DOUGLAS COUNTY
COLORADO

Minor Development Final Plat Staff Report

Date:	March 11, 2026
To:	Douglas County Board of County Commissioners
Through:	Douglas J. DeBord, County Manager
From:	Kati Carter, AICP, Director of Community Development
CC:	Mike Pesicka, Principal Planner Jeanette Bare, AICP, Planning Manager Steven E. Koster, AICP, Deputy Director
Subject:	**Pinery Village Filing 2, Minor Development Final Plat**
Project File:	**SB2021-049**

Planning Commission Hearing:	**March 2, 2026 @ 6:00 p.m.**
Board of County Commissioners Hearing (continued):	**March 10, 2026 @ 2:30 p.m.**
Board of County Commissioners Hearing:	**March 24, 2026 @ 2:30 p.m.**

I. EXECUTIVE SUMMARY

The request is for approval of Pinery Village Filing 2, a minor development final plat to create three new super-block lots for future commercial development and seven tracts for drainage, open space, and public right-of-way on 87.85 acres. Further Replats and Site Improvement Plan applications are anticipated in the near future.

The project site is located northwest of the intersection of State Highway 83 (SH 83) and Wellspring Drive. The site is zoned Planned Development (PD) within the Pinery PD and is part of the Pinery Separated Urban Area (SUA) of the 2040 Comprehensive Master Plan. The property is served by the Pinery Water and Wastewater District with access from an extension of Pinery Center Boulevard.

The application has been in process since 2021. During this time the applicant has been addressing drainage and utility issues and working with the Pinery Water and Wastewater District to establish a location for a lift station and force mains to provide sanitary service to the northern area of the project site. A Subdivision Improvements Agreement-Intergovernmental Agreement (SIA-IGA) is scheduled for Board consideration on the same hearing agenda as the minor development plat.

The Planning Commission heard the application at its March 2, 2026, public hearing and recommended approval by a vote of 7 to 0.

II. APPLICATION INFORMATION

A. Applicant

Pinery Owner, LLC
1919 14th St., Ste 700
Boulder, CO 80302

B. Applicant's Representative

Craig Campbell
1919 14th St., Ste 700
Boulder, CO 80302

C. Request

Approval of a minor development final plat consisting of 3 lots and 7 tracts within the Pinery PD. An SIA-IGA is also being considered with the minor development plat.

D. Process

A minor development final plat application for commercial use is processed pursuant to Article 6A of the Douglas County Subdivision Resolution (DCSR). Article 6A states that the intent of the process is "To provide a streamlined review process for nonresidential and multifamily subdivisions."

Section 604A.08 of the DCSR states: "The Board shall evaluate the minor development final plat application, staff report, referral agency comments, applicant responses, the Planning Commission recommendation, and public comment and testimony, and shall approved, approve with conditions, continue, table for further study, remand to the Planning Commission, or deny the minor development final plat. The Board's action shall be based on the evidence presented; compliance with adopted County standards, regulations, and policies; and other guidelines."

E. Location

The site is generally located northwest of the intersection of State Highway 83 (SH 83) and Wellspring Drive. A vicinity map, zoning map, and aerial map are attached to the staff report and show the general location of the project area.

F. Project Description

The applicant proposes 3 new superblock lots and 7 tracts within the Pinery Village subdivision of the Pinery PD. The proposed lots are being platted for future commercial and light industrial development. The project includes the extension of Pinery Center Boulevard to the project's northern boundary and a possible future connection with the Town of Parker. The project area is located within Planning Areas 41, 42, 43, and H-1 of the Pinery PD.

III. CONTEXT

A. Background

The site was rezoned to Planned Development (PD) with approval of the Pinery PD by the Board of County Commissioners in 1982. The PD has since the original approval anticipated commercial, business, and light industrial uses in the area around the wastewater treatment plant. By 1987, the plan had been modified to preserve the Cherry Creek floodplain as open space (rather than a golf course as previously anticipated) but continued to depict the land on the west side of SH 83 for commercial uses.

In 2019, the 27th Amendment changed the boundaries and roadway configurations associated with PAs 38, 41, 42, and 43. PAs 41, 42, and 43 were reconfigured by realigning the proposed configuration of "Collector Road B." PA 38 was modified to remove a previously anticipated loop road.

In 2021, the 28th Amendment approved changes to the Pinery PD map to revise the boundaries of PAs 41, 42, and 43 (Business Park), and revise associated language in the Pinery PD Development Guide to add additional uses and clean up existing text. In addition, PA 44 (Uplands Commercial) was eliminated and converted to Open Space, and the Uplands Commercial development standards text was removed from the Pinery PD Development Guide. Finally, the applicant proposed modifications to the existing access points from SH 83, and realignment of a previously approved drainageway.

In 2025, the 32nd Amendment was approved to allow mini warehouse uses in Business Park Planning Areas 38 and 41 where it was currently only allowed in Business Park Planning Areas 42 and 43.

There have been several replat applications approved for the area south of Wellspring Drive (Pinery Village Filing 1) that subdivided the area into buildable lots, one of which will be for a new King Soopers grocery store. The northern portion of Pinery Village is the subject of the current minor development plat request.

B. Adjacent Land Uses and Zoning

The project site is zoned PD within the Pinery PD with properties to the south, east, and west also within the Pinery PD. Properties to the north are zoned Agricultural One (A-1) or located within the Town of Parker.

Zoning and Land Use

	Zoning	Land Use
North	Agricultural One (A-1), Town of Parker	Open Space, agricultural uses
South	Pinery PD	Commercial

	Zoning	Land Use
East	Pinery PD, Reata South PD	Open Space, golf course, elementary school
West	Pinery PD	Open Space, wastewater treatment facility

IV. PHYSICAL SITE CHARACTERISTICS

A. Site Characteristics and Constraints

The project site consists of rolling terrain that generally slopes down from east to west towards Cherry Creek, and includes native grasses, shrubs, and various species of trees along Cherry Creek. The site is currently undeveloped. A Pinery Water and Wastewater treatment facility is located just west of the project area. No physical characteristics of the land would preclude development of the property.

B. Access

The project site is accessible from SH 83 via Wellspring Drive (which is now constructed) and Pinery Center Boulevard which is now open from N. Pinery Parkway to Wellspring Drive. Pinery Center Boulevard will be extended north to the Town of Parker as part of this minor development application. This road will be a public road, dedicated to the County via the minor development plat. Additional right-of-way (ROW) will be dedicated to Douglas County as Tract F for future expansion of SH 83. Engineering Services has reviewed and approved the Traffic Impact Study.

C. Soils and Geology

The Colorado Geological Survey (CGS) reviewed the request and stated that there are no geologic hazards or unusual geotechnical constraints known or suspected to be present that would preclude the proposed minor development final plat from being approved. CGS stated that additional soil analysis will be needed at the time of site design and building permit when building locations and loads are known.

D. Drainage and Erosion

A Phase III Drainage Report and Grading Erosion Sediment Control Plan (GESC) have been reviewed and accepted by Engineering Services. Regional drainage is available for the entire project area.

E. Floodplain

There is mapped 100-year floodplain within the bounds of the minor development plat, but it is not proposed to be developed and lies within open space planning areas of the Pinery PD.

F. Wildlife

The 2040 CMP Wildlife Resources map identifies this site as being of low wildlife habitat value with the exception of the Cherry Creek riparian areas, which are identified as moderate habitat value. Those portions of the site are contained within

Tract H, which is conveyed to the Pinery Commercial Metro Districts 1 and 2 for ownership and maintenance as an open space and drainage tract. Colorado Parks and Wildlife reviewed the referral request and stated that they have no objections to the application moving forward as proposed and they advise the applicant to refer to a previous comment letter from CPW dated February 11, 2020, for additional wildlife concerns and development recommendations for this area. The letter included a recommendation that a burrowing owl survey be performed if any earth moving activity occurs between March 15th and October 31st. This has been added as a condition of approval with this minor development application.

G. Historic Preservation

The Douglas County Curator recommended a Class II cultural resource survey for the site which was subsequently submitted by the applicant. The results of the survey noted that the site has no identified cultural resources.

V. PROVISION OF SERVICES

A. Schools

No land dedication or capital mitigation is required for this application as it does not create any new residential lots.

B. Fire Protection

South Metro Fire Rescue (SMFR) provides fire and emergency medical services to the site. SMFR had no objections to the proposed minor development final plat.

C. Sheriff Services

The Douglas County Sheriff's Office (DCSO) provides emergency services to the site. DCSO had no comments on the proposed minor development final plat. No response was received from DCSO E011 or the Office of Emergency Management.

D. Water

Water service is provided by the Pinery Water and Wastewater District (PWWD), which indicated its willingness and ability to provide water service to the project site within a letter dated January 5, 2026.

The Colorado Division of Water Resources (CDWR) provided correspondence indicating that the proposed water supply is adequate and can be provided without causing injury to decreed water rights.

E. Sanitation

Sanitation will be provided by the Pinery Water and Sanitation District (PWWD). The January 6, 2026, letter indicates the District's willingness and ability to serve the project with sanitary services. In October of 2022, the applicant received approval of a Location and Extent to construct a lift station and force mains to provide service to the north part of the project area. The lift station and force main will be owned and

maintained by the Pinery Commercial Metro District No. 1 and 2. The Tri-County Health Department provided a favorable recommendation regarding the proposed method of sanitary service.

F. Utilities

Utility service providers are AT&T , CenturyLink, Comcast, CORE (electric), and Xcel (gas). AT&T indicated that there may be a conflict with existing facilities along SH 83 and requested additional information. AT&T did not respond to follow-up correspondence. CORE is requesting additional utility easements be added to the plat exhibit and they have been added by the applicant. Xcel made the applicant aware of an existing high-pressure gas line in the project area and requested that a note be added to the plat, regarding existing easements and that additional easements may need to be granted to Xcel. The applicant has added the requested note to the plat exhibit. Xcel has also requested that the applicant enter into a license agreement prior to any final approval of the plat.

G. Dedications

A sanitary sewer easement will be dedicated to the Pinery Commercial Metro District No. 2 for a sanitary force main. Drainage easements will be dedicated to the Pinery Commercial Metro District No 2 for the drainage and stormwater facilities within proposed Lots 1 and 2. A back-up easement over the subdivision is also granted to Douglas County for the purpose of accessing and maintaining these improvements.

Pinery Center Boulevard will be dedicated to Douglas County for public right-of-way and will extend to the north property line for a possible future connection into the Town of Parker. A temporary access easement will be dedicated at the north end of Pinery Center Boulevard Area until a connection to the north is established. Tract F will dedicate ROW to the County for future expansion of SH 83. Tract D will be dedicated to RTD for a future park-n-ride facility.

A number of existing easements are present throughout the site, including water, sewer, drainage and utility easements within proposed Lots 1, 2 and 3 and along Pinery Center Blvd. CDOT slope easements along Parker Road right-of-way are within proposed Tract E and Lot 3. A 50-foot-wide Xcel high pressure gas easement is present within Tracts A, D, and G, and Lots 1, 2, and 3, and the Pinery Center Boulevard right-of-way

Public Right-of-way	Tract F will be dedicated to Douglas County as public right-of-way for SH 83. Pinery Center Blvd will be dedicated to Douglas County
Utility Easements	Utility easements for utility purposes, including but not limited to gas, electricity, telephone, and cable communication services.

Drainage and Blanket Access Easements	To Douglas County for access to drainage facilities in the event that the system owner fails to maintain the improvements.
Tracts A, B, C, and E	Dedication to the Pinery Commercial Metro District No. 2 for open space and drainage purposes.
Tract G	Dedication to the Pinery Commercial Metro District No. 2 for a sanitary sewer lift station, building, operation, and maintenance purposes.
Landscape Easement	20' landscape easement along SH 83 shall be owned and maintained by the Pinery Commercial Metro District No. 1 and 2.
Tract D	Dedicated to RTD for a future park-n-ride facility.

H. Parks and Trails, and Open Space

No park dedication is necessary as this requirement has previously been met for the Pinery PD. A new trail head and tot lot were conditions of approval as part of Pinery Village Filing 1 and are currently under construction.

I. Subdivision Improvements

The intent of the County's minor development process is "to provide a streamlined review process for nonresidential and multifamily subdivision." Per the DCSR, specific engineering reports, studies, and construction plans are required to be submitted and finally accepted or approved by Public Works Engineering with a minor development application. Cost estimates for the public and private improvements are generated from the approved construction plans and incorporated into the subdivision improvements agreement-intergovernmental agreement (SIA) for the plat. Per Section 604.07, the SIA must be approved by the County prior to the Board hearing on the minor development final plat.

Required improvements for Pinery Village Filing 2 include subdivision drainage facilities and wet and dry utilities, and grading and drainage facilities for the construction of Pinery Center Boulevard. All required engineering reports, studies, and construction plans for the plat have been reviewed by Public Works Engineering with only minor technical corrections remaining. It is anticipated that the construction plans and SIA will be approved prior to the Board hearing on the final plat. There is one future roadway connection, a short segment of Pinery Center Boulevard, that will be the responsibility of the Pinery Commercial Metro District to construct in the future. This improvement requires a SIA-IGA which is scheduled for Board consideration on the same agenda as the minor development plat.

VI. PUBLIC NOTICE AND INPUT

In accordance with Section 608A of the DCSR, public notice is required to be published in the Douglas County News-Press and posted on the site by the applicant. Adjacent landowners were also mailed courtesy notices at the beginning of the referral period.

All referral agency comments are outlined in the Referral Agency Response Report, as well as the Referral Response letters attached to this staff report. Staff received no written public comments for this application. The Pinery HOA did not respond to the referral request. The applicant's response letter to referral responses is included as an attachment to this staff report.

VII. PLANNING COMMISSION HEARING

The Planning Commission heard the application at its March 2, 2026, public hearing and recommended approval by a vote of 7 to 0. No one from the public spoke about the application. There were no substantive comments or questions raised by the Planning Commission members.

VIII. STAFF ANALYSIS

A minor development final plat may be approved upon the findings by the Board of County Commissioners that the following standards have been met:

603A.01: Conforms with the goals, objectives, and polices of the Master Plan:
Staff Comment: The property is located within the Pinery Separated Urban Area (SUA) as identified in Section 2 of the 2040 CMP. The 2040 CMP states that while approval criteria for land use applications require a finding of compliance with the 2040 CMP, "…the competing values of the Plan must be balanced through the public review process to achieve the larger vision of the community." As such, the 2040 CMP acknowledges its own competing values and that implementation can only be achieved through the balancing of community values during the review process. The proposed minor development application is consistent, on balance, with the goals and objectives of the 2040 CMP for urban development within this part of the County.

Consistent with the objectives and policies of Urban Land Use Goal 2-1, the request proposes urban development in a designated urban area, specifically the Pinery SUA. Objective 2-15A supports the logical buildout of the SUAs. This site has been zoned for nonresidential development within the Pinery PD since 1982.

Consistent with the objectives and policies of Urban Land Use Goal 2-9, the request proposed urban development within an area that has existing and planned capacity in services and infrastructure. The site is located in and will be served by an existing water and sanitary sewer district, and nearby roads to serve the development have been constructed.

603A.02: Addresses the design elements established in Section 404 – Preliminary Plan, herein:
Staff Comment: The minor development final plat has addressed all applicable subdivision design elements as noted herein"

Per Section 404.01 – Each of the proposed lots meets the applicable requirements for minimum lot size, and setbacks.

Per Section 404.02 - Geotechnical conditions have been reviewed and determined acceptable. Floodplain areas are preserved as open space.

Per Section 404.03 – In accordance with commitments within the Pinery PD specific to this area, commercial development will be screened from SH 83 by landscaping within tracts and easements to be owned and maintained by the metropolitan district. Additional landscape buffering will be installed at the time of future replat or SIP applications.

Per Section 404.04 – Drainage and grading designs have been reviewed and accepted by Engineering Services.

Per Section 404.05 – Drainage design has been incorporated into the site's infrastructure construction plans.

Per Section 404.06 – No know archaeological or historic resources are present on site.

Per Section 404.07 – Roadway design will provide for additional vehicular and pedestrian connections through the subdivision.

Per Section 404.08 – Recommendations within the technical studies, including the geotechnical report and drainage report, will be further implemented through SIP, building permit, and construction plan processes.

603A.03: Conforms with Section 18A, Water Supply Overlay District Section of the Zoning Resolution.

1803A.01: The applicant has demonstrated that the water rights can be used for the proposed uses.
Staff Comment: PWWD has indicated that it has sufficient water rights that may be legally used to provide water service to this commercial subdivision.

The CDWR reviewed the application and indicated that the amount of water needed for the subdivision can be provided without affecting existing decreed water rights.

1804A.02: The reliability of a renewable right has been analyzed and is deemed sufficient by the County based on its priority date within the Colorado System of Water Rights Administration.

Staff Comment: All Denver Basin Groundwater beneath the property will be dedicated to PWWD. PWWD provided all required water documentation relative to its existing water portfolio and reserves the right to utilize any of its conjunctive use water supplies to serve the subdivision. This water portfolio has been fully evaluated with previous development applications served by PWWD.

1803A.03: The Water Plan is deemed adequate and feasible by the County to ensure that water supply shortages will not occur due to variations in the hydrologic cycle.
Staff Comment: A Water Plan is not required for projects served by a District.

1803A.04: The Water Plan is sufficient to meet the demand applicable to the project based on the minimum water demand standards in Section 1805A herein.
Staff Comment: A Water Plan is not required for projects served by a District.

603A.04: Provides for a public wastewater collection and treatment system, and, if other methods of wastewater collection and treatment are proposed, such systems shall comply with State and local laws and regulations.
Staff Comment: PWWD will provide wastewater services to the property. Tri-County Health Department provided a favorable recommendation regarding proposed sanitary service.

603A.05: Identifies all areas of the proposed subdivision, which may involve soil or topographical conditions presenting hazards or requiring special precautions have been identified by the subdivider and that the proposed uses of these areas are compatible with such conditions.
Staff Comment: Soils present on the site do not preclude development and CGS has no objections to the subdivision.

603A.06: Provides adequate drainage improvements.
Staff Comment: A Phase III Drainage Report was submitted by the applicant and accepted by Engineering Services.

603A.07: Provides adequate transportation improvements.
Staff Comment: The applicant's traffic impact study has been reviewed and by Engineering Services and found to be acceptable with the roadway improvements identified and secured in the SIA.

603A.08: Protects significant cultural, archaeological, natural, and historical resources, and unique landforms.
Staff Comment: The Douglas County Historic Preservation Board indicated that there are no known significant cultural, archaeological, natural, historical, or unique landforms on the site.

603A.09: Demonstrates the extraction of any known commercial mining deposit shall not be impeded.

Staff Comment: No known commercially viable mining deposits will be interfered with by this application.

603A.10: Has available necessary services, including fire and police protection, recreation facilities, utility service facilities, streets, and open space to serve the proposed subdivision.
Staff Comment: The proposed subdivision will be served by South Metro Fire Rescue, the DCSO, CORE electric, Comcast, CenturyLink, and Xcel. Roads are to be public and dedicated to Douglas County.

IX. STAFF ASSESSMENT

Staff has evaluated the minor development final plat request in accordance with Article 6A of the DCSR. Should the Board of County Commissioners find that the approval standards for the minor development final plat are met, the following proposed conditions should be considered for inclusion in the motion:

1. Prior to approval of the minor development final plat, the associated SIA-IGA for the subdivision shall be approved by the Board.

2. Prior to recordation of the final plat, the applicant shall provide a copy of an executed license agreement with Xcel Energy.

3. During construction activity within the development, the applicant, its successors and assigns shall conduct a burrowing owl study if any earth moving will take place between March 15th and October 31st.

4. During construction activity within the development, the applicant, its successors and assigns shall take all reasonable care to watch for historic resources, paleontological resources, and other cultural history resources and shall immediately notify Douglas County and complete appropriate Colorado Office of Archaeology and Historic Preservation Data management forms in the event of such discovery.

5. Prior to recordation of the final plat, technical corrections to the final plat exhibit shall be made to the satisfaction of Douglas County.

6. All commitments and promises made by the applicant or the applicant's representative during the public hearing and/or agreed to in writing and included in the public record have been relied upon by the Board of County Commissioners in approving the application; therefore, such approval is condition upon the applicant's full satisfaction of all such commitments and promises.

ATTACHMENTS **PAGE**

Douglas County Land Use Application 13
Project Narrative 14
CMP Vicinity Map 18
Zoning Map 19
Aerial Map 20
Referral Agency Response Report 21
Referral Agency Response Letters 28
Applicant Response Letter to Referral Comments 85
Pinery Water and Wastewater District Will Serve Letter 112
Traffic Impact Study 121
Minor Development Exhibit 277

DOUGLAS COUNTY
COLORADO

Department of Community Development

www.douglas.co.us

Planning Services

LAND USE APPLICATION

Please fill in this application form completely. An incomplete application will not be processed.

Note: Neither the Planning Commission nor the Board of County Commissioners should be contacted regarding an open application.

OFFICE USE ONLY

PROJECT FILE #:

PROJECT NAME: File #SB2021-049/Name: Pinery Village Filing 2, Minor Development

PROJECT TYPE: Minor Development Plat

MARKETING NAME: Pinery Village Filing No 2

SITE ADDRESS: NWC of Wellspring Drive and Parker Road (Hwy 83)

OWNER(S):

Name(s): Pinery Owner, LLC

Address: 1919 14th Street, Suite 700, Boulder, CO 80302

Phone: 303-720-4436

Email: craig@cairnrealestateinvestments.com

AUTHORIZED REPRESENTATIVE *(requires notarized letter of authorization if other than owner)*

Name: Craig Campbell

Address: same

Phone: same

Email: same

PLANNING FEES:

ENGINEERING FEES:

TOTAL FEES:

RELATED PROJECTS:

LEGAL DESCRIPTION:

Subdivision Name: Pinery Village

Filing #: 2 Lot #: _____ Block #: _____ Section #: 3 & 10 Township: 7 South Range: 66 West

STATE PARCEL NUMBER(S): _____

ZONING:

Present Zoning: Commercial Proposed Zoning: _____ Gross Acreage: 87.848

Gross Site Density (DU per AC): _____ # of Lots or Units Proposed: _____

SERVICE PROVIDERS:

Fire District: South Metro Metro District: Pinery Commercial MD Gas: Xcel

Water: PWWD Sewer: PWWWD Electric: CORE

Roads: ☐ Public ☐ Private (please explain): _____

To the best of my knowledge, the information contained on this application is true and correct. ***I have received the County's information sheet regarding the Preble's Meadow Jumping Mouse.***

Applicant Signature

2/2/2026
Date

Pinery Village Filing No. 2 Minor Development

PROJECT NARRATIVE

General Project Concept

TF Pinery West, LP is planning and engineering the northern 77 acres of Pinery Village in the Pinery West PD. The property is currently zoned Planned Development (PD) and is part of The Pinery 28th Amendment. The Minor Development includes the extension of Pinery Center Boulevard to the north property line, channelizing North Pinery Creek which bisects the property, and creates three (3) commercial/industrial lots for future development, and a lot for a planned RTD Park-N-Ride facility. Six (6) new tracts have also been created through this Minor Development. Tracts A, B, and E are owned and maintained by the Pinery Commercial Metro District and are for the purposes of drainage and open space. Tracts C, D, and F will be dedicated to Douglas County as right of way. It is anticipated that the building square footage for these new lots will range from 360,000-480,000 square feet. This is based on the calculation of 55 Acres of developable land at a 1.5 to 2.0 F.A.R.

Proposed Development Timeframe

Development is anticipated to begin in 2022 and will proceed over the course of the next 10 years.

ARTICLE 6A MINOR DEVELOPMENT NONRESIDENTIAL AND MULTI-FAMILY | 603A APPROVAL STANDARDS

A minor development final plat may be approved upon the finding by the Board that the minor development final plat:

603A.01 *Conforms with the goals, objectives, and policies of the Master Plan.*

This Minor Development Application does not propose anything that conflicts with the overall vision of the approved Master Plan. Lots and major infrastructure are laid out according to the planning areas and uses outlined by the plan and allow for flexibility of future planned development.

603A.02 *Addresses the design elements established in Section 404 - Preliminary Plan, herein.*

This Minor Development Application addresses the design elements established in Section 404 – Preliminary Plan, as further expanded upon below.

603A.03 *Conforms with Section 18A, Water Supply - Overlay District section of the Zoning Resolution.*

This Minor Development Application conforms with Section 18A, Water Supply-Overlay District section of the Zoning Resolution. The property is within the Pinery Water and Wastewater District and an updated will-serve letter is being provided by the District.

603A.04 *Provides for a public wastewater collection and treatment system, and, if other methods of wastewater collection and treatment are proposed, such systems shall comply with State and local laws and regulations.*

This Minor Development Application provides for a public wastewater collection and treatment system that complies with State, and local laws and regulations. The property is within the Pinery Water and Wastewater District and a will-serve letter is being provided by the District.

603A.05 *Identifies all areas of the proposed subdivision which may involve soil or topographical conditions presenting hazards or requiring special precautions have been identified by the subdivider and that the proposed uses of these areas are compatible with such conditions.*

This Minor Development Application identifies all areas of the proposed subdivision which may involve soil or topographical conditions presenting hazards or requiring special precautions. All proposed uses are compatible with such conditions. An integral part of this design is the management of the existing drainage channel to Cherry Creek, which is now being consolidated to one discharge point from two.

603A.06 *Provides adequate drainage improvements.*

This Minor Development Application provides adequate drainage improvements. Stormwater management improvements are being proposed in accordance with the County's Storm Drainage Design and Technical Criteria Manual as documented in the *Final Drainage Report for Pinery Village Filing No. 2* prepared by Redland and submitted with this application.

603A.07 *Provides adequate transportation improvements.*

This Minor Development Application provides adequate transportation improvements according to those envisioned in the Master Plan, including a planned RTD Park-N-Ride center.

603A.08 *Protects significant cultural, archaeological, natural, and historical resources, and unique landforms.*

This Minor Development Application for Filing 02 does not include any significant natural and unique landforms. There are no known significant cultural, archaeological or historical resources on this property. An integral part of this design is the management of the existing drainage channel to Cherry Creek, which is now being consolidated to one discharge point from two. All proposed uses are compatible with the existing conditions of the site.

603A.09 *Demonstrates the extraction of any known commercial mining deposit shall not be impeded.*

This Minor Development Application demonstrates the extraction of any known commercial mining deposit shall not be impeded. There are no known mining deposits located on site.

603A.10 *Has available necessary services, including fire and police protection, recreation facilities, utility service facilities, streets, and open space to serve the proposed subdivision.*

This Minor Development Application has available necessary services, including fire and police protection, recreation facilities, utility service facilities, streets, and open space to serve the proposed subdivision. This is clearly defined and evidenced by the information in this Minor Development application and the 28th amendment to the Pinery Planned Development.

ARTICLE 4 PRELIMINARY PLAN, SECTION 404 DESIGN ELEMENTS

The following shall be considered in reviewing the subdivision design, as appropriate to the urban, nonurban, or other community context:

404.01 Lots are of an appropriate size and configuration for the site's characteristics and intended uses, and otherwise capable of meeting minimum zone district standards such as lot size, setbacks, and off-street parking.

Lots have been laid out and sized with reference to the approved Master Plan and allow for flexibility with future development of site.

404.02 Geologic hazards, floodplains, wildfire, or other hazardous conditions are mitigated or avoided.

Any known potential hazardous conditions have been taken into account in the designing of this Minor Development. Existing slopes have been flattened along SH 83, North Pinery Creek has been channelize to eliminate the shallow flooding across the property, a roadway is being provided interior to the property to provide fire protection access, and the developable areas are located outside of the floodplain.

404.03 Conflicts between proposed and surrounding land uses are minimized through lot and tract orientation, setbacks, landscaping, or other buffering techniques.

Filing 02 Plat is consistent with the requirements of the Pinery Planned Development and allowed uses. Platted ROW included in this filing provides vehicular connectivity with planned and future land uses to the north.

Highway 83 (Parker Rd) is located along the eastern edge of the property, which has been appropriately buffered through existing (and expanded) Open Space H-1 and added landscape improvements.

This filing is also fronted by Wellspring Drive to the south, within Filing 01 of the Pinery Planned Development, and will provide vehicular and pedestrian access into and through future lots in Filing 02.

Pinery Center Blvd is continued from Filing 01 into Filing 02 and provides buffering from the Pinery Water and Sanitation property (similar to Filing 01), and pedestrian trail connectivity to the Cherry Creek Trail network further to the west.

Filing 02 is a continuation of the direction established with the Filing 01 Minor Development Plat.

404.04 Streets and stormwater facilities are laid out with the ability to meet the Douglas County Roadway Design and Construction Standards, Storm Drainage Design and Technical Criteria Manual, and other applicable County regulations.

Streets and stormwater facilities have been laid out in accordance with these resources and meet all County requirements.

404.05 Elements of the site's natural terrain, drainageways, riparian areas, and vegetation are preserved or integrated into the subdivision layout.

Site's natural drainage has been integrated into the subdivision layout and managed through major infrastructure. Minor Development follows natural topography and features of the site and drainage follows the existing flow across the site.

404.06 Archeological and historical resources of special significance are protected.

No known archeological or historical resources are located within the proposed Minor Development area.

404.07 Opportunities for safe and convenient vehicular, pedestrian, and other connections within the subdivision and adjacent neighborhoods, shopping, employment, and recreational areas are provided.

Vehicular, pedestrian, and other connections throughout the subdivision are laid out according to the approved Master Plan and provide safe and convenient access to the site's offerings.

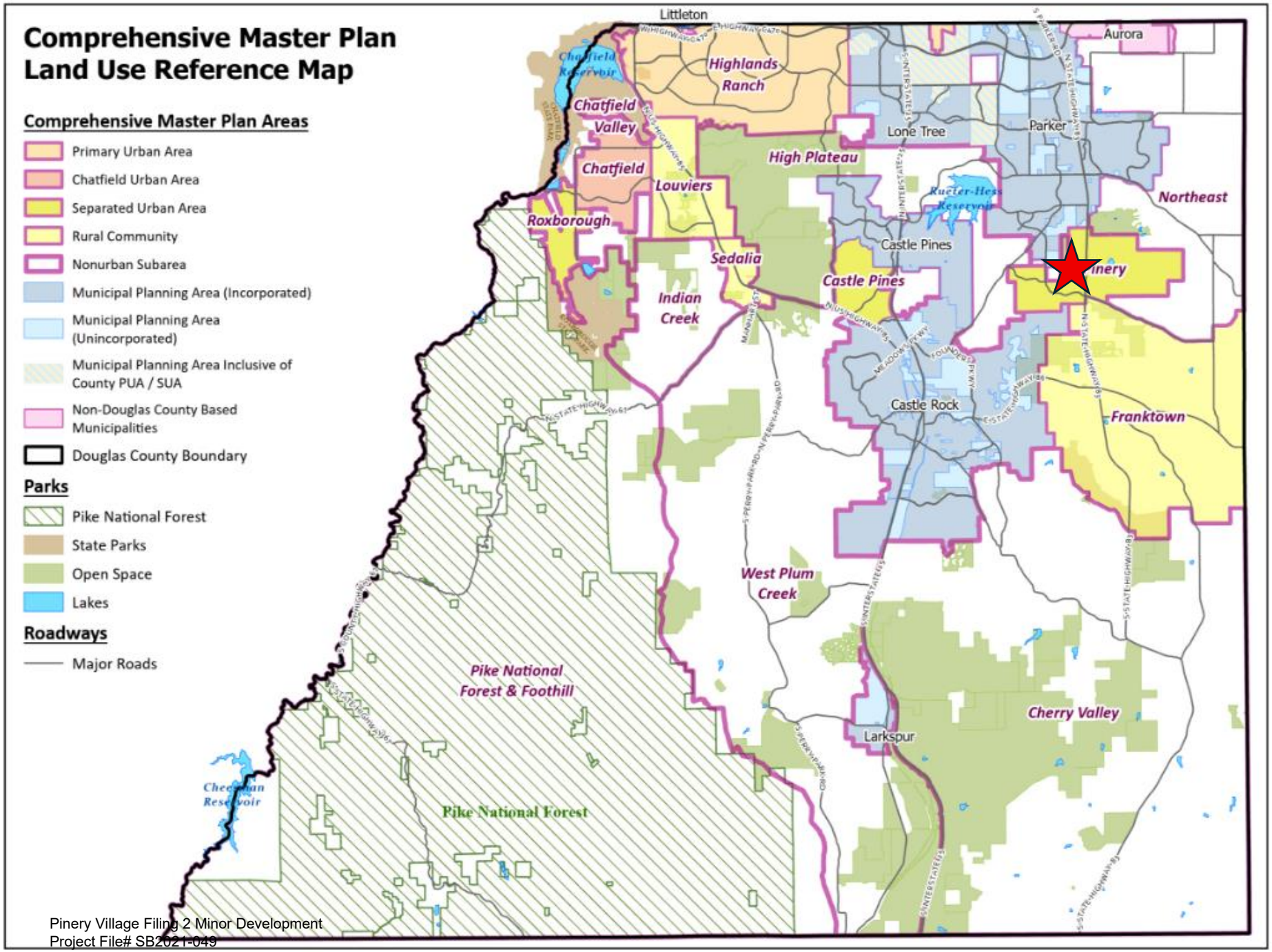
404.08 Specific recommendations of other required development reports or technical studies are implemented.

Any pertinent development or technical studies, such as the Drainage and Traffic studies, were referenced when laying out this Minor Development and utilized as appropriate and necessary.

