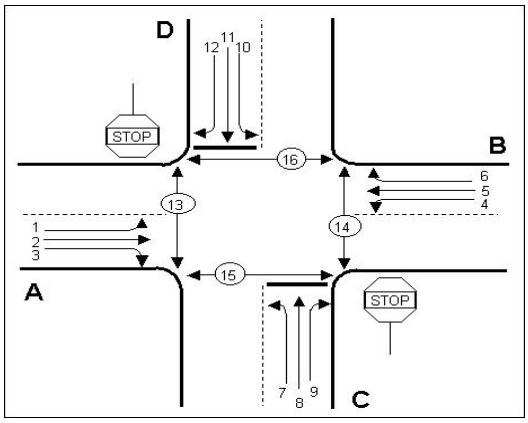


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & 52nd Ave
2025_Build



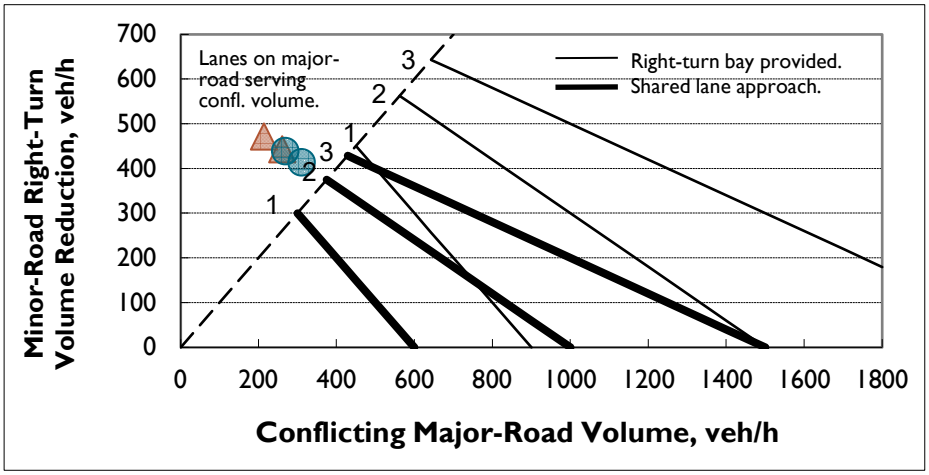
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	375	560
	3	Right	52	60
Major B	5	Through	476	516
	6	Right	45	20
Minor C	7	Left	54	65
	8	Through	0	0
	9	Right	36	44
Minor D	10	Left	40	15
	11	Through	0	0
	12	Right	55	20

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	214	310
Conflicting major-road volume (Vc12):	261	268
Right-turn volume reduction (Vr9):	472	414
Right-turn volume reduction (Vr12):	444	439
Adjusted right-turn volume reduction (Vr9):	36	44
Adjusted right-turn volume reduction (Vr12):	55	20
Adjusted minor-road volume:	54	65

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #21 & 56th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Access #21
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1847	1734	1621	1507	1394	1281	1168	1055
Highest Apprch. Minor Street	140 (112)	318	299	279	260	240	221	201	182

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1847	1734	1621	1507	1394	1281	1168	1055
Highest Apprch. Minor Street	70 (56)	318	299	279	260	240	221	201	182

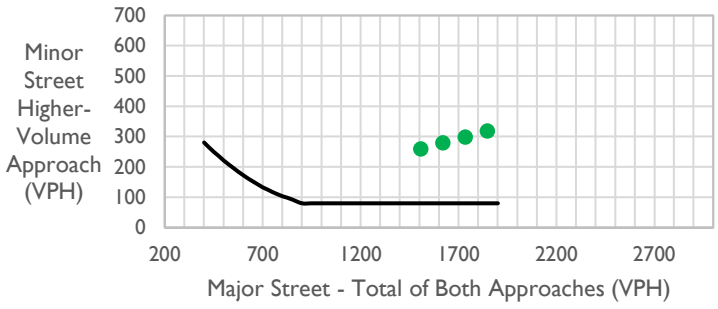
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1847	318
2nd Highest	1734	299
3rd Highest	1621	279
4th Highest	1507	260



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1847	318

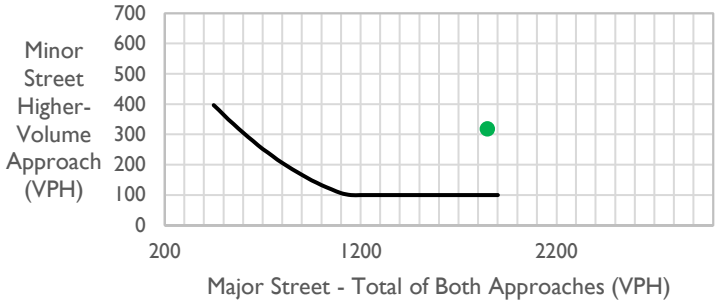
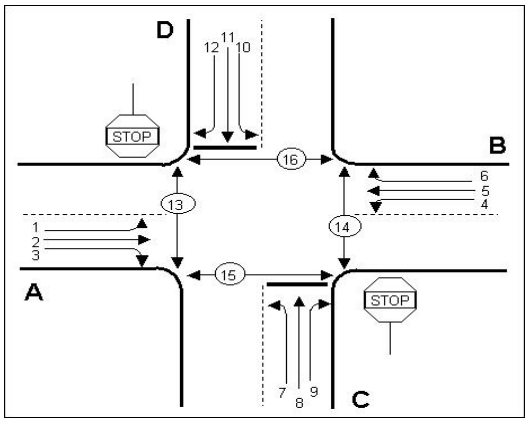


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2025_Build



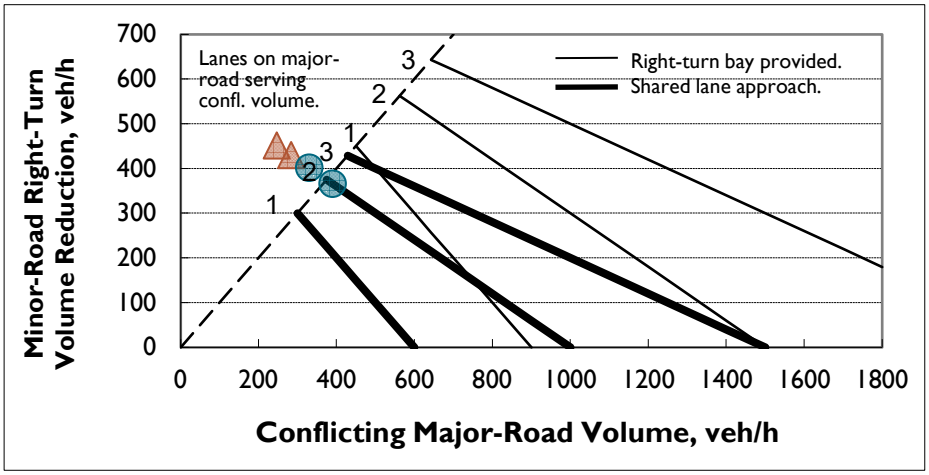
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	541	618
	3	Right	25	42
Major B	5	Through	493	779
	6	Right	0	0
Minor C	7	Left	68	158
	8	Through	0	0
	9	Right	115	319
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	283	330
Conflicting major-road volume (Vc12):	247	390
Right-turn volume reduction (Vr9):	430	402
Right-turn volume reduction (Vr12):	452	366
Adjusted right-turn volume reduction (Vr9):	115	319
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	68	158

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #25 & 56th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Access #25
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2864	2688	2513	2337	2162	1986	1811	1635
Highest Apprch. Minor Street	140 (112)	214	201	188	175	162	148	135	122

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2864	2688	2513	2337	2162	1986	1811	1635
Highest Apprch. Minor Street	70 (56)	214	201	188	175	162	148	135	122

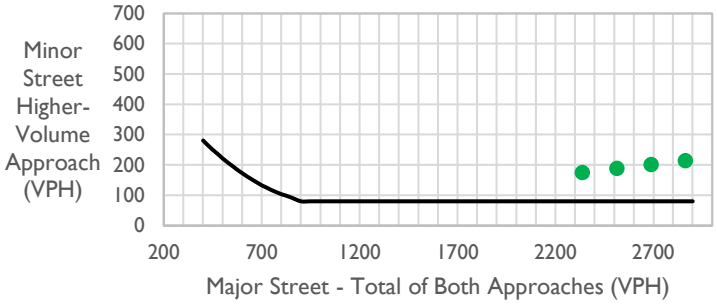
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2864	214
2nd Highest	2688	201
3rd Highest	2513	188
4th Highest	2337	175



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2864	214

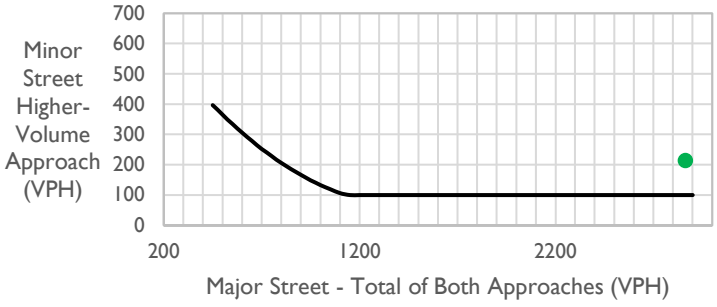
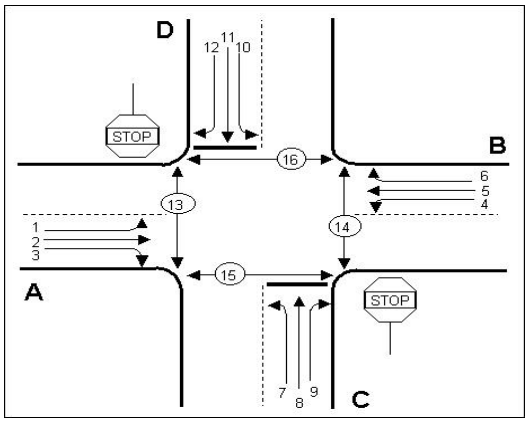


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2025_Build



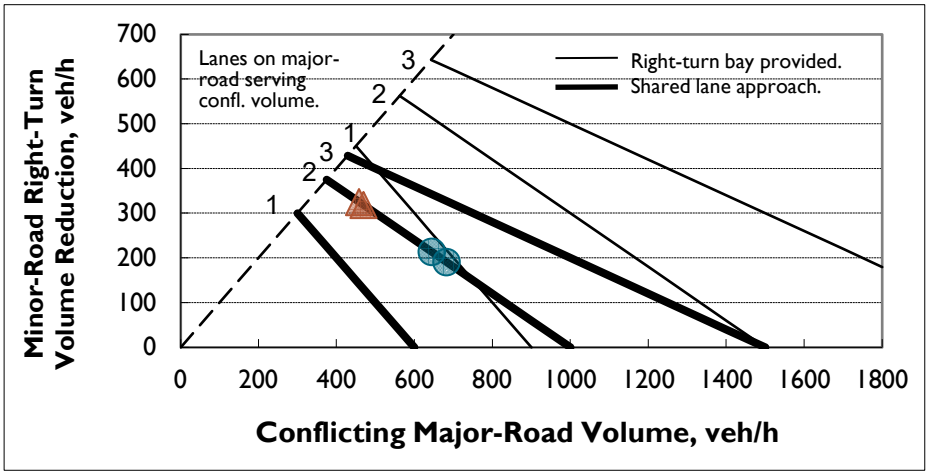
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	896	1325
	3	Right	41	39
Major B	5	Through	915	1288
	6	Right	0	0
Minor C	7	Left	62	112
	8	Through	0	0
	9	Right	88	204
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	469	682
Conflicting major-road volume (Vc12):	458	644
Right-turn volume reduction (Vr9):	319	191
Right-turn volume reduction (Vr12):	326	214
Adjusted right-turn volume reduction (Vr9):	88	191
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	62	125

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
E-470 NB Ramps & 56th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: E-470 NB Ramps
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1277	1199	1120	1042	964	886	807	729
Highest Apprch. Minor Street	140 (112)	638	599	560	521	482	442	403	364

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1277	1199	1120	1042	964	886	807	729
Highest Apprch. Minor Street	70 (56)	638	599	560	521	482	442	403	364

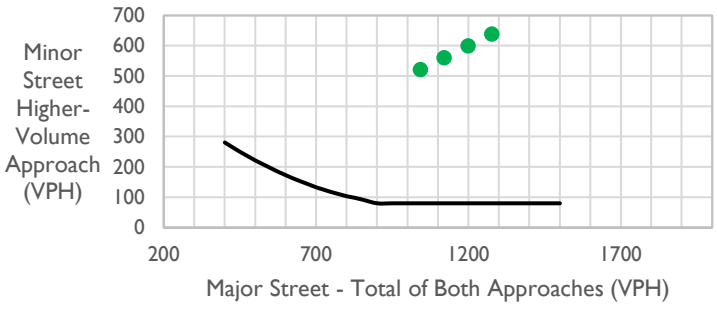
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1277	638
2nd Highest	1199	599
3rd Highest	1120	560
4th Highest	1042	521



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1277	638

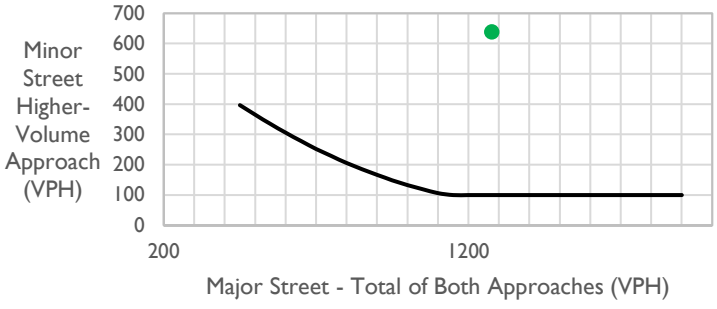
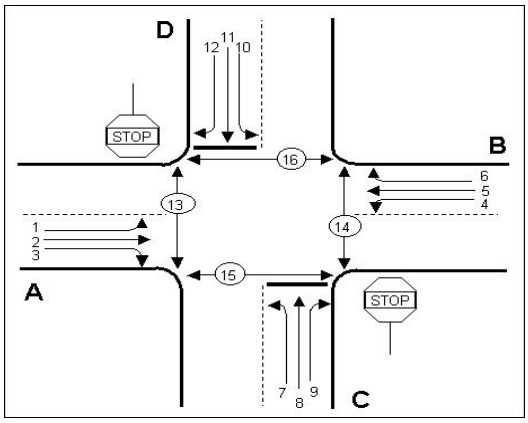


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
E-470 NB Ramps & 56th Avenue
2025_Build



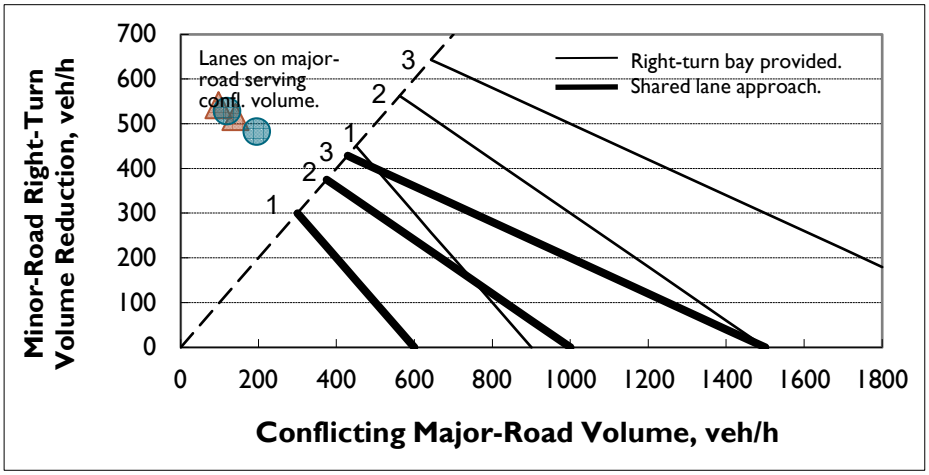
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	281	238
	3	Right	0	0
Major B	5	Through	183	375
	6	Right	10	15
Minor C	7	Left	496	625
	8	Through	0	0
	9	Right	90	25
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	141	119
Conflicting major-road volume (Vc12):	97	195
Right-turn volume reduction (Vr9):	516	529
Right-turn volume reduction (Vr12):	542	483
Adjusted right-turn volume reduction (Vr9):	90	25
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	496	625

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
E-470 SB Ramps & 56th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: E-470 SB Ramps
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2529	2374	2219	2064	1909	1754	1599	1444
Highest Apprch. Minor Street	140 (112)	298	280	261	243	225	207	188	170

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2529	2374	2219	2064	1909	1754	1599	1444
Highest Apprch. Minor Street	70 (56)	298	280	261	243	225	207	188	170

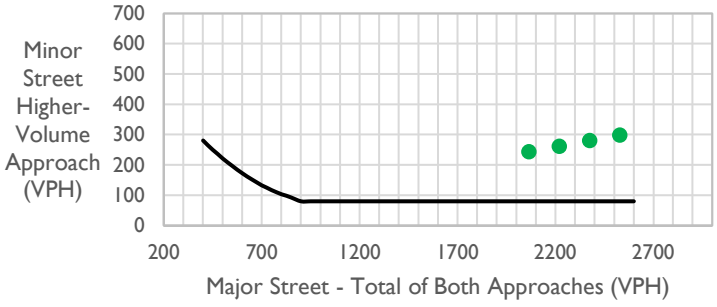
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2529	298
2nd Highest	2374	280
3rd Highest	2219	261
4th Highest	2064	243



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2529	298

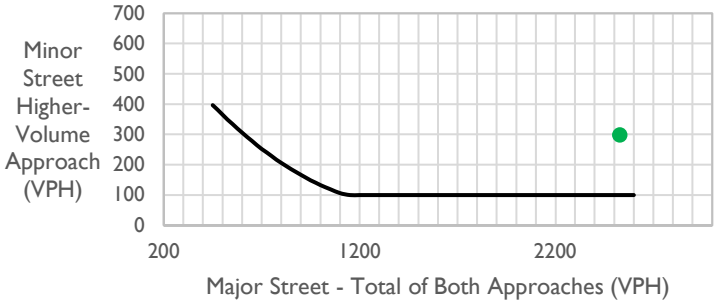
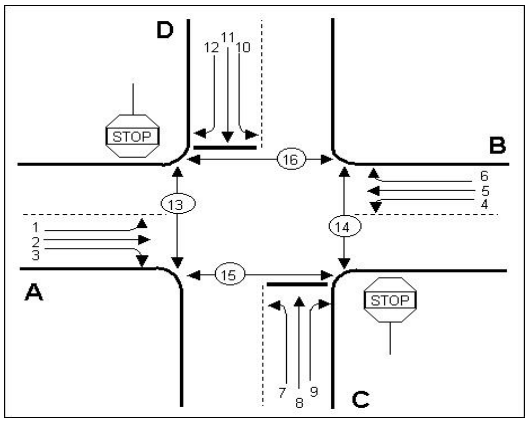


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
E-470 SB Ramps & 56th Avenue
2025_Build



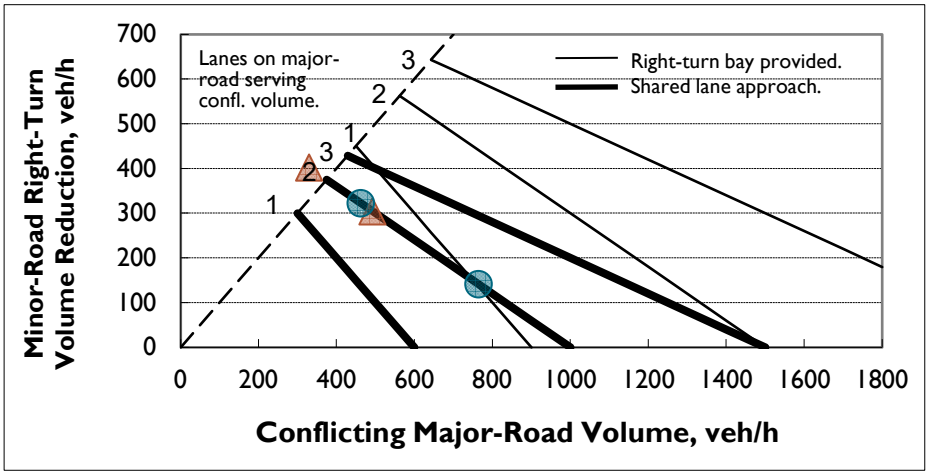
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	593	877
	3	Right	391	652
Major B	5	Through	659	925
	6	Right	0	0
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	30	10
	11	Through	0	0
	12	Right	461	575

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	492	765
Conflicting major-road volume (Vc12):	330	463
Right-turn volume reduction (Vr9):	305	141
Right-turn volume reduction (Vr12):	402	323
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	402	323
Adjusted minor-road volume:	89	263