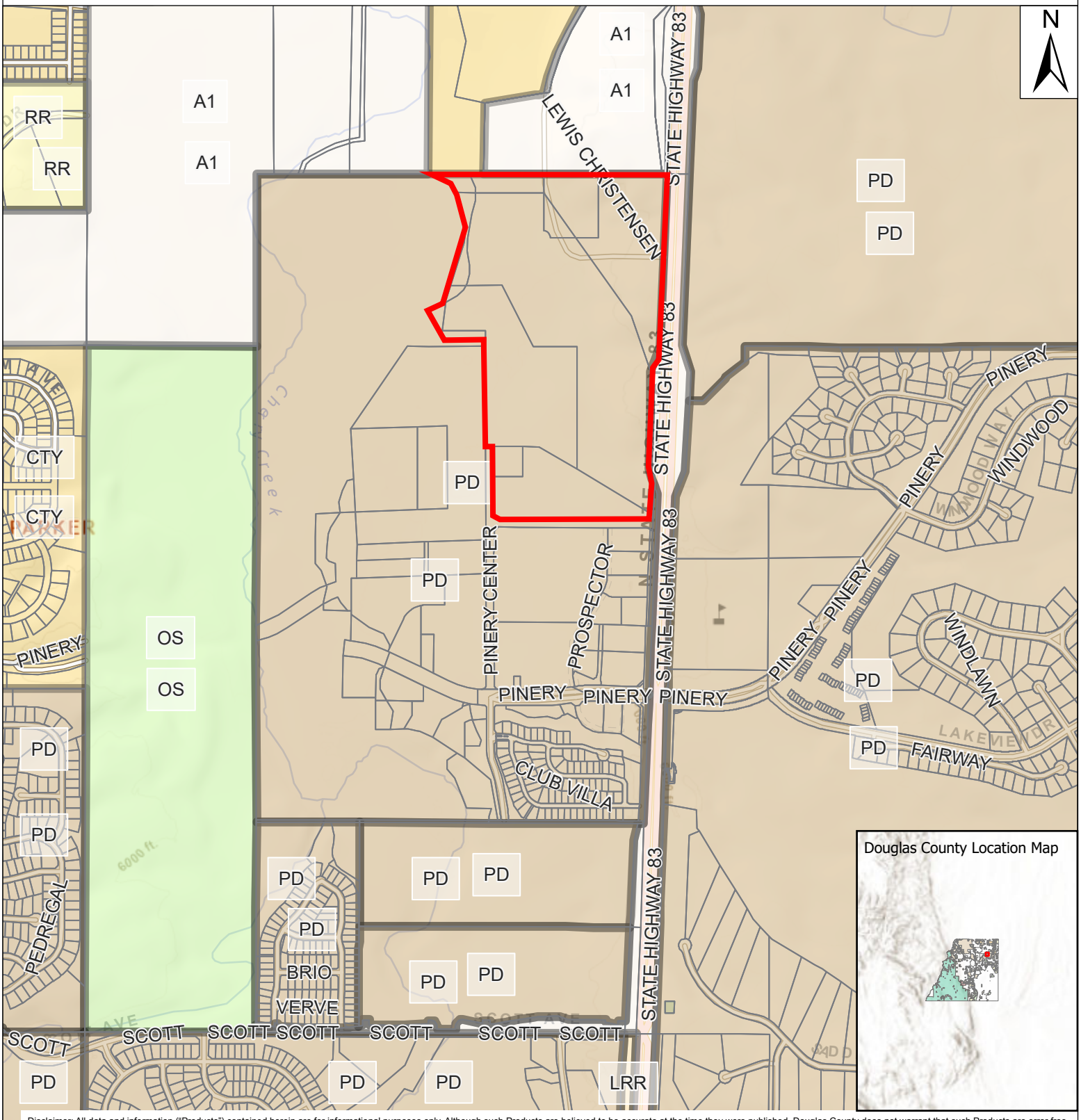
Additional Items to Note:

There were three approved CDOT access points that have been approved for the project along Highway 83. The first being North Pinery Parkway, which exists today and the future access of Wellspring Drive, which was platted with Filing 1. The third access point was eliminated (Road C), which was eliminated due to topography constraints of this access. There is no approved CDOT access for Lewis Christianson on the north side of the project and this access was never a part of any approved PD. Access will continue north from Pinery Center Blvd when the adjacent property owner develops. Other means of access and circulation for lots 2 and 4 will be a part of future Site Plans

Any park-related land requirements associated with Pinery Planned Development have been fulfilled through previous land use approvals, including the 2-acre dog park, the .21 acre tot-lot, and other Cherry Creek land use requirements.


Comprehensive Master Plan
Land Use Reference Map
Comprehensive Master Plan Areas
Primary Urban Area
Chatfield Urban Area
Separated Urban Area
Rural Community
Nonurban Subarea
Municipal Planning Area (Incorporated)
Municipal Planning Area (Unincorporated)
Municipal Planning Area Inclusive of County PUA / SUA
Non-Douglas County Based Municipalities
Douglas County Boundary
Parks
Pike National Forest
State Parks
Open Space
Lakes
Roadways
Major Roads
Littleton
Aurora
Highlands Ranch
Chatfield Reservoir
Chatfield Valley
Chatfield
Louviers
Roxborough
Lone Tree
Parker
High Plateau
Ruetter-Hess Reservoir
Northeast
Castle Pines
Sedalia
Indian Creek
Castle Pines
Castle Rock
Franktown
West Plum Creek
Pike National Forest & Foothill
Cherry Valley
Larkspur
Cheesman Reservoir
Pike National Forest

Pinery Village Filing 2, SB2021-049



Disclaimer: All data and information ("Products") contained herein are for informational purposes only. Although such Products are believed to be accurate at the time they were published, Douglas County does not warrant that such Products are error free.

Date Saved: 2/17/2026 9:02 AM

- A1 - AGRICULTURAL ONE
- LRR - LARGE RURAL RESIDENTIAL
- RR - RURAL RESIDENTIAL
- PD - PLANNED DEVELOPMENT
- OS - OPEN SPACE CONSERVATION
- PARCELS

Piney Village Filing 2, SB2021-049

DOUGLAS COUNTY COLORADO



Disclaimer: All data and information ("Products") contained herein are for informational purposes only. Although such Products are believed to be accurate at the time they were published, Douglas County does not warrant that such Products are error free.

Date Saved: 2/17/2026 8:37 AM

A1 - AGRICULTURAL ONE

PD - PLANNED DEVELOPMENT

OS - OPEN SPACE CONSERVATION

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Addressing Analyst	11/04/2021	No Comment:	No Response Required.
Assessor		Received: Please be aware of the following comments and concerns: 1. Lot 2 & Tract E Pinery Village Filing 1 are being replatted by this subdivision. They should be listed in the legal description and plat sub-title. 2. Pinery Commercial Metro District 1 & 2 are the current owners of existing Tract E Pinery Village Filing 1 per plat dedication. They need to sign the plat as an owner. 2a. As platted, Lot 4 will be setup with mixed ownership and taxable status, which is very difficult for our office to track. Please clear title on Lot 4 via deed to eliminate the mixed ownership and taxable status. 3. There is a discrepancy regarding Tract C. The acceptance certificate, Land Use Table and Plat note 8 say dedication to the Pinery Commercial Metro 2, whereas Additional Tract Note 3 says dedication to Douglas County. 4. The vicinity map does not match the area being platted. 5. There is a missing dimension on the subdivision boundary on Sheet 2, the southeastern-most call 316.60 ft call is not dimensioned. -Per an email from the Assessor dated July 8, 2023, their comments have been addressed.	The applicant has provided updated documents to the Assessor, and their comments have been addressed.
AT&T Long Distance - ROW	11/04/2021	Received: I have attached an Earth map showing the project area in read and the buried AT&T Long Line Fiber Optics in yellow. As shown, there is a possibility of conflict along State HWY 83. Any other information you could provide about the projects would be appreciated in determining if a conflict will exist. On February 12, 2026, AT&T provided an updated response indicating that their facilities are location on the east side of SH 83 and there should be no conflict. Per an email from AT&T dated February 12, 2026, the long lines are located on the east side of SH 83 so there will be no conflicts.	No Response Required.
Black Hills Energy	11/04/2021	No Comment.	No Response Required.
Building Services	11/05/2021	No Comment.	No Response Required.
CenturyLink	11/15/2021	Received: Our engineer has reviewed this plat and their comments are: "I have no objections to this plat".	No Response Required.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Cherry Creek Basin Water Quality Authority	12/02/2021	Received: 1.The Authority's Control Regulation 72 requires construction and post-construction Best Management Practices (BMPs). 2. No exceptions taken with the proposed post construction BMPs using full spectrum detention. However please note this development appears to also be within the stream preservation area. Development in the stream preservation area requires additional post construction BMPs. Please see the control regulation document Chapter VI for additional guidance. Please provide additional information or justification in future submittals on how this is being met. 3. Provide construction BMP plan when available for our review and comment. 4. The Authority reserves the right to review and comment on future referrals for this project.	The applicant has acknowledged the comments. Any future referrals will be provided to the Authority.
Colorado Department of Transportation CDOT-Region 1	12/02/2021	Received: Following is a summary of comments received from CDOT. For details, please reference the letter dated December 2, 2021. -CDOT had comments related to the offsite flows and storm sewer design in the drainage report, traffic comments related to proposed traffic mitigation on Parker Road, proposed points of access on Parker Road, and accel and decel lanes at Wellspring Drive. -The applicant will need to adhere to the Access Control Plan for State Highway 83. CDOT does not object to removal of what was Collector Road "C". Extending the North-South collector to Stroh Rd is acceptable, but opportunity is lost in not providing a connection to Lewis Christensen Rd. -Applicant needs to review Figures 10 and 11 in the traffic study that project less traffic will occur on the SB to EB left turn movement between 2030-40. -Douglas County needs to ensure sufficient ROW is dedicated along State Highway 83 per the Corridor Optimization Plan to ensure auxiliary lanes, and room for multi-use pathways and utilities can occupy the ROW.	Revised documents were provided to CDOT for review. A response has not been received. -The applicant is dedicating Tract F to Douglas County for future ROW along SH 83.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Colorado Division of Water Resources	11/04/2021	Received: Following is a summary of comments received from the Division of Water Resources (DWR). For details, please reference their review letters dated July 29, 2022. -DWR provided a summary of the existing water portfolio from the Piney Water and Wastewater District (PWWD). -DWR also stated that is their opinion that the water supply for the development can be provided without causing injury to decreed water rights.	No Response Required.
Colorado Geological Survey	12/01/2021	Received: Following is a summary of comments received from the Colorado Geological Survey (CGS). For details please reference their review letter dated December 1, 2021. -CGS stated that no geologic hazards or unusual geotechnical constraints are known or suspected to be present that would preclude the proposed non-residential use and density. -Provided the recommendations in the study conducted by CTL are adhered to, and additional investigation and analysis are conducted once building locations and loads are known, CGS has no objection to approval of SB2021-049.	The applicant has acknowledged comments from CGS and will provide further analysis as the site develops.
Colorado Parks and Wildlife (Northeast DC)	11/30/2021	Received: Following is a summary of comments received from Colorado Parks and Wildlife. For details please reference their review letter dated November 30, 2021 Upon review of the proposed referral request, Colorado Parks and Wildlife (CPW) has no objections to the application moving forward as planned for approval. Please refer to the previous comment letter from CPW dated February 11, 2020 to Mr. Dan Avery for additional wildlife concerns and development recommendations.	The applicant has acknowledged comments from CPW and will coordinate with them on future earth moving activities to limit disturbance of burrowing owls
Comcast		No Response Received	No Response Required.
CORE Electric	12/01/2021	Received: CORE will require additional utility easements as shown on the attached markup.	The applicant has worked with CORE to add easements and CORE has acknowledged that dedication of additional easements will come with future replat and site plan applications.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Douglas County Historic Preservation	12/02/2021	Received: Upon researching the cultural resources on the property and the surrounding area, the Douglas County Curator recommends a Class II cultural resource survey of the project area. - In an email dated March 29, 2022, Douglas County Historic Preservation stated they had no comments on the Class II Cultural Resource Survey and there is nothing eligible to be listed on the National Register.	As requested by the Douglas County Curator, the applicant provided a Class II Cultural Resource Survey.
Douglas County Parks and Trails		No Response Received	No Response Required.
Douglas County School District		No Response Received	No Response Required.
Engineering Services	12/02/2021	Received: Following is a summary of comments from Engineering Services, for full details please reference the letter dated December 2, 2021. Engineering Services had comments related to plat notes, certificates, drainage easements, tracts for ROW, a requirement for a Subdivision Improvement Agreement, GESC comments, Construction Plan comments and Landscaping comments.	The applicant has provided revised plans and reports to address comments from Engineering Services. An SIA has also been provided for review and approval. The SIA needs to be approved by the BCC with the minor development final plat.
High Prairie Farms HOA		No Response Received	No Response Required.
Mile High Flood District		No Response Received	No Response Required.
Office of Emergency Management		No Response Received	No Response Required.
Open Space and Natural Resources		No Response Received	No Response Required.
Pinery Commercial Metro District		No Response Received	No Response Required.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Pinery Water and Wastewater District	11/18/2021	Received: Pinery Water and Wastewater District (PWWD) takes no exception to establish 4 commercial lots. The District is working with the developer to identify solutions for possible wastewater treatment and the associated collection system as gravity flow for the entirety of the project is not possible.	-In October 2022, the applicant received approval of a Location and Extent for a future lift station and force mains to address the comment from PWWD regarding gravity flow not being available for the entire site. The lift station and force mains will be owned and maintained by the Pinery Commercial Metro District No. 1 and 2.
RTD		No Response Received	No Response Required.
Sheriff's Office	11/22/2021	No Comment.	No Response Required.
Sheriff's Office E911		No Response Received	No Response Required.
South Metro Fire Rescue	11/22/2021	Received: South Metro Fire Rescue (SMFR) has reviewed the provided documents and has no objections to the proposed minor development. Applicants and Contractors are encouraged to contact SMFR regarding the applicable permit requirements for the proposed project.	No Response Required.
The Pinery HOA		No Response Received	No Response Required.
Town of Castle Rock	11/12/2021	Received: No concerns from the Town reviewers.	No Response Required.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Town of Parker Development Review	12/06/2021	Received: Following is a summary of comments received from the Town of Parker Development Review. For details please reference their letter dated December 6, 2021. The Town had comments related to future uses on the site, landscape buffering and design standards for future development, and incorporating pedestrian friendly infrastructure along Pinery Center Blvd. The Town would like to discuss possible annexation with the applicant.	-Development on future lots will address landscaping and buffering design standards. -Pinery Center Blvd will contain detached sidewalks to provide pedestrian friendly infrastructure. -The applicant has decided to not pursue annexation into the Town. -The Pinery PD and Douglas County Zoning Resolution contain development standards to address site and building design, as well as pedestrian connectivity.
Town of Parker Public Works		No Response Received	No Response Required.
Tri-County Health Department	11/29/2021	Received: Following is a summary of comments from the Tri-County Health Department (TCHD). For full details please reference the letter dated November 29, 2021. -A will-serve letter has been provided by Pinery Water and Wastewater District. Based on this letter, THCD is providing a favorable recommendation regarding the proposed method of sewage disposal.	No Response Required.
Wildfire Mitigation	11/08/2021	No Comment.	No Response Required.

Project Name: Pinery Village Filing 2
Project File #: SB2021-049
Date Sent: 11/04/2021 **Date Due:** 12/02/2021

Agency	Date Received	Agency Response	Response Resolution
Xcel Energy-Right of Way & Permits	12/09/2021	Received: Following is a summary of comments received from Xcel Energy. For details please reference their review letter dated December 9, 2021. -Xcel/PSCo requests that 10-foot wide dry utility easements are dedicated around the perimeter of each lot, and 15-feet abutting all major rights-of-way. PSCo also requested a specific note be added to the plat exhibit. -PSCo has an existing high-pressure natural gas transmission pipeline including a regulator station and associated land rights as shown within this property and it has been determined that an engineering review is necessary. -PSCo is requesting that the applicant enter into a license agreement prior to final approval of the final plat.	The applicant acknowledges Xcel's comments. -The requested note and easements have been added to the plat exhibit. -The applicant is required to provide staff with an executed license agreement with Xcel prior to recordation of the final plat.

From: Jeremy Hirsch
To: Michael Pesicka
Subject: RE: Pinery Village Filing 2 Minor Development-SB2021-049
Date: Friday, July 8, 2022 3:03:13 PM

Hello Mike,

I believe this resolves our previous comments.

Thanks,
Jeremy

Jeremy Hirsch
GIS Specialist II | Douglas County Assessor
301 Wilcox Street | Castle Rock, CO 80104
303-660-7450 ext. 4228 | 303-479-9751 Fax

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Thursday, July 7, 2022 4:18 PM
To: Jeremy Hirsch <JHirsch@douglas.co.us>
Subject: RE: Pinery Village Filing 2 Minor Development-SB2021-049

Jeremy,

Attached for your review are the revised documents for Pinery Village Filing 2 Minor Development, Project No. SB2021-049. The response to your comments is on page 6 of the attached Comment Response Letter.

Thanks,

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

From: Jeremy Hirsch <JHirsch@douglas.co.us>
Sent: Thursday, May 12, 2022 11:14 AM
To: Michael Pesicka <mpesicka@douglas.co.us>
Subject: RE: Pinery Village Filing 2 Minor Development-SB2021-049

Hello Mike,

Please be aware of the following comments and concerns:

1. As noted on previous reviews, Pinery Commercial Metro District 1 & 2 are the current owners

of existing Tract E Pinery Village Filing 1 per plat dedication. Only Pinery Commercial Metro District No. 2 is singing on the plat as an owner, Pinery Commercial Metro District No. 1 needs to listed as well.

2. Also as noted in a previous review, as platted, Lot 3 will be setup with mixed ownership and taxable status (per the ownership of existing Tract E), which is very difficult for our office to track. Please clear title on Lot 3 via deed to eliminate the mixed ownership and taxable status.
3. There is an acreage discrepancy. The subtitle lists 87.85 acres, however the legal and land use summary both indicate 87.484 acres.

Regards,
Jeremy

Jeremy Hirsch
GIS Specialist II | Douglas County Assessor
301 Wilcox Street | Castle Rock, CO 80104
303-660-7450 ext. 4228 | 303-479-9751 Fax

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Monday, May 9, 2022 10:04 AM
To: Jeremy Hirsch <JHirsch@douglas.co.us>
Subject: Pinery Village Filing 2 Minor Development-SB2021-049

Jeremy,

Attached is the revised Pinery Village Filing 2 Minor Development plat for your review. Project No. is SB2021-049.

Thank you,

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

From:	annb cwc64.com
To:	Michael Pesicka
Cc:	Rob Williamson (rw7517@att.com); duanew cwc64.com; jt cwc64.com; danab cwc64.com
Subject:	Pinery Center Blvd Parker, Colorado Douglas County eReferral #SB2021-049
Date:	Thursday, November 4, 2021 4:24:12 PM

Hi Mike,

RE: Project No SB2021-049

This is in response to your eReferral for a utility map showing the buried AT&T Long Line Fiber Optics near Pinery Center Blvd Parker, Colorado. I attached an Earth map showing the project area in red and the buried AT&T Long Line Fiber Optics in yellow. As shown, there is a possibility of conflict along State HWY 83. Any other information you could provide about the projects would be appreciated in determining if a conflict will exist. Please pass on our contact information as well.

Please feel free to contact us with any questions or concerns.

Ann Barnowski
Clearwater Consulting Group Inc
120 9th Avenue South
Suite 140
Nampa, ID 83651
Annb@cwc64.com

The attached google earth maps are intended to show approximate locations of the buried AT&T long line fiber optic cable. The maps are provided for informational purposes only. In no way should the maps be used for anything other than general guidelines as to where the fiber is or is not and any other use of these maps is strictly prohibited.

-----Original Message-----
From: mpesicka@douglas.co.us <mpesicka@douglas.co.us>
Sent: Thursday, November 4, 2021 8:52 AM
To: annb cwc64.com <annb@cwc64.com>
Subject: Douglas County eReferral (Project Number SB2021-049) Is Ready For Review

There is an eReferral for your review. Please use the following link to log on to your account:
https://apps.douglas.co.us/planning/projects/Login.aspx

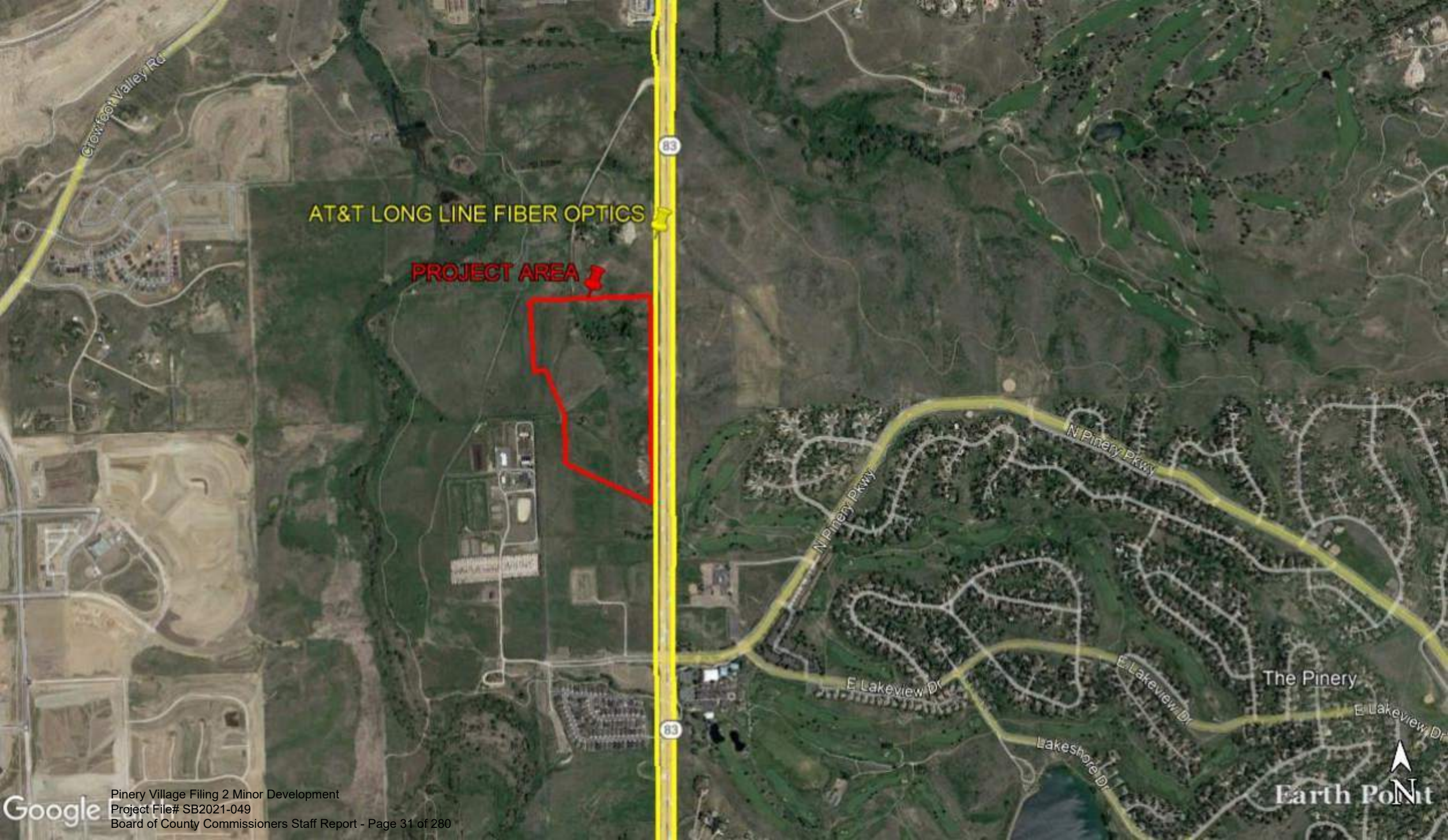
Project Number SB2021-049, Pinery Village Filing 2 Minor Development. The applicant proposes a Minor Development to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line. The property is zoned Planned Development and is located in the northeast portion of the County, approximately one-quarter mile north of North Pinery Parkway and west of State Highway 83 and partially bordered on the north by the Town of Parker.

This referral will close on Thursday, December 2, 2021.

If you have any questions, please contact me.

Sincerely,

Mike Pesicka, Principal Planner
Planning Services
100 Third Street


Crowfoot Valley Rd
83
AT&T LONG LINE FIBER OPTICS
PROJECT AREA
N Pinery Pkwy
N Pinery Pkwy
E Lakeview Dr
E Lakeview Dr
E Lakeview Dr
The Pinery
Lakeshore Dr
Google
Earth Point

From: Michael Pesicka
To: Michael Pesicka
Subject: FW: Piney Center Blvd Parker, Colorado Douglas County eReferral #SB2021-049
Date: Thursday, February 12, 2026 12:59:30 PM

-----Original Message-----
From: annb cwc64.com <annb@cwc64.com>
Sent: Thursday, February 12, 2026 12:54 PM
To: Michael Pesicka <mpesicka@douglas.co.us>
Subject: Piney Center Blvd Parker, Colorado Douglas County eReferral #SB2021-049

Caution: This email originated outside the organization. Be cautious with links and attachments.

Hi Mike,

I am attaching an updated map, our lines moved to the east of HWY 83. Thank you for reaching out! It does not look like there will be a conflict.

Ann Barnowski
Clearwater Consulting Group Inc
120 9th Avenue South
Suite 140
Nampa, ID 83651
Annb@cwc64.com

The attached google earth maps are intended to show approximate locations of the buried AT&T long line fiber optic cable. The maps are provided for informational purposes only. In no way should the maps be used for anything other than general guidelines as to where the fiber is or is not and any other use of these maps is strictly prohibited.


PROJECT AREA
AT&T LONG LINE FIBER OPTICS
Cherry Creek
Kinney Creek
Rebel Cookie Dough and Confections
Cherry Creek Trail Pinery Trailhead
Northeast Elementary
The Pinery Country Club
N Pinery Pkwy
Windchase Way
Windview Way
E Windrow Dr
Windrow
E Windrow Way
E Lakeview Dr
Lakecliff Way
Aurora Residential Al
Google Earth
Image Landsat / Copernicus
N

STATE OF COLORADO

Traffic & Safety
Region 1
2829 W. Howard Place
Denver, Colorado 80204

COLORADO
Department of Transportation

Project Name: **Pinery Village in Pinery West**

		Highway:	Mile Marker:
Print Date:	12/2/2021	083	55.355

Drainage Comments:

11-15-21 - Tanner

After reviewing the drainage report, I have the following comment:

The site primarily drains away from CDOT ROW and flows are conveyed, ultimately, to Cherry Creek via the proposed realigned North Pinery Creek. My primary concern is in regards to the calculations and documentation included in Appendix 7 which provides information on the offsite flows that impact the site from the East side of Parker Road. The proposed design shows a storm sewer that will intersect the three existing culverts that convey flows under Parker Road, the system is shown on Profiles STORM-8 and STORM-9 on page C6.7. There is documentation inlcuded in the Appendix that shows capacity calculations of the pipes in the system, however, as this system will have immediate impacts to the infrastructure within Parker Road I would like to see the HGL's for the Minor and Major storms included on these profiles to verify that there is no surcharging within CDOT ROW.

Traffic Comments:

Scherner 3-22-21

After review of the TIS, the proposed mitigation at the intersections on Parker Rd at Stroh Rd and Pinery West is maximiized to the most reasonable extent possible and therefore is an acceptable strategy.

The distance between Parker Rd and Access "C" needs to be, at a minimum, 550 ft from PC (Parker Rd) to PC (Access "C") Thi

s is not stated in the TIS. If this distance is not met, then the signal cannot be installed and full movement designation will likely require re-designation to a more restricted condition. It is also unclear why Access "C" is signalized when the primary access appears to be Pinery Center Blvd.

The Wellspring Dr RIRO will require both accel and decel auxiliary lanes meeting the requirements stated in the Access Code

Scherner 11-29-21

Previous comments still apply, Access C shall not be signalized if the 550 ft separation from Parker Rd is not met.

There are no plans showing the necessary modifications of Stroh Rd and Parker Rd to review. It is also unclear how the Access C intersection geometric design influences the Parker Rd/Stroh Rd intersection design.

The required addition of a NB left lane on Parker Rd at Stroh Rd needs to occur and be included in the roadway plans required for permit approval. Traffic signal modification may also be necessary

Right of Way Comments:

11/10/21 - SDH - No ROW comments except to reiterate the need for sufficient ROW to be dedicated to the County

along SH-83 as related to the Corridor Optimization Plan.

Resident Engineer Comments:

11/17/2021 MAK

If an intersection or sidewalks will be modified/constructed on Parker Rd Roadway plans will need to be submitted for review.

4/2/21 MAK

No Comments at this time.

Permits Comments:

There was no referral responses to CDOT previous remarks. We had mentioned in an earlier meeting the need to adhere to the Access Control Plan (ACP) for SH 83. We *assume* that the Town of Parker has reviewed this proposed development plan and has made comments in regards to the ACP and local plans as there are off-site connections to be made to the north. If there are any deviations or changes to the ACP, the Town of Parker must approve of those revisions as outlined in the IGA.

It will be important for the alternative N-S roadways, their functional design/cross sections, and timing to be in alignment with those planned by the Town of Parker. These provide essential access connections without the need to use the highway for short trips. Town of Parker has recently updated their Transportation vision/plan for SH 83.

Intersection improvements (including new auxiliary lanes) and those with > 20% traffic will require new Access permits. Any work in CDOT RoW including landscaping, signal upgrades and utilities is by permit.

The 2004 Corridor Optimization Plan calls for a 175-ft RoW profile for SH 83 in this area, half of which would come from the centerline (87.5-ft) . The plat does not show this to exist along the length of the property. Additional RoW should be dedicated to the county, to in-turn deed to CDOT at the time it is needed. Please call out the RoW for SH 83 along the length of theis property.

- RS 11-23-21

We have no issues with the removal of what was Collector Road “C". However, on the north end of this property, cross- property connections will be necessary. Extending the N-S collector to Stroh is acceptable, but opportunity is lost in not providing a connection into Lewis Christensen Rd Neither the maps provided or the TIS show enough context to the SH 83 corridor and existing local roadway rights-of-way on the north end of this project (and not consistent with Douglas County Assessor property lines/info)

With the removal of the ¾ turn movement previously permitted, a double NB to WB left turn should go into Pinery Parkway intersection – by 2030. That un-built ¾ Access permit shall be officially 'retired'.

I do not believe less traffic will occur on the SB to EB Left urn movement between 2030-40. The study's figure 10 &

11 is peculiar showing a drop from of peak hour left turns from 405 to 330.

County needs to ensure sufficient RoW is dedicated along SH 83 per the Corridor Optimization Plan to ensure auxiliary lanes, and room for multi-use pathways and utilities can occupy the RoW.

See Attached Red-line

RS 03-30-21

Other Comments:

3-31-2021

A State Highway access permit, 119094 was issued for the proposed Right-in, Right-out access and is still valid. It is currently extended to 8/29/2021. This permit may need to be either revised or repermitted to reflect the change in traffic due to the redistribution with the elimination of the 3/4 access to this development. Douglas county is the issuing authority for State Highway Access permits within their jurisdiciton. Contact at the County for access permits is Chris Martin.

The proposed improvements at Pinery Parkway and Parker Road will require new State Highway Access Permits. Improvements include a second NB left turn lane. Since Pinery Pkwy is a County Roadway, Douglas County must be the Permittee for the permit. If improvements are proposed on both the east and west side, then separate permit applications will be needed for each side.

We will want to review the drainage report for this development to insure there will be no negative impact to the State Highway.

All signing for this development that is visible to or advertises to State Highway 83 must be on-premise and must comply with any applicable rules governing outdoor advertising in Colorado per State of Colorado Rules **2 CCR 601-3**

--Steve Loeffler, 3-31-2021

From: PlatReview
To: Michael Pesicka
Cc: Benson, William
Subject: RE: Douglas County eReferral (Project Number SB2021-049) Is Ready For Review
Date: Monday, November 15, 2021 7:17:36 AM

Requester,

Our engineer has reviewed this plat and their comments are: "I have no objections to this plat"
If you require signatures, you can contact the engineer CC'd on this email and if you have any further questions, please don't hesitate to reach out.

Thank you!

-----Original Message-----
From: mpesicka@douglas.co.us <mpesicka@douglas.co.us>
Sent: Thursday, November 4, 2021 9:52 AM
To: PlatReview <PlatReview@lumen.com>
Subject: Douglas County eReferral (Project Number SB2021-049) Is Ready For Review

There is an eReferral for your review. Please use the following link to log on to your account: https://imss91-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fapps.douglas.co.us%2fplanning%2fprojects%2fLogin.aspx&umid=B837CF1F-CFF7-B205-AE20-1EC4BA6A4238&auth=19120be9529b25014b618505cb01789c5433dae7-7de8ecbaa03f4c076da1622e26bf21d24e5a7fc2

Project Number SB2021-049, Pinery Village Filing 2 Minor Development. The applicant proposes a Minor Development to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line. The property is zoned Planned Development and is located in the northeast portion of the County, approximately one-quarter mile north of North Pinery Parkway and west of State Highway 83 and partially bordered on the north by the Town of Parker.

This referral will close on Thursday, December 2, 2021.

If you have any questions, please contact me.

Sincerely,

Mike Pesicka, Principal Planner
Planning Services
100 Third Street
Castle Rock, CO 80104
303-660-7460 (main)

This communication is the property of Lumen Technologies and may contain confidential or privileged information. Unauthorized use of this communication is strictly prohibited and may be unlawful. If you have received this communication in error, please immediately notify the sender by reply e-mail and destroy all copies of the communication and any attachments.

STATE OF COLORADO

Traffic & Safety
Region 1
2829 W. Howard Place
Denver, Colorado 80204

COLORADO
Department of Transportation

Project Name: **Pinery Village in Pinery West**

		Highway:	Mile Marker:
Print Date:	12/2/2021	083	55.355

Drainage Comments:

11-15-21 - Tanner

After reviewing the drainage report, I have the following comment:

The site primarily drains away from CDOT ROW and flows are conveyed, ultimately, to Cherry Creek via the proposed realigned North Pinery Creek. My primary concern is in regards to the calculations and documentation included in Appendix 7 which provides information on the offsite flows that impact the site from the East side of Parker Road. The proposed design shows a storm sewer that will intersect the three existing culverts that convey flows under Parker Road, the system is shown on Profiles STORM-8 and STORM-9 on page C6.7. There is documentation inlcuded in the Appendix that shows capacity calculations of the pipes in the system, however, as this system will have immediate impacts to the infrastructure within Parker Road I would like to see the HGL's for the Minor and Major storms included on these profiles to verify that there is no surcharging within CDOT ROW.

Traffic Comments:

Scherner 3-22-21

After review of the TIS, the proposed mitigation at the intersections on Parker Rd at Stroh Rd and Pinery West is maximiized to the most reasonable extent possible and therefore is an acceptable strategy.

The distance between Parker Rd and Access "C" needs to be, at a minimum, 550 ft from PC (Parker Rd) to PC (Access "C") Thi

s is not stated in the TIS. If this distance is not met, then the signal cannot be installed and full movement designation will likely require re-designation to a more restricted condition. It is also unclear why Access "C" is signalized when the primary access appears to be Pinery Center Blvd.

The Wellspring Dr RIRO will require both accel and decel auxiliary lanes meeting the requirements stated in the Access Code

Scherner 11-29-21

Previous comments still apply, Access C shall not be signalized if the 550 ft separation from Parker Rd is not met.

There are no plans showing the necessary modifications of Stroh Rd and Parker Rd to review. It is also unclear how the Access C intersection geometric design influences the Parker Rd/Stroh Rd intersection design.

The required addition of a NB left lane on Parker Rd at Stroh Rd needs to occur and be included in the roadway plans required for permit approval. Traffic signal modification may also be necessary

Right of Way Comments:

11/10/21 - SDH - No ROW comments except to reiterate the need for sufficient ROW to be dedicated to the County

along SH-83 as related to the Corridor Optimization Plan.

Resident Engineer Comments:

11/17/2021 MAK

If an intersection or sidewalks will be modified/constructed on Parker Rd Roadway plans will need to be submitted for review.

4/2/21 MAK

No Comments at this time.

Permits Comments:

There was no referral responses to CDOT previous remarks. We had mentioned in an earlier meeting the need to adhere to the Access Control Plan (ACP) for SH 83. We *assume* that the Town of Parker has reviewed this proposed development plan and has made comments in regards to the ACP and local plans as there are off-site connections to be made to the north. If there are any deviations or changes to the ACP, the Town of Parker must approve of those revisions as outlined in the IGA.

It will be important for the alternative N-S roadways, their functional design/cross sections, and timing to be in alignment with those planned by the Town of Parker. These provide essential access connections without the need to use the highway for short trips. Town of Parker has recently updated their Transportation vision/plan for SH 83.

Intersection improvements (including new auxiliary lanes) and those with > 20% traffic will require new Access permits. Any work in CDOT RoW including landscaping, signal upgrades and utilities is by permit.

The 2004 Corridor Optimization Plan calls for a 175-ft RoW profile for SH 83 in this area, half of which would come from the centerline (87.5-ft) . The plat does not show this to exist along the length of the property. Additional RoW should be dedicated to the county, to in-turn deed to CDOT at the time it is needed. Please call out the RoW for SH 83 along the length of theis property.

- RS 11-23-21

We have no issues with the removal of what was Collector Road “C". However, on the north end of this property, cross- property connections will be necessary. Extending the N-S collector to Stroh is acceptable, but opportunity is lost in not providing a connection into Lewis Christensen Rd Neither the maps provided or the TIS show enough context to the SH 83 corridor and existing local roadway rights-of-way on the north end of this project (and not consistent with Douglas County Assessor property lines/info)

With the removal of the ¾ turn movement previously permitted, a double NB to WB left turn should go into Pinery Parkway intersection – by 2030. That un-built ¾ Access permit shall be officially 'retired'.

I do not believe less traffic will occur on the SB to EB Left urn movement between 2030-40. The study's figure 10 &

11 is peculiar showing a drop from of peak hour left turns from 405 to 330.

County needs to ensure sufficient RoW is dedicated along SH 83 per the Corridor Optimization Plan to ensure auxiliary lanes, and room for multi-use pathways and utilities can occupy the RoW.

See Attached Red-line

RS 03-30-21

Other Comments:

3-31-2021

A State Highway access permit, 119094 was issued for the proposed Right-in, Right-out access and is still valid. It is currently extended to 8/29/2021. This permit may need to be either revised or repermitted to reflect the change in traffic due to the redistribution with the elimination of the 3/4 access to this development. Douglas county is the issuing authority for State Highway Access permits within their jurisdiciton. Contact at the County for access permits is Chris Martin.

The proposed improvements at Pinery Parkway and Parker Road will require new State Highway Access Permits. Improvements include a second NB left turn lane. Since Pinery Pkwy is a County Roadway, Douglas County must be the Permittee for the permit. If improvements are proposed on both the east and west side, then separate permit applications will be needed for each side.

We will want to review the drainage report for this development to insure there will be no negative impact to the State Highway.

All signing for this development that is visible to or advertises to State Highway 83 must be on-premise and must comply with any applicable rules governing outdoor advertising in Colorado per State of Colorado Rules **2 CCR 601-3**

--Steve Loeffler, 3-31-2021

From: Doyle - DNR, Katie
To: Michael Pesicka
Subject: Re:Douglas County eReferral (Project Number SB2021-049) Is Ready For Review
Date: Tuesday, November 30, 2021 8:59:24 AM

Dear Mr. Pesicka,

Thank you for the opportunity to comment on the Pinery Village Filing 2 Minor Development under Project #SB2021-049. Our goal in responding to land use proposals such as this is to provide complete, consistent, and timely information to all entities who request comment on matters within our statutory authority.

Upon review of the proposed referral request, Colorado Parks and Wildlife (CPW) has no objections to the application moving forward as planned for approval. Please refer to the previous comment letter from CPW dated February 11, 2020 to Mr. Dan Avery for additional wildlife concerns and development recommendations.

Please do not hesitate to contact us about ways to continue developing and managing your properties in order to maximize wildlife value while minimizing potential conflicts. If you have any further questions, please contact me at (303) 291-7114.

Thank you,

Katie Doyle
District Wildlife Manager - Parker/Castle Rock East

Field Services

Denver Office 303.291.7227
C 720.930.8039 | P 303.291.7114
6060 Broadway, Denver, CO 80216
katie.doyle@state.co.us | www.cpw.state.co.us

`

February 11, 2026

Douglas County Department of Community Development
100 Third Street
Castle Rock, Colorado 80104

Attn: Mr. Mike Pesicka
Principal Planner

Subject: Review of Water Demand and Water Supply Availability for The Pinery Village Filing 2, File No. SB2021-049.

Project No. 24822

Dear Mike,

Moore Engineering, Inc., dba Lytle Water Solutions, LLC ("LWS"), has reviewed the pertinent documents related to the proposed minor development at the Pinery Village Filing 2, File No. SB2021-041. This property encompasses 77 acres ("ac") and is proposed to be developed with four commercial lots and water service for this area is to be by the Pinery Water and Wastewater District ("Pinery").

There was an undated, anonymous narrative of the proposed development in Pinery Village Filing 2 provided. However, there were no specific land development plans in this narrative, therefore, we have had to evaluate the proposed demand in Filing 2 based on the will-serve letter provided by the Pinery.

A January 5, 2026 will-serve letter was provided by the Pinery relative to the commitment of service to this property. According to the January 5 will-serve letter, the Pinery is prepared to serve this property. While no specifics were provided in the Pinery will-serve letter, it was estimated that the annual demand would be 95 acre-feet per year ("ac-ft/yr").

Attached to the Pinery January 5 will-serve letter was a February 2018 summary of present and future water sources, as well as current and build out demands, prepared by HRS Water Consultants, Inc. ("HRS"). The HRS analysis has been updated by Pinery staff in September 2025. According to the most recent Pinery summary, the Pinery has four types of water available to it, (a) senior tributary ditch rights diverted through alluvial groundwater wells, as well as junior tributary alluvial well water rights, (b) nontributary Denver Basin aquifer groundwater rights, (c) reusable water stored in Walker Reservoir, and (d) water contracted for through the Water Infrastructure Supply Efficiency ("WISE") project and the Cherry Creek Project Water Authority ("CCPWA"). The Pinery also has adjudicated augmentation plans which allow it to claim return flow credits from reusable water sources.

According to information provided in the updated Pinery summary, the Pinery has 1,220 ac-ft/yr of senior Harrison and Haley Ditch water rights which are diverted through alluvial wells, as well as 13,954 ac-ft/yr of nontributary Denver Basin aquifer water. These senior ditch rights and the Denver Basin aquifer water rights (located in the Central Basin) are considered firm water supplies. The Pinery's interest in the CCPWA is a 20.489 percent share, which includes Denver Basin aquifer and alluvial water. It was estimated that the yield from CCPWA water is 1,570 ac-ft/yr, with 1,530 ac-ft/yr associated with Denver Basin aquifer water and 40 ac-ft/yr associated with senior tributary alluvial water rights. It is unclear how this water will be developed for use in the Pinery or if it has been developed for use. As such, the Pinery has 15,174 ac-ft/yr of firm first-use water supplies, and 16,704 ac-ft/yr if the CCPWA supplies are considered. While the Pinery has a subscription for 500 ac-ft/yr of WISE water, this is an interruptible supply and, therefore, cannot be relied upon as a firm yield.

The amount of reusable return flow credits from the Pinery's current augmentation plans was quantified as approximately 47 ac-ft/yr, after meeting all of the augmentation plan requirements. This water is exchanged from the Pinery's wastewater effluent up to Walker Reservoir and stored for future use.

Information was also provided in the updated summary on current and projected buildout demands within the Pinery service area. The most recent data from 2024 indicates an annual demand of 3,098 ac-ft/yr, with a maximum annual historical demand of 3,861 ac-ft/yr in 2022. While not provided in the updated water rights summary, the previous HRS buildout demand estimate for the Pinery was 4,200 ac-ft/yr. Assuming the Pinery's estimated buildout demand has not appreciably changed, the available firm water supply for the Pinery is approximately 11,000 ac-ft/yr in excess of the projected buildout demand.

Based on the overall water supply (15,174 to 16,704 ac-ft/yr) and demand estimates (4,200 ac-ft/yr at buildout) for the Pinery service area, while specific details of the water demands in Filing 2 were not provided, it is our opinion that there is a sufficient water supply to serve the proposed demand associated with the Pinery Village, Filing 2 (95 ac-ft/yr).

If you have questions regarding our review of the water supply availability and demand to serve the proposed development in the Pinery Village, Filing 2, please do not hesitate to give us a call.

Yours truly,

Bruce A. Lytle, P.E.
Senior Project Manager

COLORADO
Division of Water Resources
Department of Natural Resources

July 29, 2022

Mike Pesicka, Principal Planner
Douglas County Planning Services
Transmission via email: mpesicka@douglas.co.us

Re: **Pinery Village Minor Development (Filing 2)** – 2nd Letter
Case No. SB2020-004
Part of the SE ¼ of Sec. 3 and part of the NE ¼ of Sec. 10, T 7S, R 66W, 6th P.M.
Water Division 1, Water District 8

Dear Mike Pesicka:

We have reviewed the July 19, 2022 re-referral concerning the proposal to subdivide a 77-acre parcel located within the Pinery West Commercial Development ("Development") and part of The Pinery 28th Amendment. The proposal is to divide the parcel into 3 commercial/industrial lots and 6 open space/drainage/right-of-way tracts. Proposed land uses are industrial, office, retail, and other commercial uses. This office previously commented on Filing 1 of the planned development on October 28, 2018 and February 4, 2020 (project no. SB2018-079).

Water Supply Demand

According to the March 8, 2022 letter from the Pinery Water & Wastewater District ("District"), the estimated water demand is 117 acre-feet/year for domestic service and 14 acre-feet per year for irrigation service, for a total estimated water demand of 131 acre-feet per year.

Source of Water Supply

The proposed water supply for the subdivision is service provided by the District. According to the March 8, 2022 letter, the District is willing and able to provide domestic and irrigation service to the proposed subdivision.

According to the "Present and Future Water Sources" report dated May 2014 and updated February 2018 prepared by HRS Consultants Inc. ("Report"), the Pinery Water & Wastewater District has a total of 15,037 acre-feet per year of water rights. This amount consists of 13,466 acre-feet of nontributary water rights, 1,220 acre-feet of senior tributary water rights, an additional 351 acre-feet of nontributary water rights that are dedicated to development of the Broe property, and as a member of the WISE Authority the District has subscribed to 500 acre-feet per year on average of renewable and reusable water. In addition, the District has two existing augmentation plans, decreed in Division 1 Water Court Case nos. W-6268 and 11CW198. Under those augmentation plans, return flows from the use of nontributary water, along with other replacement sources, are used to offset out-of-priority depletions from pumping of junior wells.

As of 2017, the District's water requirements from existing commitments totaled 3,098 acre-feet. Projected commitments at full build out are estimated at 4,200 acre-feet.

The majority of the Pinery Water & Wastewater Treatment District's water supply is water from bedrock aquifers in the Denver Basin. The State Engineer's Office does not have evidence regarding the length of time for which this source will be a physically and economically viable source of water. According to 37-90-137(4)(b)(I), C.R.S., "Permits issued pursuant to this subsection (4) shall allow withdrawals on the basis of an aquifer life of one hundred years." Based on this **allocation** approach, the annual amounts of water decreed are equal to one percent of the total amount, as determined by rules 8.A and 8.B of the Statewide Nontributary Ground Water Rules, 2 CCR 402-7. Therefore, the water may be withdrawn in those annual amounts for a maximum of 100 years.

State Engineer's Office Opinion

Based upon the above and pursuant to sections 30-28-136(1)(h)(I) and 30-28-136(1)(h)(II), C.R.S., it is our opinion that the proposed water supply is adequate and can be provided without causing injury to decreed water rights.

Our opinion that the water supply is **adequate** is based on our determination that the amount of water required annually to serve the subdivision is currently physically available, based on current estimated aquifer conditions.

Our opinion that the water supply can be **provided without causing injury** is based on our determination that the amount of water that is legally available on an annual basis, according to the statutory **allocation** approach, for the proposed uses is greater than the annual amount of water required to supply existing water commitments and the demands of the proposed subdivision.

Our opinion is qualified by the following:

The Division 1 Water Court has retained jurisdiction over the final amount of water available pursuant to the above-referenced decree, pending actual geophysical data from the aquifer.

The amounts of water in the Denver Basin aquifer, and identified in this letter, are calculated based on estimated current aquifer conditions. The source of water is from a non-renewable aquifer, the allocations of which are based on a 100 year aquifer life. The county should be aware that the economic life of a water supply based on wells in a given Denver Basin aquifer may be less than the 100 years used for allocation due to anticipated water level declines. We recommend that the county determine whether it is appropriate to require development of renewable water resources for this subdivision to provide for a long-term water supply.

Additional Comments

The application materials indicate that storm water detention structure(s) will be constructed as a part of this project. The applicant should be aware that unless the structure(s) can meet the requirements of a "storm water detention and infiltration facility" as defined in section 37-92-602(8), C.R.S., the structure may be subject to administration by this office. The applicant should review the Division of Water Resources' *Administrative Statement Regarding the Management of Storm Water Detention Facilities and Post-Wildland Fire Facilities in Colorado*, attached, to ensure that the notification, construction and operation of the proposed structure meets statutory and administrative requirements. The applicant is encouraged to use *Colorado Stormwater Detention and Infiltration Facility Notification Portal* to meet the notification requirements, located at https://maperture.digitaldataservices.com/gvh/?viewer=cswdif.

If you or the applicant have any questions, please contact Wenli Dickinson at 303-866-3581 x8206 or at wenli.dickinson@state.co.us.

Sincerely,

Joanna Williams, P.E.
Water Resources Engineer

Attachment: *Administrative Statement Regarding the Management of Storm Water Detention Facilities and Post-Wildland Fire Facilities in Colorado*

Ec: Subdivision file no. 26980
Pinery Water & Wastewater Treatment District file
William Conway (wconway@redland.com); Mark Cevaal (mcevaal@redland.com)

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
77.320 ACRES - 4 COMMERCIAL LOTS - 6 TRACTS SB2021-049

LEGAL DESCRIPTION

A PARCEL OF LAND SITUATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10, TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF DOUGLAS, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE CENTER-SOUTH ONE-SIXTEENTH CORNER OF SAID SECTION 3, WHENCE THE NORTH LINE OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 3 BEARS NORTH 89°32'31"EAST, A DISTANCE OF 2635.68 FEET WITH ALL BEARINGS HEREON REFERENCED TO SAID LINE;

THENCE ALONG SAID NORTH LINE, NORTH 89°32'31"EAST, A DISTANCE OF 40.73 FEET TO THE NORTHEAST CORNER OF PINERY VILLAGE FILING NO. 1 AS RECORDED AT RECEPTION NO. 2020006468 IN THE OFFICIAL RECORDS OF THE DOUGLAS COUNTY CLERK AND RECORDER'S OFFICE, AND THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID NORTH LINE, NORTH 89°32'31" EAST, A DISTANCE OF 1,817.24 FEET TO THE WESTERLY RIGHT-OF-WAY OF PARKER ROAD, RECORDED IN BOOK 1805 AT PAGE 1143, OF SAID RECORDS;

THENCE ALONG SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1. SOUTH 01°44'50" WEST, A DISTANCE OF 1,329.43 FEET;
2. SOUTH 19°39'08" WEST, A DISTANCE OF 211.40 FEET;
3. SOUTH 01°44'27" WEST, A DISTANCE OF 749.39 FEET;
4. SOUTH 18°46'51" EAST, A DISTANCE OF 86.02 FEET TO THE BOUNDARY OF SAID PINERY VILLAGE FILING NO. 1;

THENCE ALONG SAID BOUNDARY THE FOLLOWING SIXTEEN (16) COURSES;

1. SOUTH 01°44'50" WEST, A DISTANCE OF 316.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 35.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 23°37'47" WEST;
2. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23°34'56", AN ARC LENGTH OF 14.41 FEET;
3. SOUTH 89°57'09" WEST, A DISTANCE OF 1,163.73 FEET;
4. NORTH 45°19'53" WEST, A DISTANCE OF 42.44 FEET;
5. NORTH 00°37'01" WEST, A DISTANCE OF 528.99 FEET;
6. SOUTH 89°45'03" WEST, A DISTANCE OF 66.50 FEET;
7. NORTH 00°37'01" WEST, A DISTANCE OF 780.33 FEET;
8. NORTH 00°36'54" WEST, A DISTANCE OF 116.93 FEET;
9. SOUTH 89°39'16" WEST, A DISTANCE OF 330.91 FEET;
10. NORTH 06°01'28" EAST, A DISTANCE OF 235.83 FEET;
11. NORTH 17°28'32" EAST, A DISTANCE OF 468.15 FEET;
12. NORTH 03°50'12" EAST, A DISTANCE OF 121.74 FEET;
13. NORTH 16°22'12" WEST, A DISTANCE OF 279.83 FEET;
14. NORTH 37°38'54" WEST, A DISTANCE OF 83.00 FEET;
15. NORTH 68°29'08" WEST, A DISTANCE OF 133.11 FEET;
16. NORTH 00°32'20" WEST, A DISTANCE OF 24.94 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 87.848 ACRES, (3,826,658 SQUARE FEET), MORE OR LESS.

DEDICATION STATEMENT

THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, BENEFICIARIES OF DEEDS OF TRUST AND HOLDERS OF OTHER INTERESTS IN THE LANDS DESCRIBED HEREIN, HAVE LAID OUT, SUBDIVIDED AND PLATTED SAID LANDS INTO LOTS, TRACTS, STREETS AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF **PINERY VILLAGE FILING NO. 2.** THE UTILITY EASEMENTS SHOWN HEREON ARE HEREBY DEDICATED FOR PUBLIC UTILITIES AND CABLE COMMUNICATION SYSTEMS AND OTHER PURPOSES AS SHOWN HEREON. THE ENTITIES RESPONSIBLE FOR PROVIDING THE SERVICES FOR WHICH THE EASEMENTS ARE ESTABLISHED ARE HEREBY GRANTED THE PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTIES FOR INSTALLATION, MAINTENANCE AND REPLACEMENT OF UTILITY LINES AND RELATED FACILITIES. TRACT D, KNOWN AS PINERY CENTER BOULEVARD, AND TRACT F RIGHTS-OF-WAY, AS SHOWN HEREON ARE DEDICATED AND CONVEYED TO DOUGLAS COUNTY, COLORADO, IN FEE SIMPLE ABSOLUTE, WITH MARKETABLE TITLE, FOR PUBLIC USES AND PURPOSES. UTILITY EASEMENTS, DRAINAGE AND BLANKET ACCESS EASEMENTS, SIGHT DISTANCE EASEMENTS, ACCESS EASEMENT, AND DRAINAGE EASEMENTS ARE DEDICATED AND CONVEYED TO DOUGLAS COUNTY, COLORADO, FOR PUBLIC USES AND PURPOSES.

OWNER

TF PINERY WEST, L.P., A DELAWARE LIMITED PARTNERSHIP

BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____, 20__
BY _____, AS _____
OF TF PINERY WEST, L.P., A DELAWARE LIMITED PARTNERSHIP

WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC

ACCEPTANCE CERTIFICATE

THE DEDICATION OF TRACTS A, B, C, E, AND LOT 3 ARE HEREBY ACCEPTED FOR OWNERSHIP AND MAINTENANCE BY THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2

THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2:

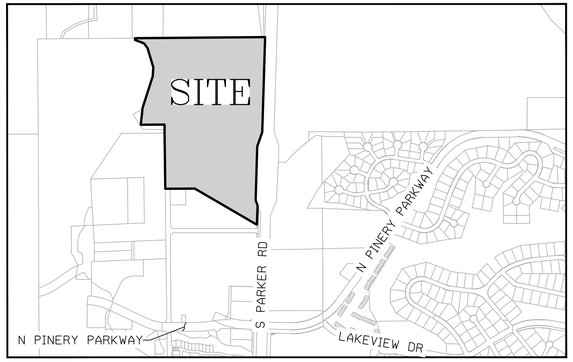
BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____, 20__
BY _____, AS _____
OF THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO.'S 1 AND 2

WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC



VICINITY MAP
SCALE 1" = 1,000'

TITLE VERIFICATION

WE, FIRST AMERICAN TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LAND IS IN THE DEDICATOR(S) FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES.

FIRST AMERICAN TITLE INSURANCE COMPANY

BY: _____

TITLE: _____

DATE: _____

STATE OF COLORADO)
)SS
COUNTY OF _____)

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20__

BY _____ AS _____

OF FIRST AMERICAN TITLE INSURANCE COMPANY

WITNESS MY HAND AND OFFICIAL SEAL

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

BOARD OF COUNTY COMMISSIONERS CERTIFICATE

THIS PLAT WAS APPROVED FOR FILING BY THE BOARD OF COUNTY COMMISSIONERS OF DOUGLAS COUNTY,

COLORADO, ON THE _____DAY OF _____ , 20___, SUBJECT TO ANY CONDITIONS SPECIFIED HEREON.

TRACT D, KNOWN AS PINERY CENTER BOULEVARD, AND TRACT F, UTILITY EASEMENTS, AND DRAINAGE AND BLANKET ACCESS EASEMENTS ARE ACCEPTED.

ALL EXPENSES INCURRED WITH RESPECT TO IMPROVEMENTS FOR ALL UTILITY SERVICES, PAVING, GRADING, LANDSCAPING, CURBS, GUTTER, SIDEWALKS, ROAD LIGHTING, ROAD SIGNS, FLOOD PROTECTION DEVICES, DRAINAGE STRUCTURES, AND ALL OTHER IMPROVEMENTS THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER AND NOT DOUGLAS COUNTY.

THIS ACCEPTANCE DOES NOT GUARANTEE THAT SOIL CONDITIONS, SUBSURFACE GEOLOGY, GROUNDWATER CONDITIONS OR FLOODING CONDITIONS OF ANY LOTS SHOWN HEREON ARE SUCH THAT A BUILDING PERMIT, WELL PERMIT OR SEWAGE DISPOSAL PERMIT WILL BE ISSUED.

_____
CHAIR, BOARD OF COUNTY COMMISSIONERS

LAND USE TABLE

TRACT	AREA (SQ.FT)	AREA (AC ±)	USE	OWNED BY / MAINTAINED BY
LOT 1	215,107	4.938	COMMERCIAL	OWNER
LOT 2	641,506	14.727	COMMERCIAL	OWNER
LOT 3	128,796	2.957	REGIONAL TRANSPORTATION DISTRICT (RTD)	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
LOT 4	1,411,946	32.414	COMMERCIAL	OWNER
TRACT A	162,913	3.740	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT B	113,415	2.604	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT C	537	0.012	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT D	139,327	3.199	RIGHT-OF-WAY	DOUGLAS COUNTY
TRACT E	1,010,903	23.207	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT F	2,208	0.051	RIGHT-OF-WAY	DOUGLAS COUNTY
LOT TOTAL	2,397,355	55.036		
TRACT TOTAL	1,429,303	32.812		
TOTAL	3,826,658	87.848		

(SEE ADDITIONAL TRACT NOTES THIS SHEET)

SHEET INDEX

SHEET 1 COVER SHEET

SHEET 2 OVERALL SHEET

SHEETS 3-4 LOT AND EASEMENT DETAIL SHEETS

PLANNING COMMISSIONERS CERTIFICATE

THE MINOR DEVELOPMENT FINAL PLAT (SB2021-049) WAS REVIEWED BY THE PLANNING COMMISSION ON _____ __, 20__.

_____ _____
PLANNING DIRECTOR, ON BEHALF OF THE PLANNING COMMISSION DATE

GENERAL NOTES

1. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, COLORADO REVISED STATUTE.
2. PER C.R.S. 38-51-106, "ALL LINEAL UNITS DEPICTED ON THIS LAND SURVEY PLAT ARE U.S. SURVEY FEET. ONE METER EQUALS 39.37/12 U.S. SURVEY FEET, EXACTLY ACCORDING TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY."
3. THE FIELD WORK FOR THIS SURVEY WAS PERFORMED BY AN AZTEC CONSULTANTS, INC. SURVEY CREW AND COMPLETED ON APRIL 01, 2021.
4. BASIS OF BEARINGS – BEARINGS SHOWN HEREON ARE GRID BEARINGS DERIVED FROM GPS OBSERVATION BASED UPON THE COLORADO COORDINATE SYSTEM OF 1983 CENTRAL ZONE (NAD 83, 2011) REFERENCED TO THE NORTH LINE OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 3, TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN BEING MONUMENTED AS SHOWN HEREON, TAKEN TO BEAR NORTH 89°32'31" EAST, A DISTANCE OF 2,635.68 FEET.
5. FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. NCS-927312-CO, EFFECTIVE 10/21/2020 AT 5:00 P.M. WAS RELIED UPON FOR RECORD INFORMATION REGARDING RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES. THIS SURVEY DOES NOT REPRESENT A TITLE SEARCH BY AZTEC CONSULTANTS INC. TO DETERMINE OWNERSHIP, RIGHTS-OF-WAY, EASEMENTS OR OTHER MATTERS OF PUBLIC RECORD.
6. BASED ON A GRAPHICAL REPRESENTATION OF FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NO. 08035C0184G, WITH AN EFFECTIVE DATE OF MARCH 16, 2016, THE SUBJECT PROPERTY LIES WITHIN ZONE "AE" AREAS WHERE BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED, WITHIN ZONE "X" OTHER AREAS, AND WITHIN "ZONE X" BEING DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
7. PARCEL IS BEING SUBDIVIDED INTO 4 COMMERCIAL LOTS AND 6 TRACTS.
8. TRACTS A, B, C, & E SHALL BE OWNED AND MAINTAINED BY THE METROPOLITAN DISTRICT, ITS SUCCESSORS AND ASSIGNS, FOR OPEN SPACE.
9. TRACTS D & F SHALL BE OWNED AND MAINTAINED BY DOUGLAS COUNTY, ITS SUCCESSORS AND ASSIGNS, FOR RIGHT-OF-WAY.

ADDITIONAL TRACT AND EASEMENTS NOTES:

1. TRACT A, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
2. TRACT B, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
3. TRACT C, AS SHOWN HEREON IS DEDICATED TO DOUGLAS COUNTY FOR RIGHT-OF-WAY, ACCESS, AND UTILITY PURPOSES. THIS TO BE WRITTEN BY SEPARATE DOCUMENT.
4. TRACT D, KNOWN AS PINERY CENTER BOULEVARD, AS SHOWN HEREON IS DEDICATED TO DOUGLAS COUNTY FOR RIGHT-OF-WAY, ACCESS, AND UTILITY PURPOSES.
5. TRACT E, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
6. TRACT F, AS SHOWN HEREON IS DEDICATED TO DOUGLAS COUNTY FOR RIGHT-OF-WAY, ACCESS, AND UTILITY PURPOSES.

SURVEYOR'S CERTIFICATE

I, MICHAEL J. NOFFSINGER, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON APRIL 28, 2021, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND, ALL SURVEYING REGULATORY RULES, REQUIREMENTS, AND STANDARDS OF PRACTICE, AND ALL APPLICABLE PROVISIONS OF THE DOUGLAS COUNTY SUBDIVISION RESOLUTION. THIS CERTIFICATION IS BASED ON MY KNOWLEDGE, INFORMATION AND BELIEF AND IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 20__

FOR REVIEW

_____
MICHAEL J. NOFFSINGER, LICENSED PROFESSIONAL LAND SURVEYOR COLORADO P.L.S. NO. 38367
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.

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

NOTICE: PER THE STATE OF COLORADO BOARD OF LICENSURE FOR ARCHITECTS, PROFESSIONAL ENGINEERS, AND PROFESSIONAL LAND SURVEYORS RULE 1.6.B.2 THE WORD "CERTIFY" AS USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED. THE SURVEY REPRESENTED HEREON HAS BEEN PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF.

CLERK AND RECORDERS CERTIFICATE

STATE OF COLORADO)
COUNTY OF DOUGLAS)

I HEREBY CERTIFY THAT THIS PLAT WAS FILED IN MY OFFICE ON THIS __ DAY OF _____ 2021,

A.D., AT _____ A.M./P.M. AND WAS RECORDED AT RECEPTION NO. _____

_____
DOUGLAS COUNTY CLERK AND RECORDER

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

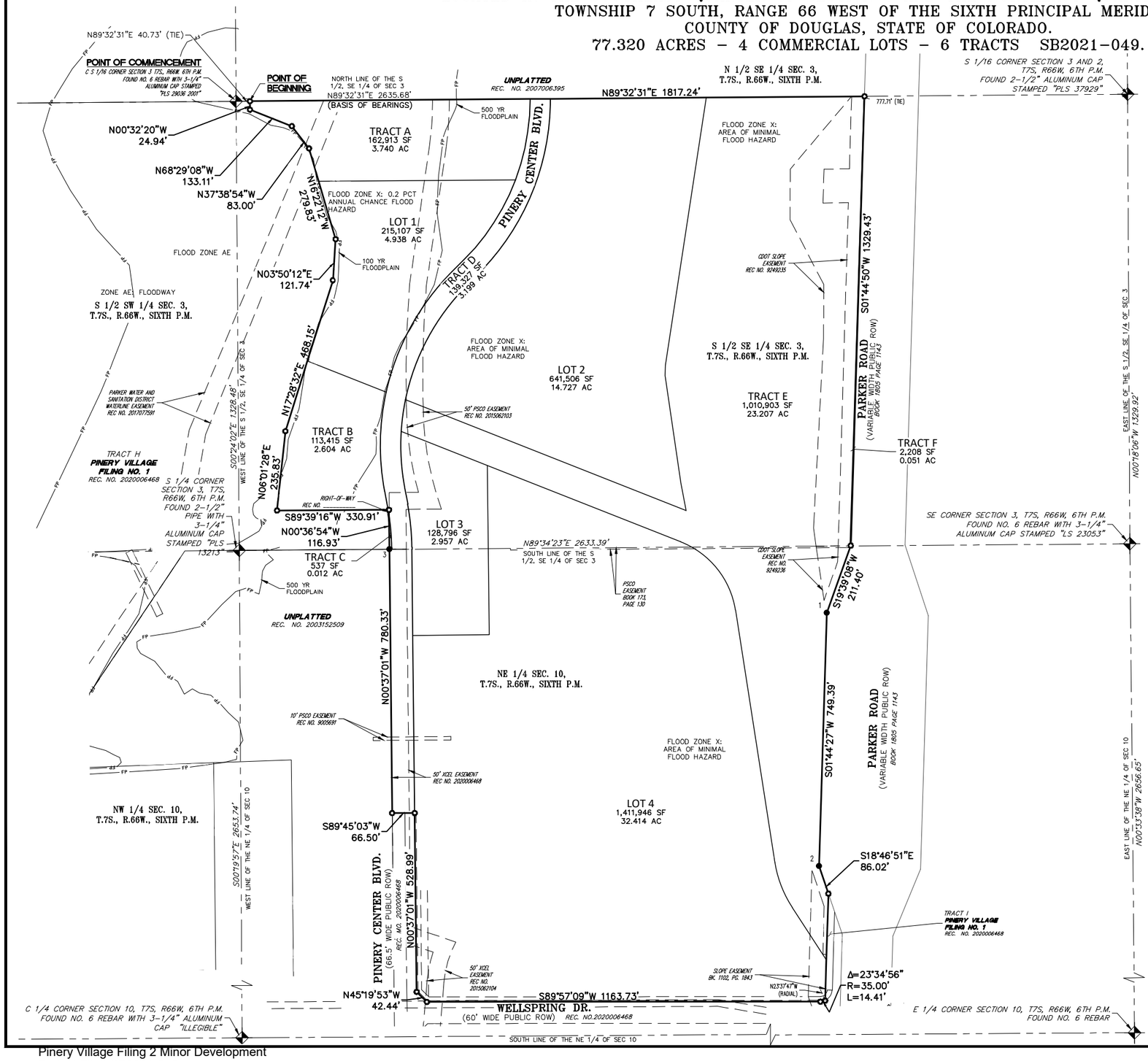
AzTec Proj. No.: 54820-23 Drawn By: RDR

DEVELOPER
STARWOOD LAND
1500 W. CANAL COURT
LITTLETON, COLORADO 80120

DATE OF PREPARATION:	07-12-2021
SCALE:	NA
SHEET 1 OF 4	

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
77.320 ACRES - 4 COMMERCIAL LOTS - 6 TRACTS SB2021-049.