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & 54th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: 54th Avenue
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1109	1041	973	905	837	769	701	633
Highest Apprch. Minor Street	140 (112)	142	133	125	116	107	98	90	81

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1109	1041	973	905	837	769	701	633
Highest Apprch. Minor Street	70 (56)	142	133	125	116	107	98	90	81

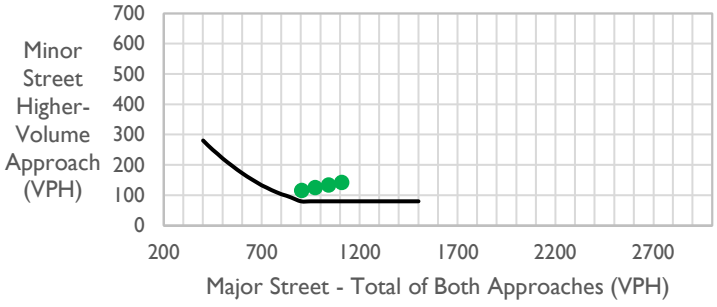
WARRANT 1, Condition A and Condition B

56% Satisfied	No

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1109	142
2nd Highest	1041	133
3rd Highest	973	125
4th Highest	905	116



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1109	142

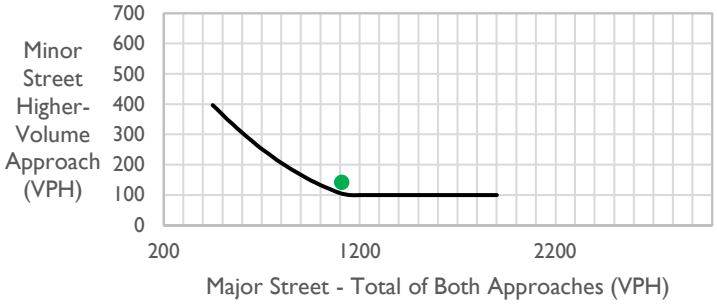
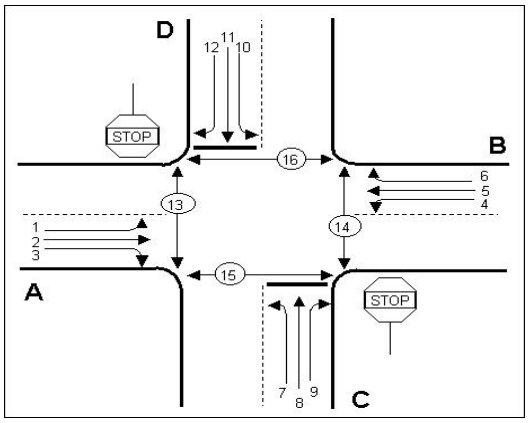


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & 54th Avenue
2025_Build



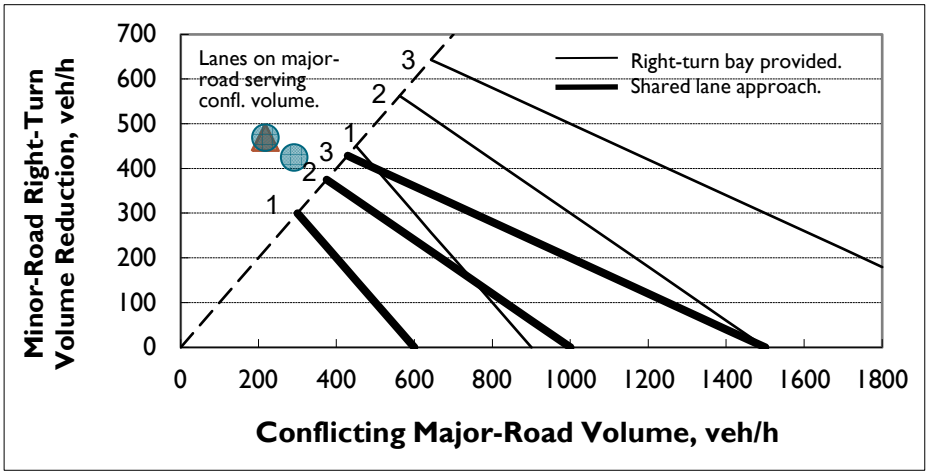
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	419	549
	3	Right	17	34
Major B	5	Through	421	415
	6	Right	10	20
Minor C	7	Left	56	137
	8	Through	0	0
	9	Right	22	7
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	15	5

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	218	292
Conflicting major-road volume (Vc12):	216	218
Right-turn volume reduction (Vr9):	469	425
Right-turn volume reduction (Vr12):	471	470
Adjusted right-turn volume reduction (Vr9):	22	7
Adjusted right-turn volume reduction (Vr12):	15	5
Adjusted minor-road volume:	56	137

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & 56th Avenue
2025_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Tibet Street
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2414	2266	2118	1970	1822	1674	1526	1378
Highest Apprch. Minor Street	140 (112)	398	374	349	325	300	276	252	227

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2414	2266	2118	1970	1822	1674	1526	1378
Highest Apprch. Minor Street	70 (56)	398	374	349	325	300	276	252	227

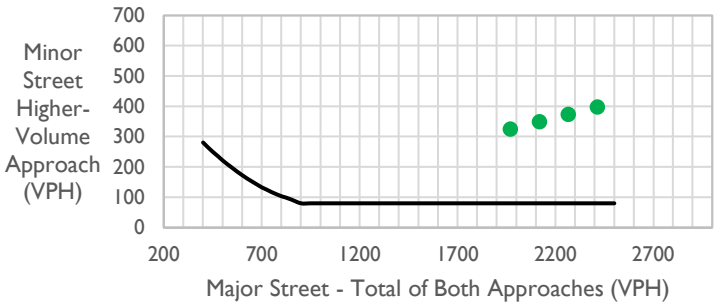
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2414	398
2nd Highest	2266	374
3rd Highest	2118	349
4th Highest	1970	325

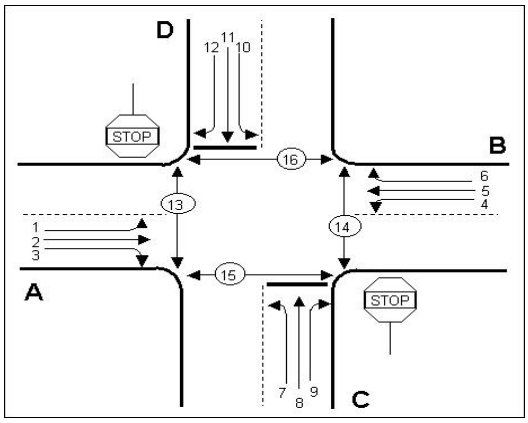


WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2414	398

Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2025_Build



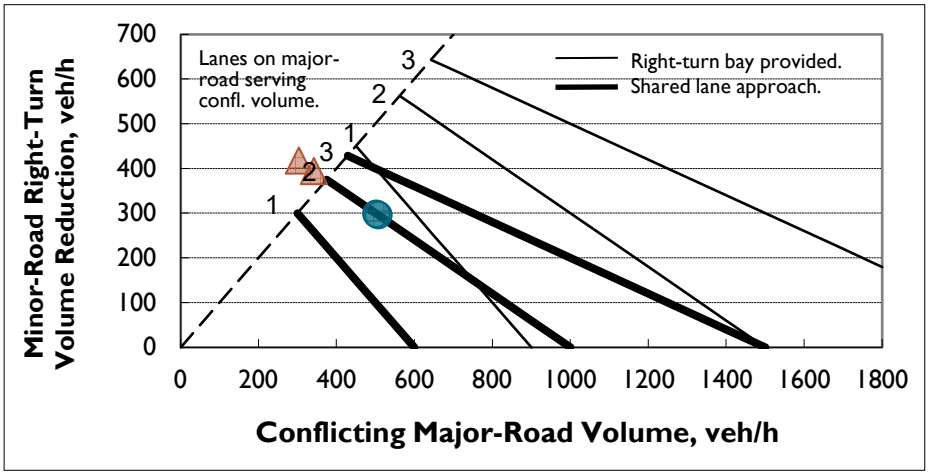
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	598	905
	3	Right	85	109
Major B	5	Through	605	1004
	6	Right	0	0
Minor C	7	Left	99	182
	8	Through	0	0
	9	Right	316	431
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	342	507
Conflicting major-road volume (Vc12):	303	502
Right-turn volume reduction (Vr9):	395	296
Right-turn volume reduction (Vr12):	419	299
Adjusted right-turn volume reduction (Vr9):	316	296
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	99	317

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet & 52nd Ave
2040_No Build

FELSBURG HOLT & ULLEVIG

Major Street: Tibet Street Lanes
Moving Traffic: 2 or more
Approach Speed: 40 MPH
Option: Low speed, urban community

Minor Street: 52nd Ave
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	1500	1408	1316	1224	1132	1040	948	857
Highest Apprch. Minor Street	200 (160)	231	217	203	189	174	160	146	132

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	1500	1408	1316	1224	1132	1040	948	857
Highest Apprch. Minor Street	100 (80)	231	217	203	189	174	160	146	132

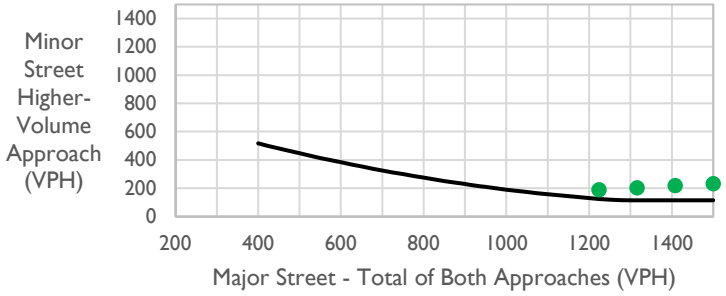
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1500	231
2nd Highest	1408	217
3rd Highest	1316	203
4th Highest	1224	189

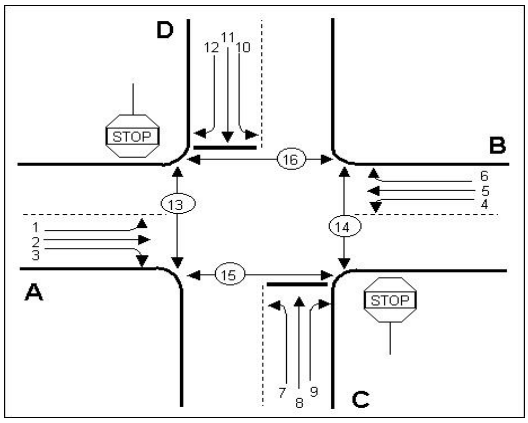


WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1500	231

Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 52nd Ave
2040_No Build



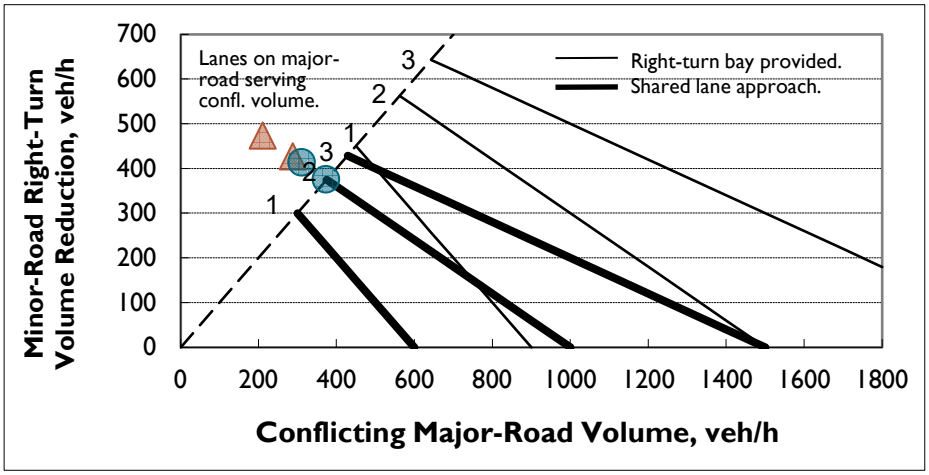
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	420	745
	3	Right	0	0
Major B	5	Through	475	510
	6	Right	100	110
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	95	115
	11	Through	0	0
	12	Right	115	155

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	210	373
Conflicting major-road volume (Vc12):	288	310
Right-turn volume reduction (Vr9):	474	377
Right-turn volume reduction (Vr12):	428	414
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	115	155
Adjusted minor-road volume:	95	115

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #29 & 48th Ave
2040_No Build

Major Street: 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Access #29
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% SB, 25% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied | No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4230	3971	3712	3452	3193	2934	2675	2415
Highest Apprch. Minor Street	200 (160)	156	146	137	127	118	108	99	89

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied | No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4230	3971	3712	3452	3193	2934	2675	2415
Highest Apprch. Minor Street	100 (80)	156	146	137	127	118	108	99	89

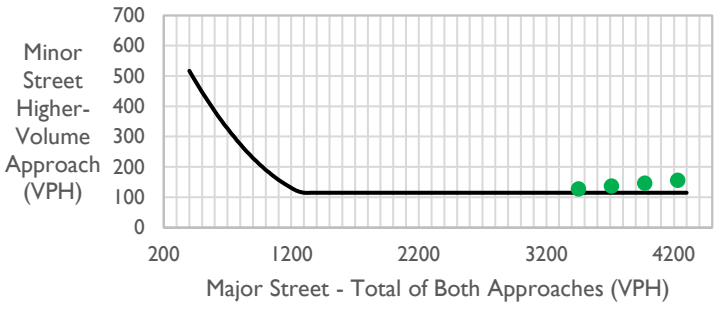
WARRANT 1, Condition A and Condition B

80% Satisfied | No

WARRANT 2, Four Hour Volume

100% Satisfied | Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4230	156
2nd Highest	3971	146
3rd Highest	3712	137
4th Highest	3452	127



WARRANT 3, Peak Hour Volume

100% Satisfied | Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4230	156

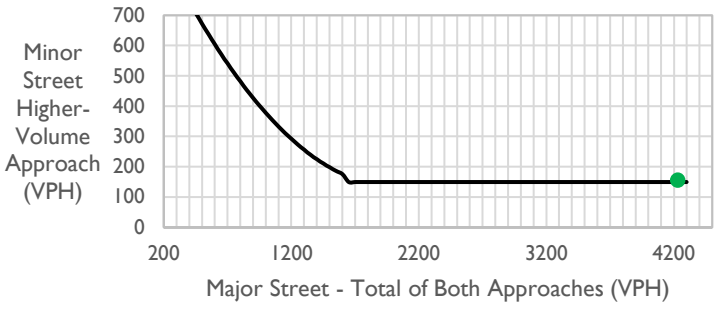
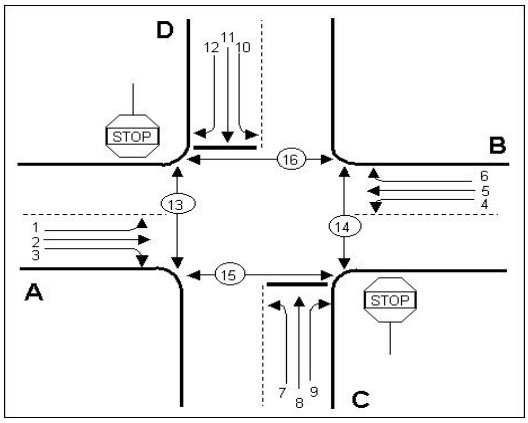


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
& 48th Ave
2040_No Build



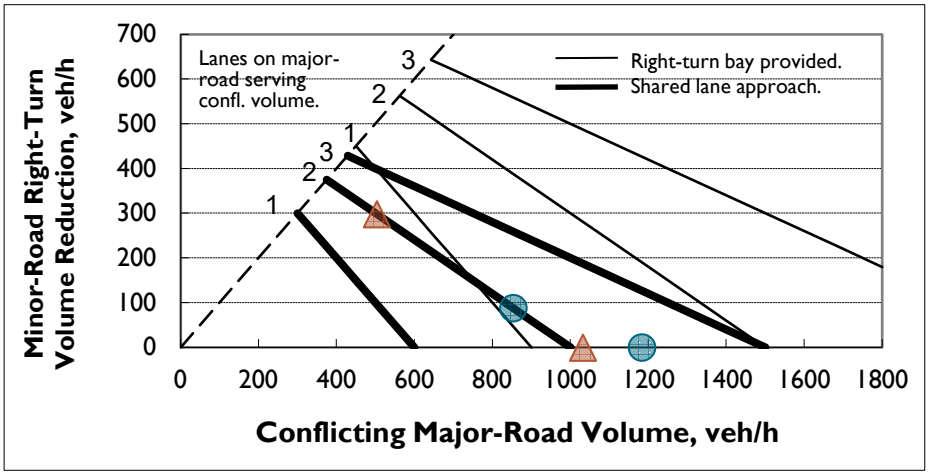
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	2021	1644
	3	Right	43	64
Major B	5	Through	953	2276
	6	Right	53	91
Minor C	7	Left	58	53
	8	Through	16	44
	9	Right	66	78
Minor D	10	Left	37	52
	11	Through	15	43
	12	Right	29	26

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	1032	854
Conflicting major-road volume (Vc12):	503	1184
Right-turn volume reduction (Vr9):	0	88
Right-turn volume reduction (Vr12):	298	0
Adjusted right-turn volume reduction (Vr9):	0	78
Adjusted right-turn volume reduction (Vr12):	29	0
Adjusted minor-road volume:	140	121

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #25 & 56th Avenue
2040_No Build

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Access #25
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied: No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1255	1178	1101	1024	947	870	794	717
Highest Apprch. Minor Street	140 (112)	190	178	167	155	143	132	120	108

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied: Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1255	1178	1101	1024	947	870	794	717
Highest Apprch. Minor Street	70 (56)	190	178	167	155	143	132	120	108

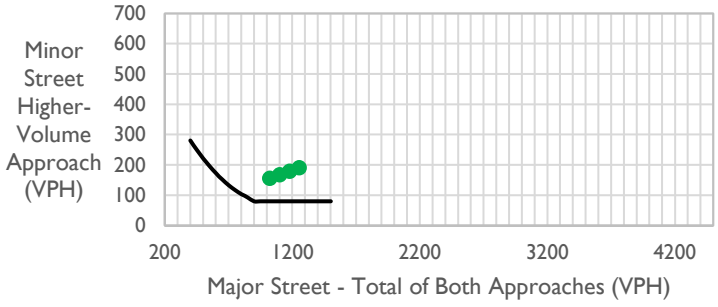
WARRANT 1, Condition A and Condition B

56% Satisfied: No

WARRANT 2, Four Hour Volume

70% Satisfied: Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1255	190
2nd Highest	1178	178
3rd Highest	1101	167
4th Highest	1024	155



WARRANT 3, Peak Hour Volume

70% Satisfied: Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1255	190

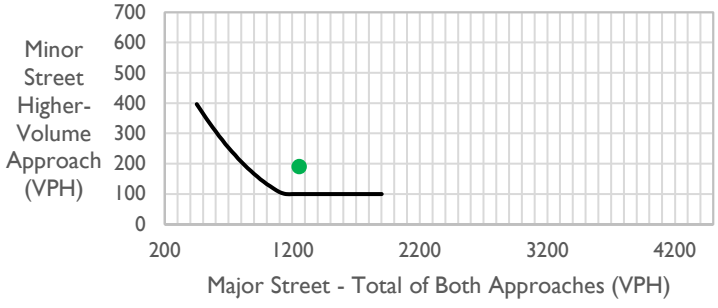
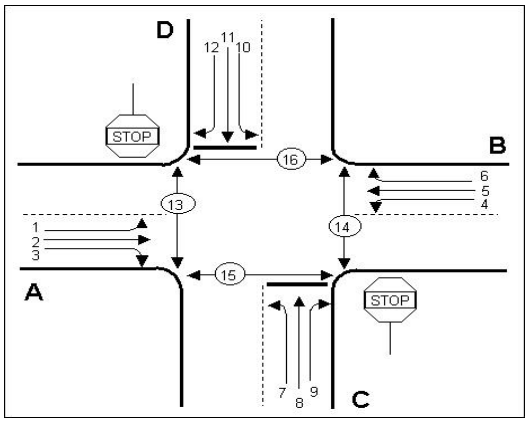


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
& 56th Avenue
2040_No Build