MONUMENT SYMBOL LEGEND

- SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 FOUND 4"X4" CONCRETE WITH NO. 5
- 2 FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"
- (ROW) RIGHT-OF-WAY
- LIMITS OF FLOOD PLAIN

N

0' 75' 150' 300'
SCALE: 1" = 150'

FOR REVIEW

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj No 54820-23 Drawn By RDR

DEVELOPER
STARWOOD LAND
1500 W. CANAL COURT
LITTLETON, COLORADO 80120

DATE OF PREPARATION	07-12-2021
SCALE	1"=150'
SHEET 2 OF 4	

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
77.320 ACRES - 4 COMMERCIAL LOTS - 6 TRACTS SB2021-049.

POINT OF COMMENCEMENT
C S 1/16 CORNER SECTION 3 T7S, R66W, 6TH P.M.
FOUND NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "PLS 29036 2001"

POINT OF BEGINNING

N89°32'31"E 40.73' (TIE)

N 1/2 SE 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

NORTH LINE OF THE S 1/2, SE 1/4 OF SEC 3
N89°32'31"E 2635.68'
(BASIS OF BEARINGS)

N89°32'31"E 1817.24'

S 1/16 CORNER SECTION 3 AND 2, T7S, R66W, 6TH P.M.
FOUND 2-1/2" ALUMINUM CAP STAMPED "PLS 37929"

777.71' (TIE)

N00°32'20"W 24.94'

N68°29'08"W 133.11'

N37°38'54"W 83.00'

PARKER WATER AND SANITATION DISTRICT WATERLINE EASEMENT REC NO. 2017077591

TRACT A
162,913 SF
3.740 AC

828.50'

500 YR FLOODPLAIN

460.96'

466.37'

4' LANDSCAPE EASEMENT

L=48.25' (TIE)

S05°49'42"W 50.00'

Δ=47°36'18" R=580.00' L=481.74'

ACCESS EASEMENT

N51°13'39"E 17.59'

N81°53'42"W 30.00'

SEE DETAIL "C" THIS SHEET

7.5' U.E. LUMEN

1.41'

S00°27'29"E 10.00'

S89°32'31"W 30.46'

N16°27'12"W 279.83'

S89°32'31"W 581.94' (NR)

FLOOD ZONE X: 0.2 PCT ANNUAL CHANCE FLOOD HAZARD

15' UE REQUIRED

LOT 1
215,107 SF
4.938 AC

4' LANDSCAPE EASEMENT

R=670.00' L=448.68'

R=700.00' L=468.68'

L=274.22'

L=461.91' (TIE)

Δ=45°00'42" R=670.00' L=526.74'

Δ=45°03'34" R=700.00' L=550.37'

R=734.00' L=574.17'

15' UE REQUIRED

TRACT F
2,208 SF
0.051 AC
(SEE DETAILS B & C FOR WIDTH)

N08°39'47"E 800.99'

S01°46'08"W 1335.29'

S01°44'50"W 1329.43'

PARKER ROAD
(VARIABLE WIDTH PUBLIC ROW)
BOOK 1805 PAGE 1143

FLOOD ZONE AE

ZONE AE: FLOODWAY

100 YR FLOODPLAIN

N03°50'12"E 121.74'

S44°49'47"W 50.00'

TRACT D
139,327 SF
3.199 AC

50' PSCO EASEMENT REC NO. 2015062103

N44°49'47"E 50.00'

30' 30'

TRACT H
PINERY VILLAGE FILING NO. 1
REC. NO. 2020006468

N44°49'47"E 50.00'

CDOT SLOPE EASEMENT REC NO. 9249235

S 1/2 SW 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

S00°24'02"E 1328.48'
WEST LINE OF THE S 1/2, SE 1/4 OF SEC 3

N17°28'32"E 468.15'

N68°28'01"W 250.68' (NR)

217.34'

LOT 2
641,506 SF
14.727 AC

Δ=55°32'25" R=710.00' L=688.27'

Δ=55°32'25" R=710.00' L=412.72'

L=45.64'

20' PIWWD WATER EASEMENT REC NO. _____

S03°36'40"E 43.20' (TIE)

N03°36'30"W 452.95'

N03°36'30"W 404.33'

S 1/2 SE 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

N01°25'57"E 30.54'

N08°14'53"W 320.62'

N10°46'00"W 82.87'

TRACT E
1,010,903 SF
23.207 AC

TRACT B
113,415 SF
2.604 AC

L=295.41'

273.90'

N68°28'01"W 891.79'

N68°28'01"W 888.82'

614.92'

20' PIWWD SANITARY EASEMENT REC NO. _____

N10°42'38"W 50.00'

RIGHT-OF-WAY REC NO. _____

N37°43'32"E 50.39'

N37°43'32"E 49.75'

328.97'

S89°39'16"W 330.91'

N00°36'54"W 116.93'

TRACT C
537 SF
0.012 AC

LOT 3
128,796 SF
2.957 AC

S00°37'01"E 500.09'

S07°07'01"E 81.40'

PSCO EASEMENT BOOK 173, PAGE 130

N89°34'23"E 2633.39'
SOUTH LINE OF THE S 1/2, SE 1/4 OF SEC 3

Δ=59°37'08" R=260.00' L=270.54'

SEE DETAIL "B" THIS SHEET

6.21'

205.19'

S19°39'08"W 211.40'

TRACT F
2,208 SF
0.051 AC

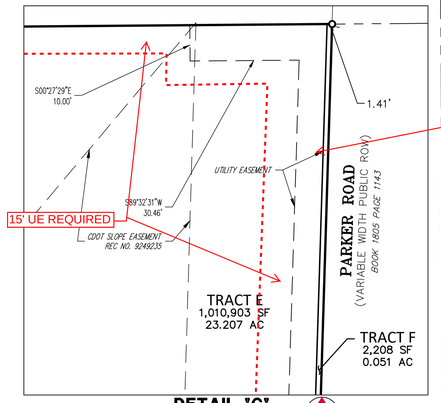
S 1/16 CORNER SECTION 3, T7S, R66W, 6TH P.M.
FOUND 2-1/2" PIPE WITH 3-1/4" ALUMINUM CAP STAMPED "PLS 13213"

SE CORNER SECTION 3, T7S, R66W, 6TH P.M.
FOUND NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "LS 23053"

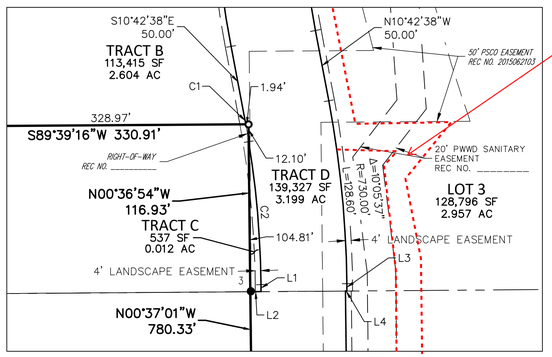
EAST LINE OF THE S 1/2, SE 1/4 OF SEC 3
N00°18'06"W 1329.92'

N
0' 50' 100' 200'
SCALE: 1" = 100'

DETAIL "C"
SCALE 1" = 20'



DETAIL "A"
SCALE 1" = 50'



15' UE REQUIRED

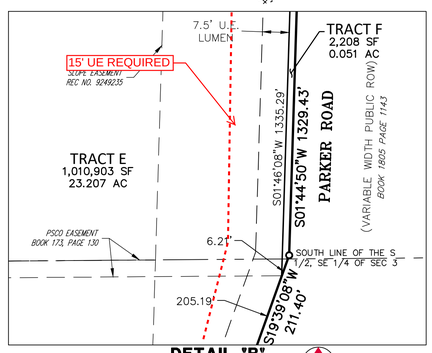
MONUMENT SYMBOL LEGEND

- SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 ● FOUND 4"X4" CONCRETE WITH NO. 5
- 2 ● FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 ● FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"

(ROW) RIGHT-OF-WAY
U.E. UTILITY EASEMENT
PWWD PINERY WATER & WASTE WATER DISTRICT
—//— LIMITS OF FLOOD PLAIN
(NR) NON RADIAL
CDOT COLORADO DEPT. OF TRANSPORTATION

SEE SHEET 4

DETAIL "B"
SCALE 1" = 20'



CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	0°27'56"	670.00'	5.44'
C2	8°34'46"	670.00'	100.33'
C3	1°43'29"	666.00'	20.05'
C4	5°16'14"	666.00'	61.27'
C5	10°05'37"	700.00'	123.32'

LINE TABLE		
LINE	BEARING	LENGTH
L1	S00°37'01"E	4.88'
L2	N89°34'30"E	7.50'
L3	N00°37'01"W	5.08'
L4	N89°34'30"E	1.00'
L5	N85°05'01"E	24.87'
L6	N04°54'59"W	132.94'
L7	N04°54'59"W	210.82'
L8	N85°05'01"E	46.24'
L9	N33°28'57"E	20.80'

FOR REVIEW

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

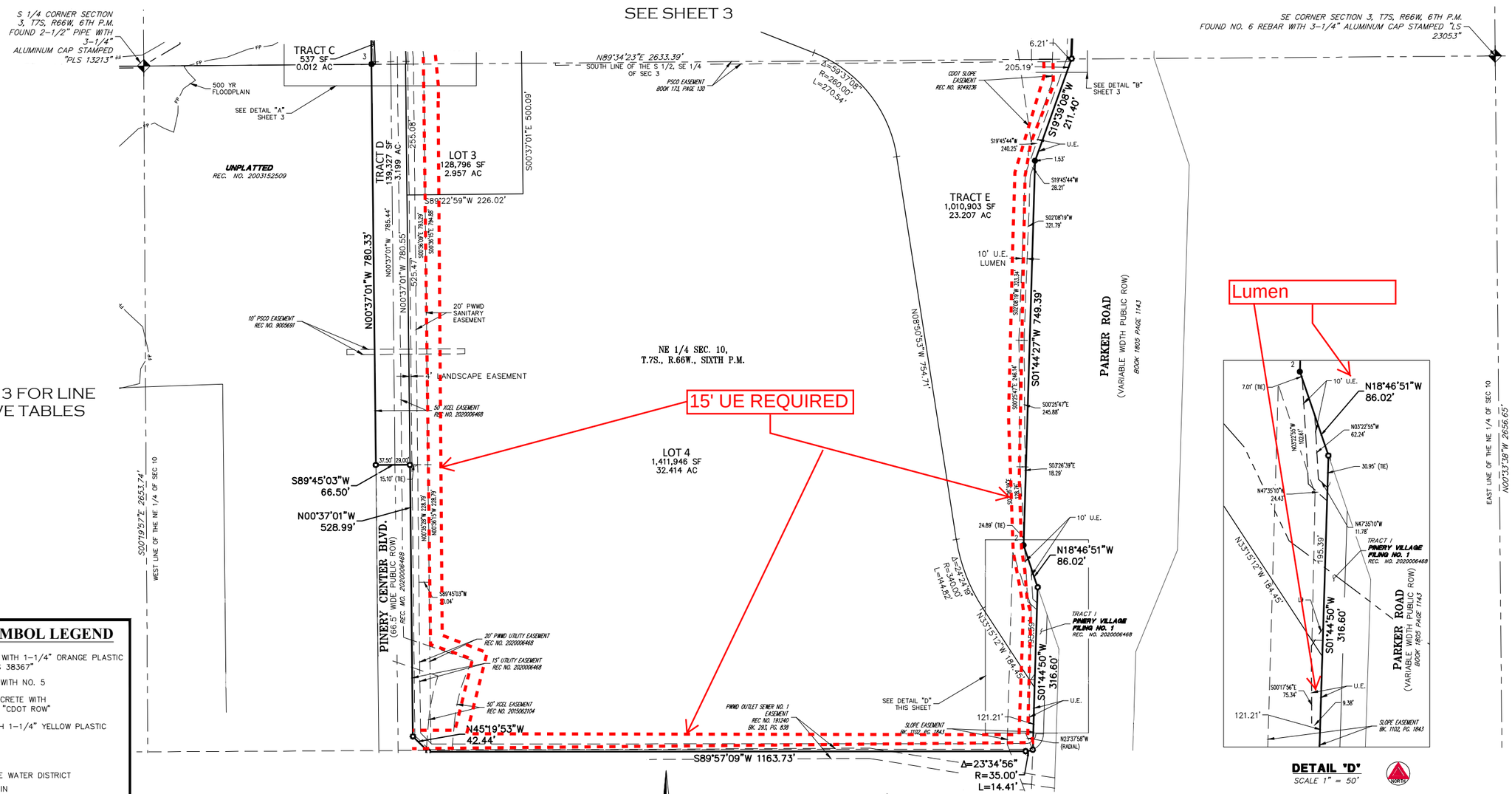
AzTec Proj. No.: 54820-23 Drawn By: RDR

DEVELOPER
STARWOOD LAND
1500 W. CANAL COURT
LITTLETON, COLORADO 80120

DATE OF PREPARATION:	07-12-2021
SCALE:	1"=100'
SHEET 3 OF 4	

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
77.320 ACRES - 4 COMMERCIAL LOTS - 6 TRACTS SB2021-049.



MONUMENT SYMBOL LEGEND

- ○ SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 ● FOUND 4"X4" CONCRETE WITH NO. 5
- 2 ● FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 ● FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"
- (ROW) RIGHT-OF-WAY
- U.E. UTILITY EASEMENT
- PWWD PINERY WATER & WASTE WATER DISTRICT
- ——"—— LIMITS OF FLOOD PLAIN
- (NR) NON RADIAL
- CDOT COLORADO DEPT. OF TRANSPORTATION

FOR REVIEW

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AzTec Consultants, Inc.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj No 54820-23 Drawn By RDR

DEVELOPER
STARWOOD LAND
1500 W. CANAL COURT
LITTLETON, COLORADO 80120

DATE OF PREPARATION	07-12-2021
SCALE	1"=100'
SHEET 4 OF 4	

From: Brooks Kaufman
To: Michael Pesicka
Cc: Craig Campbell
Subject: RE: Pinery Village Filing No. 2 Minor Development Pinery Village Filing 2-SB2021-049
Date: Friday, February 13, 2026 11:32:18 AM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.png
image006.png
Pinery Village Filing No. 2 - Final Plat_8th Submittal_12-17-25.pdf

Caution: This email originated outside the organization. Be cautious with links and attachments.

Good morning, Michael

CORE Electric Cooperative and the applicant met this morning pertaining to Pinery Village Filing 2- (SB2021-049)

CORE Electric Cooperative approves and agrees to the applicant's responses below.

CORE Electric Cooperative
1. CORE will require additional utility easements as shown on the attached markup.
Response: A 15' Utility Easement has been added along Pinery Center Boulevard except for areas where a retaining wall is proposed. Perimeter lot easements will be deferred until the lots are subdivision for specific development.

Respectfully

Brooks Kaufman
Lands and Rights of Way Manager

800.332.9540 **MAIN**
720.733.5493 **DIRECT**
303.912.0765 **MOBILE**

www.core.coop.





Book time to meet with me

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Thursday, February 12, 2026 8:16 AM

To: Brooks Kaufman <BKaufman@core.coop>
Subject: RE: Pinery Village Filing No. 2 Minor Development

[CAUTION:] This email is from an external source. Avoid clicking links or opening attachments unless you trust the sender and verify the content's safety.

Brooks, thanks for the response. I have notified the applicant to contact you.

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

NOTICE: Douglas County Planning does not charge "Approval" fees. Douglas County communicates through our official email accounts ending in @douglas.co.us; beware of phishing scams using similar addesses. If you have questions or concerns about the validity of an email or invoice, please call our Public Outreach and Assistance team at 303-660-7460 or email planning@douglas.co.us

---

From: Brooks Kaufman <BKaufman@core.coop>
Sent: Thursday, February 12, 2026 6:13 AM
To: Michael Pesicka <mpesicka@douglas.co.us>
Subject: RE: Pinery Village Filing No. 2 Minor Development

Caution: This email originated outside the organization. Be cautious with links and attachments.

Good morning, Michael

The applicant did not address our comments, CORE will require a meeting with the applicant on this matter.

Respectfully

Brooks Kaufman
Lands and Rights of Way Manager

800.332.9540 **MAIN**
720.733.5493 **DIRECT**
303.912.0765 **MOBILE**

www.**core**.coop.

Book time to meet with me

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Wednesday, February 11, 2026 11:22 AM
To: Brooks Kaufman <BKaufman@core.coop>
Subject: Pinery Village Filing No. 2 Minor Development

[CAUTION:] This email is from an external source. Avoid clicking links or opening attachments unless you trust the sender and verify the content's safety.

Brooks,

Its been awhile since you have reviewed this project (Pinery Village Filing 2-SB2021-049) but I wanted to verify that the applicant's response addresses your comments, see below. Updated plat exhibit attached.

Core Electric Cooperative
1. CORE will require additional utility easements as shown on the attached markup.
Response: A 15' Utility Easement has been added along Pinery Center Boulevard except for areas where a retaining wall is proposed. Perimeter lot easements will be deferred until the lots are subdivision for specific development.

Thank you,

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

NOTICE: Douglas County Planning does not charge "Approval" fees. Douglas County communicates through our official email accounts ending in @douglas.co.us; beware of phishing scams using similar addesses. If you have questions or concerns about the validity of an email or invoice, please call our Public Outreach and Assistance team at 303-660-7460 or email planning@douglas.co.us

From: Doyle - DNR, Katie
To: Michael Pesicka
Subject: Re:Douglas County eReferral (Project Number SB2021-049) Is Ready For Review
Date: Tuesday, November 30, 2021 8:59:24 AM

Dear Mr. Pesicka,

Thank you for the opportunity to comment on the Pinery Village Filing 2 Minor Development under Project #SB2021-049. Our goal in responding to land use proposals such as this is to provide complete, consistent, and timely information to all entities who request comment on matters within our statutory authority.

Upon review of the proposed referral request, Colorado Parks and Wildlife (CPW) has no objections to the application moving forward as planned for approval. Please refer to the previous comment letter from CPW dated February 11, 2020 to Mr. Dan Avery for additional wildlife concerns and development recommendations.

Please do not hesitate to contact us about ways to continue developing and managing your properties in order to maximize wildlife value while minimizing potential conflicts. If you have any further questions, please contact me at (303) 291-7114.

Thank you,

Katie Doyle
District Wildlife Manager - Parker/Castle Rock East

Field Services

Denver Office 303.291.7227
C 720.930.8039 | P 303.291.7114
6060 Broadway, Denver, CO 80216
katie.doyle@state.co.us | www.cpw.state.co.us

December 2, 2021

Craig Campbell
West Region President
Starwood Land Advisors, LLC
385 Inverness Parkway, Suite 310
Englewood, CO 80112

DV 2021-332

Subject: Pinery Village Filing No. 2 – Minor Development Plat

Dear Craig,

Plan Review Summary:

Submitted to Engineering	-	11/4/21
Comments Sent Out	-	12/2/21

Engineering has reviewed the above referenced submittal and have the following comments:

Final Plat Comments

Comment #1-On sheet 1, it appears the Dedication Statement and Board of County Commissioners Certification are missing information. There is right-of-way being dedicated, easements, etc.

Comment #2-On sheet 2, please clarify why the extension of Pinery Center Blvd. is in a Tract.

Comment #3-The plat should provide a Tract for the North Piney Creek channel and the following language should be included for both the channel and the detention facilities: “Drainage Easements are hereby granted to Douglas County across Tracts _____& _____ in Pinery Village Filing No. 2 (the “Subdivision”) for the purpose of accessing, maintaining and repairing storm water management improvements, including but not limited to inlets, pipes, culverts, channels, ditches, hydraulic structures, riprap, detention basins, forebays, micropools and water quality facilities (collectively, the “Facilities”). In the event the Pinery Commercial Metropolitan District, its successors, and assigns (“System Owner”) fails to satisfactorily maintain said facilities, a blanket access easement over the subdivision is also granted to Douglas County, but only for the purpose of accessing the facilities in the event that the drainage easements do not provide adequate access. The maintenance and repair of the facilities located in the subdivision, as shown on the construction plans accepted by Douglas County or on the plat for the subdivision, shall be the responsibility of the system owner in the event such maintenance and repair are not performed by the system owner to the satisfaction of

Douglas County, then Douglas County shall have the right, but not the obligation to enter said subdivision after ten (10) prior written notice to the system owner. Unless there is an emergency, in which case Douglas County shall give notice as soon as practicable, to perform all necessary work, the cost of which shall be paid by the system owner upon billing. In the event the system owner fails to reimburse Douglas County within thirty (30) days after submission of the bill for the costs incurred, Douglas County shall have the right to enforce such obligation by appropriate legal action. It is the system owner's responsibility to construct, maintain, and repair the facilities in a manner consistent with all applicable plans approved or accepted by Douglas County".

Comment #4-The drainage channels/swales along the north & east side of the development should also be included in drainage easements.

Comment #5-Additional right-of-way for North State Highway 83 may be required. This portion of the corridor requires a minimum right-of-way width of 175-ft.

Comment #6-A Subdivision Improvements Agreement (SIA) will be required for this project. The applicant can get a copy of this document from our office or from the Douglas County website. When submitting this document, please provide us with 1-copy with original signatures. Please include a "letter of authorization" for whoever signs the agreement, and the cost estimate exhibits need to be signed by this individual as well. This document will need to be submitted and approved prior to the approval of the final plat.

GESC Comments

Comment #1-On sheet G0.0, please revise the wording of the Douglas County Acceptance Block as follows, "…Douglas County for GESC improvements only". This is a typical comment for all sheets with our signature block.

Comment #2-On sheet G0.1, please remove the Douglas County Acceptance Block from this sheet.

Comment #3-On sheet G0.2, please remove this sheet from the GESC package. The notes are included with our standard notes/detail sheets.

Comment #4-On sheet G1.1, rather than installing the silt fence across the future drainage channel, please look at another option of containing the sediment (check dam, etc.).

Comment #5-On sheets G1.1 – G1.10, please include the length for each segment of silt fence as well as each length of construction fence.

Comment #6-On sheet G1.2, the plans show “JB” (jersey barrier) within the proposed diversion ditches. Our standard details don’t include a detail for a jersey barrier. Please reference BMP’s that are included with our standard notes/detail sheets.

Comment #7-On sheets G1.2, G1.4, & G1.6 please specify the pipe diameter and riprap size for the proposed temporary slope drains.

Comment #8-On sheet G1.5, the proposed silt fence is shown crossing slopes steeper than 5%. Please stager the silt fence to keep from exceeding the 5% slope.

Comment #9-On sheet G1.8, a “temporary construction access” permit may be required for the access onto North Pinery Parkway.

Comment #10-On sheets G2.1 – G2.10, please specify the type and quantity for each area of erosion control blanket.

Comment #11-On sheet G2.3, please include cross sections for the proposed drainage swales.

Comment #12-On sheets G2.5 & G2.7, please show the grades along the easterly bank.

Comment #13-On sheet G2.8, please clarify the surface treatment at the northwesterly corner of the disturbance.

Construction Plan Comments

Comment #1-On sheets C1.1 & C1.2, please remove the Douglas County Acceptance Block from these sheets.

Comment #2-On sheet C1.2, it appears that the Douglas County Storm Sewer Notes are included in the Douglas County Standard Notes.

Comment #3-On sheet C1.2, please remove the pavement thickness from the details. The thickness will be determined by the pavement design report.

Comment #4-On sheet C1.2, please include the centerline stationing that coordinates with the proposed street cross sections.

Comment #5-On sheet C1.2, please relocate the proposed trench drain to the back of sidewalk.

Comment #6-On sheets C4.0 – C4.9, please remove these sheets from this construction package since the grading plans are included in a separate GESC package.

Comment #7-The detention pond calculations for the north pond shows a “depth to invert of outlet pipe” difference of 1.5-ft. (Outlet pipe w/ flow restriction plate). The plans show an elevation difference of 2-ft. Please revise.

Comment #8-On sheet C4.10, please clarify the 20-ft. driveway along the north side of the detention pond.

Comment #9-On sheet C4.10, please provide cross sections for the forebay and include the structural design. Also, please include the structural information for the connections between the baffle blocks and the forebay.

Comment #10-On sheet C4.10, please provide and dimension control joints for the forebay.

Comment #11-On sheet C4.11, please include the structural design for the outlet structure in Section D-D.

Comment #12-On sheet C4.11, please lower the front wall of the outlet structure to within 3 to 4-inches of the bottom of the micropool and the orifice plate needs to extend to the bottom of the micropool in Section D-D.

Comment #13-On sheet C4.11, please include the dimensions for the trash rack and orifice plate.

Comment #14-Please review the following information from the detention pond calculations for the south pond:

- Depth at top of Zone using Orifice Plate – shows 6.42-ft which doesn’t appear to be correct
- Clarify the number of orifices (we try and minimize the number to 3)
- Overflow Weir Front Edge Height – shows 6.42-ft. which doesn’t appear to be correct
- Depth to Invert of Outlet Pipe – shows 0.5-ft. which doesn’t appear to be correct
- Spillway invert Stage – shows 7.9-ft. which doesn’t appear to be correct

Comment #15-On sheet C4.12, please provide a cross section though Pinery Center Blvd. showing the road in relationship to the retaining wall.

Comment #16-On sheet C4.12, please provide cross sections for the forebay and include the structural design. Also, please include the structural information for the connections between the baffle blocks and the forebay.

Comment #17-On sheet C4.12, please provide and dimension control joints for the forebay.

Comment #18-On sheet C4.13, please include the structural design for the outlet structure in Section D-D.

Comment #19-On sheet C4.13, please lower the front wall of the outlet structure to within 3 to 4-inches of the bottom of the micropool and the orifice plate needs to extend to the bottom of the micropool in Section D-D.

Comment #20-On sheet C4.13, please include the dimensions for the trash rack and orifice plate.

Comment #21-On sheets C4.15 – C4.18, please verify the proposed handrail/guardrail meets AASHTO Roadside Design Guide for clear zone and crash criteria.

Comment #22-On sheets C4.15 – C4.18, a License Agreement will be required for the landscaping and retaining walls within the public right-of-way. I will provide you with our standard License Agreement document.

Comment #23-On sheet C4.19, please remove the Douglas County Acceptance Block from this sheet.

Comment #24-Engineering is not familiar with the hydraulic model that was used for this project and will request that the project engineer provide a comparison between this model and the UD-Sewer modeling supported by Urban Drainage & Flood Control District.

Comment #25-On sheet C6.1, please include the flowline transition profiles per Figure 4-6 of our road design manual (typical comment for all sump conditions).

Comment #26-On sheet C6.2, please clarify why manholes A7 & A8 are labeled twice in the profile.

Comment #27-On sheet C6.2, engineering has concerns regarding the proposed cover over the box culvert in regard to the future pavement section. Please look at lowering this box to account for the future pavement section (should be consistent with the storm sewer depths 3.5 to 4-ft.).

Comment #28-On sheet C6.3, the proposed Pinery Center Blvd. roadway improvements need to extend to the northerly property line.

Comment #29-On sheets C6.3 & C6.4, the depth of the proposed storm sewer is a concern (depth needs to be a minimum of 3.5 – 4-ft. without a preliminary pavement design).

Comment #30-On sheet C6.5, our drainage manual requires a 6-ft. manhole for a 48-in. pipe. Please revise.

Comment #31-On sheet C6.7, please clarify that the existing 36-in. pipe will be removed near manhole F4-A. Also, please include the invert information at both manholes.

Comment #32-On sheets C7.1 – C7.14, Douglas County is meeting with Mile High Flood District on Friday to discuss the proposed channel improvements. We will provide comments on the channel re-alignment within the next couple of weeks.

Comment #33-On sheets C7.15 & C7.16, the proposed open channel swales need to be designed per Chapter 8 (Volume 1) of the Mile High Flood Control Districts criteria manual. Please include their figures in the drainage report that applies to each channel section.

Comment #34-On sheets C11.1 & C11.2, our traffic group will be reviewing the signage & striping plans and once I get their comments, I will forward them to you.

Comment #35-Our traffic group has reviewed the traffic analysis and overall, there were no significant changes in the findings of the original traffic study. The purpose of the proposed updated traffic analysis was to incorporate two changes:

- Removal of a roadway connection to Hwy 83 (known as Access A, a 3/4 movement access).
- Changes to Land Use projection and trip generation at the north end of the project. 50,000 square feet of office use was added to the trip generation to replace the previously planned charter school. This results in a decrease of AM peak hour trips and a minor change to the PM peak hour trips.

<u>Required Improvements to accommodate the project are:</u>

- Access Permit for the project Access to US 83 – Right-in/Right-out – the currently issued State Hwy Access Permit for the RI/RO access to SH 83 north of North Pinery Parkway may need to be re-issued due to the increase in trips proposed to use this access (because of the elimination

of Access A which causes volumes using the access to exceed the original (original: 345 vph, new: 515 vph) – Access Permit for the Access at North Pinery Parkway & State Highway 83

- 2030 – US83/North Pinery Parkway – 2nd northbound left-turn lane & Modify the east leg of the median to include a new exclusive westbound left turn lane.
- North Pinery Parkway/Access C – Traffic signal – check warrants at build-out of project
- 2040 – North Pinery Parkway/Pinery Center Blvd. (J Morgan Blvd) – traffic signal
- Auxiliary Lane Evaluation – Access B & Parker Road (with initial development) – Southbound right-turn deceleration lane (378-ft. + 222-ft. taper, 600-ft. total length) – Southbound right-turn acceleration lane (tie into the exiting southbound right-turn deceleration lane approaching North Pinery Parkway, approximately 370-ft. south of Access B)
- Parker Road and Pinery Parkway (short-term) – Second northbound left-turn lane (build parallel to the existing 600-ft. total lane length)
- Parker Road and Pinery Parkway (long-term) – New eastbound left-turn lane (110-ft. lane + 60-ft. taper)

Landscaping Comments

Comment #1-On sheet L-01, please add the Douglas County Acceptance Block to this sheet.

Comment #2-On sheets L-05, please clarify the purpose of the driveway onto Pinery Center Blvd.

We cannot recommend approval of this final plat and/or construction plans until these comments have been addressed. If you have any questions, please give me a call.

Sincerely,

Chuck Smith
Development Review Engineer

cc: Matt Williams, P.E.; Assistant Director of Development Review & Stormwater
Mike Pesicka, AICP, Principal Planner

DV21332

December 2, 2021

Mike Pesicka
Principal Planner
Douglas County Community Development
100 Third Street
Castle Rock, CO 80104

Re: SB202-049 Pinery Village Filing No. 2 Minor Development

Dear Mr. Pesicka:

The letter provides comments regarding the Pinery Village Filing 2 Minor Development project to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line in Douglas County.

Upon researching the cultural resources on the property and the surrounding area the Douglas County Curator recommends a Class II cultural resource survey of the project area.

There is potential for buried archaeological resources related to prehistoric activities in the project area and potential for the discovery of subsurface cultural deposits during ground moving activities. Should buried artifacts and features be discovered, we recommend completion of the appropriate Colorado Office of Archaeology and Historic Preservation (OAHP) Data Management and Historic and/or Prehistoric Component forms, following OAHP guidelines, with accompanying sketch maps and photographs. Completed forms are submitted to OAHP to ensure that Douglas County's historic or prehistoric data is included in the Colorado OAHP state-wide database of cultural resources.

Thank you in advance for your attention to the preservation and protection of Douglas County's cultural resources for future generations.

Sincerely,

Brittany Cassell

Brittany Cassell, Curator

From: Brittany Cassell
To: Michael Pesicka
Subject: RE: Cultural Resource Survey for Project No. SB2021-049
Date: Tuesday, March 29, 2022 8:18:27 AM

Hi Mike,

I have no questions or concerns on the report. Sounds like this property had a lot of activity in the past but nothing eligible to be listed on the National Register.

Thank you!
Brittany

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Tuesday, March 29, 2022 8:02 AM
To: Brittany Cassell <bcassell@douglas.co.us>
Subject: RE: Cultural Resource Survey for Project No. SB2021-049

Hi Brittany, do you have any questions or concerns for the applicant about the Cultural Resource Survey for SB2021-049?

Thanks,

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

From: Brittany Cassell <bcassell@douglas.co.us>
Sent: Thursday, March 17, 2022 2:33 PM
To: Michael Pesicka <mpesicka@douglas.co.us>
Subject: RE: Cultural Resource Survey for Project No. SB2021-049

Hi Mike,

Thank you for sharing this with me. I am glad the got the survey completed.

Thank you!
Brittany

From: Michael Pesicka <mpesicka@douglas.co.us>
Sent: Thursday, March 17, 2022 2:27 PM
To: Brittany Cassell <bcassell@douglas.co.us>
Subject: Cultural Resource Survey for Project No. SB2021-049

Hi Brittany,

During the referral process for Project No. SB2021-049, DC Historic Preservation recommended submittal of a Cultural Resource Survey. Attached is that survey from the applicant. Please let me know if you have any comments.

Thank you,

Mike Pesicka | Principal Planner
Douglas County Department of Community Development
Address | 100 Third St., Castle Rock, CO 80104
Direct | 303-814-4367 **Main** | 303-660-7460
Email | mpesicka@douglas.co.us

From:	Chuck Smith
To:	Mark Cevaal; Laura Hinds
Cc:	Michael Pesicka; Craig Campbell; William Conway; Jim Watt; Mary Powell
Subject:	RE: Pinery Village Filing No. 2 - Vegetation Management Plan
Date:	Friday, February 17, 2023 11:01:46 AM
Attachments:	image002.png image007.png MEP - 109059 - Pinery Village F2 Design Approval Letter.msg

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Morning All,

Attached is the email from MHFD on the design approval for Pinery Village #2 – I thought I had send this out. However their approval is attached

Thanks

From: Mark Cevaal <mcevaal@redland.com>
Sent: Monday, January 9, 2023 5:06 PM
To: 'Laura Hinds' <lhinds@mhfd.org>
Cc: Michael Pesicka <mpesicka@douglas.co.us>; Chuck Smith <CSmith@douglas.co.us>; Craig Campbell <ccampbell@starwoodland.com>; William Conway <wconway@redland.com>; 'Jim Watt' <jwatt@mhfd.org>; 'mpowell@mhfd.org' <mpowell@mhfd.org>
Subject: Pinery Village Filing No. 2 - Vegetation Management Plan

Laura,
Please find attached a revised Vegetation Management Plan for Pinery Village Filing No. 2 along with our responses to the comments. We have incorporated Mary's recommendations into the Plan.

Let us know if you have any questions.

Thanks,

MARK CEVAAL, P.E.
Sr. Project Manager
Associate Principal

signature_931543734

1500 West Canal Court
Littleton, CO 80120
Office: (720) 283-6783 x136
Cell: (303) 517-2464

mcevaal@redland.com
www.redland.com

From: Chuck Smith <CSmith@douglas.co.us>
Sent: Thursday, December 22, 2022 12:51 PM
To: Mark Cevaal <mcevaal@redland.com>; Craig Campbell <ccampbell@starwoodland.com>
Cc: Michael Pesicka <mpesicka@douglas.co.us>
Subject: [External] FW: Pinery Commercial - Drainage

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good Afternoon All,

Attached are a couple of comments from MHFD regarding the weed management plan

Hope you all have a Merry Christmas!!

From: Laura Hinds < >
Sent: Thursday, December 22, 2022 12:08 PM
To: Chuck Smith <CSmith@douglas.co.us>
Cc: Jim Watt < >; Mary Powell < >
Subject: RE: Pinery Commercial - Drainage

Hi Chuck,
Please see attached - the MHFD Environmental Manager, Mary Powell, review the Vegetation Management plan and provided her feedback. There were a few recommendations on the values in the tables but overall felt it was a well thought out plan.

Please let us know if there are any questions or concerns.

Thank you,

Laura

Laura Hinds, P.E.
MILE HIGH FLOOD DISTRICT

From: Chuck Smith <CSmith@douglas.co.us>
Sent: Thursday, December 15, 2022 12:48 PM
To: Jim Watt <jwatt@mhfd.org>
Cc: Laura Hinds <lhinds@mhfd.org>

Subject: RE: Pinery Commercial - Drainage

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hi Jim & Laura

Attached is the applicants vegetation management plan and a response to comments (I highlighted MHFD response in yellow). If you need anything else, please let me know

Thanks

From: Jim Watt <jwatt@mhfd.org>
Sent: Tuesday, November 8, 2022 10:24 AM
To: Chuck Smith <CSmith@douglas.co.us>
Cc: Laura Hinds <lhinds@mhfd.org>
Subject: RE: Pinery Commercial - Drainage

Chuck,

Thanks for coordinating the Pinery meeting today. I wanted to reshare this attached email with the vegetation management plan template that we discussed. Let me know if there is a need for any follow up outside of the direct coordination with the developer.

Could you help me to understand if the county has other processes or report products that may overlap with a revegetation management plan? Outside of the SWMP are there any other weed management plans that the County already requires?

Thanks,
Jim

Jim Watt, P.E., CFM
Watershed Manager
MILE HIGH FLOOD DISTRICT
2480 W. 26th Ave. Suite 156-B | Denver, CO 80211
Office: 303-455-6277 | **Direct:** 303-749-5455 | www.mhfd.org

Protecting People, Property, and our Environment

From: Jim Watt
Sent: Thursday, October 27, 2022 2:59 PM
To: Chuck Smith <CSmith@douglas.co.us>
Cc: Laura Hinds <lhinds@mhfd.org>
Subject: RE: Pinery Commercial - Drainage

Hi Chuck – Thanks for reaching out to coordinate on this topic.

Is the current request from Starwood to forego this Vegetation Management Plan altogether or just for the exclusion area that they highlighted?

The only outstanding comment that MHFD has for this project is to provide a vegetation management plan for the low flow channel and the spill floodplain channel associated with North Piney Creek. This request and the template for the plan were provided with our 6/1/22 comments. Ultimately, for this to reach final acceptance we will look for these areas to be established with planned native vegetation and be reasonably weed free. We have found from past projects that proper establishment of native vegetation and weed control took a signification additional effort after construction to reach establishment, so as a result, we will be looking to have this vegetation management plan in place for these types of larger MEP efforts. The goal is to have a guidance document for the developer / contractor to follow which will result in the vegetation community required by the design team. The upfront costs of this vegetation management plan will likely save money over the duration of the project by guiding proactive management of the revegetation process.

Not long ago, we had a meeting with the development team to discuss the vegetation management plan comment and I had thought we cleared up the work area to exclude the Cherry Creek floodplain on only focus on the North Piney Creek floodplain. Apologies that the County was not in attendance for that meeting. This project is very unusual in the that the active channel and the floodplain diverge, so I can understand how this island exclusion area is presenting issues. I have attached a figure that shows the specific MHFD area of interest for the vegetation management plan. While MHFD will not focus on the areas that Starwood has highlighted, we do think that a proactive management of this area should be encouraged if not required by the County. I have not seen the condition of the Starwood exclusion area, so it is difficult to determine if issues in this exclusion area will spill over into the adjacent North Piney Creek areas that we are considering for MEP. Work performed on for development by ERO has documented weed issues with the area, so at a minimum, MHFD reserves the right to comment on the condition of the vegetation in this area once we reach the final establishment phases of the MEP process. I recognize and agree with Starwood that managing weeds and reestablishing a native vegetation community in this upland Cherry Creek and N. Piney Creek floodplain area is going to be difficult. However, I believe that it is achievable and that this change in land use / management responsibilities is the appropriate time to address the issue.

Let me know if a follow up conversation is needed.

Sincerely,

Jim

From: Laura Hinds <lhinds@mhfd.org>
Sent: Wednesday, October 26, 2022 9:36 AM
To: Jim Watt <jwatt@mhfd.org>
Subject: FW: Pinery Commercial - Drainage

Laura Hinds, P.E.
Project Engineer
MILE HIGH FLOOD DISTRICT
2480 W. 26th Ave Suite 156-B | Denver, CO 80211
Office: 303-455-6277 | **Direct:** 303-929-8342 | www.mhfd.org

Protecting People, Property, and our Environment





From: Chuck Smith <CSmith@douglas.co.us>
Sent: Tuesday, October 25, 2022 11:36 AM
To: Laura Hinds <lhinds@mhfd.org>
Subject: Pinery Commercial - Drainage

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Morning Laura,

I had a conversation with Craig Campbell from Starwood Land regarding MHFD's comments regarding the vegetation of the floodplain. I talked with Brad Robenstein this morning to get his thoughts and I know the owner is willing to provide weed control for their property, however they are not comfortable to try and get significant coverage within the shaded area (see attached exhibit). There point is they are not disturbing this area and since it will be dry the majority of the time, it would be difficult to get much to grow.

Just wanted to see if there was a way to work around this requirement and not hold up maintenance eligibility.

Thanks for your time

Chuck Smith, CFM | Development Review Engineer
Douglas County Department of Public Works Engineering
Engineering Services
Address | 100 Third St., Castle Rock, CO 80104
Main | 303-660-7490
Email | csmith@douglas.co.us

MILE HIGH FLOOD DISTRICT
2480 W. 26th Ave Suite 156-B | Denver, CO 80211
TEL 303 455 6277 | FAX 303 455 7880
www.mhfd.org

For MHFD staff use only.	
MHFD Project ID:	109059
Design Approval:	01/13/2023
Construction Approval:	Not yet completed
Final Acceptance:	Not yet completed

Date: January 13, 2023
To: Chuck Smith (Douglas)
Via email
Subject: Approval of Design for Maintenance Eligibility Features

Project Name:	Pinery Village Filing 2 (PVF2)
Date of Plans:	08/15/2022 (C1.0, C4.1-C4.4, C6.12, C7.1, C7.2, C12.4, C12.6)
Description of MEP Features:	North detention pond outfall and spillway to Cherry Creek South detention pond outfall and spillway to North Pinery Creek North Pinery Creek channel and floodplain

The construction plans and specifications for maintenance eligible features in the referenced project are hereby approved. The project will be eligible for District maintenance assistance upon satisfactory construction per the approved design and certification of maintenance eligibility (final acceptance) as determined by the District. **Construction must begin within two years of the date of this memorandum, or the design approval will expire.** This project may require federal, state, or local permits in addition to this design approval. The District will follow the procedure listed below to ascertain the acceptability of the construction effort. Your assistance with this procedure will be necessary to qualify the project for District maintenance assistance. The District staff, or consultants retained by the District, will observe construction activities.

1) The District or its consultant may conduct site visits during project construction as deemed necessary to observe construction activities for conformance with the approved design. All grouted boulder installations must receive a pre-grout sign-off. Construction deficiencies should be reported to your contact, who will take the necessary actions to correct deficiencies. Such visits will not relieve the local government, the owner (developer), or the contractor of the obligation to construct the project per the approved design. The design consultant should maintain a presence during the construction phase to clarify the design intent and verify construction surveys and layout.
2) Upon completion of the project, representatives from the District or its consultant, local government, contractor, design consultant, and the owner (developer) shall conduct a walk-through inspection of the project and prepare a list of deficiencies (punch list) to be corrected. The local government is responsible for arranging the inspection.
3) When the punch list items have been addressed, the local government should notify the District to inspect the project again. If the project is adequate, written notice of construction acceptance for maintenance eligibility will be sent to you (MEP Step 2 of 3).
4) Grass-lined facilities will be eligible for maintenance assistance after an adequate vegetative cover is established.
5) Changes to approved designs can only be made using the "Notice of Change to Approved Design" form (enclosed).

We look forward to working with you on this project.

Sincerely,

Jim Watt, P.E., CFM
Watershed Manager, Mile High Flood District
jwatt@mhfd.org

Enclosed: MHFD Project Contact Information Request (*To be filled out and returned with approved plans)*
Notice of Change to Approved Design (Blank Form)
Design Approval Exhibit (MEP ID: #109059)

MILE HIGH FLOOD DISTRICT
2480 W. 26th Ave Suite 156-B | Denver, CO 80211
TEL 303 455 6277 | FAX 303 455 7880
www.mhfd.org

MAINTENANCE ELIGIBILITY PROGRAM (MEP)
Notice of Change to Approved Design

MEP ID:	
Change No.	
Change Date:	
Design Approval Date:	

Project Name:

Description of changes made to Approved Design (attach appropriate drawings, specifications, or calculations):

Justification:

Impact of change on function of the facility, channel or features:

APPROVALS REQUIRED

CONTACT	PRINTED	SIGNED	DATE
Design Consultant			
Owner/Developer			
Local Government			
Contractor			
MHFD			

SOUTH METRO FIRE RESCUE
FIRE MARSHAL'S OFFICE

Mike Pesicka, Principal Planner
Douglas County Department of Community Development, Planning Services
100 Third St
Castle Rock Co 80104
303.660.7460
303.660.9550 Fax

Project Name:	Pinery Village Filing No. 2 – Minor Development
Project File #:	**SB2021-049**
S Metro Review #	REFRP21-00240
Review date:	November 22, 2021
Plan reviewer:	Aaron Miller 720.989.2246 aaron.miller@southmetro.org
Project Summary:	Proposed Minor Development to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line. The property is zoned Planned Development and is located in the northeast portion of the County, approximately one-quarter mile north of North Pinery Parkway and west of State Highway 83 and partially bordered on the north by the Town of Parker.
Code Reference:	Douglas County Fire Code, 2018 International Fire Code, and 2018 International Building Code with amendments as adopted by Douglas County.

South Metro Fire Rescue (SMFR) has reviewed the provided documents and has no objections to the proposed minor development. Applicants and Contractors are encouraged to contact SMFR regarding the applicable permit requirements for the proposed project.

November 29, 2021

Mike Pesicka
Douglas County Department of Community Development
Planning Services Division
100 Third Street
Castle Rock, CO 80104

RE: Pinery Village Filing 2, SB2021-049
TCHD Case No. 7349

Dear Mr. Pesicka,

Thank you for the opportunity to review and comment on the Minor Development to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line, located in Pinery West. Tri-County Health Department (TCHD) staff has reviewed the application for compliance with applicable environmental and public health regulations and principles of healthy community design. After reviewing the application, TCHD has the following comments.

Water and Sewer Service
A will-serve letter has been provided by Pinery Water and Wastewater District. Based on this letter, TCHD is providing a favorable recommendation regarding the proposed method of sewage disposal.

Community design to support walking and bicycling
Because chronic diseases related to physical inactivity and obesity now rank among the country's greatest public health risks, TCHD encourages community designs that make it easy for people to include regular physical activity, such as walking and bicycling, in their daily routines. Because research shows that the way we design our communities can encourage regular physical activity, TCHD strongly supports community plans that incorporate pedestrian and bicycle amenities that support the use of a broader pedestrian and bicycle network. Increasing multi-modal transportation has additional co-benefits including improved air quality, which can reduce contributions to climate change and exposure to pollutants associated with a number of health problems including asthma, lung cancer, and heart disease.

In order to promote walking and bicycling through this development, TCHD encourages the applicant to consider the inclusion of the following as they design the community.

- A system of sidewalks, bike paths and open space trail networks that are well-designed and well-lit, safe, and attractive so as to promote bicycle and pedestrian use.

- Bicycle and pedestrian networks that provide direct connections between destinations in and adjacent to the community.

- Where public transportation systems exist, direct pedestrian access should be provided to increase transit use and reduce unnecessary vehicle trips, and related vehicle emissions. The pedestrian/bicycle networks should be integrated with the existing and future transit plans for the area.

- Streets that are designed to be pedestrian/bike friendly and to reduce vehicle and pedestrian/bicycle fatalities.

- Bicycle facilities and racks are provided in convenient locations.

Please feel free to contact me at 720-200-1575 or kboyer@tchd.org if you have any questions on TCHD's comments.

Sincerely,

Kathy Boyer, REHS
Land Use and Built Environment Specialist III

cc: Sheila Lynch, Keith Homersham, TCHD

External Referral Comments

TO: Mike Pesicka, Douglas County Planning

FROM: Pam Hall, Planner I Development Services Department

DATE: November 12, 2021

SUBJECT: COU21-0029, Case No. SB2021-049

Thank you for the opportunity to review and respond to the Pinery Village Filing 2, Minor Development. The application was reviewed by various Town Departments with no concerns from the Town reviewers. Please keep us informed of any changes to the proposal. Thank you.

REFERRAL RESPONSE REQUEST

Date sent: November 4, 2021

Comments due by: **December 2, 2021**
Fax: 303.660.9550

Project Name:	Pinery Village Filing No. 2 - Minor Development
Project File #:	SB2021-049
Project Summary:	Proposed Minor Development to subdivide 77.32 acres into 4 non-residential lots and 6 tracts and the extension of Pinery Center Blvd to the north property line. The property is zoned Planned Development and is located in the northeast portion of the County, approximately one-quarter mile north of North Pinery Parkway and west of State Highway 83 and partially bordered on the north by the Town of Parker.

Information on the identified development proposal located in Douglas County is enclosed. Please review and comment in the space provided.

☐ No Comment	
☐ Please be advised of the following concerns:	
☒ See letter attached for detail.	
Agency: Town of Parker	**Phone #:** (303) 805-3331
Your Name: Carson Byerhof	**Your Signature:**
(please print)	**Date:** December 3, 2021

Agencies should be advised that failure to submit written comments prior to the due date, or to obtain the applicant's written approval of an extension, will result in written comments being accepted for informational purposes only.

Sincerely,

Mike Pesicka, Principal Planner

PARKER COLORADO

Your kind of place.

TO:	Mike Pesicka, Principal Planner Douglas County Department of Community Development 100 Third St. Castle Rock, Colorado 80104
FROM:	Carson Byerhof Planner I
DATE:	December 3, 2021
SUBJECT:	SB2021-049 | Pinery Village Filing No. 2 – Minor Development

Dear Mike,

Thank you for the opportunity to review the SB2021-049 | Pinery Village Filing No. 2 – Minor Development. At this time, the Town of Parker Community Development Department has the following comments on this case:

1. The Town has platted the lot just north of what is proposed as Tract A, multi-family. Please be sensitive with uses, landscape buffering, and design standards for proposed lots 1 and 2 (PA 42 and PA 43).

2. Please incorporate pedestrian-friendly infrastructure between RTD and the Town along Pinery Center Blvd.

3. Please reference the attached documents which redline these comments.

In addition to the comments above, please reference the following comments from a previous referral for this site:

Referral Response Comments: *from ZR2018-038, December 10, 2018*

1. The Pinery Village Minor Development is located within the Town's 2035 Master Plan Planning Area and Three-Mile Plan map, and qualifies for annexation into the Town of Parker. The Town supports and welcomes discussions for annexation and rezoning of this property into the Town of Parker.

2. The Concept Site Plan from the project Traffic Impact Study, dated December 13, 2018, shows a site plan with commercial/retail development located adjacent to Parker Road. The Town encourages primary building frontages to front or side with Parker Road, to create a consistent

setback, street wall, and streetscape. Buildings that side with Parker Road are encourage to have enhanced architectural design. To minimize the view of parking lots from Parker Road, parking lots are encouraged to be located away from view of Parker Road, on the sides or rear of buildings.

3. Each proposed retail site is encouraged to provide pedestrian/bicycle connectivity from the primary façade of each building, as well as along Parker Road. Enhanced landscaping along Parker Road is also encouraged.

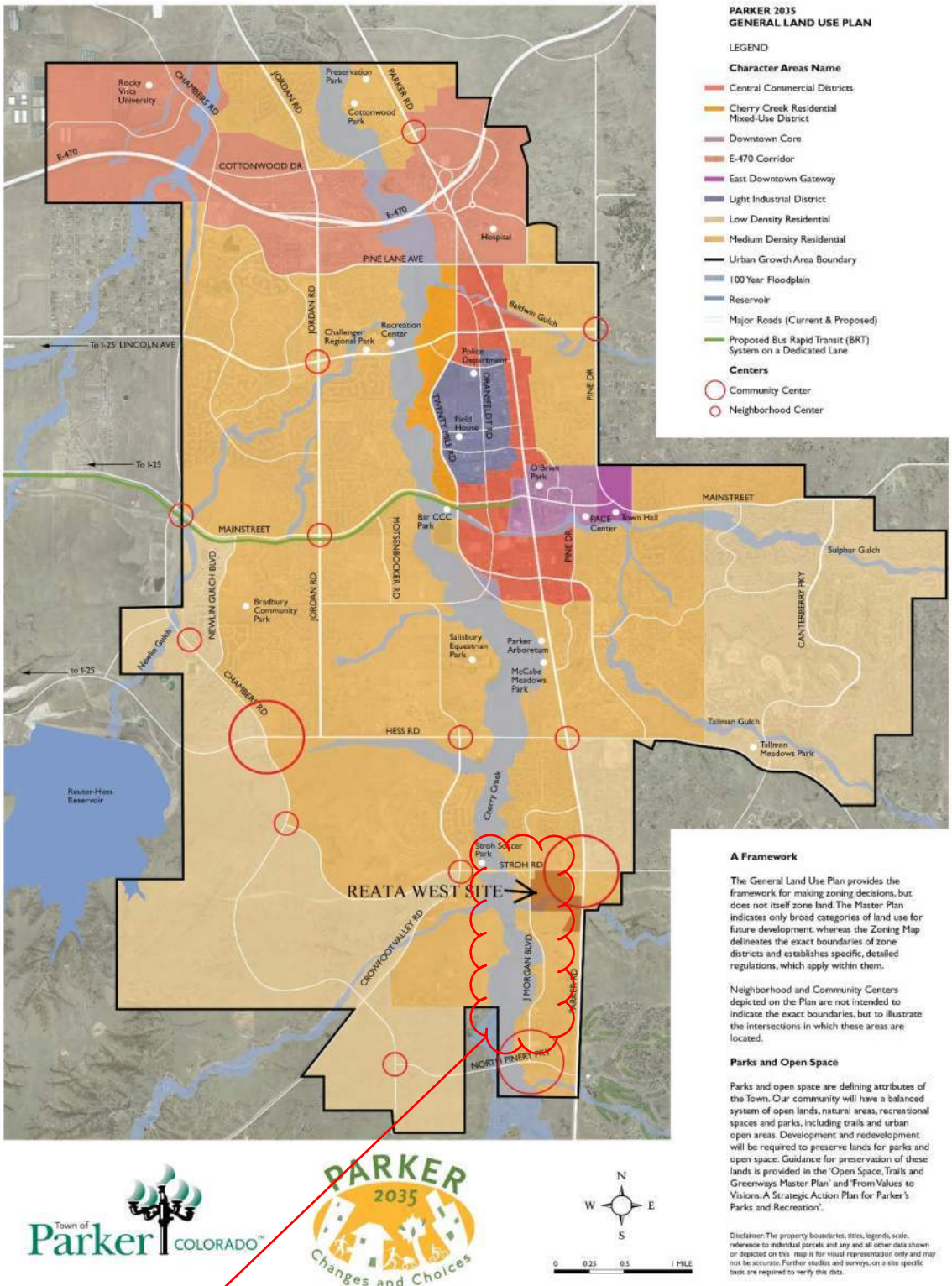
End of Town of Parker comments. Please feel free to contact me at 303-805-3331 or cbyerhof@parkeronline.org if you have any questions.

Sincerely,

Carson Byerhof
Planner I

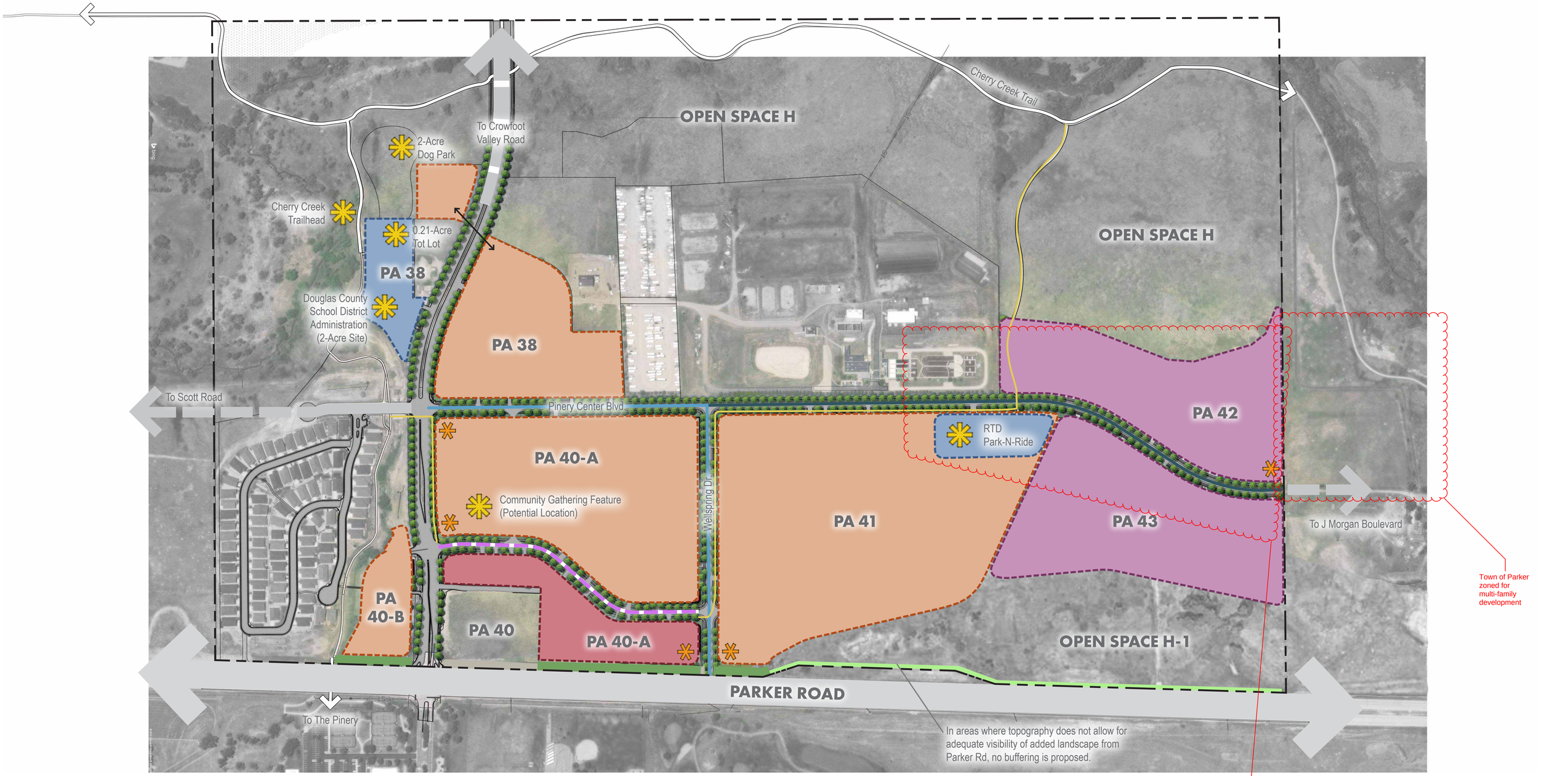
Signature

December 3, 2021
Date



Note plans to expand J Morgan Blvd. to N. Pinery Pkwy (See Reata West Plan Report for more details)

Illustration 2. – Parker General Land Use Plan (with site identified)



LEGEND

Proposed Improvements
- Collector Roadway (Detached Sidewalk)
- Collector Roadway (Attached Sidewalk)
- Parker Road Landscape Buffer
- Site Improvement Plan Related Landscape Buffer
- Pedestrian circulation to Cherry Creek Trail

Future Development
- Roadway Extension
- Internal Pedestrian-Oriented Roadway
- Site Improvement Amenity/Commitment
- Monumentation (Proposed)

Potential Land Uses
- Public Services
- Community Mixed-Use Commercial
- Community-Serving Retail
- Mixed-Use Industrial

PINERY WEST | MASTER LANDSCAPE AND PEDESTRIAN FRAMEWORK PLAN

10/15/2021

NORTH

NOT TO SCALE

NORRIS DESIGN
Planning | Landscape Architecture | Branding

Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571. 3284
donna.l.george@xcelenergy.com

December 8, 2021

Douglas County Department of Community Development
100 Third Street
Castle Rock, CO 80104

Attn: Mike Pesicka

Re: Pinery Village Filing No. 2 Minor Development, Case # SB2021-049

Public Service Company of Colorado's (PSCo) Right of Way and Permits Referral Desk has reviewed the documentation for **Pinery Village F2** and requests that 10-foot-wide dry utility easements are dedicated around the perimeter of each lot, and 15-feet abutting all major rights-of-way.

PSCo requests that the following language or plat note is added to the preliminary and final plats for the subdivision:

> *Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, including, without limitation, vegetation. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form.*

Public Service Company has an existing high-pressure natural gas transmission pipeline including a regulator station and associated land rights as shown within this property and it has determined that an **engineering review** is necessary. Any activity including grading, proposed landscaping, erosion control or similar activities involving our existing right-of-way will require Public Service Company approval. Encroachments across PSCo's easements must be reviewed for safety standards, operational and maintenance clearances, liability issues, and acknowledged with a Public Service Company License Agreement to be executed with the property owner. PSCo is requesting that, prior to any final approval of the plat, it is the responsibility of the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement (upload all files in PDF format) at: https://www.xcelenergy.com/encroachment_application (click *Colorado* if necessary). An engineer will then be in contact to request specific plan sheets.

The property owner/developer/ contractor must complete the application process for any new gas service or modification to existing facilities via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

If additional easements need to be acquired by separate PSCo document, a Right-of-Way Agent will need to be contacted.

All easement labels referenced as "XCEL" must be changed to "PSCO". Although "branded" as Xcel Energy, the legal owner and operator of the utility facilities in Colorado is Public Service Company of

Colorado. All utility facilities and related land rights, including fee property, easements, permits, etc., are owned by, operated by and held in the name of Public Service Company of Colorado, a Colorado Corporation.

As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 to have all utilities located prior to any construction.

Donna George
Right of Way and Permits
Public Service Company of Colorado / Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303.571.3284
Donna.L.George@xcelenergy.com

February 12, 2026

Douglas County Department of Community Development
100 Third Street
Castle Rock, CO 80104

Attn: Mike Pesicka

Re: * AMENDED RESPONSE
Pinery Village Filing No. 2 Minor Development, Case # SB2021-049

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the plan for **Pinery Village F2**. Please note that all easement labels referenced as "XCEL" must be changed to "PSCO". Although "branded" as Xcel Energy, the legal owner and operator of the utility facilities in Colorado is Public Service Company of Colorado. All utility facilities and related land rights, including fee property, easements, permits, etc., are owned by, operated by and held in the name of Public Service Company of Colorado, a Colorado Corporation.

Public Service Company has an existing high-pressure natural gas transmission pipeline including a regulator station and associated land rights as shown within this property and it has determined that an **engineering review** is necessary. Any activity including grading, proposed landscaping, erosion control or similar activities involving our existing right-of-way will require Public Service Company approval. Encroachments across PSCo's easements must be reviewed for safety standards, operational and maintenance clearances, liability issues, and acknowledged with a Public Service Company License Agreement to be executed with the property owner. PSCo is requesting that, prior to any final approval of the plat, it is the responsibility of the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement (upload all files in PDF format) at: cloud.marketing.xcelenergy.com/encroachment.

The property owner/developer/contractor must complete the application process for any new natural gas service, or modification to existing facilities via Building and Remodeling | Partner Resources | Xcel Energy. It is then the responsibility of the developer to contact the Xcel Designer assigned to the project for approval of design details.

If additional easements need to be acquired by separate PSCo document, a Right-of-Way Agent will need to be contacted.

Contact Colorado 811 for utility locates prior to construction.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com

Redland
WHERE GREAT PLACES BEGIN
720.283.6783 Office
1500 West Canal Court
Littleton, Colorado 80120
REDLAND.COM

February 25, 2022

Mr. Mike Pesicka
Douglas County
100 Third Street #220
Castle Rock, CO 80104

Re: Pinery Village Filing No. 2 – Minor Development Plat
2nd submittal – Final Plat and Construction Documents
Response to Comments

Dear Mr. Pesicka,

Please accept this letter on behalf of TF Pinery West, LP, the applicant for Pinery Village Filing No.2. We received your comments and referral comments on December 02, December 06, December 14 and December 16, 2021, regarding the application and we offer the following responses:

Douglas County – Development Review Engineer

Final Plat Comments

1. *On sheet 1, it appears the Dedication Statement and Board of County Commissioners Certification are missing information. There is right-of-way being dedicated, easements, etc.*
   Response: Both statements: Dedication and Board of County Commissioners have been added to the Cover Sheet.

2. *On sheet 2, please clarify why the extension of Pinery Center Blvd. is in a Tract.*
   Response: The future right-of-way for Pinery Center Boulevard is now shown at Right-of-way on the revised Plat.

3. *The plat should provide a Tract for the North Piney Creek channel and the following language should be included for both the channel and the detention facilities: "Drainage Easements are hereby granted to Douglas County across Tracts ____&_____ in Pinery Village Filing No. 2 (the "Subdivision") for the purpose of accessing, maintaining and repairing storm water management improvements, including but not limited to inlets, pipes, culverts, channels, ditches, hydraulic structures, riprap, detention basins, forebays, micropools and water quality facilities (collectively, the "Facilities"). In the event the Pinery Commercial Metropolitan District, its successors, and assigns ("System Owner") fails to satisfactorily maintain said facilities, a blanket access easement over the subdivision is also granted to Douglas County, but only for the purpose of accessing the facilities in the event that*

the drainage easements do not provide adequate access. The maintenance and repair of the facilities located in the subdivision, as shown on the construction plans accepted by Douglas County or on the plat for the subdivision, shall be the responsibility of the system owner in the event such maintenance and repair are not performed by the system owner to the satisfaction of Douglas County, then Douglas County shall have the right, but not the obligation to enter said subdivision after ten (10) prior written notice to the system owner. Unless there is an emergency, in which case Douglas County shall give notice as soon as practicable, to perform all necessary work, the cost of which shall be paid by the system owner upon billing. In the event the system owner fails to reimburse Douglas County within thirty (30) days after submission of the bill for the costs incurred, Douglas County shall have the right to enforce such obligation by appropriate legal action. It is the system owner's responsibility to construct, maintain, and repair the facilities in a manner consistent with all applicable plans approved or accepted by Douglas County".
Response: The note has been added. Tracts A, B, C and E have drainage improvements within the Tract.

4. *The drainage channels/swales along the north & east side of the development should also be included in drainage easements.*
Response: The drainage easements have been added.

5. *Additional right-of-way for North State Highway 83 may be required. This portion of the corridor requires a minimum right-of-way width of 175-ft.*
Response: A 2.5' width of additional ROW is being dedicated to the County in Tract F which will provide the required half ROW width of 87.5'.

6. *A Subdivision Improvements Agreement (SIA) will be required for this project. The applicant can get a copy of this document from our office or from the Douglas County website. When submitting this document, please provide us with 1-copy with original signatures. Please include a "letter of authorization" for whoever signs the agreement, and the cost estimate exhibits need to be signed by this individual as well. This document will need to be submitted and approved prior to the approval of the final plat.*
Response: Acknowledged.

GESC Comments

1. *On sheet G0.0, please revise the wording of the Douglas County Acceptance Block as follows, "…Douglas County for GESC improvements only". This is a typical comment for all sheets with our signature block.*
Response: Block revised with note

2. *On sheet G0.1, please remove the Douglas County Acceptance Block from this sheet.*
Response: Block has been removed

3. *On sheet G0.2, please remove this sheet from the GESC package. The notes are included with our standard notes/detail sheets.*
   Response: Sheet has been removed

4. *On sheet G1.1, rather than installing the silt fence across the future drainage channel, please look at another option of containing the sediment (check dam, etc.).*
   Response: Check dam has been added to plans.

5. *On sheets G1.1 – G1.10, please include the length for each segment of silt fence as well as each length of construction fence.*
   Response: Lengths added to each segment of silt fence and Construction Fence.