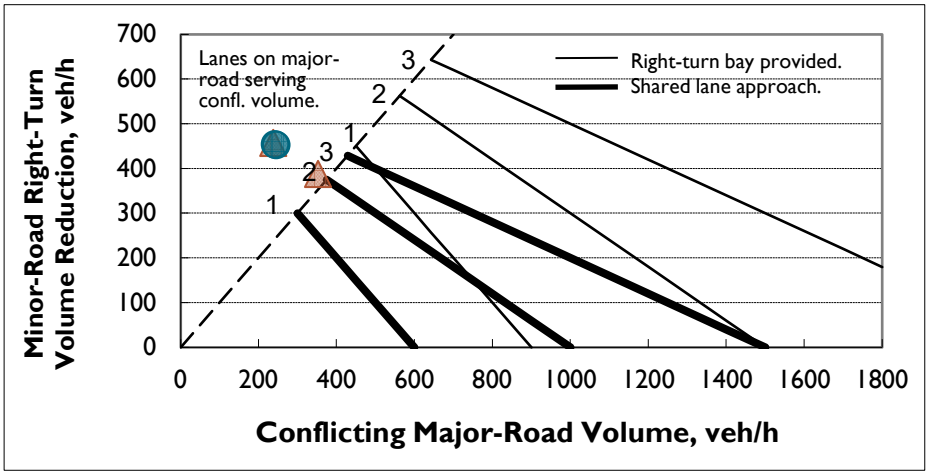
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	475	490
	3	Right	0	0
Major B	5	Through	610	330
	6	Right	95	155
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	95	135
	11	Through	0	0
	12	Right	80	110

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	238	245
Conflicting major-road volume (Vc12):	353	243
Right-turn volume reduction (Vr9):	458	453
Right-turn volume reduction (Vr12):	389	455
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	80	110
Adjusted minor-road volume:	95	135

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #26 & 48th Ave
2040_No Build

Major Street: 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Access #26
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4225	3966	3707	3448	3189	2930	2671	2412
Highest Apprch. Minor Street	200 (160)	220	207	193	180	166	153	139	126

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4225	3966	3707	3448	3189	2930	2671	2412
Highest Apprch. Minor Street	100 (80)	220	207	193	180	166	153	139	126

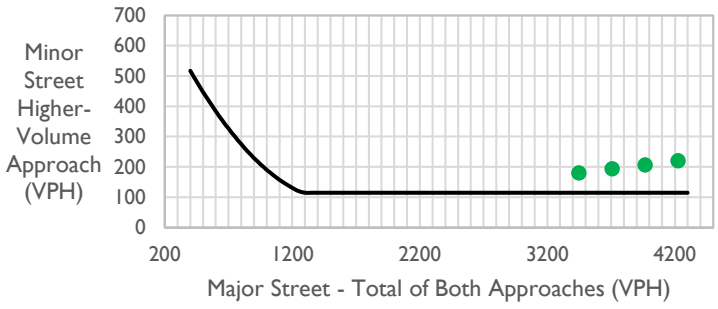
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4225	220
2nd Highest	3966	207
3rd Highest	3707	193
4th Highest	3448	180



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4225	220

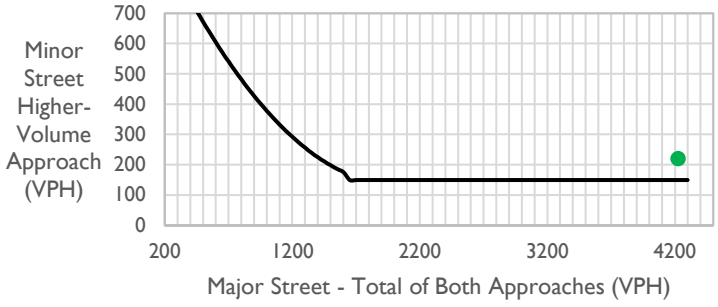
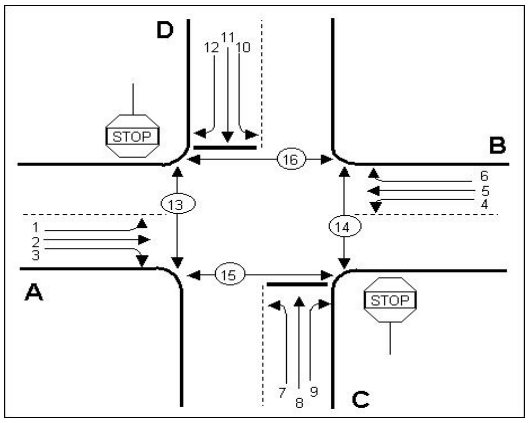


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Eastern Access & 48th Ave
2040_No Build



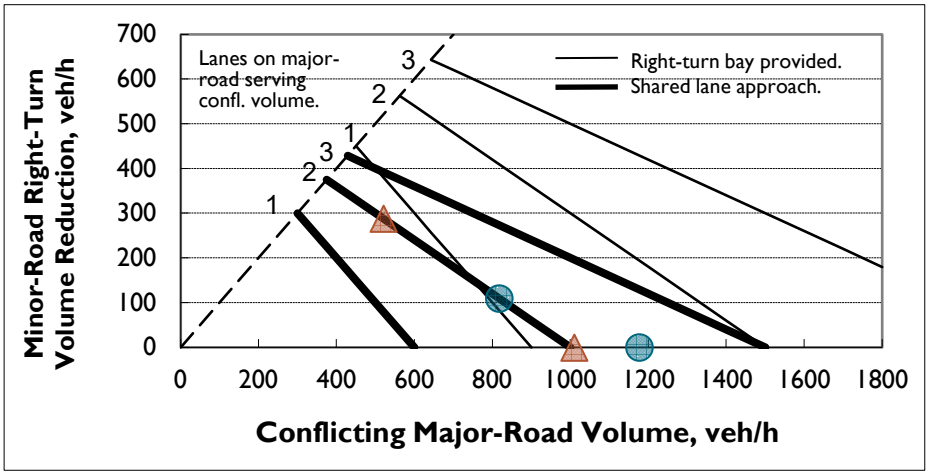
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	2020	1635
	3	Right	0	0
Major B	5	Through	950	2295
	6	Right	90	60
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	65	105
	11	Through	0	0
	12	Right	155	230

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	1010	818
Conflicting major-road volume (Vc12):	520	1178
Right-turn volume reduction (Vr9):	0	110
Right-turn volume reduction (Vr12):	288	0
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	155	0
Adjusted minor-road volume:	65	335

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Filing 5 Access & 48th Ave
2040_No Build

FELSBURG HOLT & ULLEVIG

Major Street: 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Filing 5 Access
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4380	4112	3843	3575	3306	3038	2769	2501
Highest Apprch. Minor Street	200 (160)	250	235	219	204	189	173	158	143

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4380	4112	3843	3575	3306	3038	2769	2501
Highest Apprch. Minor Street	100 (80)	250	235	219	204	189	173	158	143

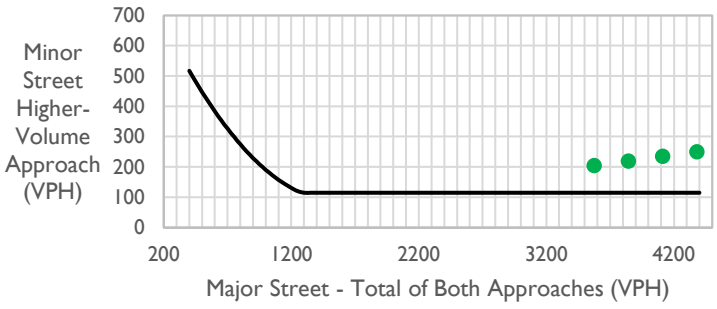
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4380	250
2nd Highest	4112	235
3rd Highest	3843	219
4th Highest	3575	204



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4380	250

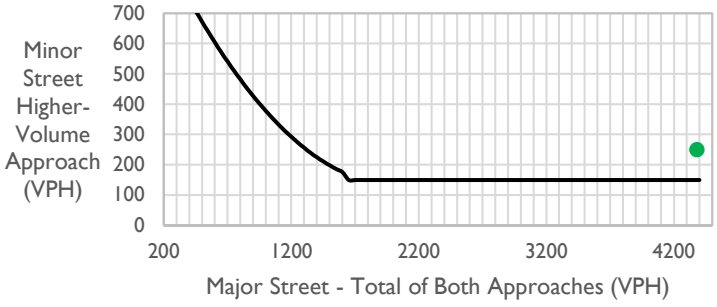
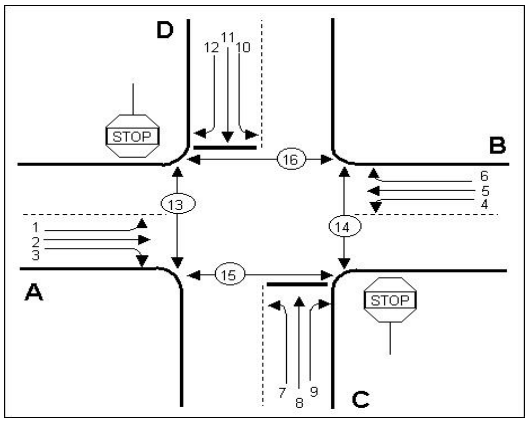


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Filing 5 Access & 48th Ave
2040_No Build



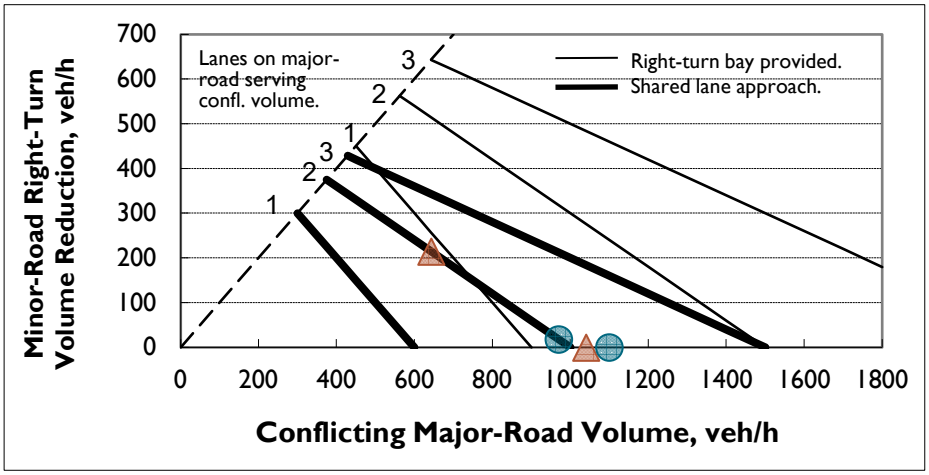
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1960	1770
	3	Right	120	170
Major B	5	Through	1280	2185
	6	Right	5	15
Minor C	7	Left	150	170
	8	Through	0	0
	9	Right	200	110
Minor D	10	Left	15	10
	11	Through	0	0
	12	Right	20	10

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	1040	970
Conflicting major-road volume (Vc12):	643	1100
Right-turn volume reduction (Vr9):	0	18
Right-turn volume reduction (Vr12):	215	0
Adjusted right-turn volume reduction (Vr9):	0	18
Adjusted right-turn volume reduction (Vr12):	20	0
Adjusted minor-road volume:	350	262

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & Green Valley Ranch Blvd
2040_No Build

FELSBURG HOLT & ULLEVIG

Major Street: Green Valley Ranch Blvd
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4250	3990	3729	3469	3208	2948	2687	2427
Highest Apprch. Minor Street	200 (160)	1370	1286	1202	1118	1034	950	866	782

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4250	3990	3729	3469	3208	2948	2687	2427
Highest Apprch. Minor Street	100 (80)	1370	1286	1202	1118	1034	950	866	782

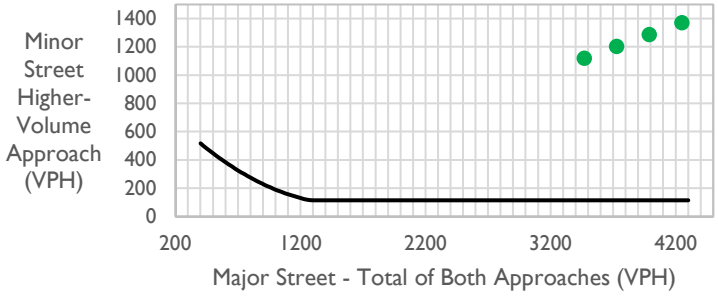
WARRANT 1, Condition A and Condition B

80% Satisfied	Yes

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4250	1370
2nd Highest	3990	1286
3rd Highest	3729	1202
4th Highest	3469	1118



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4250	1370

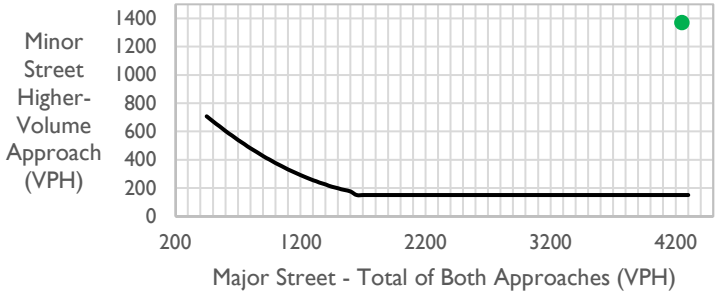
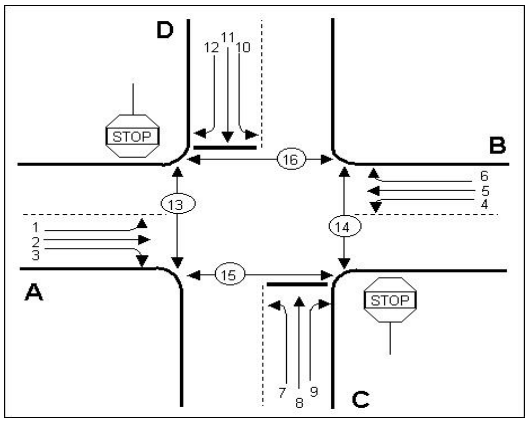


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & Green Valley Ranch Blvd
2040_No Build



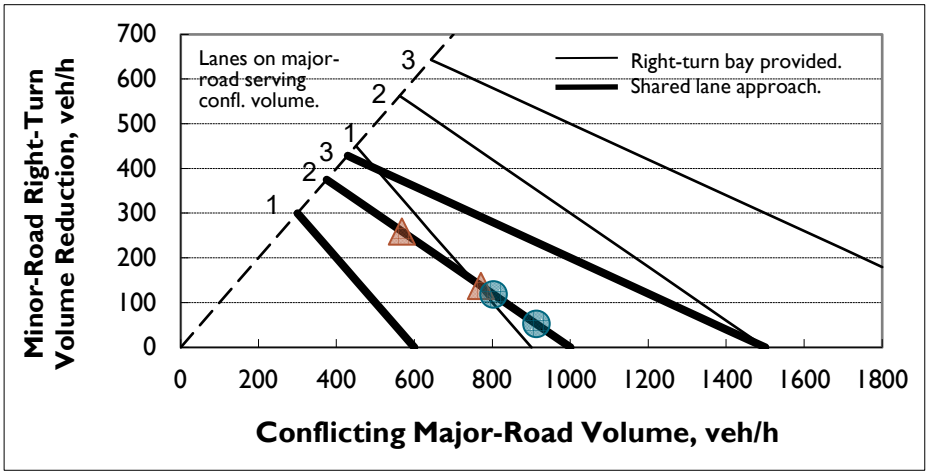
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1285	1300
	3	Right	255	305
Major B	5	Through	680	1325
	6	Right	455	500
Minor C	7	Left	125	205
	8	Through	720	715
	9	Right	645	285
Minor D	10	Left	275	410
	11	Through	505	860
	12	Right	110	200

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	770	803
Conflicting major-road volume (Vc12):	568	913
Right-turn volume reduction (Vr9):	138	119
Right-turn volume reduction (Vr12):	260	53
Adjusted right-turn volume reduction (Vr9):	138	119
Adjusted right-turn volume reduction (Vr12):	110	53
Adjusted minor-road volume:	1352	1418

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & 52nd Ave
2040_No Build

FELSBURG HOLT & ULLEVIG

Major Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: 52nd Ave
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 50% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2915	2736	2558	2379	2200	2022	1843	1664
Highest Apprch. Minor Street	140 (112)	168	158	147	137	127	117	106	96

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2915	2736	2558	2379	2200	2022	1843	1664
Highest Apprch. Minor Street	70 (56)	168	158	147	137	127	117	106	96

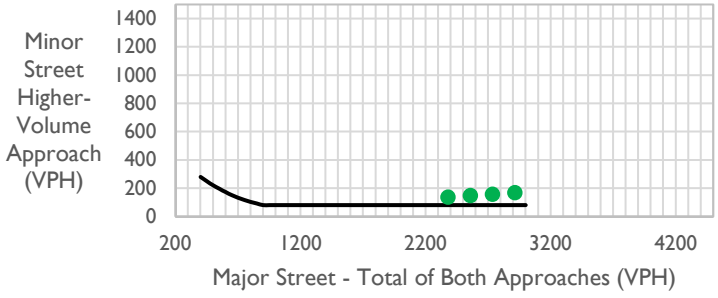
WARRANT 1, Condition A and Condition B

56% Satisfied	No

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2915	168
2nd Highest	2736	158
3rd Highest	2558	147
4th Highest	2379	137



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2915	168

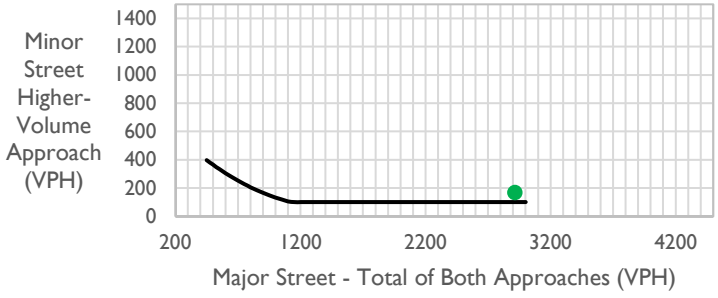
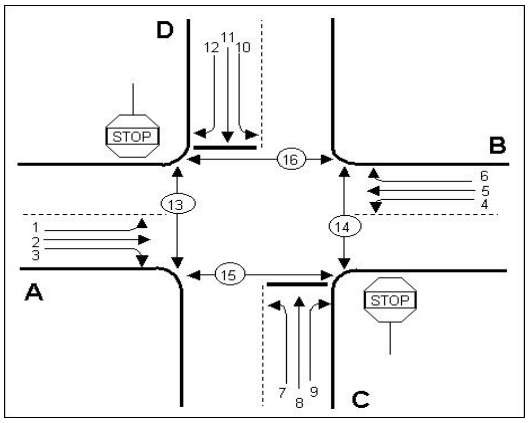


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & 52nd Ave
2040_No Build



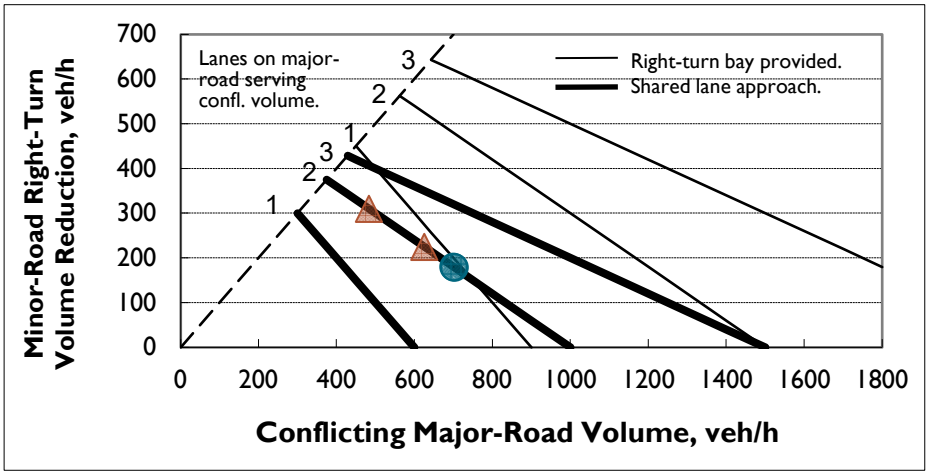
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1130	1235
	3	Right	120	165
Major B	5	Through	875	1365
	6	Right	90	40
Minor C	7	Left	85	95
	8	Through	10	10
	9	Right	140	125
Minor D	10	Left	55	30
	11	Through	10	10
	12	Right	115	45

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	625	700
Conflicting major-road volume (Vc12):	483	703
Right-turn volume reduction (Vr9):	225	180
Right-turn volume reduction (Vr12):	311	179
Adjusted right-turn volume reduction (Vr9):	140	125
Adjusted right-turn volume reduction (Vr12):	115	45
Adjusted minor-road volume:	95	105

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet St & 48th Ave
2040_No Build

FELSBURG HOLT & ULLEVIG

Major Street: 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Tibet St
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4415	4144	3874	3603	3333	3062	2792	2521
Highest Apprch. Minor Street	200 (160)	503	472	441	411	380	349	318	287

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4415	4144	3874	3603	3333	3062	2792	2521
Highest Apprch. Minor Street	100 (80)	503	472	441	411	380	349	318	287