6. *On sheet G1.2, the plans show "JB" (jersey barrier) within the proposed diversion ditches. Our standard details don't include a detail for a jersey barrier. Please reference BMP's that are included with our standard notes/detail sheets.*
   Response: Jersey Barriers have been removed and erosion control material added to diversion ditches.

7. *On sheets G1.2, G1.4, & G1.6 please specify the pipe diameter and riprap size for the proposed temporary slope drains.*
   Response: Pipe Diameter and Riprap size added to plans.

8. *On sheet G1.5, the proposed silt fence is shown crossing slopes steeper than 5%. Please stager the silt fence to keep from exceeding the 5% slope.*
   Response: Silt Fences adjusted to account for crossing slopes exceeding 5%.

9. *On sheet G1.8, a "temporary construction access" permit may be required for the access onto North Pinery Parkway.*
   Response: Acknowledged.

10. *On sheets G2.1 – G2.10, please specify the type and quantity for each area of erosion control blanket.*
    Response: Added Erosion Control Specifications.

11. *On sheet G2.3, please include cross sections for the proposed drainage swales.*
    Response: Reference Drainage Report for Swale Design.

12. *On sheets G2.5 & G2.7, please show the grades along the easterly bank.*
    Response: Grades are displayed on sheets G2.5 & G2.7.

13. *On sheet G2.8, please clarify the surface treatment at the northwesterly corner of the disturbance.*
    Response: Added the surface treatment in affected area.

Construction Plan Comments

1. *On sheets C1.1 & C1.2, please remove the Douglas County Acceptance Block from these sheets.*
   Response: Approval block has been removed from these sheets.

2. *On sheet C1.2, it appears that the Douglas County Storm Sewer Notes are included in the Douglas County Standard Notes.*
   Response: Douglas County Storm Sewer notes have been removed from C1.2.

3. *On sheet C1.2, please remove the pavement thickness from the details. The thickness will be determined by the pavement design report.*
   Response: Pavement thickness has been removed from the details.

4. *On sheet C1.2, please include the centerline stationing that coordinates with the proposed street cross sections.*
   Response: Centerline stationing has been added to the street cross sections.

5. *On sheet C1.2, please relocate the proposed trench drain to the back of sidewalk.*
   Response: Proposed trench drain has been relocated to the back of the sidewalk.

6. *On sheets C4.0 – C4.9, please remove these sheets from this construction package since the grading plans are included in a separate GESC package.*
   Response: Sheets C4.0 – C4.9 have been removed from the CD package.

7. *The detention pond calculations for the north pond shows a "depth to invert of outlet pipe" difference of 1.5-ft. (Outlet pipe w/ flow restriction plate). The plans show an elevation difference of 2-ft. Please revise.*
   Response: Pond spreadsheet has been revised to properly show the top of the micropool to be 5931.50. Pond outfall has been lowered to lowest possible location that allows the pond outfall to drain 2.10' below the trickle channel.

8. *On sheet C4.10, please clarify the 20-ft. driveway along the north side of the detention pond.*
   Response: Maintenance access road has been labeled.

9. *On sheet C4.10, please provide cross sections for the forebay and include the structural design. Also, please include the structural information for the connections between the baffle blocks and the forebay.*
   Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

10. *On sheet C4.10, please provide and dimension control joints for the forebay.*
    Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

11. *On sheet C4.11, please include the structural design for the outlet structure in Section D-D.*
Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

12. *On sheet C4.11, please lower the front wall of the outlet structure to within 3 to 4-inches of the bottom of the micropool and the orifice plate needs to extend to the bottom of the micropool in Section D-D.*
Response: Pond outfall has been lowered to lowest possible location that allows the pond outfall to drain 2.10' below the trickle channel. Pond outfall and outflow pipe to be revised further with downstream channel redesign.

13. *On sheet C4.11, please include the dimensions for the trash rack and orifice plate.*
Response: Refer to Water Quality Orifice Plate, Section H-H, and Section I-I detail for dimensions. Section I-I details has been updated.

14. *Please review the following information from the detention pond calculations for the south pond:*
    - *Depth at top of Zone using Orifice Plate – shows 6.42-ft which doesn't appear to be correct*
    - *Clarify the number of orifices (we try and minimize the number to 3)*
    - *Overflow Weir Front Edge Height – shows 6.42-ft. which doesn't appear to be correct*
    - *Depth to Invert of Outlet Pipe – shows 0.5-ft. which doesn't appear to be correct*
    - *Spillway invert Stage – shows 7.9-ft. which doesn't appear to be correct*

    Response:
    - Depth at top of Zone using Orifice Plate has been updated to reflect UD-Detention. Overflow weir is located at stage 4.17, or 6.67 above front end of micropool. At the orifice plate and trash rack, the depth is 6.93'.
    - Number Orifices has been reduced to three
    - Overflow weir front edge height has been updated to reflect UD-Detention
    - Depth to invert of orifice plate is 2.10'. This has been updated in UD-Detention spreadsheet.
    - UD-Detention has been updated with the correct Top of Micropool elevation of 5931.50. The spillway invert is at stage 5.00 at elevation of 5936.50. The top of the berm is situated at 5939.10 and with a flow depth of 1.05', provides over 1' of freeboard.

15. *On sheet C4.12, please provide a cross section though Pinery Center Blvd. showing the road in relationship to the retaining wall.*
Response: Cross section is available on page C1.2 that displays the relationship of the roadway and the retaining wall.

16. *On sheet C4.12, please provide cross sections for the forebay and include the structural design. Also, please include the structural information for the connections between the baffle blocks and the forebay.*
Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

17. *On sheet C4.12, please provide and dimension control joints for the forebay.*
Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

18. *On sheet C4.13, please include the structural design for the outlet structure in Section D-D.*
Response: Structural design for pond infrastructure to follow after approval of CDs and Drainage Report.

19. *On sheet C4.13, please lower the front wall of the outlet structure to within 3 to 4-inches of the bottom of the micropool and the orifice plate needs to extend to the bottom of the micropool in Section D-D.*
Response: Due to grade constraints, the outlet pipe cannot be lowered below its current elevation. The outlet pipe is current running a 0.57% slope into the proposed drainage channel which cannot be lowered any further. Pond outfall and outflow pipe to be revised further with downstream channel redesign.

20. *On sheet C4.13, please include the dimensions for the trash rack and orifice plate.*
Response: Trash rack and orifice plate dimensions have been updated and are show in the Water Quality Orifice plate detail as well as Section views H-H and I-I.

21. *On sheets C4.15 – C4.18, please verify the proposed handrail/guardrail meets AASHTO Roadside Design Guide for clear zone and crash criteria.*
Response: Yes. Guardrail will be designed by structural engineer to meet the same standards as a CDOT Type 3 W-Beam Guardrail.

22. *On sheets C4.15 – C4.18, a License Agreement will be required for the landscaping and retaining walls within the public right-of-way. I will provide you with our standard License Agreement document.*
Response: Acknowledged. License agreement will be included with resubmittal.

23. *On sheet C4.19, please remove the Douglas County Acceptance Block from this sheet.*
Response: Douglas County Acceptance block has been removed from sheet.

24. *Engineering is not familiar with the hydraulic model that was used for this project and will request that the project engineer provide a comparison between this model and the UD-Sewer modeling supported by Urban Drainage & Flood Control District.*
Response: The hydraulic model Hydraflow is a part of the AutoCAD drainage package and is comparable to StormCAD. The UD-Sewer program was run for the storm systems on this development and is included with this submittal. See the revised drainage report narrative for discussion on the UD-Sewer versus Hydraflow comparison.

25. *On sheet C6.1, please include the flowline transition profiles per Figure 4-6 of our road design manual (typical comment for all sump conditions).*
Response: Flowline transition profiles have been added to the plans for all sump conditions.

26. *On sheet C6.2, please clarify why manholes A7 & A8 are labeled twice in the profile.*
Response: Duplicate labels have been removed from profile view.

27. *On sheet C6.2, engineering has concerns regarding the proposed cover over the box culvert in regard to the future pavement section. Please look at lowering this box to account for the future pavement section (should be consistent with the storm sewer depths 3.5 to 4-ft.).*
Response: The drainage channel has been revised in order to provide cover over the pipes

28. *On sheet C6.3, the proposed Pinery Center Blvd. roadway improvements need to extend to the northerly property line.*
Response: The developer is requesting that the completion of the road to the north property line at the time when the road is extended from the north will be the developer's obligation in the SIA.

29. *On sheets C6.3 & C6.4, the depth of the proposed storm sewer is a concern (depth needs to be a minimum of 3.5 – 4-ft. without a preliminary pavement design).*
Response: Storm sewer has been lowered wherever possible to provide the most cover over the pipes.

30. *On sheet C6.5, our drainage manual requires a 6-ft. manhole for a 48-in. pipe. Please revise.*
Response: Storm manhole has been revised appropriately.

31. *On sheet C6.7, please clarify that the existing 36-in. pipe will be removed near manhole F4-A. Also, please include the invert information at both manholes.*
Response: Plan has been refined to reflect 36-in pipe tie-in. Demolition plans have been updated as well. Invert information has been added to both manholes.

32. *On sheets C7.1 – C7.14, Douglas County is meeting with Mile High Flood District on Friday to discuss the proposed channel improvements. We will provide comments on the channel re-alignment within the next couple of weeks.*
Response: Acknowledged.

33. *On sheets C7.15 & C7.16, the proposed open channel swales need to be designed per Chapter 8 (Volume 1) of the Mile-High Flood Control Districts criteria manual. Please include their figures in the drainage report that applies to each channel section.*
Response: Channel swales A, B, and D have been redesigned based on MHFCD Volume 1, Chapter 8, Section 6. Slope of swale C has been adjusted to 5:1 side slope to follow MHFCD design guide lines but due to the channel slope has been designed using Hydraflow.

34. *On sheets C11.1 & C11.2, our traffic group will be reviewing the signage & striping plans and once I get their comments, I will forward them to you.*
Response: Acknowledged.

35. *Our traffic group has reviewed the traffic analysis and overall, there were no significant changes in the findings of the original traffic study. The purpose of the proposed updated traffic analysis was to incorporate two changes:*
    - *Removal of a roadway connection to Hwy 83 (known as Access A, a 3/4 movement access).*
    - *Changes to Land Use projection and trip generation at the north end of the project. 50,000 square feet of office use was added to the trip generation to replace the previously planned charter school. This results in a decrease of AM peak hour trips and a minor change to the PM peak hour trips.*

    Required Improvements to accommodate the project are:
    - *Access Permit for the project Access to US 83 – Right-in/Right-out – the currently issued State Hwy Access Permit for the RI/RO access to SH 83 north of North Pinery Parkway may need to be re-issued due to the increase in trips proposed to use this access (because of the elimination of Access A which causes volumes using the access to exceed the original (original: 345 vph, new: 515 vph) – Access Permit for the Access at North Pinery Parkway & State Highway 83*
    - *2030 – US83/North Pinery Parkway – 2nd northbound left-turn lane & Modify the east leg of the median to include a new exclusive westbound left turn lane.*
    - *North Pinery Parkway/Access C – Traffic signal – check warrants at build-out of project*
    - *2040 – North Pinery Parkway/Pinery Center Blvd. (J Morgan Blvd) – traffic signal*
    - *Auxiliary Lane Evaluation – Access B & Parker Road (with initial development) – Southbound right-turn deceleration lane (378-ft. + 222-ft. taper, 600-ft. total length) – Southbound right-turn acceleration lane (tie into the exiting southbound right-turn deceleration lane approaching North Pinery Parkway, approximately 370-ft. south of Access B)*

- *Parker Road and Pinery Parkway (short-term) – Second northbound left-turn lane (build parallel to the existing 600-ft. total lane length)*
- *Parker Road and Pinery Parkway (long-term) – New eastbound left-turn lane (110-ft. lane + 60-ft. taper)*
  Response: Refer to traffic comments section for responses.

Landscaping Comments

1. *On sheet L-01, please add the Douglas County Acceptance Block to this sheet.*
   Response: Douglas County Acceptance Block has been added to the sheet.

2. *On sheets L-05, please clarify the purpose of the driveway onto Pinery Center Blvd.*
   Response: Label has been added to plans identifying lift station access drive.

Douglas County – Development Review Engineer (Additional)

Drainage Report & Construction Plan Comments

1. *Please clarify/correlate the narrative on Page 2 of the drainage report regarding offsite basins with the information present in Table 3-4. Discussion of Subbasin 206 is not included in Section 3.7 or Table 3-4. Identify which culvert crossing is associated with the V3 subbasins. What is the relation of the OSP North Pinery Subbasin areas and the V3 Hydrologic Exhibit areas in Table 3-4?*
   Response: Please see the revised narrative for additional explanation. In summary, Subbasin 206 revised boundaries are not likely to result in an appreciable change to the OSP flowrates going to the 96-in diameter Parker Road culvert and therefore, the OSP rates with respect to Subbasin 206 are maintained and used in the channel analysis (DP 1062). The OSP North Pinery Subbasin Areas are updated with respect to drainage boundaries and drainage area using updated Douglas County GIS topographic contours. The flows from the revised drainage areas are scaled from the OSP flow rates (Table 3-4) for use in evaluation of the three tributary culverts and flows entering the Parker Road median structure. Please see the narrative for additional detail.

2. *The drainage swale designs, and selection of treatment should be based on the Urban Storm Drainage Criteria Manual, Volume 1, Chapter 8, Open Channel, Section 6.0 – Swales, rather than the Hydraflow channel analysis or pipe simulations.*
   Response: Channel swales A, B, and D have been redesigned based on MHFCD Volume 1, Chapter 8, Section 6. Slope of swale C has been adjusted to 5:1 side slope to follow MHFCD design guide lines but due to the channel slope has been designed using Hydraflow.

3. *Please clarify how this project will address the 59-cfs overflow (over State Highway 83) at the existing North Pinery Creek crossing.*
   Response: The 59 cfs overflow will be captured in curb and gutter along the west side of Parker Road and a series of Type R inlets. The flows will be conveyed via storm sewers to the relocated North Pinery Creek channel pipes.

4. *Please remove any references to using internal energy dissipation (grouted boulders) within the proposed reinforced concrete box culverts.*
   Response: Comments are removed and narrative has been revised.

5. *Regarding the use of Hydraflow Storm Sewer Extension (Hydraflow) for hydraulic grade line calculations, consult Modeling Hydraulic and Energy Gradients in Storm Sewers: A Comparison of Computational Methods, prepared for UDFCD and available on their website. It appears that Hydraflow uses the Standard Method for determination of junction loss coefficients, the method that was recommended when using StormCAD. Loss coefficients provided in Table 2 must be manually entered in Hydraflow for the standard situations with a bend in the main line or laterals on a straight main line. For other junction configurations, Equation 13 must be solved for eth Standard Method head loss coefficient (K) to input into Hydraflow.*
   Response: Please see response to above comment 24 (Construction Plan Comments).

6. *Please include all design calculations, for the grouted sloping boulder drop structures, as required, and outlined in the Urban Storm Drainage Criteria Manual, Volume 2, Chapter 9 – Hydraulic Structures, Section 2.0 – Grade Control Structures.*
   Response: The Grouted Sloping Boulder Drop structures have been removed.

7. *On sheets C4.2, please provide us with a copy of the 30-ft. access easement from Parker Water & Sanitation District and verify that this property has the right to use this easement out to Parker Road.*
   Response: The developer had received verbal approval from Parker Water and Sanitation District contingent upon approval of a prospective buyer for the Parker Water and Sanitation District property. The prospective buyer is no longer under contract to purchase the land; therefore, the developer has reinitiated discussion with Parker Water and Sanitation District to get the easement granted.

8. *On sheets C6.2 & C6.6, engineering has concerns regarding the design of the proposed box culvert under Pinery Center Blvd. Our recommendation is to extend the box on both sides of the road to avoid the vertical drop-off and construct the standard headwall/wingwalls. Also, it is unclear on how the reinforced box culvert will integrate or interface with the proposed retaining wall design. Please provide additional details or clarification.*
   Response: The box culvert has been replaced by dual 72-inch pipes and a headwall.

9. *On sheets C7.1 – C7.5, please show the water surface in the profiles.*
   Response: Water surface profiles for the 5-year and 100-year storm events are provided.

10. *On sheets C7.1 – C7.5, please specify the surface treatment for the proposed maintenance access road.*
    Response: Please reference maintenance access road detail on sheet C4.1

11. *On sheets C7.1 & C7.2, the channel design for North Pinery Creek downstream of Pinery Center Blvd. to Cherry Creek does not appear to incorporate High Function Low Maintenance stream design principles. Typically, there is some determination of the extent of the tributary (North Pinery Creek) floodplain, independent of the Cherry Creek floodplain.*
Response: Please see the revised narrative and supplemental documentation for additional information. In summary, there is no channel for the intermittent North Pinery Creek flows within the Quaternary Terrace floodplain of Cherry Creek. A proposed channel for this floodplain terrace incorporates High Function Low Maintenance principles through inclusion of riffle-pool meander complexes for bankfull flows.

12. *On sheets C7.1 & C7.2, please extend the maintenance access along this westerly reach to Cherry Creek.*
Response: Maintenance Road has been extended along the new downstream side of the drainage channel.

13. *On sheets C7.3 & C7.5, the County won't accept the concept of a modified grouted sloping boulder (GSB) drop structure within the RCBC's.*
Response: Acknowledge and redesigned. Please see the new design.

14. *On sheets C7.7 – C7.13, detailed profiles must be developed for all GSB drop structures to show cutoff walls, still basins, grout lines, interface with upstream and downstream channels, slopes, elevations, flow spreads, crest lengths, etc.*
Response: Plans have been revised to remove drop structures and open channel.

15. *On sheet C7.13, please show the pipe connection to the RCBC. Also, please provide details for this junction.*
Response: RCBC has been detailed out. Structural design to follow upon approval of plans.

16. *On sheet C7.14, additional details need to be provided for the channel cross-sections, including elevations, treatment types and limits, toe depths, bedding, riprap sizes, etc.*
Response: Plans have been revised to remove drop structures and open channel.

17. *On sheets C7.15 & C7.16, additional details must be provided for treatment of the swales.*
Response: Additional details have been added to the swales.

18. *Grouted boulder placement details and associated material and grout placement notes, subgrade preparation specifications and weep drain details must be provided. Required mandatory County inspection intervals or stages must be clearly defined by the contractor.*
Response: The Grouted Sloping Boulder Drop structures have been removed.

19. *On sheets C12.5 & C12.6, please use the Douglas County headwall and wingwall details.*
    Response: Douglas County headwall and wingwall details have been added to the plans.

20. *The signage and striping comments should be available in the next few days and once I receive them, I will forward them to you.*
    Response: Acknowledged.

Douglas County – Planning

General Comments

1. *The submitted will-serve letter from the Pinery Water and Wastewater District is from December of 2018. Please provide an updated will serve letter and water supply report from the District. Response noted, an updated will serve letter will be required prior to scheduling for public hearings.*
   Response: Acknowledged. An updated Will Serve letter has been requested and will be provided when received.

2. *A Class II Cultural Resource Survey, as recommended by Douglas County Historic Preservation, needs to be included with the next resubmittal.*
   Response: Acknowledged. Cultural Resource survey will be included with next resubmittal.

Minor Development Exhibit

1. *Thank you for providing the PD Vicinity Map. Please reduce the map and include it on the cover page of the minor development plat exhibit.*
   Response: The PD Vicinity Map has been added to the Cover Sheet.

2. *Label adjacent properties as "not a part of this replat."*
   Response: The labels have been added.

3. *See redlines for additional corrections.*
   Response: Acknowledged.

4. *Please refer to comments from Xcel Energy as it may impact landscaping along Pinery Center Blvd due to the existence of a 50-foot easement.*
   Response: Acknowledged. We have already had Xcel conduct a preliminary review of the Plans and will be applying for a License Agreement for work within their easement.

5. *I apologize for any confusion on the right-of-way dedication for Pinery Center Blvd, but in the Land Use Table, Tracts D and F should be labeled as ROW, and under the Use column listed as Pinery Center Blvd ROW, see redlines.*
   Response: The table has been updated as requested.

6. *Provide distances for all property and tract lines. See redlines*
   Response: The labels have been added

7. *As stated previously, the following conditions of approval will be included with the PC and BCC staff reports:*
   a. *Prior to approval of the any site improvement plan with Lots 1, 2, or 4, buffers with Tract E shall be designed and secured through the Site Improvement Plan Improvements Agreement (SIPIA) or through an accompanying Subdivision Improvement Agreement (SIA).*
      Response: Acknowledged.

8. *The response letter notes that the North Pinery Watercourse is marked on the plat, but it is not, or I was unable to locate it.*
   Response: North Pinery Creek has been labeled on the Plat.

Landscape Plans

1. *Provide several cross-sections showing the landscape buffer along Parker Road including the slope to the west.*
   Response: Cross sections have been provided.

2. *It is noted on the plans that certain areas will be landscaped at the time of site plan submittal, and there is a note stating the steep slopes may not be landscaped, but there are long stretches of the landscape buffer that are left blank, please explain.*
   Response: All but a small portion of Filing No. 2 Parker Road frontage is Tract E (Open Space). The intent is to keep this Tract in a condition as similar to its natural state as possible. The majority of the landscape buffer along Parker Road is therefore handled only through native seed reestablishment following any grading activity. Some additional plantings are provided occasionally to enhance this edge and provide some additional native plant material. The portion of Filing No. 2 fronting Parker Road that will have future development (Lot 3) will provide the associated landscape buffer at the time of its site plan.

3. *Is the plan to leave most of Tract E as native seed and not landscaped or will more landscaping be provided at time of future site plans?*
   Response: The intent is to maintain Tract E as natural open space, utilizing native seed and existing vegetation for its coverage. There is no additional landscaping planned for the future aside from reseeding areas following grading activity and construction of the maintenance path and trail along the drainage channel.

4. *Please label on the landscape plans the twenty percent of the Highway 83 landscape buffer that is required to be 40-feet wide.*
   Response: The entirety of Tract E is remaining as open space with native seed coverage and therefore exceeds the twenty percent 40-feet wide requirement.

Lumen Technologies

General Comments:

1. *Our engineer has reviewed this plat and their comments are: "I have no objections to this plat"*
   Response: Acknowledged.

State of Colorado – Traffic & Safety

Drainage Comments:

1. *The site primarily drains away from CDOT ROW and flows are conveyed, ultimately, to Cherry Creek via the proposed realigned North Pinery Creek. My primary concern is in regards to the calculations and documentation included in Appendix 7 which provides information on the offsite flows that impact the site from the East side of Parker Road. The proposed design shows a storm sewer that will intersect the three existing culverts that convey flows under Parker Road, the system is shown on Profiles STORM-8 and STORM-9 on page C6.7. There is documentation included in the Appendix that shows capacity calculations of the pipes in the system, however, as this system will have immediate impacts to the infrastructure within Parker Road I would like to see the HGL's for the Minor and Major storms included on these profiles to verify that there is no surcharging within CDOT ROW.*
   Response: HGL Calculations have been added to the storm profiles. The calculations show no surcharging within the CDOT ROW.

Traffic Comments:

1. *After review of the TIS, the proposed mitigation at the intersections on Parker Rd at Stroh Rd and Pinery West is maximized to the most reasonable extent possible and therefore is an acceptable strategy. The distance between Parker Rd and Access "C" needs to be, at a minimum, 550 ft from PC (Parker Rd) to PC (Access "C") This is not stated in the TIS. If this distance is not met, then the signal cannot be installed and full movement designation will likely require re-designation to a more restricted condition. It is also unclear why Access "C" is signalized when the primary access appears to be Pinery Center Blvd. The Wellspring Dr RIRO will require both accel and decel auxiliary lanes meeting the requirements stated in the Access Code*
   Response: (Per our recent call with CDOT staff, we understand that this comment was meant to refer to North Pinery Parkway not Stroh Road.) A variance request to Section 13.2.4 of the Douglas County Roadway Design and Construction Standards was previously prepared and approved (see attached letter dated April 21, 2021) for this existing full-movement access and future signal. Note that this access, with a future signal proposed, was previously approved and the intersection has been constructed based on the 2008 Traffic Impact Stud, which the current TIS is consistent with. The spacing from Parker Road is approximately 450' from PC to PC and 640' centerline to centerline. This exceeds or is similar to spacing from existing signals adjacent to similar locations along the SH 83 corridor (examples are Cottonwood Drive/Brompton Way, E. Broncos Parkway, E. Orchard Parkway, S. Chambers Road, E. Quincy Ave, S. Peoria St.

See attached variance memo for additional information.

2. *Previous comments still apply, Access C shall not be signalized if the 550 ft separation from Parker Rd is not met. There are no plans showing the necessary modifications of Stroh Rd and Parker Rd to review. It is also unclear how the Access C intersection geometric design influences the Parker Rd/Stroh Rd intersection design. The required addition of a NB left lane on Parker Rd at Stroh Rd needs to occur and be included in the roadway plans required for permit approval. Traffic signal modification may also be necessary*
Response: See response #1 re: Access C spacing. Per our recent call with CDOT staff, we understand that this comment was meant to refer to Pinery Parkway not Stroh Road. Per page 39 of the TIS, improvements to the Parker Road & Pinery Parkway intersections are planned to occur with later development stages. Improvements to Parker Road and North Pinery Parkway intersection were previously approved with Filing 1 of this project. The timing of those improvements is outlined with the Pinery Village Filing 1 approvals.

Right of Way Comments:

1. *No ROW comments except to reiterate the need for sufficient ROW to be dedicated to the County.*
Response: Acknowledged. We are dedicating ROW with the Plat with Tract F to provide the required ½ ROW of 87.5'

Resident Engineer Comments:

1. *If an intersection or sidewalks will be modified/constructed on Parker Rd Roadway plans will need to be submitted for review.*
Response: Acknowledged. A set of Construction Plans showing the modification to the previously approved improvements with Pinery Village Filing No. 1 are included with this submittal.

Permits Comments:

1. *There was no referral responses to CDOT previous remarks. We had mentioned in an earlier meeting the need to adhere to the Access Control Plan (ACP) for SH 83. We assume that the Town of Parker has reviewed this proposed development plan and has made comments in regards to the ACP and local plans as there are off-site connections to be made to the north. If there are any deviations or changes to the ACP, the Town of Parker must approve of those revisions as outlined in the IGA.*
Response: Responses to referral comments were prepared following a meeting with CDOT staff to review these comments in April 2021, but appear not to have been received by CDOT. No changes to the ACP to increase or relocate any access is proposed, with only the removal of the previously proposed "Access A" (northernmost 3/4-access along SH 83). Per our recent meeting with CDOT staff, we understand that this ¾ access will thus be removed from the future ACP update.

2. *It will be important for the alternative N-S roadways, their functional design/cross sections, and timing to be in alignment with those planned by the Town of Parker. These provide essential access connections without the need to use the highway for short trips. Town of Parker has recently updated their Transportation vision/plan for SH 83.*
   Response: As discussed at our meeting with CDOT staff in December 2021, the proposed Pinery Center Blvd. (collector) roadway connection between Stroh Road and Pinery Parkway will provide alternative north-south access parallel to SH 83 and accommodates future plans for the Town of Parker to the north.

3. *Intersection improvements (including new auxiliary lanes) and those with > 20% traffic will require new Access permits. Any work in CDOT RoW0 including landscaping, signal upgrades and utilities is by permit.*
   Response: Acknowledged. This will apply to renewal of the "Access B" permit (expired 8/29/21) and Pinery Parkway at SH 83.

4. *The 2004 Corridor Optimization Plan calls for a 175-ft RoW profile for SH 83 in this area, half of which would come from the centerline (87.5-ft). The plat does not show this to exist along the length of the property. Additional RoW should be dedicated to the county, to in-turn deed to CDOT at the time it is needed. Please call out the RoW for SH 83 along the length of this property.*
   Response: We are dedicating ROW with the Plat to provide the required ½ ROW of 87.5'

5. *We have no issues with the removal of what was Collector Road "C". However, on the north end of this property, cross- property connections will be necessary. Extending the N-S collector to Stroh is acceptable, but opportunity is lost in not providing a connection into Lewis Christensen Rd Neither the maps provided or the TIS show enough context to the SH 83 corridor and existing local roadway rights-of-way on the north end of this project (and not consistent with Douglas County Assessor property lines/info)*
   Response: As discussed in the December 2021 meeting w/ CDOT, Pinery Center Blvd is extended to the north boundary of the property with the expectation development to the north will tie into this connection, either via extension of J Morgan Blvd or Lewis Christensen Rd.

6. *With the removal of the ¾ turn movement previously permitted, a double NB to WB left turn should go into Pinery Parkway intersection – by 2030. That un-built ¾ Access permit shall be officially 'retired'.*
   Response: This is consistent with the recommendations of Pinery Village Filing No. 1 on page 39 of the TIS which states that the 2nd NB left-turn lane should be constructed by project build out, assumed Year 2030. The timing of the need for this improvement is both dependent on the built out of the project and the extension of North Pinery Parkway to the west, which would attract background (non-project) traffic to this movement. The plans for the second left-bound turn lane were included in the previously approved Pinery Village Filing No. 1 Construction

Plans.

7. *I do not believe less traffic will occur on the SB to EB Left urn movement between 2030-40. The study's figure 10 & 11 is peculiar showing a drop from of peak hour left turns from 405 to 330.*
   Response: When North Pinery Parkway is extended to the west to Crowfoot Valley Road, as well as when the project is developed and attracts retail/commercial trips that are currently to/from the north towards the Town of Parker, some traffic from the Pinery (east of the project) is anticipated to redistribute from Parker Road to this connection, resulting in decreases to some movements (including the SB left-turn).

8. *County needs to ensure sufficient RoW is dedicated along SH 83 per the Corridor Optimization Plan to ensure auxiliary lanes, and room for multi-use pathways and utilities can occupy the RoW.*
   Response: Acknowledged.

9. *A State Highway access permit, 119094 was issued for the proposed Right-in, Right-out access and is still valid. It is currently extended to 8/29/2021. This permit may need to be either revised or repermitted to reflect the change in traffic due to the redistribution with the elimination of the 3/4 access to this development. Douglas county is the issuing authority for State Highway Access permits within their jurisdiction. Contact at the County for access permits is Chris Martin.*
   Response: Acknowledged. The Access B permit application will include volumes from the July 31, 2020 TIS, with was updated to reflect the removal of the ¾-access on SH 83 ("Access A").

10. *The proposed improvements at Pinery Parkway and Parker Road will require new State Highway Access Permits. Improvements include a second NB left turn lane. Since Pinery Pkwy is a County Roadway, Douglas County must be the Permittee for the permit. If improvements are proposed on both the east and west side, then separate permit applications will be needed for each side.*
    Response: Acknowledged.

11. *We will want to review the drainage report for this development to insure there will be no negative impact to the State Highway.*
    Response: Acknowledged. The updated Drainage Report is included in this submittal.

12. *All signing for this development that is visible to or advertises to State Highway 83 must be on-premise and must comply with any applicable rules governing outdoor advertising in Colorado per State of Colorado Rules 2 CCR 601-3*
    Response: Acknowledged.

Colorado Department of Transportation CDOT – Region # 1

1. *Following is a summary of comments received from CDOT. Full details please reference the letter dated December 2, 2021.*
   Response: Acknowledged.

2. *CDOT had comments related to the offsite flows and storm sewer design in the drainage report, traffic comments related to proposed traffic mitigation on Parker Road, proposed points of access on Parker Road, and accel and decel lanes at Wellspring Drive.*
   Response: Acknowledged

3. *The applicant will need to adhere to the Access Control Plan for State Highway 83. CDOT does not object to removal of what was Collector Road "C". Extending the North-South collector to Stroh Rd is acceptable, but opportunity is lost in not providing a connection to Lewis Christensen Rd.*
   Response: Collector Road Access C is not feasible due to significant grade difference between Parker Road and Pinery Center Blvd.

4. *Applicant needs to review Figures 10 and 11 in the traffic study that project less traffic will occur on the SB to EB left turn movement between 2030-40.*
   Response: When Pinery Parkway is extended to the west to Crowfoot Valley Road, as well as when the project is developed and attracts retail/commercial trips that are currently to/from the north towards the Town of Parker, some traffic from the Pinery (east of the project) is anticipated to redistribute from Parker Road to this connection, resulting in decreases to some movements (including the SB left-turn).

5. *Douglas County needs to ensure sufficient ROW is dedicated along State Highway 83 per the Corridor Optimization Plan to ensure auxiliary lanes, and room for multi-use pathways and utilities can occupy the ROW.*
   Response: Acknowledged. We are dedicating ROW with the Plat to provide the required ½ ROW of 87.5'

Colorado Parks and Wildlife (Northeast DC)

General Comments:

1. *Upon review of the proposed referral request, Colorado Parks and Wildlife (CPW) has no objections to the application moving forward as planned for approval. Please refer to the previous comment letter from CPW dated February 11, 2020 to Mr. Dan Avery for additional wildlife concerns and development recommendations.*
   Response: Acknowledged.

South Metro Fire Rescue

General Comments:

1. *South Metro Fire Rescue (SMFR) has reviewed the provided documents and has no objections to the proposed minor development. Applicants and Contractors are encouraged to contact SMFR regarding the applicable permit requirements for the proposed project.*
   Response: Acknowledged.

Tri-County Health Department

Water and Sewer Service Comments

1. *A will-serve letter has been provided by Pinery Water and Wastewater District. Based on this letter, TCHD is providing a favorable recommendation regarding the proposed method of sewage disposal.*
   Response: Acknowledged.
2. *Because chronic diseases related to physical inactivity and obesity now rank among the country's greatest public health risks, TCHD encourages community designs that make it easy for people to include regular physical activity, such as walking and bicycling, in their daily routines. Because research shows that the way we design our communities can encourage regular physical activity, TCHD strongly supports community plans that incorporate pedestrian and bicycle amenities that support the use of a broader pedestrian and bicycle network. Increasing multi-modal transportation has additional co-benefits including improved air quality, which can reduce contributions to climate change and exposure to pollutants associated with a number of health problems including asthma, lung cancer, and heart disease.*

   In order to promote walking and bicycling through this development, TCHD encourages the applicant to consider the inclusion of the following as they design the community.