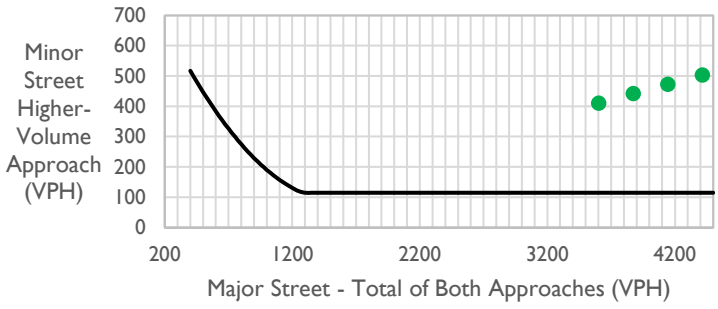
WARRANT 1, Condition A and Condition B

80% Satisfied	Yes

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4415	503
2nd Highest	4144	472
3rd Highest	3874	441
4th Highest	3603	411



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4415	503

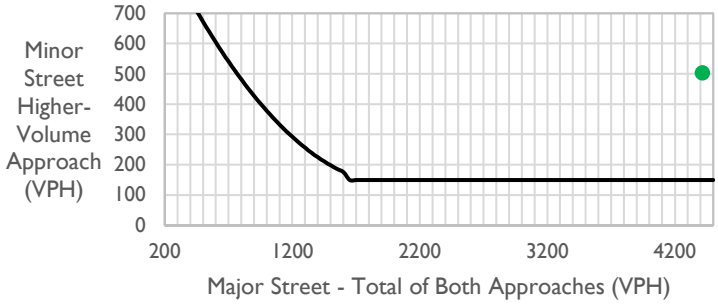
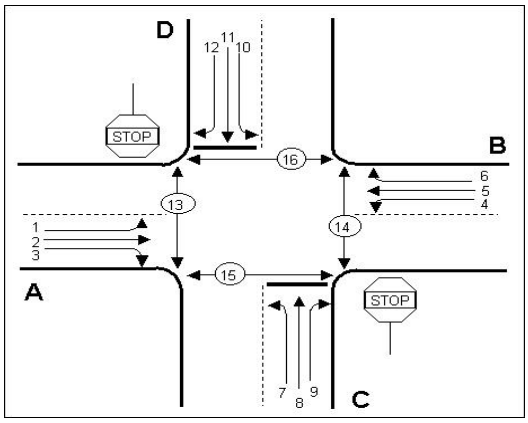


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Tibet St & 48th Ave
2040_No Build



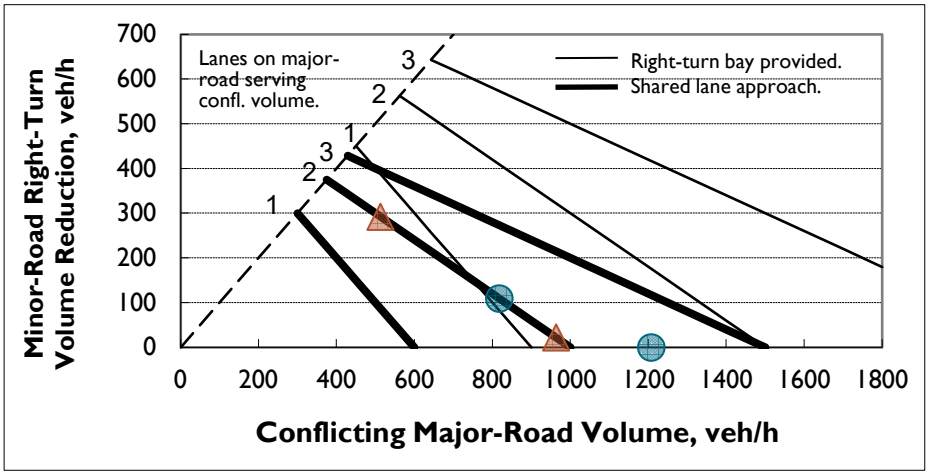
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1805	1555
	3	Right	120	80
Major B	5	Through	875	1985
	6	Right	150	430
Minor C	7	Left	80	110
	8	Through	135	190
	9	Right	120	65
Minor D	10	Left	305	250
	11	Through	70	85
	12	Right	230	335

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	963	818
Conflicting major-road volume (Vc12):	513	1208
Right-turn volume reduction (Vr9):	23	110
Right-turn volume reduction (Vr12):	293	0
Adjusted right-turn volume reduction (Vr9):	23	65
Adjusted right-turn volume reduction (Vr12):	230	0
Adjusted minor-road volume:	375	670

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet & 52nd Ave
2040_No Build

Major Street: Tibet Street Lanes
Moving Traffic: 2 or more
Approach Speed: 40 MPH
Option: Low speed, urban community

Minor Street: 52nd Ave
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	1500	1408	1316	1224	1132	1040	948	857
Highest Apprch. Minor Street	200 (160)	231	217	203	189	174	160	146	132

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	1500	1408	1316	1224	1132	1040	948	857
Highest Apprch. Minor Street	100 (80)	231	217	203	189	174	160	146	132

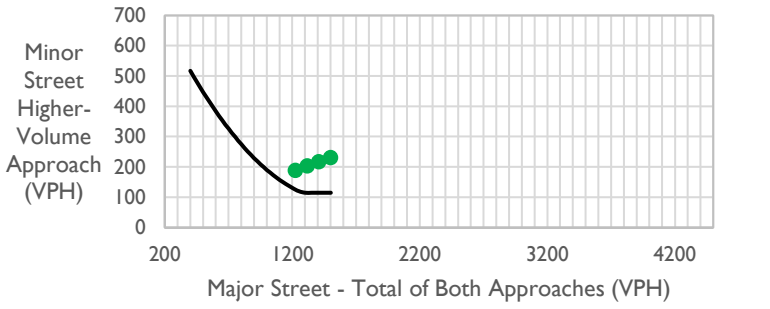
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1500	231
2nd Highest	1408	217
3rd Highest	1316	203
4th Highest	1224	189



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1500	231

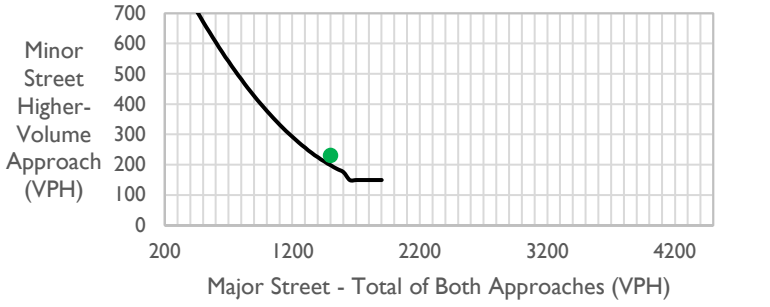
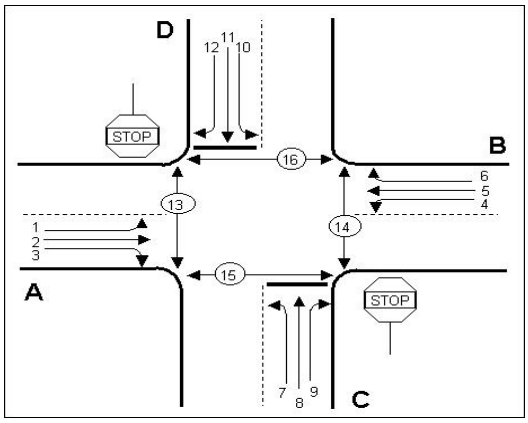


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 52nd Ave
2040_No Build



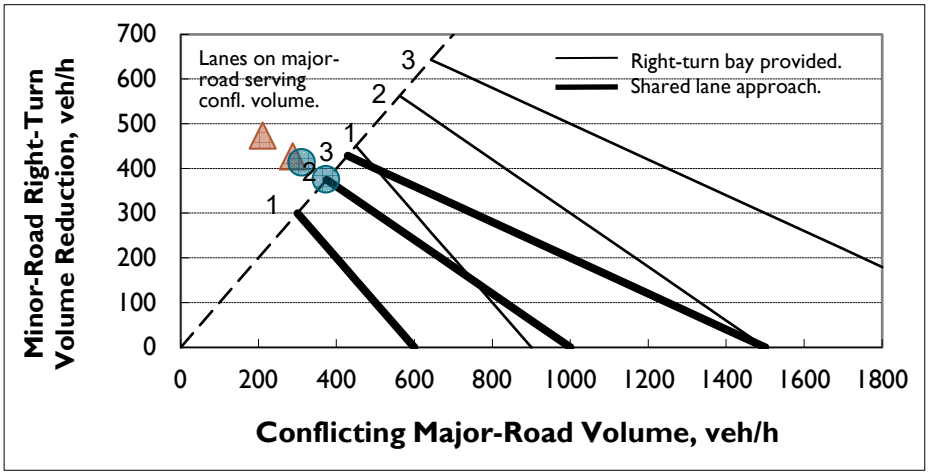
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	420	745
	3	Right	0	0
Major B	5	Through	475	510
	6	Right	100	110
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	95	115
	11	Through	0	0
	12	Right	115	155

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	210	373
Conflicting major-road volume (Vc12):	288	310
Right-turn volume reduction (Vr9):	474	377
Right-turn volume reduction (Vr12):	428	414
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	115	155
Adjusted minor-road volume:	95	115

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & 56th Avenue
2040_No Build

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Tibet Street
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1305	1225	1145	1065	985	905	825	745
Highest Apprch. Minor Street	140 (112)	740	695	649	604	559	513	468	423

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1305	1225	1145	1065	985	905	825	745
Highest Apprch. Minor Street	70 (56)	740	695	649	604	559	513	468	423

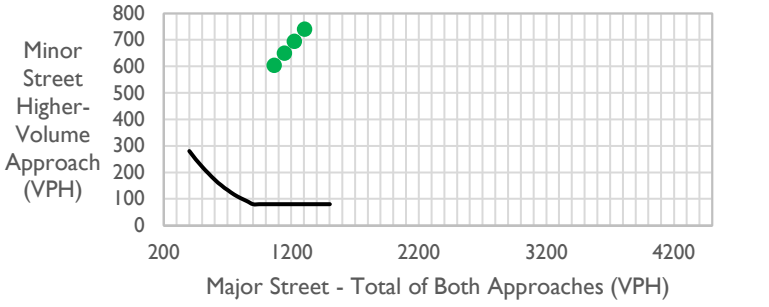
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1305	740
2nd Highest	1225	695
3rd Highest	1145	649
4th Highest	1065	604



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1305	740

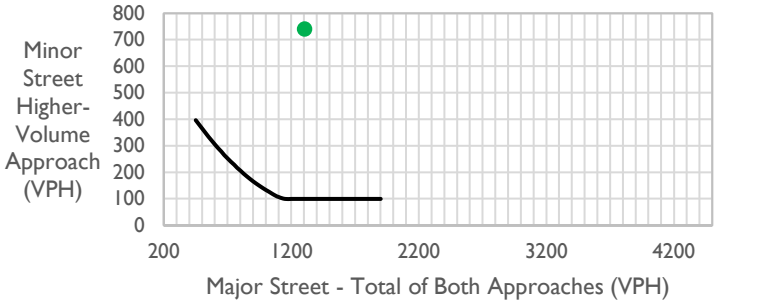
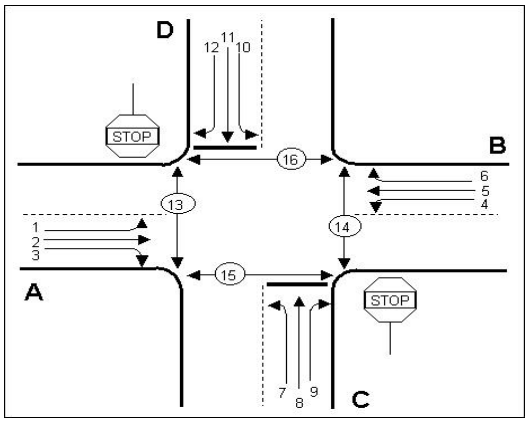


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
& 56th Avenue
2040_No Build



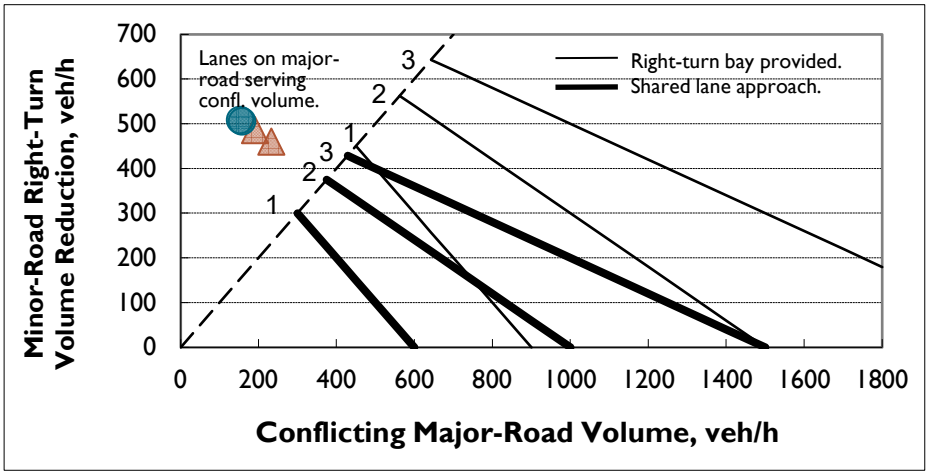
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	200	135
	3	Right	180	180
Major B	5	Through	230	120
	6	Right	235	185
Minor C	7	Left	155	305
	8	Through	195	315
	9	Right	165	240
Minor D	10	Left	185	230
	11	Through	170	305
	12	Right	175	290

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	190	158
Conflicting major-road volume (Vc12):	233	153
Right-turn volume reduction (Vr9):	486	506
Right-turn volume reduction (Vr12):	461	509
Adjusted right-turn volume reduction (Vr9):	165	240
Adjusted right-turn volume reduction (Vr12):	175	290
Adjusted minor-road volume:	355	620

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #29 & 48th Ave
2040_Build

Major Street: 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Access #29
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% SB, 25% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied | No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4468	4194	3920	3647	3373	3099	2825	2551
Highest Apprch. Minor Street	200 (160)	156	146	137	127	118	108	99	89

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied | No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4468	4194	3920	3647	3373	3099	2825	2551
Highest Apprch. Minor Street	100 (80)	156	146	137	127	118	108	99	89

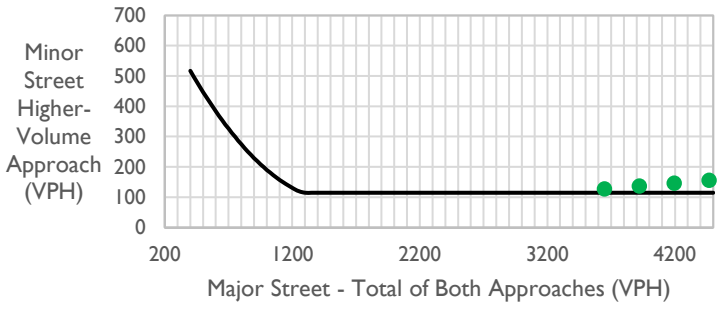
WARRANT 1, Condition A and Condition B

80% Satisfied | No

WARRANT 2, Four Hour Volume

100% Satisfied | Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4468	156
2nd Highest	4194	146
3rd Highest	3920	137
4th Highest	3647	127



WARRANT 3, Peak Hour Volume

100% Satisfied | Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4468	156

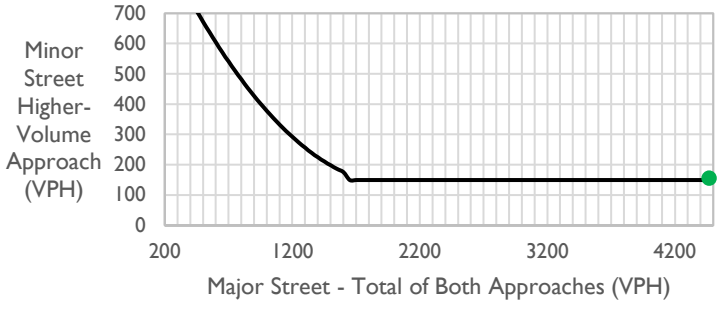
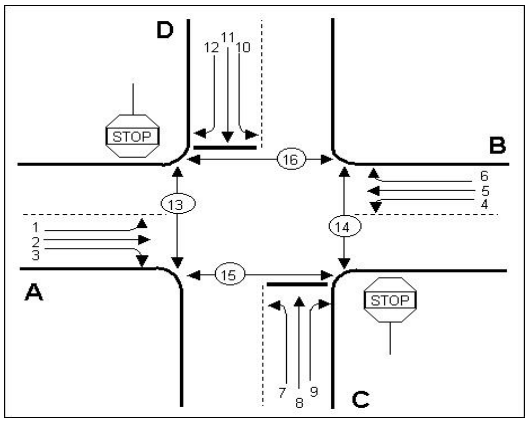


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Access #29 & 48th Ave
2040_Build



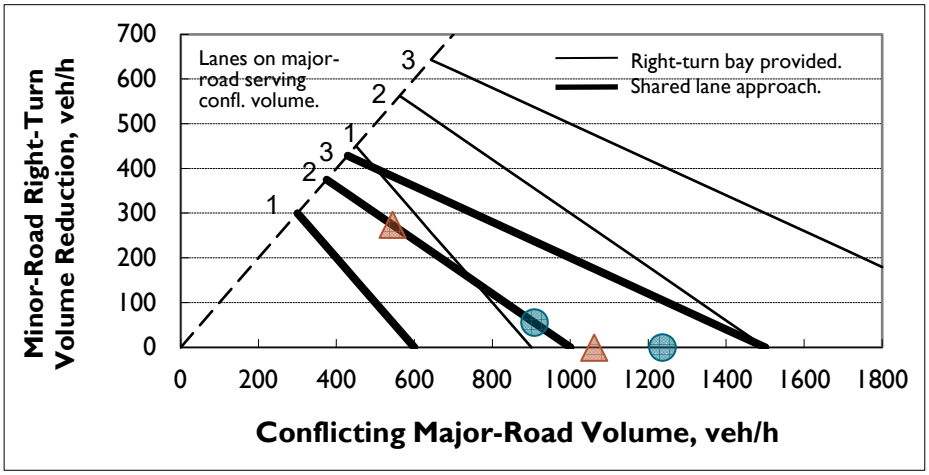
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	2078	1751
	3	Right	43	64
Major B	5	Through	1031	2380
	6	Right	55	93
Minor C	7	Left	58	53
	8	Through	16	44
	9	Right	66	78
Minor D	10	Left	40	57
	11	Through	15	43
	12	Right	51	59

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	1061	908
Conflicting major-road volume (Vc12):	543	1237
Right-turn volume reduction (Vr9):	0	56
Right-turn volume reduction (Vr12):	274	0
Adjusted right-turn volume reduction (Vr9):	0	56
Adjusted right-turn volume reduction (Vr12):	51	0
Adjusted minor-road volume:	140	159

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #21 & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Access #21
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2472	2321	2169	2018	1866	1715	1563	1412
Highest Apprch. Minor Street	140 (112)	316	297	277	258	239	219	200	180

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2472	2321	2169	2018	1866	1715	1563	1412
Highest Apprch. Minor Street	70 (56)	316	297	277	258	239	219	200	180

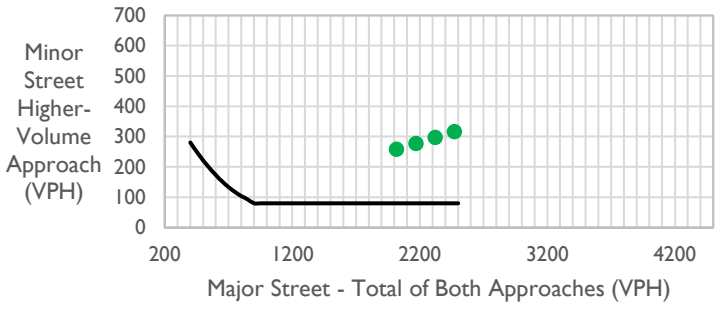
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2472	316
2nd Highest	2321	297
3rd Highest	2169	277
4th Highest	2018	258



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2472	316

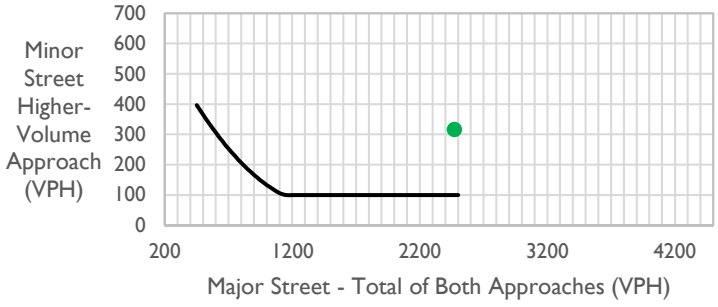
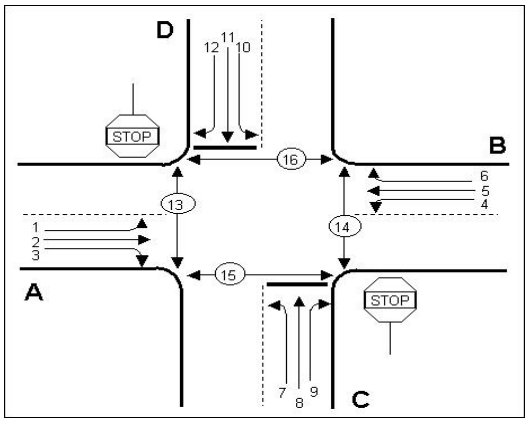


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2040_Build



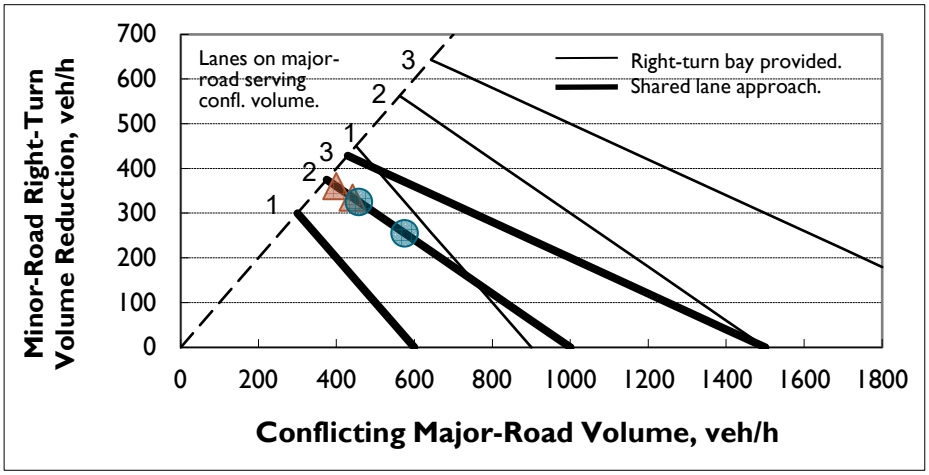
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	857	873
	3	Right	25	42
Major B	5	Through	797	1149
	6	Right	0	0
Minor C	7	Left	58	156
	8	Through	0	0
	9	Right	115	319
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	441	458
Conflicting major-road volume (Vc12):	399	575
Right-turn volume reduction (Vr9):	335	326
Right-turn volume reduction (Vr12):	361	255
Adjusted right-turn volume reduction (Vr9):	115	319
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	58	156

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Access #25 & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street:Access #25
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	3374	3167	2960	2754	2547	2340	2133	1927
Highest Apprch. Minor Street	140 (112)	214	201	188	175	162	148	135	122

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	3374	3167	2960	2754	2547	2340	2133	1927
Highest Apprch. Minor Street	70 (56)	214	201	188	175	162	148	135	122

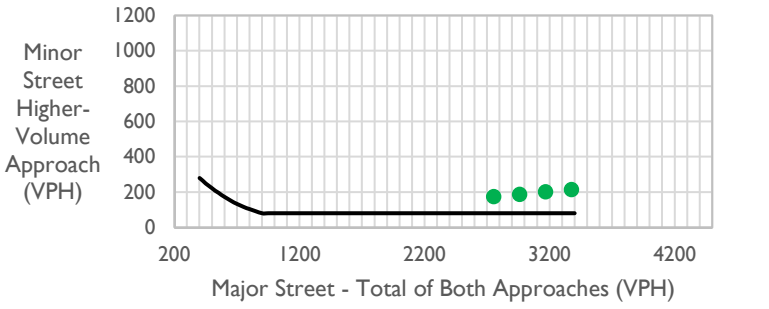
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3374	214
2nd Highest	3167	201
3rd Highest	2960	188
4th Highest	2754	175



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3374	214

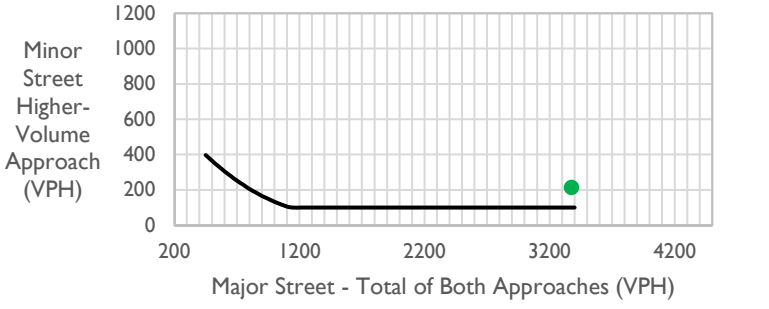
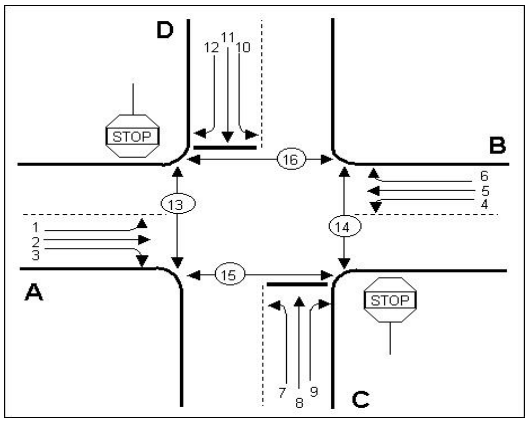


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2040_Build



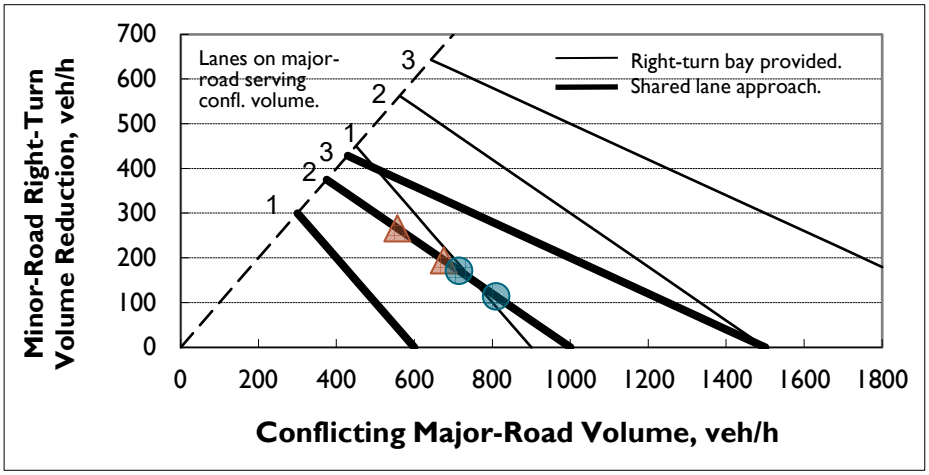
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1070	1580
	3	Right	41	39
Major B	5	Through	1254	1273
	6	Right	95	155
Minor C	7	Left	62	112
	8	Through	0	0
	9	Right	87	204
Minor D	10	Left	95	135
	11	Through	0	0
	12	Right	80	110

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	556	810
Conflicting major-road volume (Vc12):	675	714
Right-turn volume reduction (Vr9):	267	114
Right-turn volume reduction (Vr12):	195	172
Adjusted right-turn volume reduction (Vr9):	87	114
Adjusted right-turn volume reduction (Vr12):	80	110
Adjusted minor-road volume:	95	202

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
E-470 NB Ramps & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: E-470 NB Ramps
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	1642	1541	1441	1340	1239	1139	1038	938
Highest Apprch. Minor Street	140 (112)	720	676	632	588	543	499	455	411

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	1642	1541	1441	1340	1239	1139	1038	938
Highest Apprch. Minor Street	70 (56)	720	676	632	588	543	499	455	411

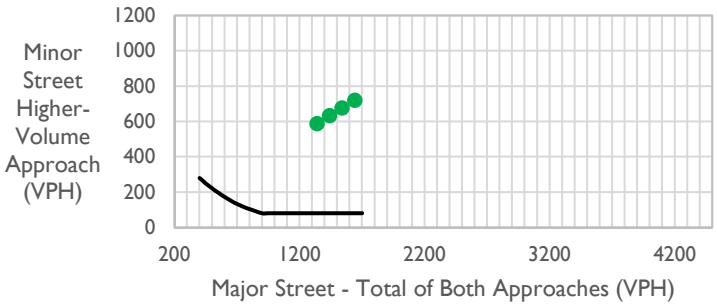
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1642	720
2nd Highest	1541	676
3rd Highest	1441	632
4th Highest	1340	588



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	1642	720

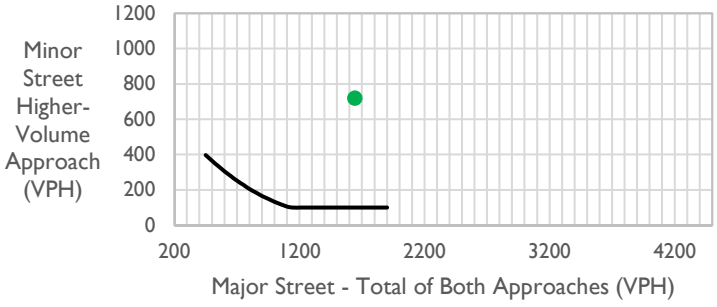
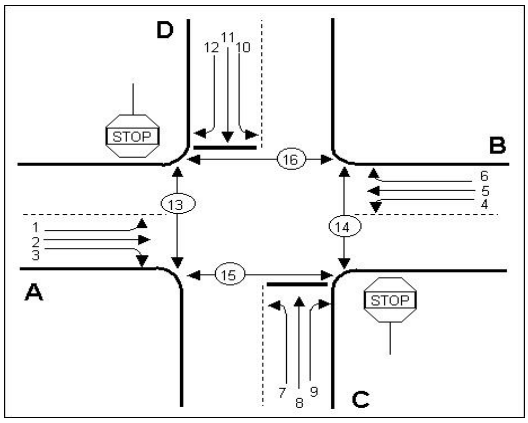


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
E-470 NB Ramps & 56th Avenue
2040_Build



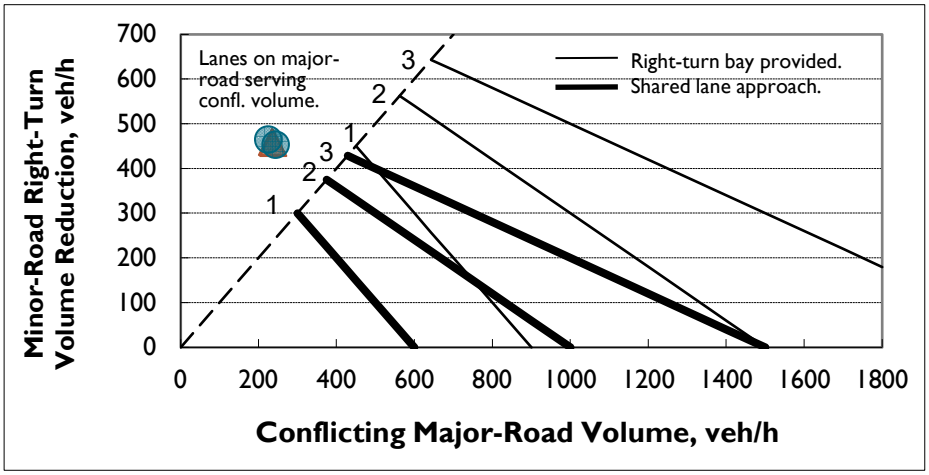
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	467	488
	3	Right	0	0
Major B	5	Through	465	435
	6	Right	10	15
Minor C	7	Left	587	705
	8	Through	0	0
	9	Right	140	30
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	234	244
Conflicting major-road volume (Vc12):	238	225
Right-turn volume reduction (Vr9):	460	454
Right-turn volume reduction (Vr12):	458	465
Adjusted right-turn volume reduction (Vr9):	140	30
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	587	705

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
E-470 SB Ramps & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: E-470 SB Ramps
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	3059	2872	2684	2497	2309	2122	1934	1747
Highest Apprch. Minor Street	140 (112)	315	296	276	257	238	218	199	180

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	3059	2872	2684	2497	2309	2122	1934	1747
Highest Apprch. Minor Street	70 (56)	315	296	276	257	238	218	199	180

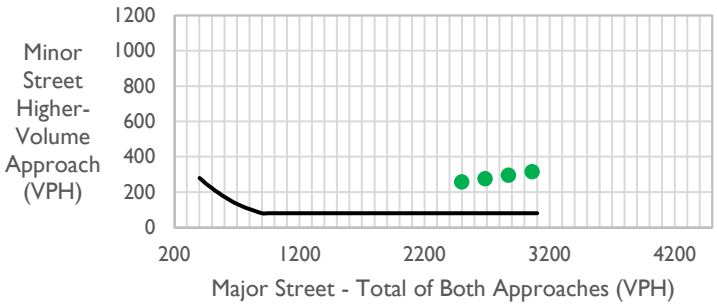
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3059	315
2nd Highest	2872	296
3rd Highest	2684	276
4th Highest	2497	257



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3059	315

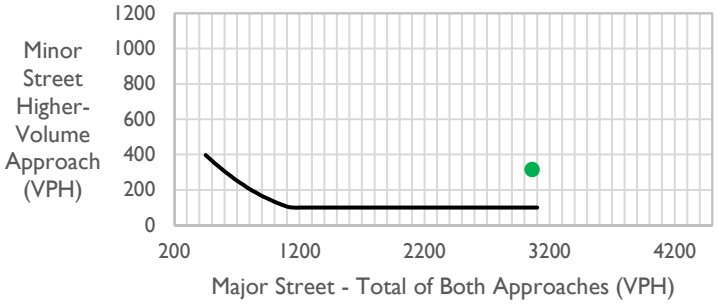
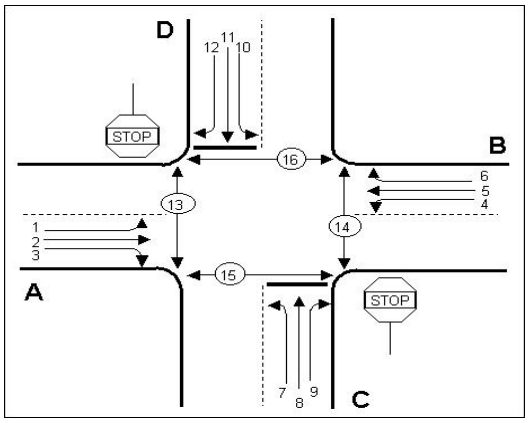


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
E-470 SB Ramps & 56th Avenue
2040_Build



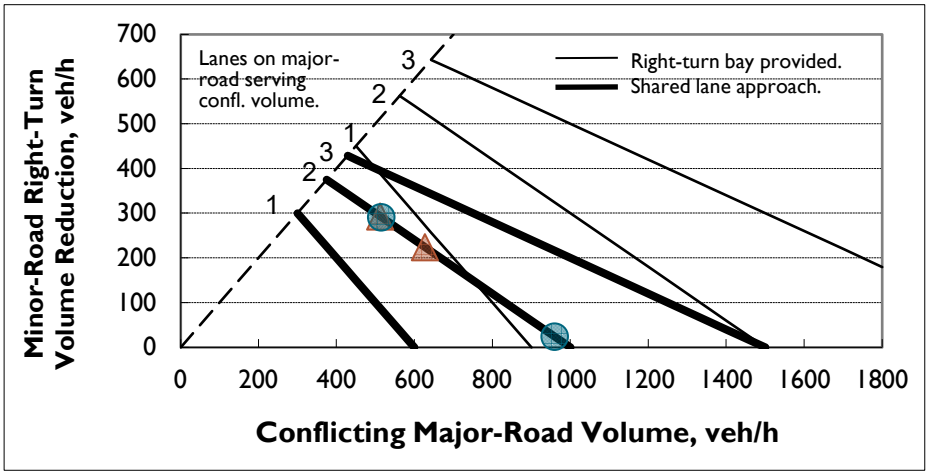
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	790	1182
	3	Right	462	737
Major B	5	Through	1022	1030
	6	Right	0	0
Minor C	7	Left	0	0
	8	Through	0	0
	9	Right	0	0
Minor D	10	Left	40	10
	11	Through	0	0
	12	Right	532	610

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	626	960
Conflicting major-road volume (Vc12):	511	515
Right-turn volume reduction (Vr9):	224	24
Right-turn volume reduction (Vr12):	293	291
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	293	291
Adjusted minor-road volume:	279	329

Chart Legend: ▲ ●



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed, rural community

Minor Street: Tibet Street
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2334	2191	2048	1905	1762	1619	1476	1333
Highest Apprch. Minor Street	140 (112)	419	393	368	342	316	291	265	239

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2334	2191	2048	1905	1762	1619	1476	1333
Highest Apprch. Minor Street	70 (56)	419	393	368	342	316	291	265	239

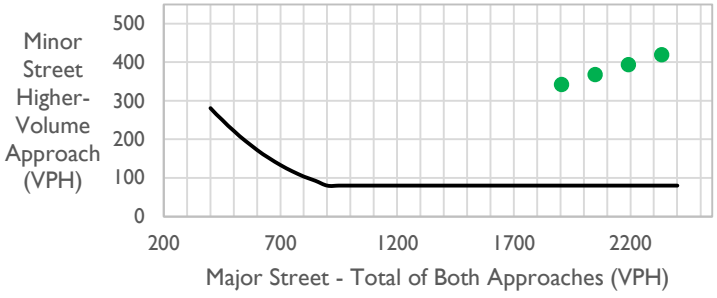
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2334	419
2nd Highest	2191	393
3rd Highest	2048	368
4th Highest	1905	342



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2334	419

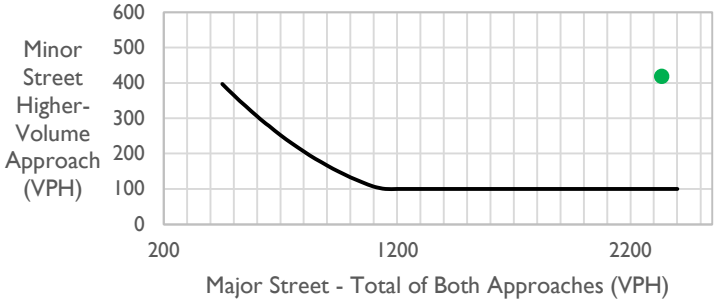
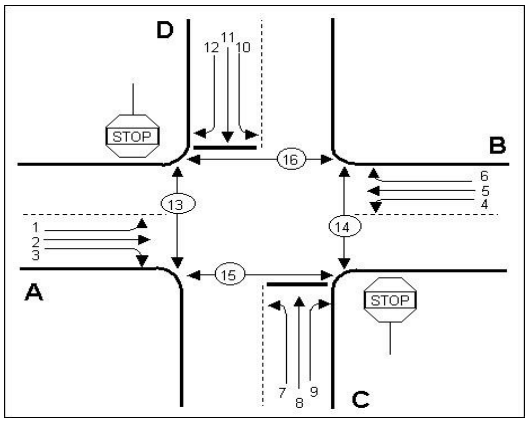


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Tibet Street & 56th Avenue
2040_Build



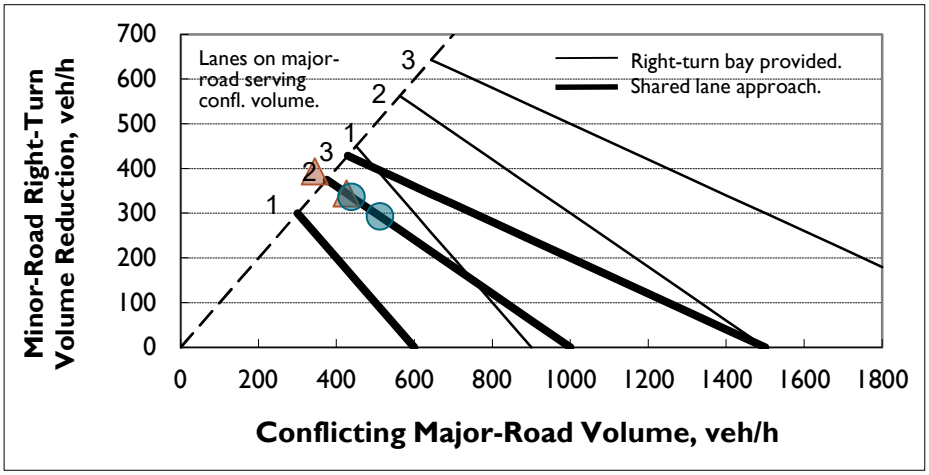
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	746	763
	3	Right	104	114
Major B	5	Through	687	1023
	6	Right	0	0
Minor C	7	Left	86	149
	8	Through	0	0
	9	Right	327	540
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	0	0