   - *A system of sidewalks, bike paths and open space trail networks that are well-designed and well-lit, safe, and attractive so as to promote bicycle and pedestrian use.*
   - *Bicycle and pedestrian networks that provide direct connections between destinations in and adjacent to the community.*
   - *Where public transportation systems exist, direct pedestrian access should be provided to increase transit use and reduce unnecessary vehicle trips, and related vehicle emissions. The pedestrian/bicycle networks should be integrated with the existing and future transit plans for the area.*
   - *Streets that are designed to be pedestrian/bike friendly and to reduce vehicle and pedestrian/bicycle fatalities.*
   - *Bicycle facilities and racks are provided in convenient locations.*
     Response: Acknowledged. A bike and pedestrian trail system is being proposed

throughout the development.

Town of Castle Rock

1. *Thank you for the opportunity to review and respond to the Pinery Village Filing 2, Minor Development. The application was reviewed by various Town Departments with no concerns from the Town reviewers. Please keep us informed of any changes to the proposal. Thank you.*
   Response: Acknowledged.

Town of Parker – Planning

General Comments:

1. *The Town has platted the lot just north of what is proposed as Tract A, multi-family. Please be sensitive with uses, landscape buffering, and design standards for proposed lots 1 and 2 (PA 42 and PA 43).*
   Response: Acknowledged.

2. *Please incorporate pedestrian-friendly infrastructure between RTD and the Town along Pinery Center Blvd.*
   Response: A bike and pedestrian trail system is being proposed throughout the development.

3. *Please reference the attached documents which redline these comments.*
   Response: Acknowledged.

Previous Comments

1. *The Pinery Village Minor Development is located within the Town's 2035 Master Plan Planning Area and Three-Mile Plan map, and qualifies for annexation into the Town of Parker. The Town supports and welcomes discussions for annexation and rezoning of this property into the Town of Parker.*
   Response: Acknowledged.

2. *The Concept Site Plan from the project Traffic Impact Study, dated December 13, 2018, shows a site plan with commercial/retail development located adjacent to Parker Road. The Town encourages primary building frontages to front or side with Parker Road, to create a consistent setback, street wall, and streetscape. Buildings that side with Parker Road are encourage to have enhanced architectural design. To minimize the view of parking lots from Parker Road, parking lots are encouraged to be located away from view of Parker Road, on the sides or rear of buildings.*
   Response: Acknowledged.

3. *Each proposed retail site is encouraged to provide pedestrian/bicycle connectivity from the primary façade of each building, as well as along Parker Road. Enhanced landscaping along Parker Road is also encouraged.*
   Response: Acknowledged.

Douglas County – History Repository

General Comments

1. *Upon researching the cultural resources on the property and the surrounding area the Douglas County Curator recommends a Class II cultural resource survey of the project area.*
   Response: Acknowledged. Cultural Resource survey will be submitted when finalized.

2. *There is potential for buried archaeological resources related to prehistoric activities in the project area and potential for the discovery of subsurface cultural deposits during ground moving activities. Should buried artifacts and features be discovered, we recommend completion of the appropriate Colorado Office of Archaeology and Historic Preservation (OAHP) Data Management and Historic and/or Prehistoric Component forms, following OAHP guidelines, with accompanying sketch maps and photographs. Completed forms are submitted to OAHP to ensure that Douglas County's historic or prehistoric data is included in the Colorado OAHP state-wide database of cultural resources.*
   Response: Acknowledged. Cultural Resource survey will be submitted when finalized.

Referral Agency Response Report

Addressing Analyst Comments

1. *No Comment*
   Response: Acknowledged.

Assessor Comments

1. *Lot 2 & Tract E Pinery Village Filing 1 are being replatted by this subdivision. They should be listed in the legal description and plat sub-title.*
   Response: Lot 2 & Tract E Pinery Village Filing 1 have been added to the Legal Description and shown as being vacated via the Filing No. 2 Plat.

2. *Pinery Commercial Metro District 1 & 2 are the current owners of existing Tract E Pinery Village Filing 1 per plat dedication. They need to sign the plat as an owner.*
   Response: Tract E of Pinery Village Filing No. 1 will be deeded back to TF Pinery West LP prior to the recording of this Plat so they will be the only Owner.

   a. *As platted, Lot 4 will be setup with mixed ownership and taxable status, which is very difficult for our office to track. Please clear title on Lot 4 via deed to eliminate the mixed ownership and taxable status.*
      Response: See response to Item #2 above. Pinery Commercial Metro District 1 & 2 will no longer have partial ownership of Lot 3 of Pinery Village Filing No. 2.

3. *There is a discrepancy regarding Tract C. The acceptance certificate, Land Use Table and Plat note 8 say dedication to the Pinery Commercial Metro 2, whereas Additional Tract Note 3 says dedication to Douglas County.*
   Response: Tract C will be dedicated to Pinery Commercial Metro District No. 2 for Open Space and Drainage purposes. The table has been updated accordingly.

4. *The vicinity map does not match the area being platted.*
   Response: The Vicinity Map has been corrected.

5. *There is a missing dimension on the subdivision boundary on Sheet 2, the southeastern-most call 316.60 ft call is not dimensioned.*
   Response: The missing callout has been added.

AT&T Long Distance - ROW Comments

1. *This is in response to your eReferral for a utility map showing the buried AT&T Long Line Fiber Optics near Pinery Center Blvd Parker, Colorado. I attached an Earth map showing the project area in read and the buried AT&T Long Line Fiber Optics in yellow. As shown, there is a possibility of conflict along State HWY 83. Any other information you could provide about the projects would be appreciated in determining if a conflict will exist. Please pass on our contact information as well.*
   Response: Acknowledged. Our understanding is the AT&T Long Line Fiber Optics is located on the east side of Parker Road. This project is on the west side of Parker Road.

Black Hills Comments

1. *No Comment*
   Response: Acknowledged.

Building Services Comments

1. *No Comment*
   Response: Acknowledged.

CenturyLink Comments

1. *Our engineer has reviewed this plat and their comments are: "I have no objections to this plat". If you require signatures, you can contact the engineer CC'd on this email and if you have any further questions, please don't hesitate to reach out.*
   Response: Acknowledged.

Cherry Creek Basin Water Quality Authority

1. *The Authority's Control Regulation 72 requires construction and post-construction Best Management Practices (BMPs).*
   Response: Acknowledged. BMPs are shown on GESC plan and discussed in the GESC Report.

2. *No exceptions taken with the proposed post construction BMPs using full spectrum detention. However please note this development appears to also be within the stream preservation area. Development in the stream preservation area requires additional post construction BMPs. Please see the control regulation document Chapter VI for additional guidance. Please provide additional information or justification in future submittals on how this is being met.*
Response: Acknowledged. BMPs are shown on GESC plan and discussed in the GESC Report.

3. *Provide construction BMP plan when available for our review and comment.*
Response: Acknowledged. BMPs are shown on GESC plan and discussed in the GESC Report.

4. *The Authority reserves the right to review and comment on future referrals for this project.*
Response: Acknowledged.

Colorado Division of Water Resources

1. *No Comment*
Response: Acknowledged.

Colorado Geological Survey

1. *No geologic hazards or unusual geotechnical constraints are known or suspected to be present that would preclude the proposed non-residential use and density. CGS previously reviewed a geotechnical report relevant to the subject site: Preliminary Geotechnical Investigation, Pinery West Preliminary Plan #3 (CTL|Thompson Project No. DN49,579-115-R1, September 10, 2018). CTL makes appropriate preliminary recommendations for mitigating the site's variable subsurface conditions, which include low density/low strength and expansive soils, and shallow, expansive claystone bedrock.*
Response: Acknowledged.

2. *Provided CTL's recommendations are adhered to, and additional investigation and analysis are conducted once building locations and loads are known, for use in design of subgrade preparation, foundations, floor systems, pavements, etc., Colorado Geological Survey has no objection to approval of SB2021-049. Jill Carlson, Colorado Geological Survey, 303-384-2643 or carlson@mines.edu*
Response: Acknowledged.

Comcast

1. *No Response Received*
Response: Acknowledged.

Core Electric Cooperative

1. *CORE will require additional utility easements as shown on the attached markup.*
   Response: A 15' Utility Easement has been added along Pinery Center Boulevard except for areas where a retaining wall is proposed. Perimeter lot easements will be deferred until the lots are subdivision for specific development.

Douglas County Parks and Trails

1. *No Response Received*
   Response: Acknowledged.

Douglas County School District RE 1

1. *No Response Received*
   Response: Acknowledged.

Engineering Services

1. *Engineering Services had comments related to plat notes, certificates, drainage easements, tracts for ROW, a requirement for a Subdivision Improvement Agreement, GESC comments, Construction Plan comments and Landscaping comments.*
   Response: Acknowledged.

High Prairie Farms HOA

1. *No Response Received*
   Response: Acknowledged.

Office of Emergency Management

1. *No Response Received*
   Response: Acknowledged.

Pinery Commercial Metro Districts #1 & 2

1. *No Response Received*
   Response: Acknowledged.

Pinery Water and Wastewater District

1. *Pinery Water District takes no exception to establish 4 commercial lots. The District is working with the developer to identify solutions for possible wastewater treatment and the associated collection system as gravity flow for the entirety of the project is not possible*.
   Response: Acknowledged.

RTD – Planning & Development Dept

1. *No Response Received*
   Response: Acknowledged.

Sheriff's Office

1. *No Comment*
   Response: Acknowledged.

Sheriff's Office E911

1. *No Response Received*
   Response: Acknowledged.

The Pinery HOA

1. *No Response Received*
   Response: Acknowledged.

Town of Parker Public Works

1. *No Response Received*
   Response: Acknowledged.

Urban Drainage & Flood Control – District Floodplain

1. *No Response Received*
   Response: Acknowledged.

Wildfire Mitigation

1. *No Comment*
   Response: Acknowledged.

Xcel Energy-Right of Way & Permits

1. *Public Service Company of Colorado's (PSCo) Right of Way and Permits Referral Desk has reviewed the documentation for Pinery Village F2 and requests that 10-foot wide dry utility easements are dedicated around the perimeter of each lot, and 15-feet abutting all major rights-of-way.*
   Response: A 15' Utility Easement has been added along Pinery Center Boulevard except for areas where a retaining wall is proposed. Perimeter lot easements will be deferred until the lots are subdivision for specific development.

2. *PSCo requests that the following language or plat note is added to the preliminary and final plats for the subdivision: Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility*

easements and the utility providers, as grantees, may remove any Interfering Objects at not cost to such grantees, including, without limitation, vegetation. PSCo and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form.
Response: Notes has been added to Plat, see general note no. 10

3. *PSCo has an existing high-pressure natural gas transmission pipeline including a regulator station and associated land rights as shown within this property and it has been determined that an engineering review is necessary. Any activity including grading, proposed landscaping, erosion control or similar activities involving our existing right-of-way will require PSCo approval. Encroachments across PSCo's easement must be reviewed for safety standards, operational and maintenance clearances, liability issues, and acknowledged with a PSCo License Agreement to be executed with the property owner. PSCo is requesting that, prior to any final approval of the plat, it is the responsibility of the property owner/developer/contractor to contact PSCo's Encroachment Team for development plan review and execution of a License Agreement (upload all files in PDF format) at : https://www.xcelenergy.com/encroachment_application (click Colorado if necesssary). An engineer will then be in contact to request specific plan sheets.*
Response: An encroachment request was made in September 2020. An updated request will be made once the utility design is complete.

4. *The property owner/developer/contractor must complete the application process for any new gas service or modification to existing facilities via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.*
Response: Acknowledged.

5. *If additional easements need to be acquired by separate PSCo document, a Right-of-Way Agent will need to be contacted. All easement labels referenced as "XCEL" must be changed to "PSCO". Although "branded" as Xcel Energy, the legal owner and operator of the utility facilities in Colorado is Public Service Company of Colorado. All utility facilities and related land rights, including fee property, easements, permits, etc., are owned by, operated by, and held in the name of PSCo, a Colorado Corporation.*
Response: Acknowledged.

6. *As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 to have all utilities located prior to any construction.*
Response: Acknowledged.

Redland
WHERE GREAT PLACES BEGIN

If you have any questions regarding the above response to comments, please contact me at 720-283-6783 ext. 136 or at mcevaal@redland.com.

Sincerely,



Mark D. Cevaal, P.E.
Sr. Project Manager

Cc: Mr. Chuck Smith – Douglas County
Mr. Craig Campbell – Starwood Land Advisors

PINERY
WATER AND WASTEWATER DISTRICT
Quality Water for Life

January 5, 2026
Mr. Craig Campbell
Starwood Land

RE: Pinery Village Filing 2

Dear Mr. Campbell,

Pursuant to Section 1805a.01.3 of the Douglas County Zoning Resolution, the Pinery Water & Wastewater District (the "District") acknowledges its willingness and ability to serve the proposed subdivision, Pinery Village Filing 2. The land where the proposed subdivision is located was included within the District boundaries when the District was formed on July 12, 1965.

Water Demand

Based on the proposed development plan, this project will require an average day demand of 84,749 gpd for domestic service (95 AF/YR).

Water Supply

Please find enclosed a copy of our District's Present and Future Water Sources report that the District has provided the State Division of Water Resources as required by Section 30-28-136(1)(h)(ii), C.R.S.

Water Quality

The District is in compliance with the Colorado Department of Public Health and Environment testing and quality requirements.

Sincerely,
Pinery Water & Wastewater District

Heather Beasley
District Manager

Present and Future Water Sources
Denver Southeast Suburban Water & Sanitation District

Prepared by HRS Water Consultants, Inc. in consultation with Denver Southeast Suburban Water & Sanitation District
Previous Versions: May 2014 and February 2018
Updated by DSSWSD staff in September 2025

A. General

The Denver Southeast Suburban Water and Sanitation District, dba Pinery Water and Wastewater District (DSSWSD), has four types or sources of water for present and future water supply. These are its tributary shallow wells constructed in the Cherry Creek alluvium, its deep non-tributary Denver Basin Aquifer wells, its reusable water stored in Walker Reservoir, and wholesale water supply through either WISE or CCPWA. The shallow alluvial wells withdraw senior Harrison and Haley Ditch rights along with junior water rights, both of which are covered under existing plans for augmentation in Cases No. W-6862 and No. 11CW198. The annual appropriation for the deep Denver Basin aquifer wells is derived from: 1) Pre-Senate Bill 213 wells; 2) District decrees; and 3) Decrees from others that have been included in the District. In total, DSSWSD has firm water rights of 15,221 acre-feet per year (af/yr), with average and wet years being higher. In addition, the District owns a 20.489% share of the Cherry Creek Project Water Authority alluvial and Denver Basin water rights, providing another 1,570 af/yr of dry year supply and greater average or wet year supply. Finally, the District is a member of the WISE Authority and has subscribed to 500 af/yr of this renewable and reusable water, although this is not considered part of the dry year supply.

B. Water Rights Considerations

The pumping of the shallow wells constructed in the Cherry Creek alluvium is covered by the District's existing plans for augmentation (W-6268 and 11CW198). The augmentation plan in Case No. W-6268 allows for tributary pumping using three sources:

1. In-priority pumping based upon the historic consumptive use from the senior Harrison and Haley ditch rights totaling 1,220 acre-feet per year;
2. Infrequent in-priority pumping under the junior well water rights; and
3. Out-of-priority pumping derived from return flow credits from the District use of non-tributary (pre-S.B. 213) wells, pursuant to the plan for augmentation.

The augmentation plan in Case No. 11CW198 includes additional alluvial wells, non-tributary water rights not included in the W-6268 augmentation plan, and additional water sources. These sources include:

1. Infrequent in-priority pumping under new alluvial well water rights;
2. Additional non-tributary water rights and wells;
3. Water available from the Cherry Creek Project Water Authority (CCPWA);
4. Water available through the WISE project; and
5. Out-of-priority alluvial well pumping to be allowed under the new plan for augmentation and derived from return flow credits and/or direct releases and exchanges from the above sources.

The District has acquired a substantial amount of non-tributary groundwater through adjudications (by the District or Senior Corp.), through inclusions into the District, or by direct purchase. The attached Table 2 includes a summary of the various decreed tributary, non-tributary, and not non-tributary rights and annual appropriations.

The primary source of non-tributary groundwater currently in use by the District is from the original set of Pre-Senate Bill 213 (Pre-S.B. 213) wells, which are referenced in the augmentation plan in Case No. W-6268 and three associated decrees (W-6265, W-6267 and W-7241). These are the wells designated as A through M. Because part of the original appropriations for Wells A, B, C and J have been reduced, and Well C has been abandoned, the present total availability of non-tributary water for this set of wells is 1,865 acre-feet per year (af/yr).

The District acquired water rights from Senior Corp., initially for property east of Highway 83, and then for property west of the highway. These rights were originally filed together under applications for each of the four Denver Basin aquifers but were then separated into two sets of decrees based on lands east and west of Highway 83. Non-tributary rights acquired from Senior Corp. for the District total 2,261 af/yr for the area east of the highway, and 3,051 af/yr for the west area. Although the decrees were separated based on geography, Colorado water law allows the District to combine Denver Basin water rights within a contiguous well field and produce these rights from any well in the same aquifer.

The District also acquired the non-tributary water rights associated with the Gondolier Farms which were decreed in Case No. 84CW208. These rights total 885 af/yr.

In Case No. 85CW203, the District adjudicated all remaining water underlying District lands east of Highway 83 which had not previously been adjudicated in any of the above-described decrees. This decree also recovered a portion of the water made available by the reduction in appropriations for Pre-S.B. 213 wells A, B, C and J. The total non-tributary ground water made available under this decree is 2,466 af/yr.

The District has also obtained additional decreed groundwater rights by inclusion of the Reata South (1,608 af/yr), Vistancia/Scott Road (184 af/yr), Cross Creek (40 af/yr), 6793 Scott Avenue (47.9 af/yr), and Pinery Meadows (49.4 af/yr) developments. In addition, the District purchased decreed groundwater rights from the Evans Ranch in the amount of 1,146 af/yr. These rights total 3,075 af/yr.

The water listed in Table 2 under the Broe Aug Plan and Rosie Wells decree (Broe) can only be used for development of the Broe property. The District began service to the development on the Broe property in 2019. These rights total 351 af/yr.

The above-described decrees provide additional non-tributary groundwater for District use beyond the amount originally included in the District augmentation plan. The total of these additional rights is 12,089 af/yr. When combined with the original Pre-S.B. 213 well appropriations, the District has a total non-tributary and not non-tributary groundwater supply of about 13,954 af/yr. It should be noted that several of the listed decrees include provisions where the final ground water appropriation may be changed based on site-specific data at the time wells are drilled. Based on past experience, such data is not likely to change the decreed appropriations more than plus or minus five percent.

The decree in Case No. W-6268 also includes changes in use for the District's 5/9 interest in the Harrison Ditch and the 85% interest in the Haley Ditch. The decree made findings that a combined total of 1,220 af/yr may be pumped through certain District alluvial wells as alternate points of diversion and used directly for municipal purposes. With priorities of May 30, 1874, and July 1, 1873, respectively,

these are some of the most senior water rights on Cherry Creek and provide a firm yield of 1,220 af/yr.

Under the existing augmentation plan in Case No. W-6268, the District can utilize return flows from municipal use of non-tributary water supplied by the District's Denver Basin aquifer wells as credits against out-of-priority tributary well pumping. Under the augmentation plan, depletions from tributary well pumping are calculated by multiplying out-of-priority pumping by the monthly consumptive use percentages included in Paragraph 22 of the decree. Return flow credits from non-tributary pumping are calculated based on the complement of the monthly consumptive use percentages. The credits for return flows are then applied to offset the calculated depletions on an annual basis. As long as the total non-tributary return flows equal or exceed the total tributary well depletions at the end of the year, the District's augmentation plan is in compliance and no injury to other water rights will occur.

Under the plan for augmentation in Case No. 11CW198, additional non-tributary water rights and associated return flow credits are included as augmentation sources to allow for additional tributary well pumping. Up to eight additional alluvial wells (two currently in use and one under construction) can be added under the plan. Depletions from out-of-priority pumping from the alluvial wells are offset by return flows from non-tributary well pumping under the plan, as well as other sources. These other sources include water available to the District through its participation in the Cherry Creek Project Water Authority and the WISE project, a plan by which excess water from the Cities of Denver and Aurora is made available via pipeline for use by several south metro area water providers. The augmentation plan also includes provisions to maximize use and flexibility for the various water sources via exchanges and storage, including aquifer storage and recovery.

C. Demand Requirements

The water requirements of DSSWSD have varied over the years with development and variations in weather. Although overall water demand has increased with additional customers, the per capita residential water demand has decreased due to the District's water conservation efforts. Tables 3 and 4 show the recorded demand over the past 43 years. As can be noted, the system use has tripled since 1982 to a total of 3,613 af in 2024. Projected buildout water use for the District is estimated to be 4,493 af/yr.

D. Summary of Uses and Projected Dry Year and Average Year Yields

The tabulation in Table 1 below shows water used in the system from 2002 – 2024. Even at buildout, water demand falls within the 17,291 af/yr the District has of firm water rights.

The yield of the District's Denver Basin water rights will not be affected by a dry year. Thus, the dry year and average year yield will be the same and will be as decreed, with a total of up to 15,484 af/yr of decreed rights available – 13,954 af/yr of District Denver Basin water rights and 1,530 af/yr of CCPWA Denver Basin water rights.

The District's Cherry Creek alluvial water rights can be impacted by a dry year in terms of both physical supply and water available through the administration of water rights. The most senior water rights for the Haley and Harrison ditches have a firm yield of 1,220 af/yr. When both the junior and senior alluvial water rights are combined with Denver Basin water under the District augmentation plans, the actual yield of the alluvial wells is greater. The expected average year yield of the alluvial water rights is about 2,150 af/yr.

The alluvial water rights owned by CCPWA are administered similarly to the District's alluvial water

rights. The three senior water rights owned by CCPWA are more senior than the District's ditch rights and therefore can also be relied upon in drought years. The District's share of the dry year yield for these alluvial water rights is 40 af/yr.

The anticipated reusable supply available to the District in dry years is 47 af. This is the volume available after return flows are used to meet augmentation plan requirements. It is exchanged up to and stored in Walker Reservoir for later use by the District.

The District's subscription to WISE is for an average annual delivery of 500 af. However, it is expected that deliveries will be reduced during times of drought and therefore are not considered in dry year supplies.

The current and proposed uses of the District's water rights are the same and are for all uses. These uses correspond to the existing decreed water rights of the District.

Table 1. Proportion of Tributary and Non-Tributary Water Use by Year

Year	Tributary (af/yr)	Non-Tributary (af/yr)	Total
2002	2,002	832	2,834
2003	1,730	687	2,417
2004	1,852	360	2,212
2005	2,088	652	2,740
2006	2,704	811	3,515
2007	2,474	613	3,087
2008	2,450	1,021	3,471
2009	1,928	608	2,536
2010	2,160	1,150	3,310
2011	2,536	769	3,305
2012	2,198	1,273	3,471
2013	1,704	1,195	2,899
2014	1,801	896	2,697
2015	2,036	741	2,777
2016	2,015	962	2,977
2017	2,155	943	3,098
2018	2,312	1,241	3,553
2019	2,149	1,230	3,379
2020	2,015	1,810	3,824
2021	2,107	1,297	3,405
2022	2,054	1,807	3,861
2023	2,026	668	2,694
2024	2,183	1,430	3,613

TABLE 2

Denver Southeast Suburban Water & Sanitation District
Water Rights Summary

Case No.	Description	Decreed Amount (af/yr)	Subtotals (af/yr)
A. Tributary Water Rights			
W-6268	Harrison & Haley Ditches	1,220	
W-6268, 11CW198	Junior Water Rights	Variable	
	Total Tributary Water:		**1,220 +**
B. Non-tributary (NT) and Not Non-tributary (NNT) Water Rights			
W-6265	Wells A, B and C	243	
W-6267	Well J	103	
W-7241	Wells F, G, H, I, K, L and M	1,519	
	Pre-S.B. 213 Wells Subtotal:		1,865
83CW087E	Senior Corp. East Side - Arapahoe	1,202	
83CW088E	Senior Corp. East Side - Denver	240	
83CW089E	Senior Corp. East Side - Dawson	305	
83CW090E	Senior Corp. East Side - LFH	514	
	Senior Corp East Side Subtotal:		2,261
82CW087W	Senior Corp. West Side - Arapahoe	1,823	
83CW088W	Senior Corp. West Side - Denver	396	
83CW089W	Senior Corp. West Side - Dawson	154	
83CW090W	Senior Corp. West Side - LFH	678	
	Senior Corp West Side Subtotal:		3,051
84CW208	Gondolier Farms Decree	885	
85CW203	DSSWSD Non-tributary Determination	2,466	
89CW086, 087, 088, and 089	Reata South	1,608	
93CW146 & 2003CW344	Evans Ranch	1,146	
85CW139	Wolf/Vistancia/Scott Road	184	
23CW3065	Cross Creek	40	
22CW3093	Pinery Meadows	49.4	
23CW3146	6793 Scott Ave.	47.9	
	Additional NT and NNT Subtotal:		6,426
Non-tributary Water Assigned to Broe Aug Plan (87CW338)			
82CW418	Rosie Wells Decree (Broe)	351	351
	Total NT and NNT Water:		**13,954**
C. Wholesale Water			
	CCPWA Denver Basin Rights	1,530	
	CCPWA Alluvial Rights (Senior)	40	
	CCPWA Alluvial Rights (Junior)	Variable	
	WISE Water	500	
	Total Wholesale Water:		**2,070 +**
D. Reuse Water			
	Reuse Water in Walker Reservoir	47 +	**47 +**
E. Total Water Sources			**17,291 +**

TABLES 3 and 4

Water Use by Water Year

Table 3. Tributary vs. Non-Tributary Volumes

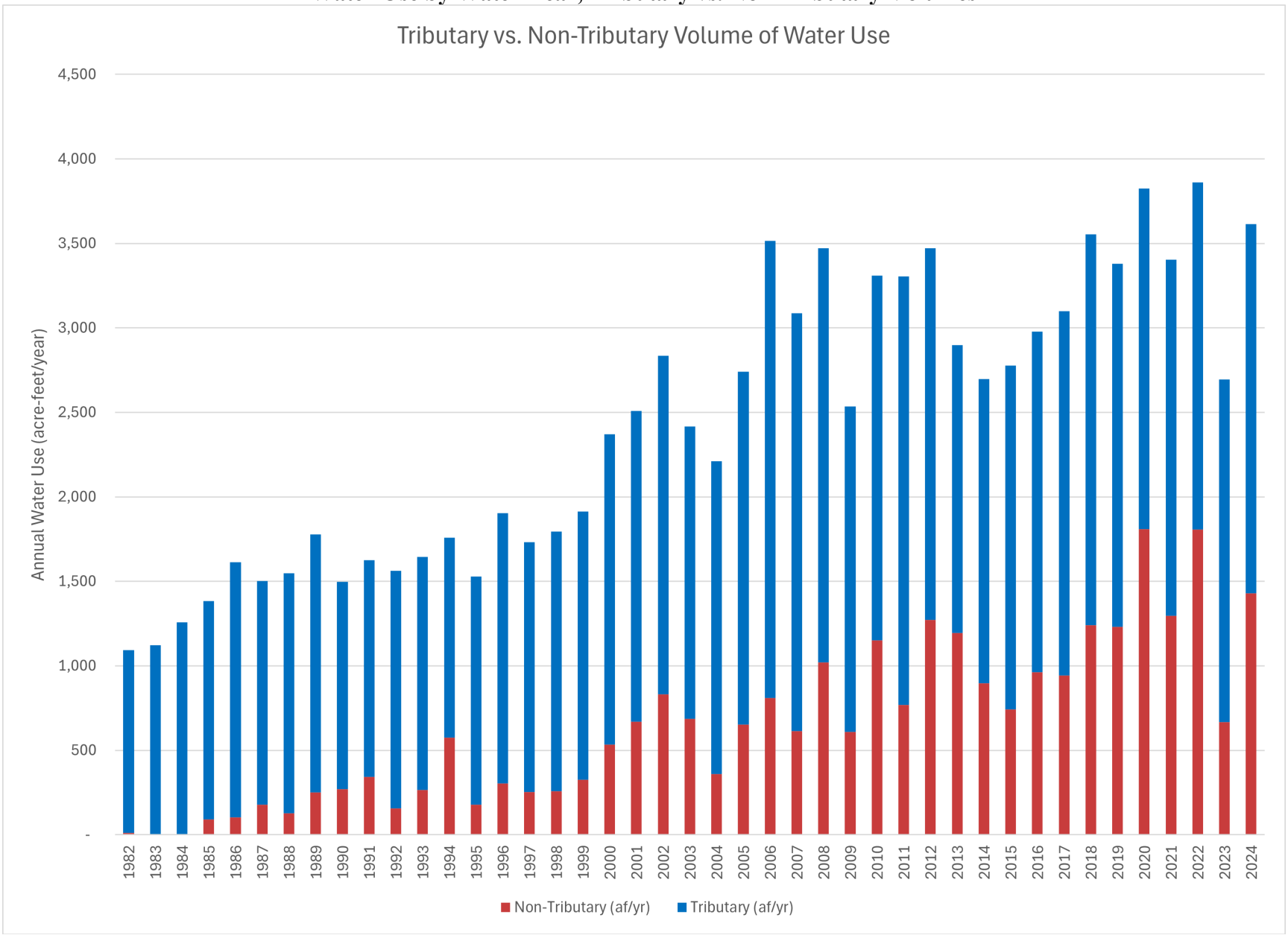
Year	Tributary (af/yr)	Non-Tributary (af/yr)	Total
1982	1,080	12	1,091
1983	1,123	-	1,123
1984	1,258	-	1,258
1985	1,292	91	1,384
1986	1,511	103	1,614
1987	1,324	179	1,504
1988	1,422	127	1,549
1989	1,527	250	1,777
1990	1,225	271	1,496
1991	1,282	344	1,626
1992	1,407	156	1,563
1993	1,379	265	1,644
1994	1,184	574	1,758
1995	1,351	178	1,529
1996	1,601	303	1,904
1997	1,477	254	1,731
1998	1,537	257	1,795
1999	1,588	326	1,914
2000	1,838	533	2,371
2001	1,839	669	2,508
2002	2,002	832	2,834
2003	1,730	687	2,417
2004	1,852	360	2,212
2005	2,088	652	2,740
2006	2,704	811	3,515
2007	2,474	613	3,087
2008	2,450	1,021	3,471
2009	1,928	608	2,536
2010	2,160	1,150	3,310
2011	2,536	769	3,305
2012	2,198	1,273	3,471
2013	1,704	1,195	2,899
2014	1,801	896	2,697
2015	2,036	741	2,777
2016	2,015	962	2,977
2017	2,155	943	3,098
2018	2,312	1,241	3,553
2019	2,149	1,230	3,379
2020	2,015	1,810	3,824
2021	2,107	1,297	3,405
2022	2,054	1,807	3,861
2023	2,026	668	2,694
2024	2,183	1,430	3,613

Table 4. Tributary vs. Non-Tributary Percents

Year	Tributary	Non-Tributary
1982	99%	1%
1983	100%	0%
1984	100%	0%
1985	93%	7%
1986	94%	6%
1987	88%	12%
1988	92%	8%
1989	86%	14%
1990	82%	18%
1991	79%	21%
1992	90%	10%
1993	84%	16%
1994	67%	33%
1995	88%	12%
1996	84%	16%
1997	85%	15%
1998	86%	14%
1999	83%	17%
2000	78%	22%
2001	73%	27%
2002	71%	29%
2003	72%	28%
2004	84%	16%
2005	76%	24%
2006	77%	23%
2007	80%	20%
2008	71%	29%
2009	76%	24%
2010	65%	35%
2011	77%	23%
2012	63%	37%
2013	59%	41%
2014	67%	33%
2015	73%	27%
2016	68%	32%
2017	70%	30%
2018	65%	35%
2019	64%	36%
2020	53%	47%
2021	62%	38%
2022	53%	47%
2023	75%	25%
2024	60%	40%

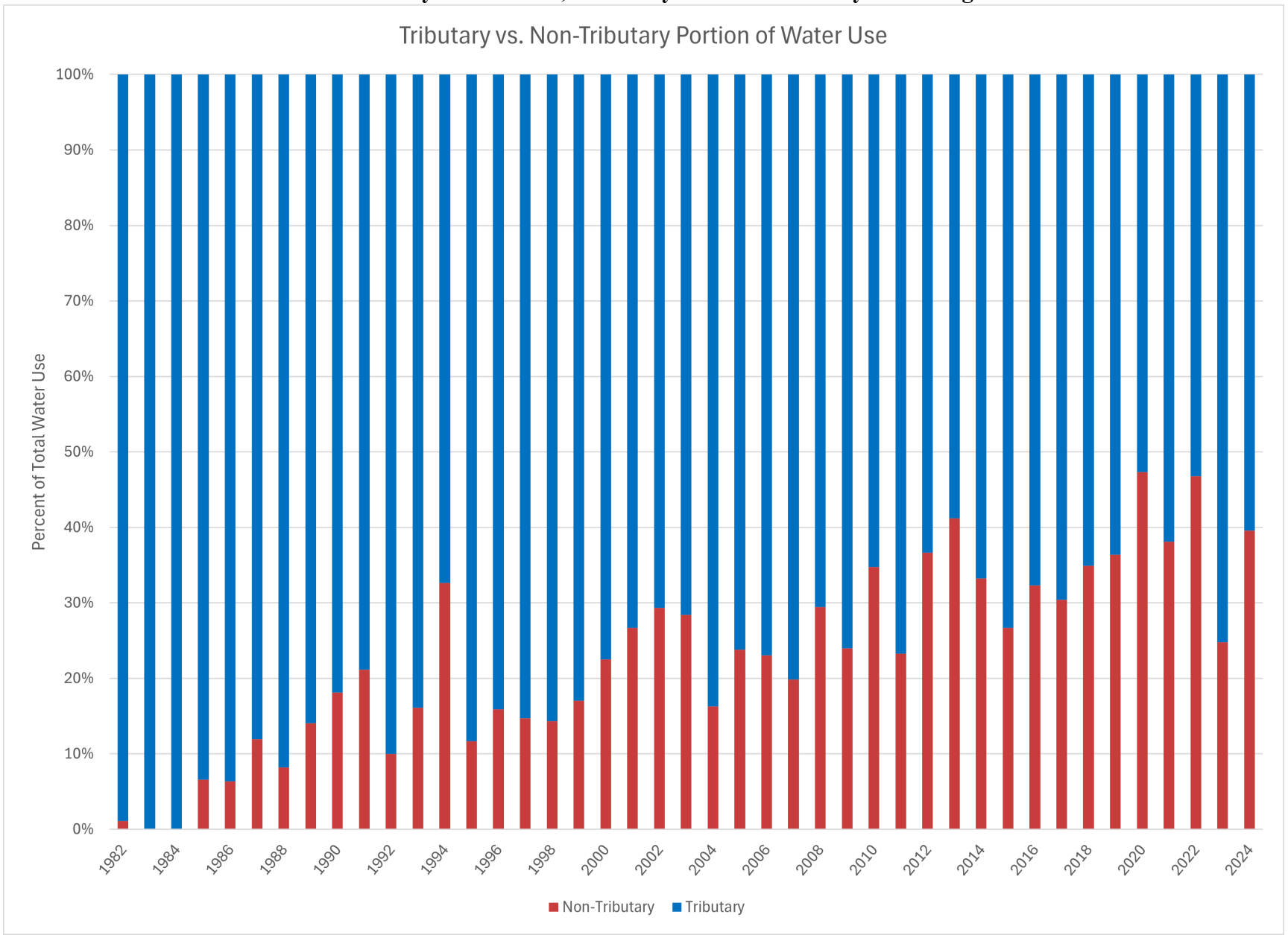
GRAPH 1

Water Use by Water Year, Tributary vs. Non-Tributary Volumes



GRAPH 2

Water Use by Water Year, Tributary vs. Non-Tributary Percentages



FOX TUTTLE

MEMORANDUM

To: Douglas County Development Review

From: Steve Tuttle, PE, PTOE

Date: July 31, 2020

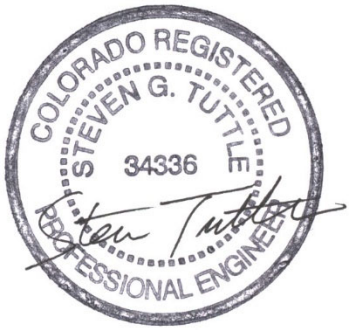
Project: Pinery West Traffic Impact Study Update

Subject: Summary of Changes to Traffic Impact Study

The Fox Tuttle Transportation Group has completed an update to the Pinery West Traffic Impact Study, previously accepted by Douglas County staff (dated April 15, 2019). The attached traffic impact study *update* incorporates the following changes to the project, with the resulting outcomes also summarized:

- **Removal of "Access A", which was a previously proposed ¾-movement, unsignalized intersection located along Parker Road (SH 83)**. The removal of this access is anticipated to result in some, redistribution of site traffic: increased access traffic at the remaining right-in, right-out access ("Access B") along Parker Road, and increases in traffic also to the Parker Road/Access C intersection. As shown in the updated traffic analysis, the redistribution of traffic does not result in degradation of intersection Level of Service at any location and the findings and recommendations of the original traffic impact study are still valid.
- **Changes to Land Use Projections and Trip Generation at the north end of the project.** With the removal of Access A, the land use plan has been updated at the north end of the project. The previously planned charter elementary school land use is now assumed as light industrial or flex office space. 50,000 square feet of office use was added to the trip generation estimates to conservatively estimate this change in projected use, with removal of the charter school from the trip generation calculations. The change in land use results in a decrease in AM peak hour trip generation for the project, with minor changes in the PM peak hour. There were no changes to the findings and recommendations of the original traffic study with this change in land use projections.