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	425	439
Conflicting major-road volume (Vc12):	344	512
Right-turn volume reduction (Vr9):	345	337
Right-turn volume reduction (Vr12):	394	293
Adjusted right-turn volume reduction (Vr9):	327	337
Adjusted right-turn volume reduction (Vr12):	0	0
Adjusted minor-road volume:	86	352

Chart Legend: ▲ ●



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Filing 5 Access & 48th Avenue / 48th Ave
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 48th Avenue / 48th Ave
Lanes Moving Traffic: 2 or more
Approach Speed: 35 MPH
Option: Low speed, urban community

Minor Street: Filing 5 Access
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	4929	4627	4325	4023	3721	3419	3117	2814
Highest Apprch. Minor Street	200 (160)	250	235	219	204	189	173	158	143

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	4929	4627	4325	4023	3721	3419	3117	2814
Highest Apprch. Minor Street	100 (80)	250	235	219	204	189	173	158	143

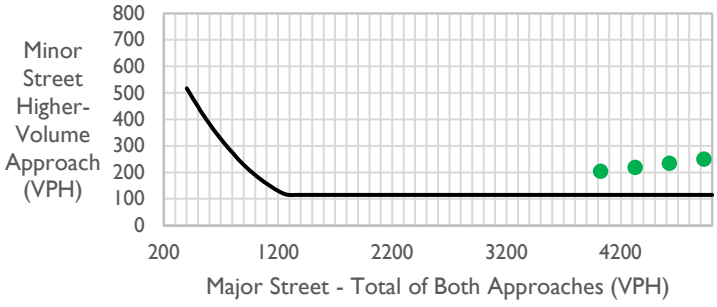
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4929	250
2nd Highest	4627	235
3rd Highest	4325	219
4th Highest	4023	204



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	4929	250

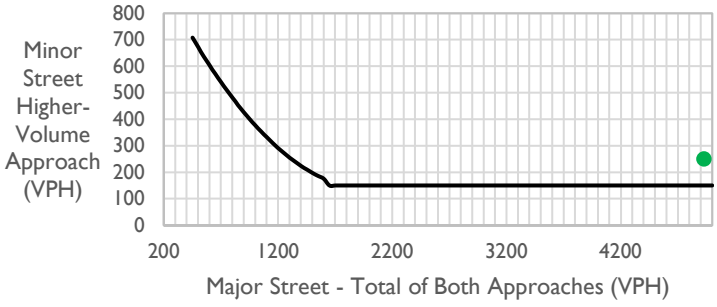
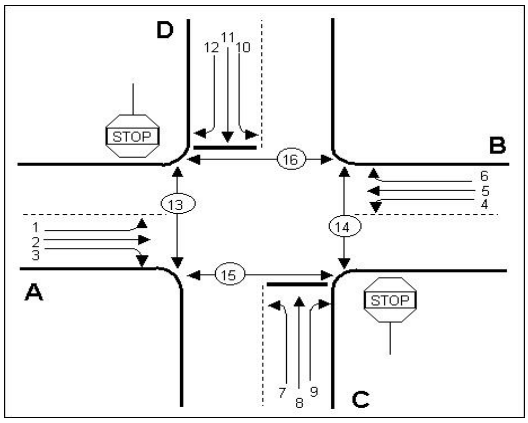


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Filing 5 Access & 48th Avenue / 48th Ave
2040_Build



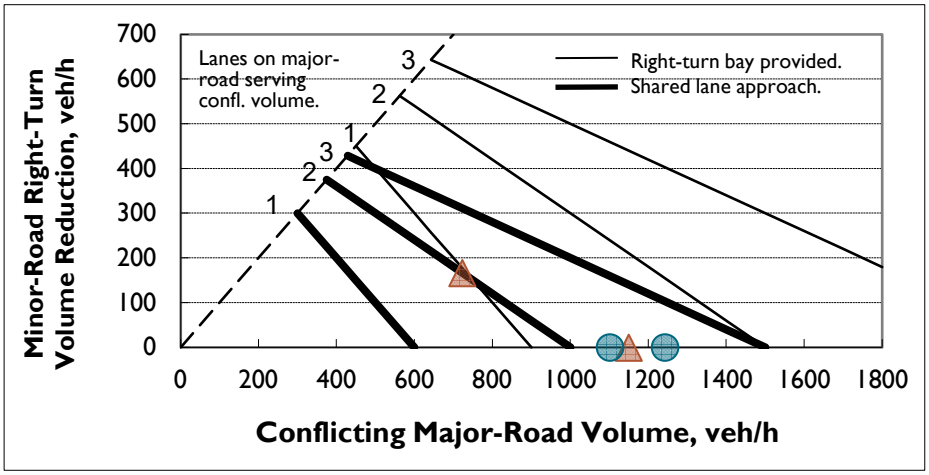
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	2179	2034
	3	Right	120	170
Major B	5	Through	1440	2470
	6	Right	5	15
Minor C	7	Left	150	170
	8	Through	0	0
	9	Right	200	110
Minor D	10	Left	15	10
	11	Through	0	0
	12	Right	20	10

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	1150	1102
Conflicting major-road volume (Vc12):	723	1243
Right-turn volume reduction (Vr9):	0	0
Right-turn volume reduction (Vr12):	167	0
Adjusted right-turn volume reduction (Vr9):	0	0
Adjusted right-turn volume reduction (Vr12):	20	0
Adjusted minor-road volume:	350	280

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Picadilly Rd & 54th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: Picadilly Rd
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: 54th Avenue
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	No

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	3409	3200	2991	2782	2573	2364	2155	1947
Highest Apprch. Minor Street	140 (112)	142	133	125	116	107	98	90	81

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	3409	3200	2991	2782	2573	2364	2155	1947
Highest Apprch. Minor Street	70 (56)	142	133	125	116	107	98	90	81

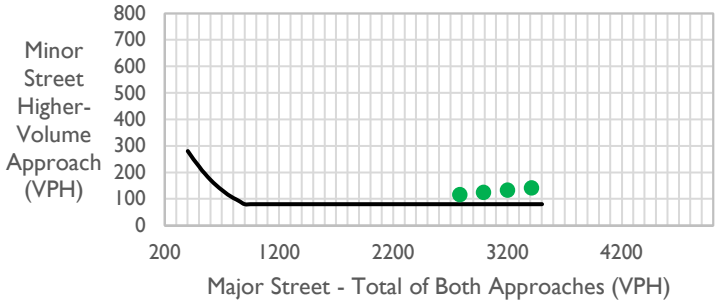
WARRANT 1, Condition A and Condition B

56% Satisfied	No

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3409	142
2nd Highest	3200	133
3rd Highest	2991	125
4th Highest	2782	116



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	3409	142

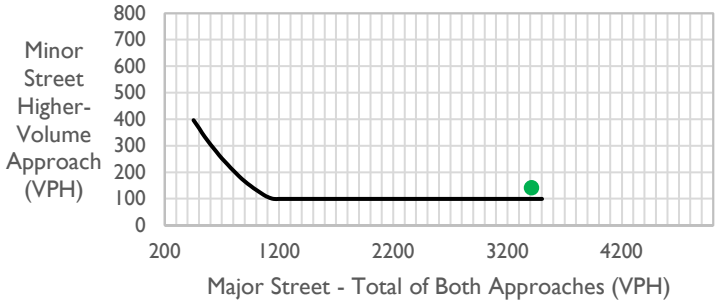
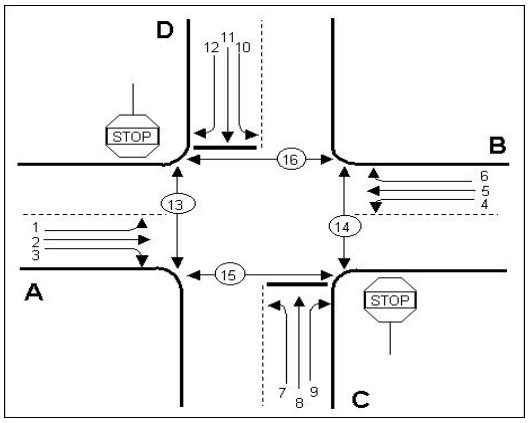


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Picadilly Rd & 54th Avenue
2040_Build



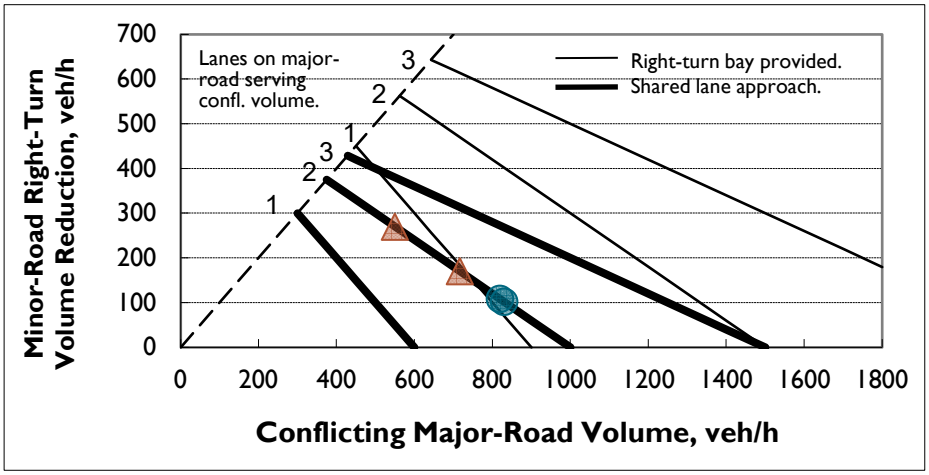
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	1414	1604
	3	Right	17	34
Major B	5	Through	1078	1615
	6	Right	20	45
Minor C	7	Left	56	137
	8	Through	0	0
	9	Right	22	7
Minor D	10	Left	0	0
	11	Through	0	0
	12	Right	35	10

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	716	819
Conflicting major-road volume (Vc12):	549	830
Right-turn volume reduction (Vr9):	171	109
Right-turn volume reduction (Vr12):	271	102
Adjusted right-turn volume reduction (Vr9):	22	7
Adjusted right-turn volume reduction (Vr12):	35	10
Adjusted minor-road volume:	56	137

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & 52nd Ave
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: Tibet Street
Lanes Moving Traffic: 2 or more
Approach Speed: 40 MPH
Option: Low speed, urban community

Minor Street: 52nd Ave
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	2347	2203	2059	1915	1772	1628	1484	1340
Highest Apprch. Minor Street	200 (160)	282	265	247	230	213	196	178	161

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	2347	2203	2059	1915	1772	1628	1484	1340
Highest Apprch. Minor Street	100 (80)	282	265	247	230	213	196	178	161

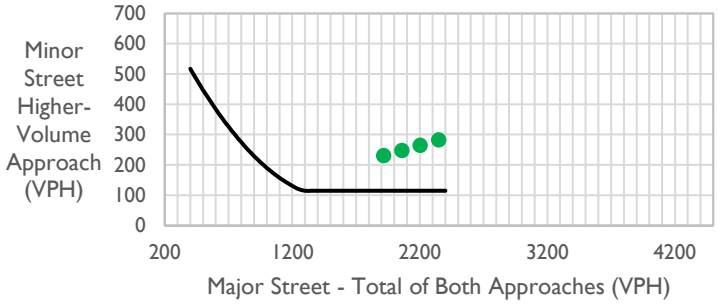
WARRANT 1, Condition A and Condition B

80% Satisfied	Yes

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2347	282
2nd Highest	2203	265
3rd Highest	2059	247
4th Highest	1915	230



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2347	282

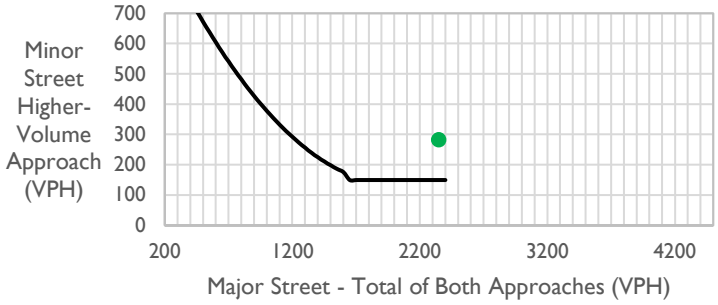
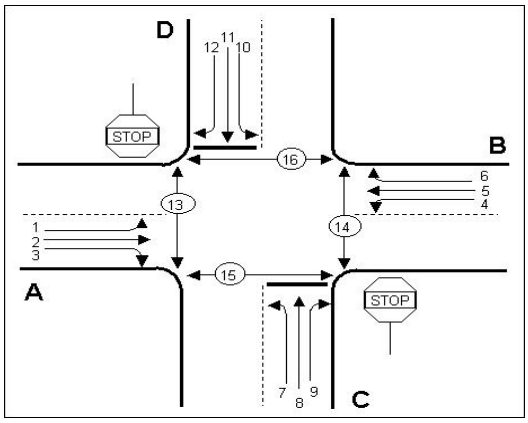


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Tibet Road & 52nd Ave
2040_Build



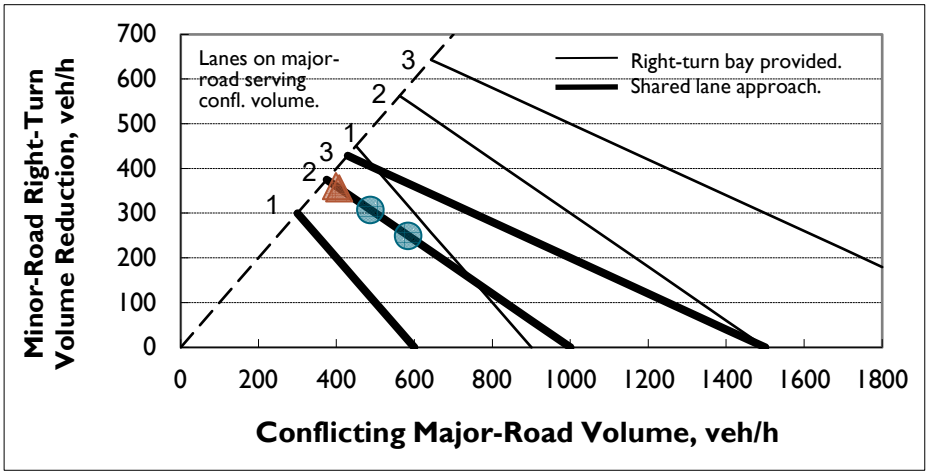
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	728	1111
	3	Right	68	57
Major B	5	Through	706	857
	6	Right	106	117
Minor C	7	Left	29	69
	8	Through	22	58
	9	Right	41	89
Minor D	10	Left	104	118
	11	Through	57	45
	12	Right	122	159

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	398	584
Conflicting major-road volume (Vc12):	406	487
Right-turn volume reduction (Vr9):	361	250
Right-turn volume reduction (Vr12):	356	308
Adjusted right-turn volume reduction (Vr9):	41	89
Adjusted right-turn volume reduction (Vr12):	122	159
Adjusted minor-road volume:	161	163

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & 56th Avenue
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: 56th Avenue
Lanes Moving Traffic: 2 or more
Approach Speed: 45 MPH
Option: High speed major-street

Minor Street: Tibet Street
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 50% SB, 50% NB

WARRANT 1, Condition A - Minimum Vehicular Volume

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	420 (336)	2764	2595	2425	2256	2086	1917	1748	1578
Highest Apprch. Minor Street	140 (112)	1138	1068	999	929	859	789	720	650

WARRANT 1, Condition B - Interruption of Continuous Traffic

70% Satisfied	Yes

	Vehicles per hour 70% (56%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	630 (504)	2764	2595	2425	2256	2086	1917	1748	1578
Highest Apprch. Minor Street	70 (56)	1138	1068	999	929	859	789	720	650

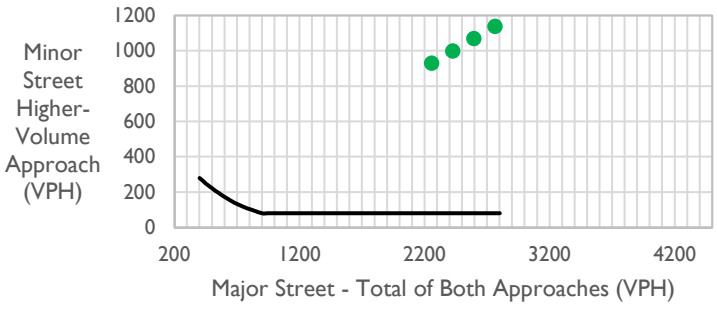
WARRANT 1, Condition A and Condition B

56% Satisfied	Yes

WARRANT 2, Four Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2764	1138
2nd Highest	2595	1068
3rd Highest	2425	999
4th Highest	2256	929



WARRANT 3, Peak Hour Volume

70% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2764	1138

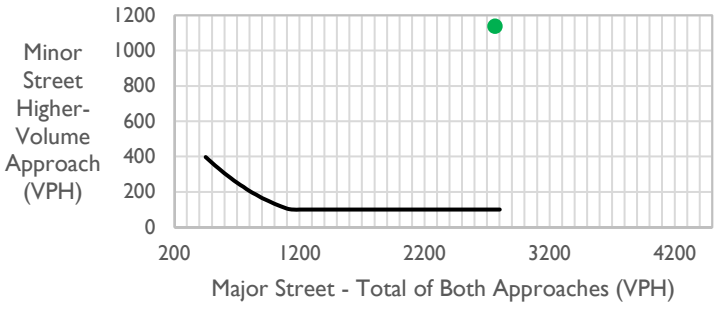
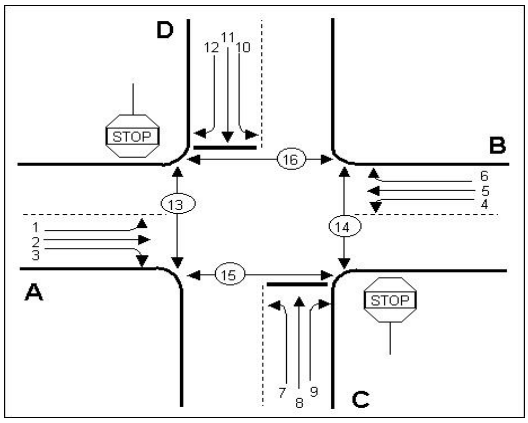


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
0 & 56th Avenue
2040_Build



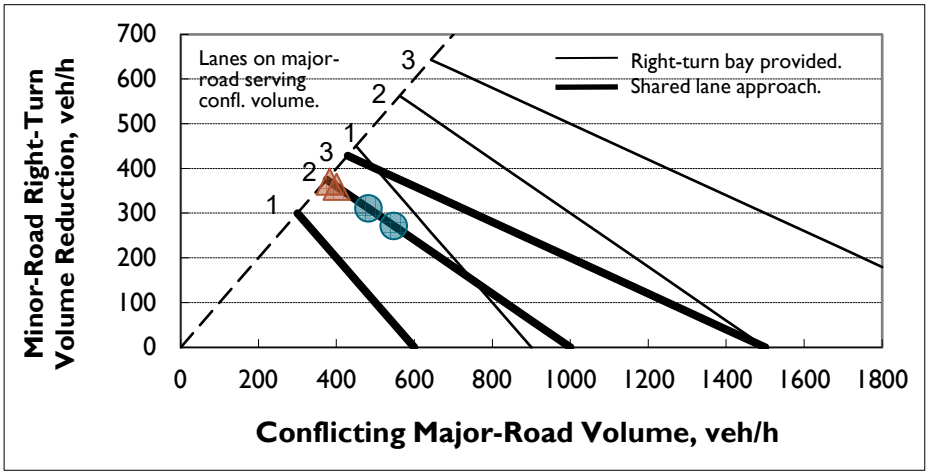
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	498	805
	3	Right	265	289
Major B	5	Through	565	779
	6	Right	235	185
Minor C	7	Left	254	487
	8	Through	195	315
	9	Right	481	671
Minor D	10	Left	185	230
	11	Through	170	305
	12	Right	175	290

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	382	547
Conflicting major-road volume (Vc12):	400	482
Right-turn volume reduction (Vr9):	371	272
Right-turn volume reduction (Vr12):	360	311
Adjusted right-turn volume reduction (Vr9):	371	272
Adjusted right-turn volume reduction (Vr12):	175	290
Adjusted minor-road volume:	559	1201

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & Access #18
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: Tibet Street
Lanes Moving Traffic: 2 or more
Approach Speed: 40 MPH
Option: Low speed, urban community

Minor Street: Access #18
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	2433	2284	2135	1986	1837	1687	1538	1389
Highest Apprch. Minor Street	200 (160)	178	167	156	145	134	123	113	102

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	2433	2284	2135	1986	1837	1687	1538	1389
Highest Apprch. Minor Street	100 (80)	178	167	156	145	134	123	113	102

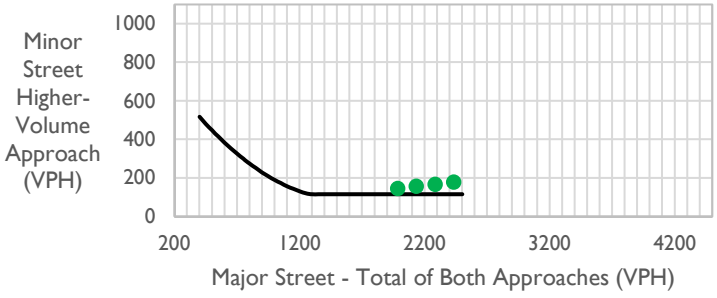
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2433	178
2nd Highest	2284	167
3rd Highest	2135	156
4th Highest	1986	145



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2433	178

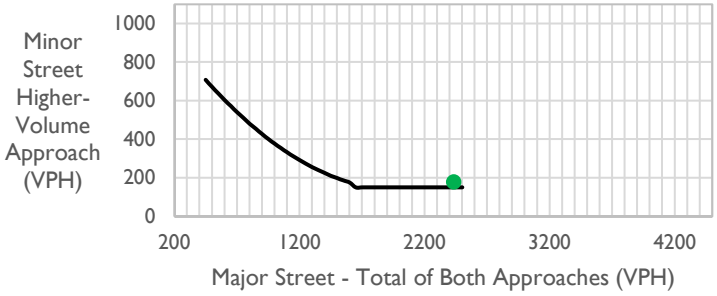
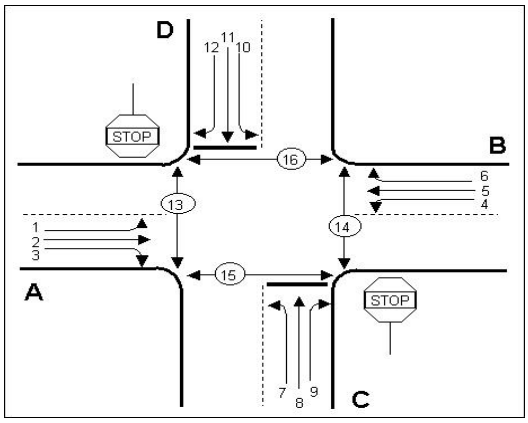


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Tibet Road & Access #18
2040_Build



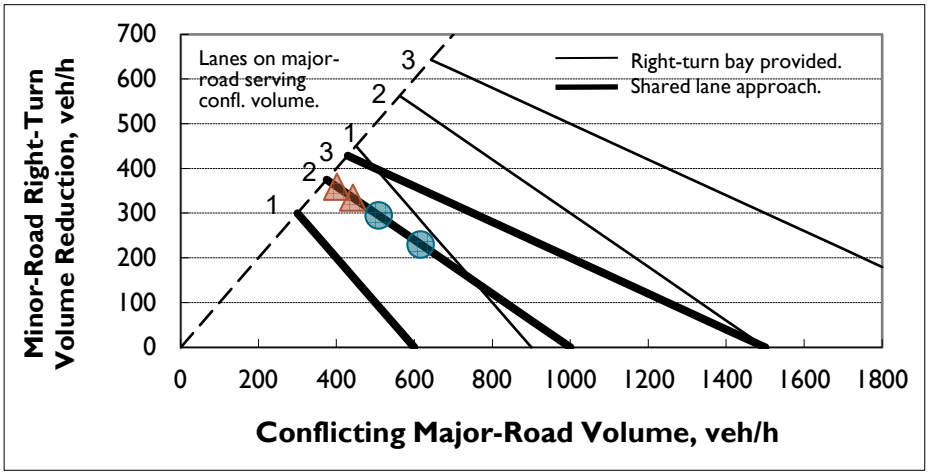
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	756	1192
	3	Right	45	40
Major B	5	Through	868	997
	6	Right	15	19
Minor C	7	Left	36	64
	8	Through	0	0
	9	Right	85	152
Minor D	10	Left	50	47
	11	Through	0	0
	12	Right	12	6

OUTPUT

Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	401	616
Conflicting major-road volume (Vc12):	442	508
Right-turn volume reduction (Vr9):	360	230
Right-turn volume reduction (Vr12):	335	295
Adjusted right-turn volume reduction (Vr9):	85	152
Adjusted right-turn volume reduction (Vr12):	12	6
Adjusted minor-road volume:	50	64

Chart Legend:



Source: NCHRP Report 457

MUTCD Volume-based Warrant Evaluation
Tibet Street & Access #19
2040_Build

FELSBURG HOLT & ULLEVIG

Major Street: Tibet Street
Lanes Moving Traffic: 2 or more
Approach Speed: 40 MPH
Option: Low speed, urban community

Minor Street: Access #19
Lanes Moving Traffic: 2 or more
Right Turn Volume Included: 25% EB, 25% WB

WARRANT 1, Condition A - Minimum Vehicular Volume

100% Satisfied	No

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	600 (480)	2517	2363	2208	2054	1900	1746	1591	1437
Highest Apprch. Minor Street	200 (160)	206	193	181	168	156	143	130	118

WARRANT 1, Condition B - Interruption of Continuous Traffic

100% Satisfied	Yes

	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	900 (720)	2517	2363	2208	2054	1900	1746	1591	1437
Highest Apprch. Minor Street	100 (80)	206	193	181	168	156	143	130	118

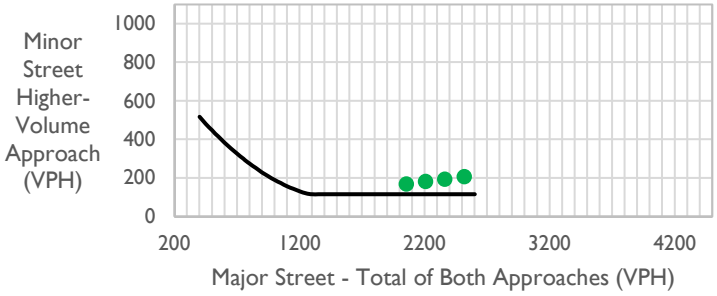
WARRANT 1, Condition A and Condition B

80% Satisfied	No

WARRANT 2, Four Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2517	206
2nd Highest	2363	193
3rd Highest	2208	181
4th Highest	2054	168



WARRANT 3, Peak Hour Volume

100% Satisfied	Yes

	Both Apprchs. Major Street	Higher Vol. Apprch. Minor Street
Peak Hour	2517	206

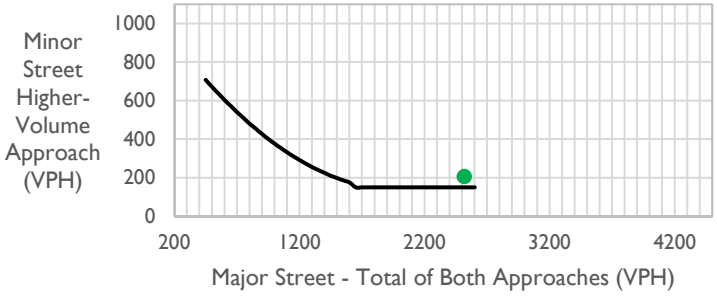
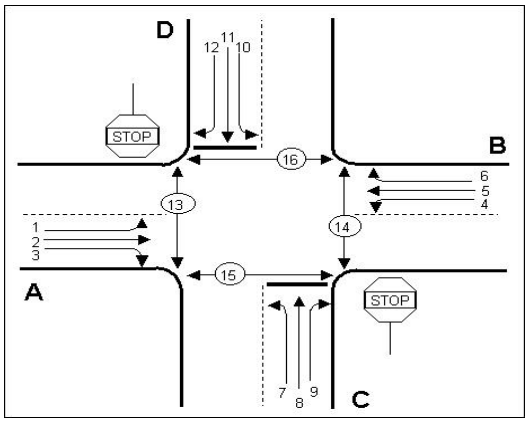


Figure 2 - 11. Minor-road right-turn volume reduction for warrant check.
Tibet Road & Access #19
2040_Build



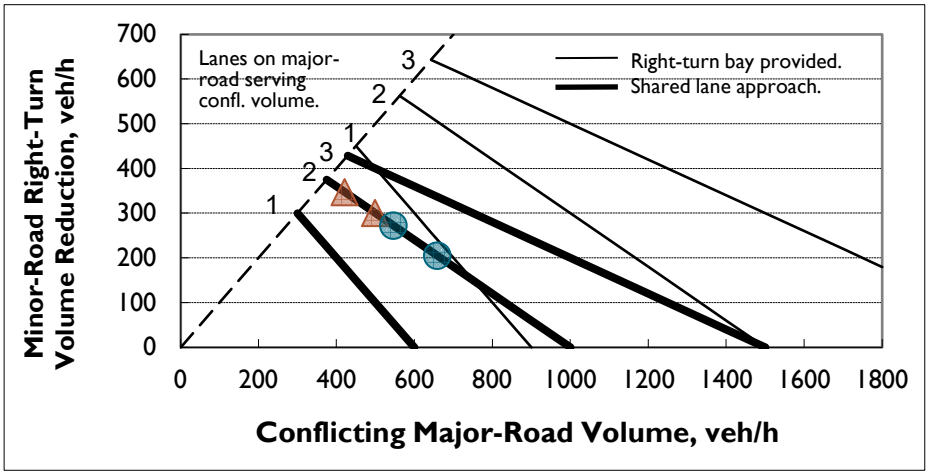
INPUT

Number of lanes on major-road approach:			2	
Right-turn geometry on minor-road:			Shared-lane approach	
Approach	Number	Movement	Volume (veh/hr) AM	PM
Major A	2	Through	829	1306
	3	Right	12	11
Major B	5	Through	941	1012
	6	Right	55	80
Minor C	7	Left	25	35
	8	Through	0	0
	9	Right	28	34
Minor D	10	Left	85	148
	11	Through	0	0
	12	Right	43	77

OUTPUT

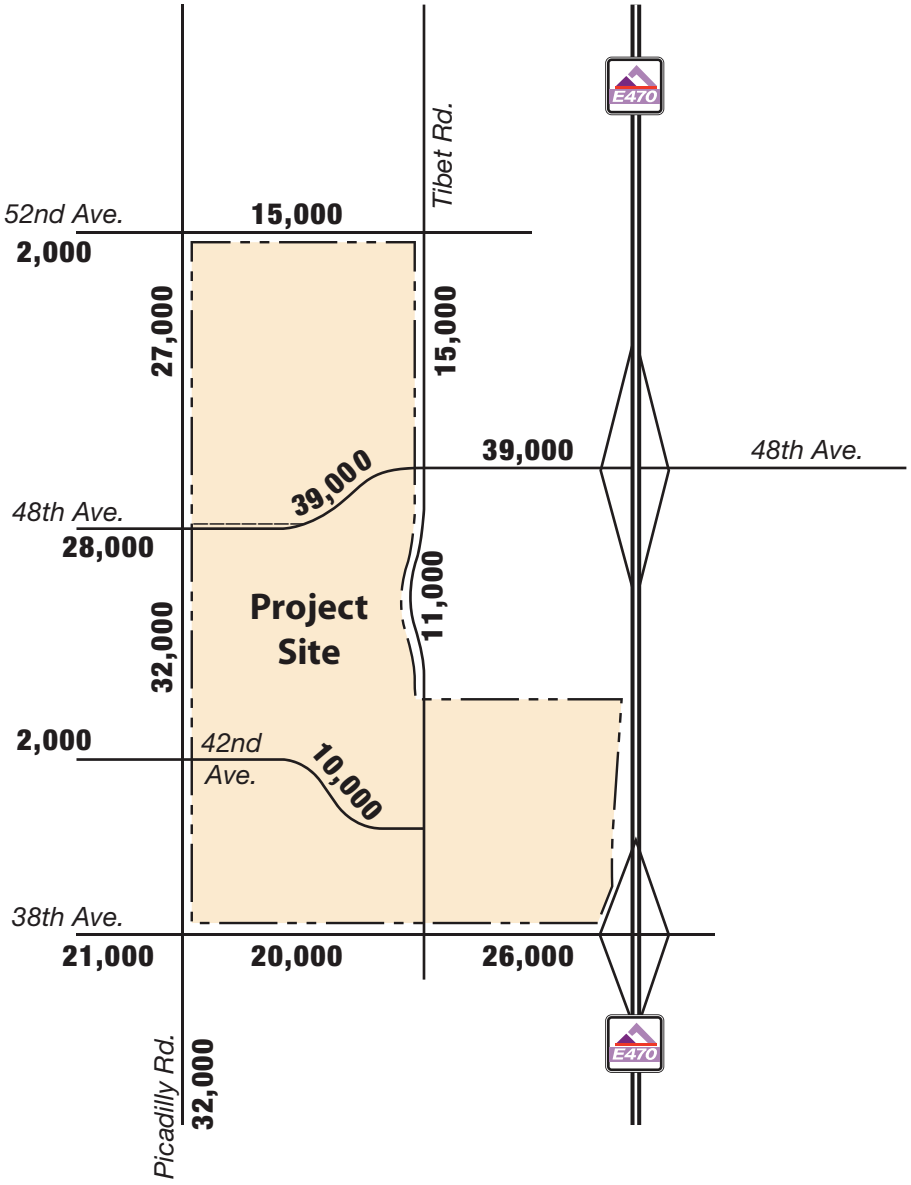
Variable	Volume (veh/hr) AM	PM
Conflicting major-road volume (Vc9):	421	659
Conflicting major-road volume (Vc12):	498	546
Right-turn volume reduction (Vr9):	348	205
Right-turn volume reduction (Vr12):	301	272
Adjusted right-turn volume reduction (Vr9):	28	34
Adjusted right-turn volume reduction (Vr12):	43	77
Adjusted minor-road volume:	85	148

Chart Legend:



Source: NCHRP Report 457

APPENDIX I. BACKGROUND INFORMATION



LEGEND

XXXX = Daily Traffic Volumes

NORTH

FIGURE 6

Long Term Total Projected Traffic

FELSBURG HOLT & ULLEVIG

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

MEMORANDUM

TO: Victor Rachael
Brandon Wyszynski

FROM: Charles Buck

DATE: June 5, 2018

SUBJECT: Green Valley Ranch East Transportation Analysis
Traffic Volume Forecasting Update – Proposed Approach
FHU Reference Number 116375-01

The Green Valley Ranch East Transportation Analysis, last updated December 2017, provided high-level traffic forecasting towards the evaluation of ultimate roadway system needs in the GVRE area. For this study, a hybrid travel demand model, adapted from the DRCOG COMPASS/tailor-made VISUM model, was used to represent a larger sub area, incorporating other surrounding development and growth, such as the Aurora Highlands and the Highlands 310 master plans. This model assumed a build-out scenario at maximum density within the larger subarea, thus representing a very conservative projection of future travel demand.

A more refined modeling effort has since been developed as a part of the City of Aurora's current NEATS (Northeast Area Transportation Study) refresh project. The NEATS model, now substantially complete, utilizes the current DRCOG FOCUS 2 travel demand model, and is based on a consensus of development and growth expectations. This current model, therefore, provides a more realistic vision of build-out travel demand within the study area.

As discussed at the meeting between developer representatives and City of Aurora staff on May 29, 2018, an update to the GVRE Transportation Analysis (as well as the associated GVRE CSP studies) is appropriate to provide consistent traffic volume forecasts reflecting the results of the current NEATS effort. The purpose of this brief technical memorandum is to document our proposed approach to adjusting the traffic volume forecasts to be used in each analysis.

At the meeting, City staff expressed the need to maintain a conservative outlook for the traffic projections and suggested some combination of the older Compass projections and the newer NEATS results. Therefore, our approach incorporates the following:

- We have used the NEATS output from the Build-Out Scenario, rather than the 2040 model (which assumed only a percentage of build-out).
- We have averaged the NEATS output with 90 percent of the COMPASS-based projections.
- E-470 interchanges at both 48th Avenue and 38th Avenue are assumed.

The resultant long term total daily traffic volumes are depicted on the attached **Figure 1**. As shown, the adjusted traffic volumes along Green Valley Ranch Boulevard/48th Avenue are projected to range between 28,000 to 39,000 vehicles per day (VPD). Picadilly road would carry between 27,000 and 32,000 VPD. 38th

Avenue would carry between 20,000 and 26,000 VPD. Traffic volumes along Tibet Road would range between 11,000 and 15,000 VPD.

These projections represent reductions from the previous Compass-based analysis of about 13 to 19 percent on 48th Avenue, 7 to 19 percent on 38th Avenue, and 8 to 18 percent on Picadilly Road. However, compared to the current NEATS output, the projections represent increases of about 9 to 11 percent on 48th Avenue, 7 to 8 percent on 38th Avenue, and 8 to 13 percent on Picadilly Road. Thus, the proposed approach maintains a conservative outlook while bringing the projections more in line with the current NEATS model.

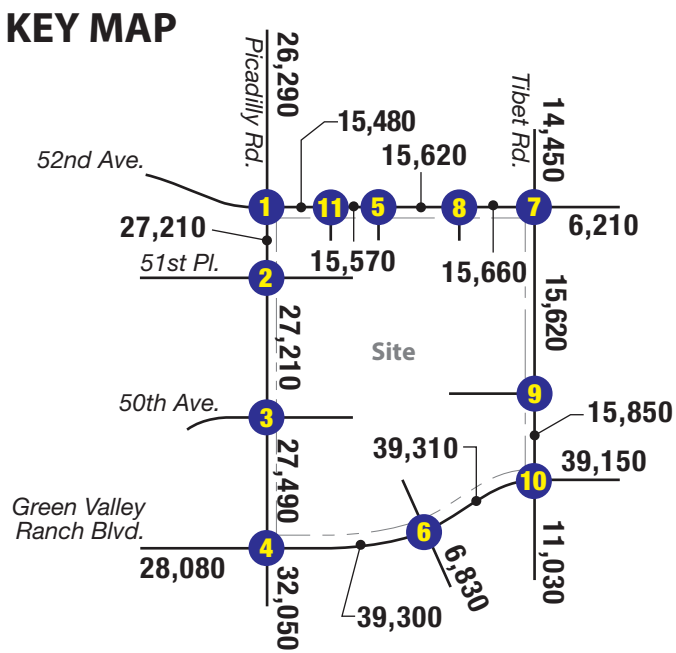
The above projections indicate the following roadway requirements:

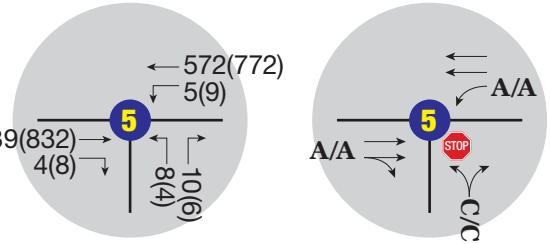
- The traffic volumes along 48th Avenue between Picadilly Road and E-470 remain consistent with a six-lane arterial roadway cross-section. A transition to four-lanes upon crossing Picadilly Road heading east into Denver would be appropriate.
- The projected Picadilly Road volumes are within the typical daily capacity of a four-lane arterial; however, sufficient right-of-way should be preserved to accommodate the ultimate six-lane major arterial cross-section.
- Tibet Road should be constructed to the three-lane collector standard, which includes center turn lanes. Additional width along Tibet Road near 48th Avenue may be needed depending on the nature of development (and access thereof) of the property along the east side of Tibet Road. In addition, extra width to accommodate turn lanes from Tibet Road onto 48th Avenue and 38th Avenue is likely.
- 38th Avenue should be constructed to a four-lane arterial given its interchanging with E-470; auxiliary lanes near the E-470 interchange will be appropriate.

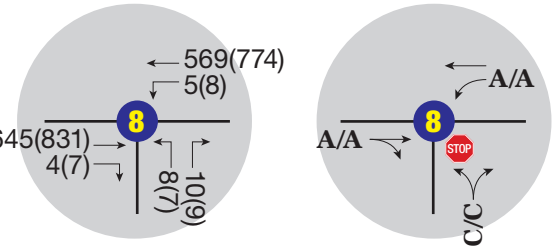
The above roadway network requirements remain generally consistent with the December 2017 report, but will need to be verified through updated analyses. Specific intersection requirements, such as traffic control, auxiliary turn lanes, and storage requirements, will be identified through the more focused CSP studies.

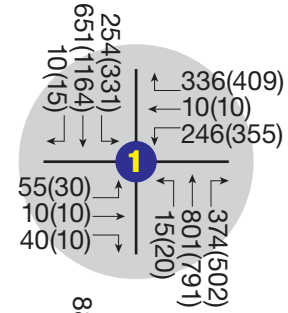
If the above approach to refining the traffic volume projections for the GVRE study area is acceptable, please indicate your concurrence so that we can proceed with the analyses. Otherwise, if you have comments or suggestions for a modified approach, please call or email me.

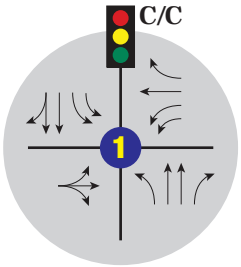
Charles M. Buck, P.E., PTOE
charles.buck@fhueng.com
303-721-1440

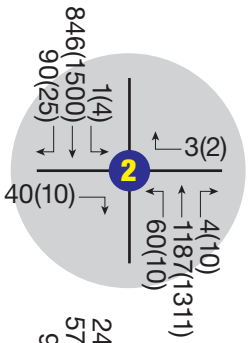


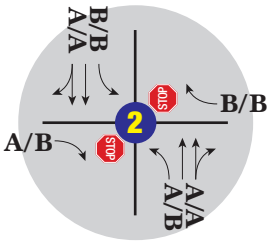


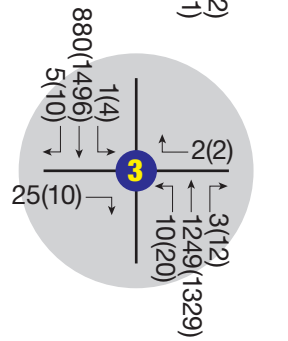


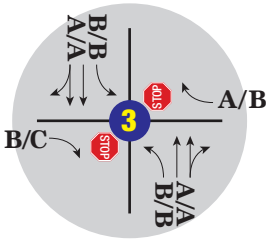


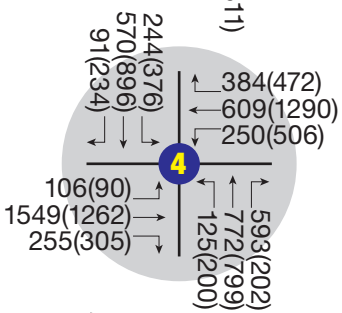


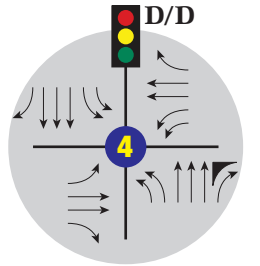


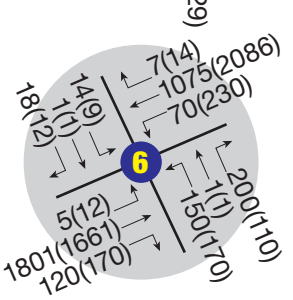


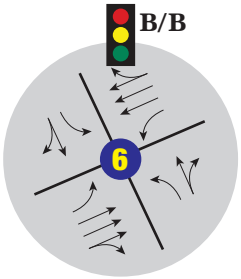


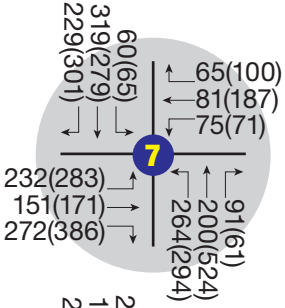


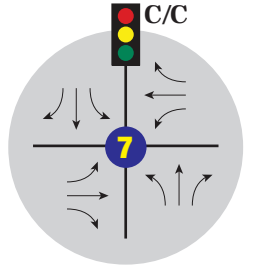


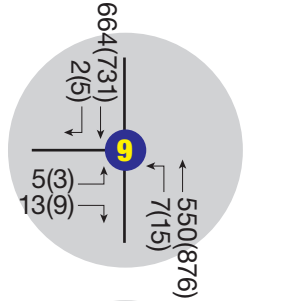


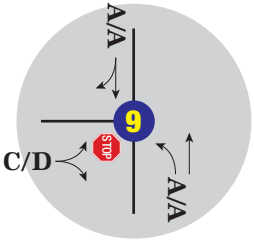


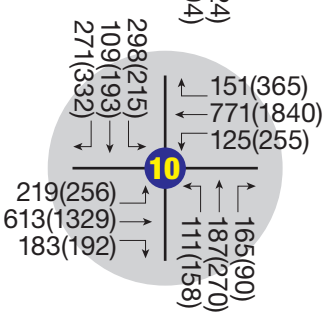


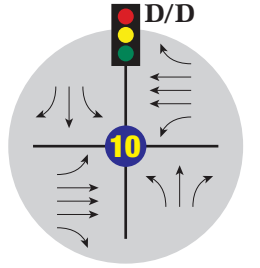


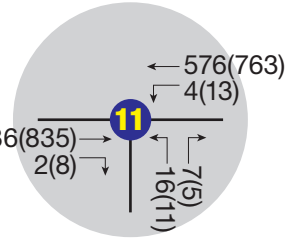


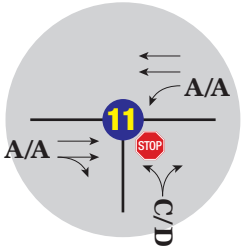












LEGEND

XXX(XXX)	= AM(PM) Peak Hour Traffic Volumes	STOP	= Stop Sign
XXXX	= Daily Traffic Volumes		= Traffic Signal
X/X	= AM/PM Peak Hour Intersection Level of Service		= Yield Control Right-Turn

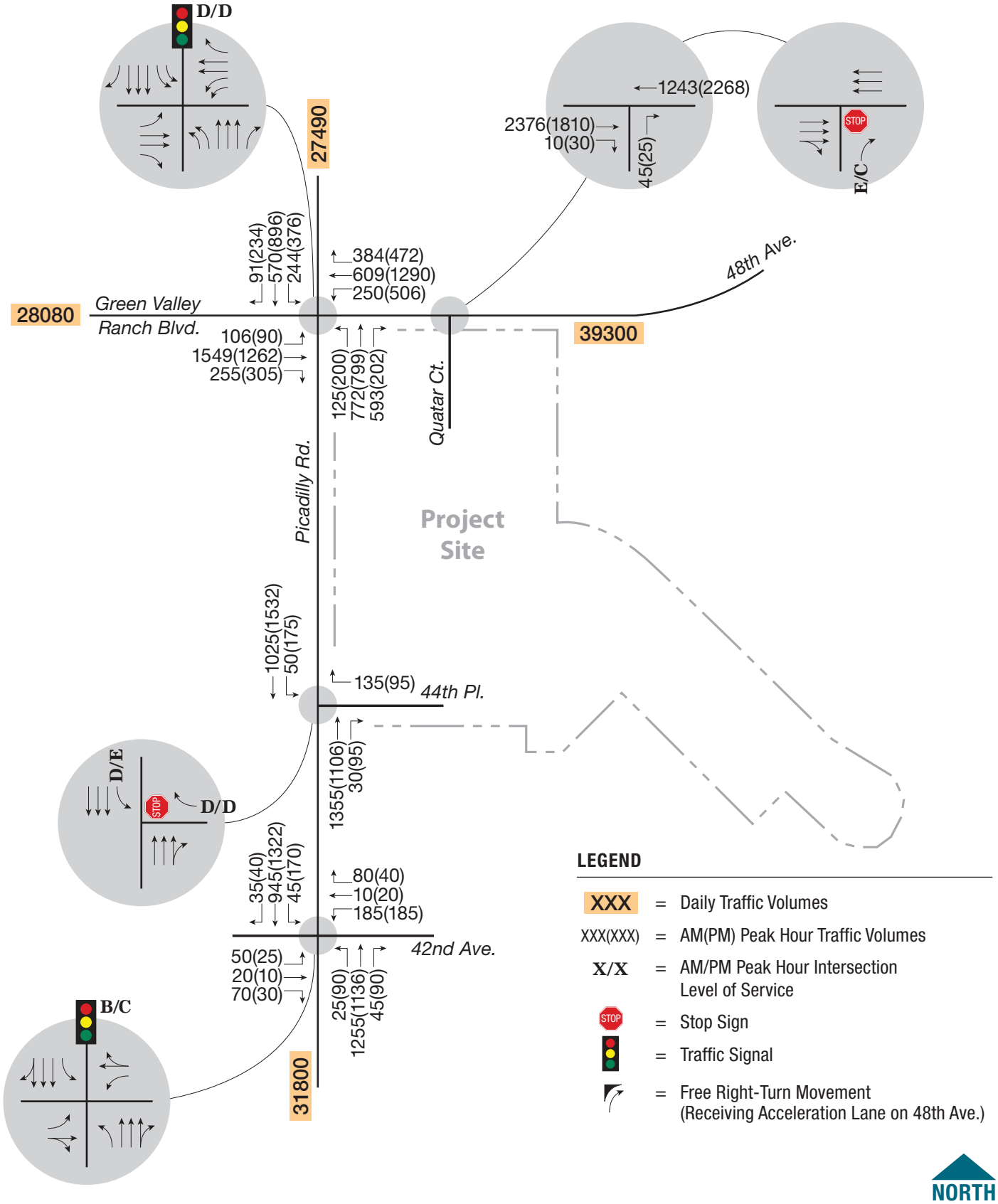
FELSBURG HOLT & ULLEVIG

NORTH

FIGURE 8

Long Range Future Total Traffic Conditions

GVR East Filing 5 20-080-01 4/27/20



LEGEND

XXX	=	Daily Traffic Volumes
XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
X/X	=	AM/PM Peak Hour Intersection Level of Service
STOP	=	Stop Sign
	=	Traffic Signal
	=	Free Right-Turn Movement (Receiving Acceleration Lane on 48th Ave.)

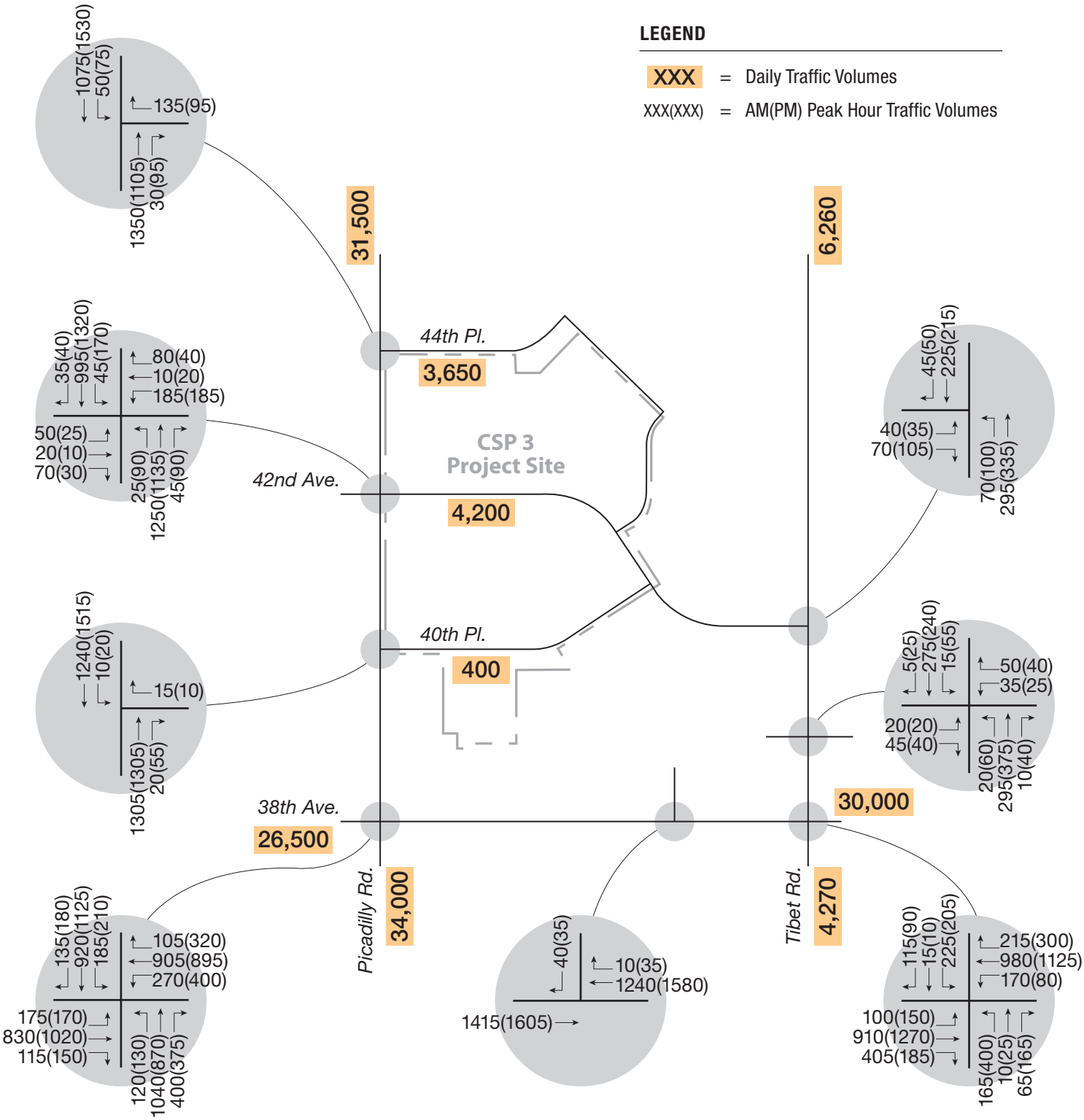
NORTH

FELSBURG HOLT & ULLEVIG

Long Term Total Traffic Conditions

FIGURE 7

GVR Transportation Study - CSP2 UPDATE 20-219 05/18/20



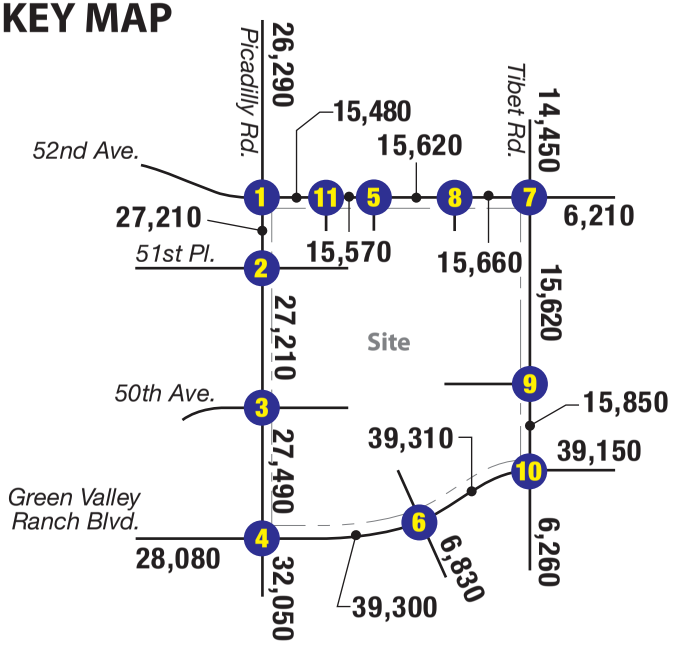
FELSBURG HOLT & ULLEVIG

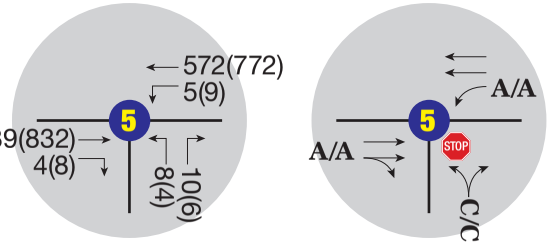
Long-Range Total Traffic Volumes

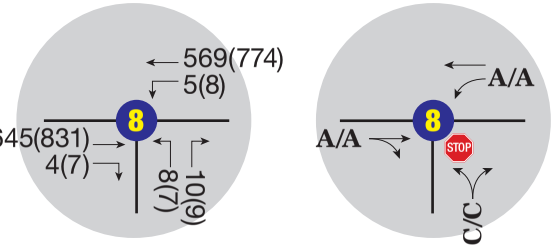
GVR East Transportation Study - CSP3 UPDATE 18-427 5/27/20

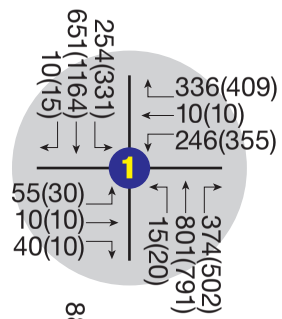
FIGURE 8

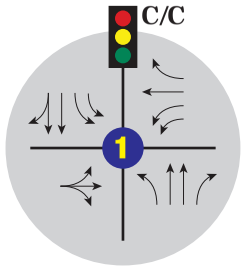
KEY MAP

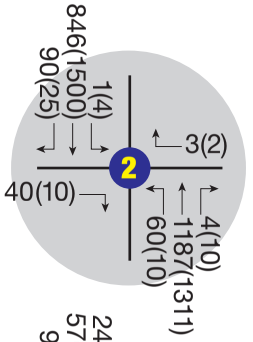


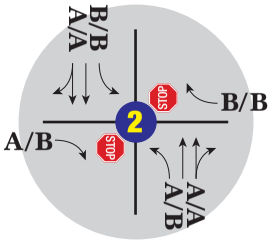


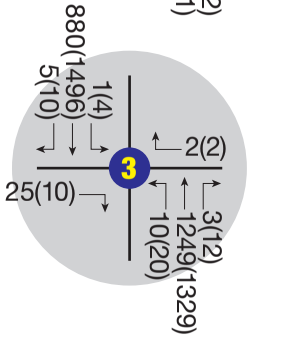


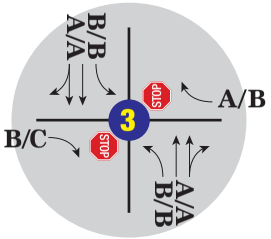


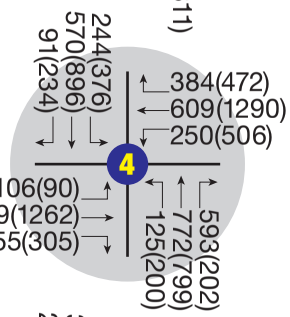


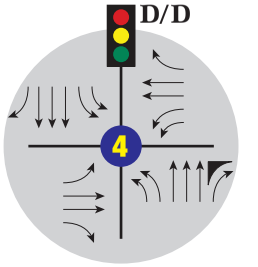


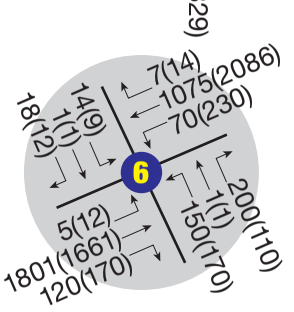


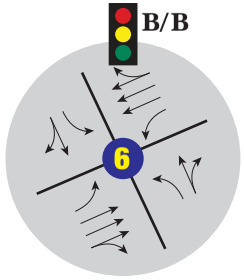


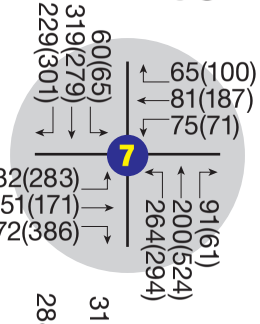


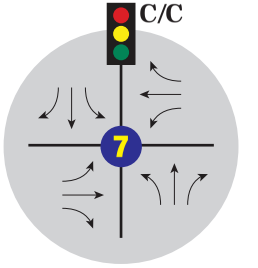


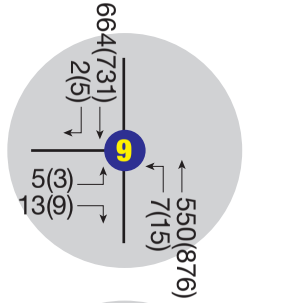


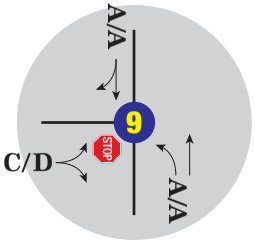


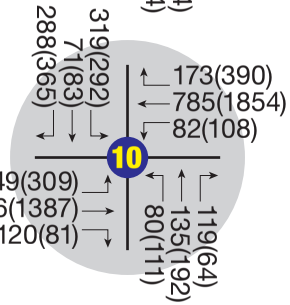


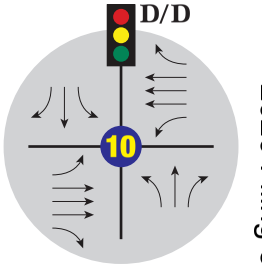


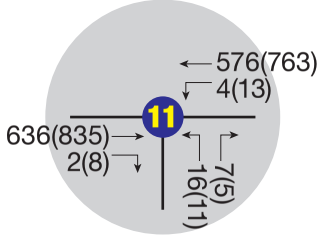


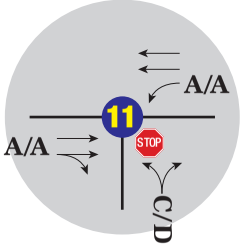












LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes
XXXX = Daily Traffic Volumes
X/X = AM/PM Peak Hour Intersection Level of Service
STOP = Stop Sign
= Traffic Signal
= Yield Control Right-Turn

FELSBURG HOLT & ULLEVIG

2020 Filing 5 TIS

NORTH

FIGURE 8
Long Range Future Total Traffic Conditions

GVR East Filing 5 20-080-01 5/14/20