/SGT



1624 Market Street | Suite 202 | Denver, CO 80202
Phone: 303.652.3571 | www.FoxTuttle.com

Pinery West
Traffic Impact Study UPDATE

Date: *Revised* July 31, 2020

Submitted To:
Starwood Land Advisors, LLC
385 Inverness Parkway, Suite 310
Englewood, CO 80112

Submitted By:
Fox Tuttle Transportation Group
1624 Market Street, Suite 202
Denver, Colorado 80202

TABLE OF CONTENTS

1.0 Introduction 3

2.0 Project Description 3

3.0 Study Considerations 7

3.1 Data Collection 7

3.2 Evaluation Methodology 7

3.3 Level of Service Definitions 7

4.0 Existing Conditions 8

4.1 Roadways 8

4.2 Intersections 9

4.3 Pedestrian and Bicycle 9

4.4 Transit 10

4.4.1 Existing Intersection Capacity Analysis 10

5.0 Future Conditions 15

5.1 Annual Growth Factor and Future Volume Methodology 15

5.1.1 Year 2030 Background Intersection Capacity Analysis 19

5.1.2 Year 2040 Background Intersection Capacity Analysis 20

6.0 Future Conditions with Pinery West Development 22

6.1 Trip Generation 22

6.2 Trip Distribution and Assignment 27

6.2.1 Year 2030 Background + Project Intersection Capacity Analysis 31

6.2.2 Year 2040 Background + Project Intersection Capacity Analysis 32

7.0 Auxiliary Lane Evaluation 37

8.0 Conclusions 37

LIST OF TABLES

Table 1A. Signalized Intersection Level of Service Summary 13
Table 1B. Stop Controlled Intersection Level of Service Summary 14
Table 2. Trip Generation Summary 25
Table 3. Trip Type Breakdown 26

LIST OF FIGURES

Figure 1. Vicinity Map 5
Figure 2. Concept Site Plan 6
Figure 3. Existing Traffic Volumes 12
Figure 4. Year 2030 Background Traffic Volumes 16
Figure 5. Year 2040 Background Traffic Volumes (Without Connection) 17
Figure 6. Year 2040 Background Traffic Volumes (With Connection) 18
Figure 7. Trip Distribution 28
Figure 8. Site-Generated Traffic Volumes (Without Connections) 29
Figure 9. Site-Generated Traffic Volumes (With Connections) 30
Figure 10. Year 2030 Total Traffic Volume 34
Figure 11. Year 2040 Total Traffic Volume 35
Figure 12. Traffic Signal Warrants 36

APPENDIX

Existing Traffic Data

Level of Service Definitions

Intersection Capacity Worksheets and Time-Space (Signal Progression) Diagrams

PINERY WEST DEVELOPMENT

TRAFFIC IMPACT STUDY *UPDATE*

1.0 INTRODUCTION

The Fox Tuttle Transportation Group has prepared this traffic impact study for the Pinery West development project in Douglas County, Colorado. The project site is located at the northwest corner of the Parker Road (Highway 83) and N. Pinery Parkway intersection. The project proposes to develop 144± acres with a mix of employment, commercial, and light industrial uses.

The purpose of this study is to assist in identifying potential traffic impacts within the study area as a result of this project. The traffic study addresses existing, site-build out (Year 2030), and long-term, 20-year (Year 2040) peak hour intersection and roadway conditions in the study area with and without the project generated traffic. The information contained in this study is anticipated to be used by the Douglas County staff in identifying any intersection or roadway deficiencies and potential improvements for the build-out year and long-term future scenarios. This study focused on the weekday AM and PM peak hours which represents the periods of highest trip generation for the proposed uses and adjacent roadway traffic. It also includes an evaluation of roadway laneage needs, auxiliary lane requirements, and intersection traffic controls.

The study is consistent with the requirements listed in Douglas County's *Roadway Design and Construction Standards, Appendix B for Traffic Impact Study Criteria*.

2.0 PROJECT DESCRIPTION

The Pinery West project proposes to construct a mix of employment, commercial, and light industrial uses on a largely vacant 144± acre property. Based on conceptual site planning, it is anticipated that there will be a grocery marketplace, office space, flex office space, commercial plats for shops, restaurants, and services, daycare services, a hote, RTD park-n-ride station, recreational space, and light industrial uses.

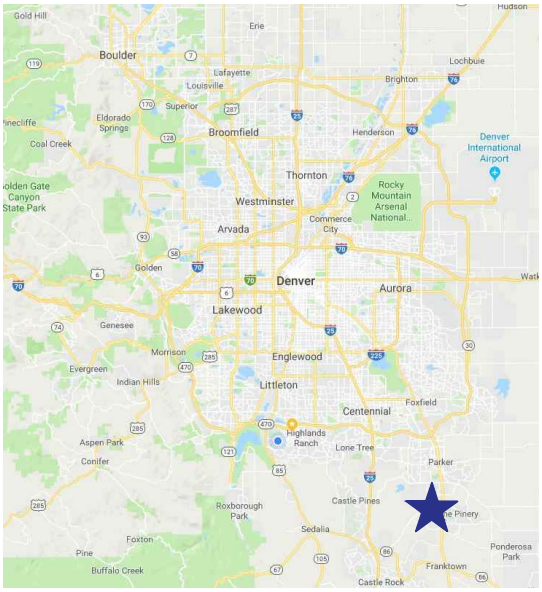
The project proposes to have two full-movement accesses on N. Pinery Parkway, a ¾-movement access along N. Pinery Parkway, and a right-in, right-out access on Parker Road. The curb-cuts on Pinery Parkway already exist and will be extended into the subject property to service the proposed land uses. In the short-term, trips from the Pinery West project will travel along Parker Road to get to/from their regional destinations.

In the long-term, Pinery Parkway is anticipated to be extended to the west to Crowfoot Valley Road and Pinery Center Boulevard is anticipated to be extended to the north to Stroh Road at J Morgan Boulevard. The County also anticipates that Pinery Center Blvd. will be extended as a collector roadway south to Scott Road in the long-term future, pending development north of Scott Road that would complete this connection.

The internal roadway network will include constructing Pinery Center Boulevard and Prospector Way as collector streets.

A vicinity map is shown on **Figure 1**. The site and access plan is provided on **Figure 2**.

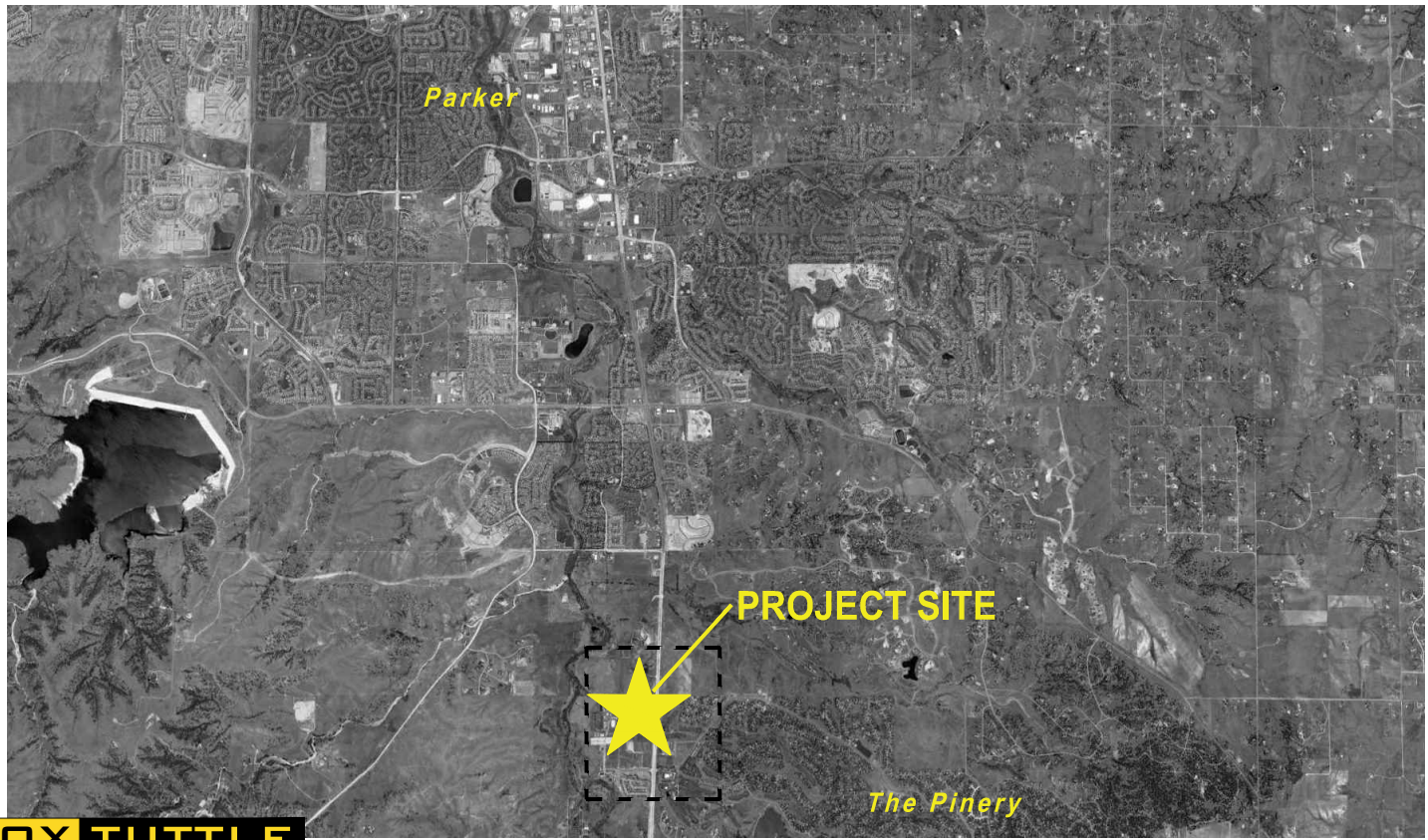
Location Map



Project Site



Vicinity Map



FOX TUTTLE
TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

VICINITY MAP

FT #	20049	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	1



FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

CONCEPT SITE PLAN

FT #	20049	Project	Pinery Village Filing 2 Minor Development	Graphical Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	2

3.0 STUDY CONSIDERATIONS

3.1 Data Collection

Intersection turning movement volumes were collected in October 2018 at three existing intersections during the weekday AM and PM peak hours. Average daily traffic (ADT) counts were also collected for 24-hours on N. Pinery Parkway west of Parker Road and on Stroh Road east of J. Morgan Boulevard. Historic daily volumes along Parker Road were gathered from the Colorado Department of Transportation's (CDOT) Transportation Data Management System (TDMS) and Online Transportation Information System (OTIS) as well as from Denver Regional Council of Government (DRCOG) resources. The existing traffic volumes are illustrated on **Figure 3**. The existing intersection geometry and traffic control are also shown on this figure.

Signal-related information for the existing intersections were provided by the Town of Parker and CDOT. Count data sheets are provided in the **Appendix**.

3.2 Evaluation Methodology

The traffic operations analysis addressed the signalized and unsignalized intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*[1]*.* Existing peak hour factor was applied to the intersections for the existing scenarios. Study intersections were evaluated using Synchro software.

3.3 Level of Service Definitions

A level of service analysis was conducted to determine the existing and future performance of the study area intersection and to determine the most appropriate traffic control device and need for auxiliary lanes for the study intersections.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as "Level of Service" (LOS) that is defined by the *HCM.* LOS characterizes the operational conditions of an intersections traffic flow, ranging from LOS A (indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the

[1] Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 2010 and 6th Edition (2016).

intersection as a whole and for each turning movement. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

Typically, LOS A through C is considered to be good for the overall intersection operations and the desired standard for overall intersection performance is LOS D or better. Individual movements may be allowed to fall to LOS E/F depending on the circumstances, such as a low-volume sidestreet approach to a major arterial or a protected-only left-turn on a major arterial.

4.0 EXISTING CONDITIONS

4.1 Roadways

The study area boundaries are based on the amount of traffic to be generated by the project and potential impact to the existing roadway network. The existing study area street network consists of a major arterial and two collectors. The primary public roadways that serve the project site are discussed in the following text and illustrated on **Figure 1**.

Parker Road (State Highway 83) is a north-south six-lane major arterial that provides local and regional access beyond the Pinery. The highway travels from Aurora (to the north), through the Town of Parker and beyond Franktown (to the south). Parker Road is a CDOT facility classified as NR-A (Non-Rural Principal Highway). North of the project site, the roadway intersects with and provides access to E-470. The posted speed limit on Parker Road is 55 miles per hour (mph) adjacent to the site. This roadway has limited access for pedestrians and bicyclists (see **Section 4.3** for discussion on existing facilities for pedestrian and bicyclist). Parker Road currently serves approximately 32,000 vehicles per day (vpd) north of N. Pinery Parkway and approximately 23,900 vpd south of N. Pinery Parkway. This roadway is the eastern boundary of the proposed site. Parker Road is between 76-feet and 112-feet wide adjacent to the Pinery West property, which includes 12-foot travel lanes, three per direction; 12-foot right-turn deceleration and acceleration lanes; varying widths of shoulders; and a 30-foot center left-turn lane/median.

Stroh Road is an east-west, collector that extends from Motsenbocker Road to Parker Road. Stroh Road ends east of Parker Road within a rural neighborhood. It provides access to existing residential neighborhoods and commercial businesses. The posted speed limit is 40 mph within the study area. Stroh Road currently serves approximately 8,800 vpd west of Parker Road. This roadway is 102-feet east of J. Morgan Boulevard (two lanes per direction) and narrows to 28-feet west of J. Morgan Boulevard (one lane

per direction); including 12-foot travel lanes; 12-foot deceleration lanes; and a center median. This roadway is the northern boundary of the study area.

Pinery Parkway is circuitous, four-lane collector roadway that serves The Pinery community with two connections to Parker Road. Within The Pinery, the parkway provides access to neighborhoods, the country club, four schools, and recreational areas. West of Parker Road, Pinery Parkway provides access to a small residential neighborhood, The Pinery RV Lot, Pinery Wastewater Treatment Plant, and a trailhead for the Cherry Creek Trail. The posted speed limit is 25 mph. In the long-term, it is proposed that this roadway be extended west to access Crowfoot Valley Road.

4.2 Intersections

The study area includes three intersections that are listed below with the current traffic control and were analyzed for existing and future background year traffic operations:

1. Parker Road at N. Pinery Parkway (signalized)
2. Parker Road at Stroh Road (signalized)
3. Stroh Road at J. Morgan Boulevard (side-street stop-controlled)

The existing lane configuration at each of the study locations is illustrated on **Figure 3**. Additional intersections were analyzed for the scenarios with the addition of project-added traffic.

4.3 Pedestrian and Bicycle

Currently, there are sidewalks on both sides of Pinery Parkway (west of Parker Road) and on Stroh Road. There is a detached multi-use path on the south side of Pinery Parkway that connects the Cherry Creek Trail to The Pinery country club and community. Along Pinery Parkway there is a multi-use path that is designated as a regional trail that links to the Cherry Creek Trail.

There are no on-street bike lanes on the study roadways. Currently bicyclists are permitted to ride within the wide shoulders on Parker Road or with traffic on Stroh Road and Pinery Parkway.

Just west of the project boundary is a trailhead for the Cherry Creek Trail. This multi-use path starts south of this trailhead and travel north through the Town of Parker and City of Centennial into the Cherry Creek Reservoir State Park. The trail continues along the Cherry Creek into downtown Denver ending at Confluence Park.

4.4 Transit

Currently, there is the Pinery park-n-ride on the north side of N. Pinery Parkway just east of Parker Road. It has 79 parking spaces and is served by Route P (Parker / Denver). The bus route links The Pinery to Parker and Downtown Denver via Parker Road, E-470, I-25, and Broadway. There is limited service to the near-by park-n-ride that only operates in peak times at 30-minute headways.

4.4.1 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 1**. The intersection level of service worksheets and queue reports are attached in the **Appendix**.

All project intersections are shown to be operating at LOS C or better overall in the AM and PM peak hours, which meets Douglas County requirements for overall intersection operations. There are several individual movements that are operating at LOS E or F, as noted below:

- Parker Road & N. Pinery Parkway: This signalized intersection operates overall at LOS C/B in the AM/PM peak hours, respectively. The westbound right-turn movement is calculated to operate at LOS F in the AM peak hour, with just under 400 vehicles per hour (vpd) exiting the Pinery and turning right onto northbound Parker Road. The 95th percentile queue[2] for this movement is calculated at 328 feet in the AM peak hour.

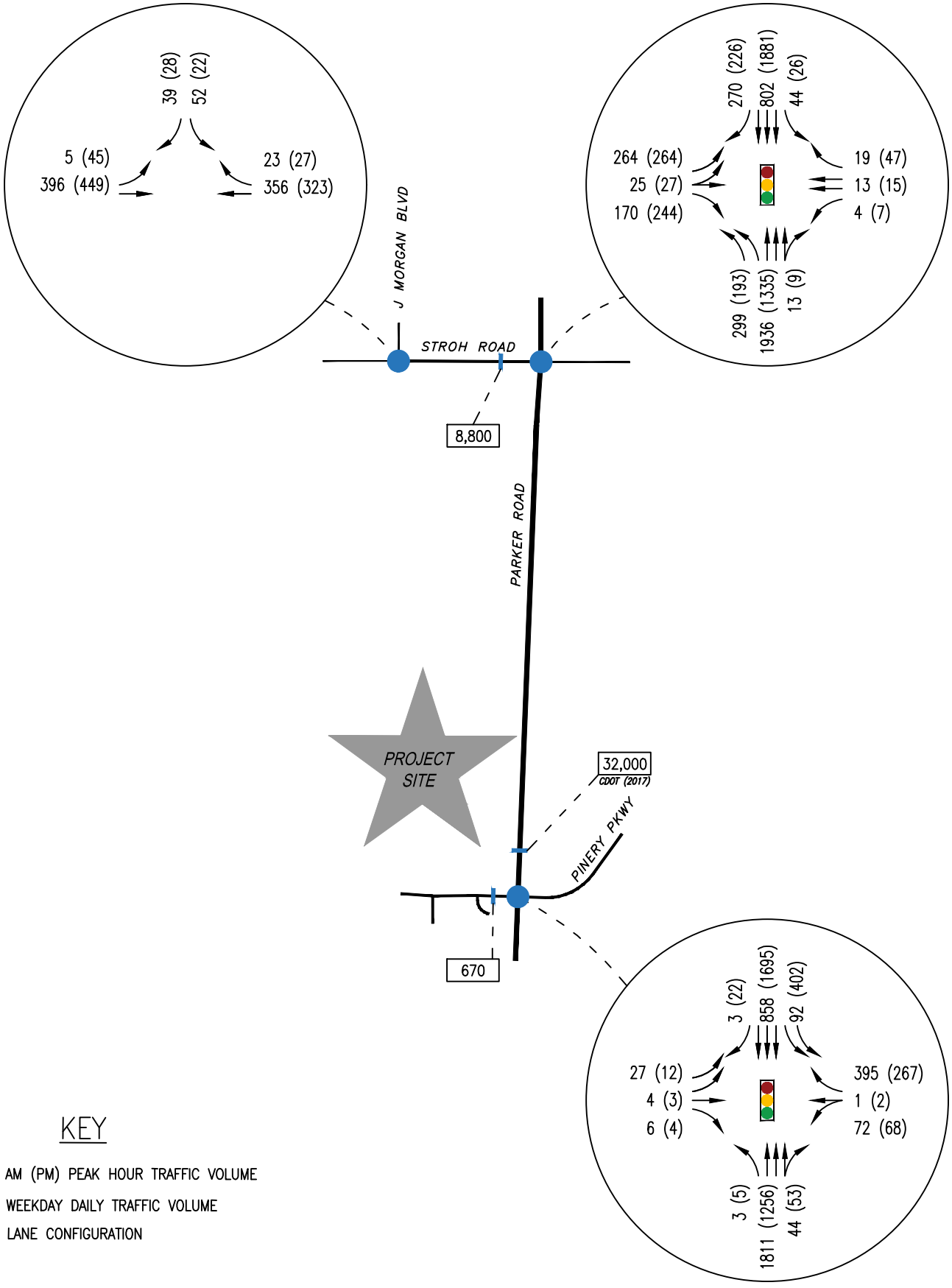
  To mitigate this existing deficiency, a northbound right-turn acceleration lane would need to be constructed on Parker Road to allow this movement to function as a "free right" turn movement, which would significantly reduce the delays and queuing. An acceleration lane would typically be installed for these volumes. This improvement would not be related to development of the Pinery West project but would be necessary to mitigate an existing deficiency. This improvement was not assumed to be installed for future scenarios with project development, to provide a more conservative estimate of site traffic impacts.

- Parker Road & Stroh Road: This signalized intersection operates overall at LOS C both peak hours. The southbound left-turn movement is calculated to operate at LOS E in the

[2] It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur.

PM peak hour. The 95th percentile queue for this movement is calculated at 55 feet in the AM peak hour (less than 3 vehicles).

This delay is due to the protected-only left-turn operation of this movement and is common where a lower volume left-turn is protected along a major arterial. As the protected-only operation is due to safety concerns with left-turns across a major, three-lane arterial, no changes are recommended to mitigate this delay.



FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

EXISTING TRAFFIC VOLUMES (YEAR 2018)

FT #	20049	Diagram	Pinery Village Filing 2 Minor Development	Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	3

FOX TUTTLE

Table 1A - Signalized Intersection Level of Service Summary

Intersection and Lanes Groups	2018 Existing AM Peak Delay	2018 Existing AM Peak LOS	2018 Existing PM Peak Delay	2018 Existing PM Peak LOS	2030 Background AM Peak Delay	2030 Background AM Peak LOS	2030 Background PM Peak Delay	2030 Background PM Peak LOS	2030 Background + Project AM Peak Delay	2030 Background + Project AM Peak LOS	2030 Background + Project PM Peak Delay	2030 Background + Project PM Peak LOS	2040 Background without Connections AM Peak Delay	2040 Background without Connections AM Peak LOS	2040 Background without Connections PM Peak Delay	2040 Background without Connections PM Peak LOS	2040 Total with Connections AM Peak Delay	2040 Total with Connections AM Peak LOS	2040 Total with Connections PM Peak Delay	2040 Total with Connections PM Peak LOS
SIGNAL CONTROL																				
Parker Rd & N. Pinery Pkwy	**34.6**	**C**	**15.7**	**B**	**41.8**	**D**	**22.7**	**C**	**42.3**	**D**	**44.5**	**D**	**58.2**	**E**	**23.9**	**C**	**36.7**	**D**	**40.2**	**D**
Eastbound Left	45.2	D	29.9	C	45.5	D	28.8	C	48.0	D	70.0	E	44.6	D	29.7	C	27.6	C	44.0	D
Eastbound Through	30.3	C	29.6	C	30.3	C	28.4	C	39.1	D	30.6	C	29.9	C	29.3	C	23.4	C	30.9	C
Eastbound Right	0.0	A	0.0	A	0.0	A	0.0	A	0.1	A	0.3	A	0.0	A	0.0	A	0.1	A	0.2	A
Westbound Left									62.6	E	70.6	E					46.8	D	53.2	D
Westbound Left+Through	45.9	D	33.3	C	46.6	D	42.4	D					50.0	D	45.4	D				
Westbound Through									50.5	D	53.0	D					48.3	D	52.8	D
Westbound Right	<120	F	23.3	C	<120	F	26.8	C	> 120	F	46.8	D	<120	F	27.8	C	45.8	D	40.4	D
Northbound Left	54.4	D	41.1	D	54.4	D	48.7	D	53.3	D	70.3	E	53.5	D	48.7	D	52.5	D	54.4	D
Northbound Through+Right	23.1	C	16.9	B	39.2	D	26.7	C	23.5	C	33.9	C	67.2	E	28.5	C	39.7	D	27.6	C
Southbound Left	40.2	D	31.7	C	40.4	D	38.3	D	54.0	D	58.9	E	41.1	D	38.3	D	51.5	D	54.6	D
Southbound Through	9.7	A	8.9	A	10.3	B	15.2	B	17.4	B	47.3	D	11.3	B	16.6	B	27.5	C	49.7	D
Southbound Right	0.0	A	0.0	A	0.0	A	0.0	A	0.2	A	0.3	A	0.0	A	0.0	A	0.1	A	20.5	C
Parker Rd & Stroh Rd	**25.2**	**C**	**20.9**	**C**	**32.1**	**C**	**26.4**	**C**	**31.1**	**C**	**34.8**	**C**	**32.6**	**C**	**30.2**	**C**	**25.7**	**C**	**36.5**	**D**
Eastbound Left	53.6	D	45.5	D	43.7	D	40.8	D	43.0	D	61.5	E	43.4	D	46.4	D	48.7	D	54.8	D
Eastbound Left+Through	52.2	D	45.3	D	42.7	D	42.8	D	41.9	D	48.9	D	42.1	D	46.8	D	42.4	D	43.6	D
Eastbound Right	0.2	A	0.2	A	0.3	A	0.3	A	0.3	A	0.3	A	0.2	A	0.3	A	0.1	A	0.2	A
Westbound Left	49.1	D	47.5	D	50.4	D	49.4	D	50.9	D	50.2	D	50.7	D	54.2	D	51.3	D	50.4	D
Westbound Through	49.1	D	46.7	D	53.0	D	52.2	D	53.1	D	53.7	D	53.3	D	57.1	E	53.4	D	52.8	D
Westbound Right	0.0	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.0	A	0.1	A	0.0	A	0.1	A
Northbound Left	46.2	D	46.7	D	48.7	D	48.4	D	52.1	D	60.6	E	52.8	D	62.2	E	51.1	D	51.4	D
Northbound Through	24.8	C	14.4	B	17.9	B	16.9	B	37.3	D	18.5	B	39.4	D	17.7	B	25.6	C	19.0	B
Northbound Right	11.9	B	9.7	A	10.7	B	10.4	B	10.8	B	8.9	A	10.8	B	10.4	B	11.0	B	10.7	B
Southbound Left	48.8	D	55.2	E	57.3	E	57.2	E	64.1	E	54.7	D	70.9	E	81.3	F	59.6	E	59.7	E
Southbound Through	20.2	C	24.1	C	47.5	D	35.1	D	22.6	C	50.0	D	21.0	C	40.0	D	20.5	C	52.4	D
Southbound Right	0.3	A	0.2	A	0.3	A	0.3	A	0.3	A	0.3	A	0.4	A	0.3	A	0.4	A	0.3	A
Pinery Pkwy & Access C									**15.5**	**B**	**26.7**	**C**					**20.3**	**C**	**16.5**	**B**
Eastbound Left									7.3	A	18.7	B					5.0	A	11.0	B
Eastbound Through									7.8	A	23.1	C					7.9	A	12.7	B
Eastbound Right									7.3	A	18.7	B					10.3	B	6.4	A
Westbound Left									3.8	A	18.4	B					14.4	B	9.2	A
Westbound Through									3.6	A	14.1	B					16.8	B	8.8	A
Westbound Right									3.9	A	14.6	B					51.9	D	5.8	A
Northbound Left+Through+Right									35.7	D	15.9	B					43.5	D	30.9	C
Southbound Left									54.4	D	48.6	D					45.8	D	42.4	D
Southbound Through+Right									34.8	C	15.1	B					40.1	D	29.4	C
Stroh Road & J Morgan Blvd																	**16.1**	**B**	**16.7**	**B**
Eastbound Left																	5.2	A	6.8	A
Eastbound Through																	9.0	A	11.2	B
Eastbound Right																	6.0	A	6.8	A
Westbound Left																	4.8	A	6.5	A
Westbound Through																	7.2	A	8.4	A
Westbound Right																	4.8	A	5.9	A
Northbound Left																	48.9	D	43.0	D
Northbound Through																	43.1	D	35.7	D
Northbound Right																	43.0	D	35.7	D
Southbound Left																	47.7	D	45.3	D
Southbound Through																	43.2	D	44.0	D
Southbound Right																	43.2	D	43.7	D
Pinery Pkwy & Pinery Center Blvd																	**18.6**	**B**	**22.8**	**C**
Eastbound Left																	7.6	A	10.5	B
Eastbound Through																	7.1	A	10.5	B
Eastbound Right																	6.6	A	8.8	A
Westbound Left																	10.9	B	19.6	B
Westbound Through																	12.5	B	17.9	B
Westbound Right																	13.2	B	31.3	C
Northbound Left																	38.3	D	34.6	C
Northbound Through+Right																	38.3	D	33.4	C
Southbound Left																	37.8	D	45.6	D
Southbound Through+Right																	37.1	D	36.8	D

Note: Delay represented in average seconds per vehicle.

FOX TUTTLE

Table 1B - Stop Controlled Intersection Level of Service Summary

Intersection and Lanes Groups	2018 Existing				2030 Background				2030 Background + Project				2038 Background without Connections				2038 Total with Connections			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
STOP SIGN CONTROL																				
Stroh Rd & J. Morgan Blvd																				
Eastbound Left	8.2	A	8.2	A	8.4	A	8.5	A	8.4	A	8.6	A	8.6	A	8.7	A				
Southbound Left	21.1	C	19.0	C	29.4	D	25.9	D	31.9	D	31.8	D	38.9	E	33.1	D				
Southbound Right	11.1	B	10.6	B	11.8	B	11.2	B	11.8	B	11.5	B	12.5	B	11.8	B				
Parker Rd & Wellspring Dr																				
Eastbound Right									0.0	A	0.0	A					12.3	B	33.0	D
Pinery Pkwy & Pinery Center Blvd																				
Eastbound Left									7.6	A	7.7	A								
Westbound Left									7.4	A	7.5	A								
Northbound Left									0.0	A	0.0	A								
Northbound Through+Right									8.7	A	8.7	A								
Southbound Left									11.1	B	18.9	C								
Southbound Through+Right									0.0	A	18.9	C								
Pinery Pkwy & Access D																				
Westbound Left									8.6	A	7.3	A					8.4	A	9.2	A
Northbound Right									7.4	A	8.6	A					9.9	A	11.4	B

Note: Delay represented in average seconds per vehicle.

5.0 FUTURE CONDITIONS

5.1 Annual Growth Factor and Future Volume Methodology

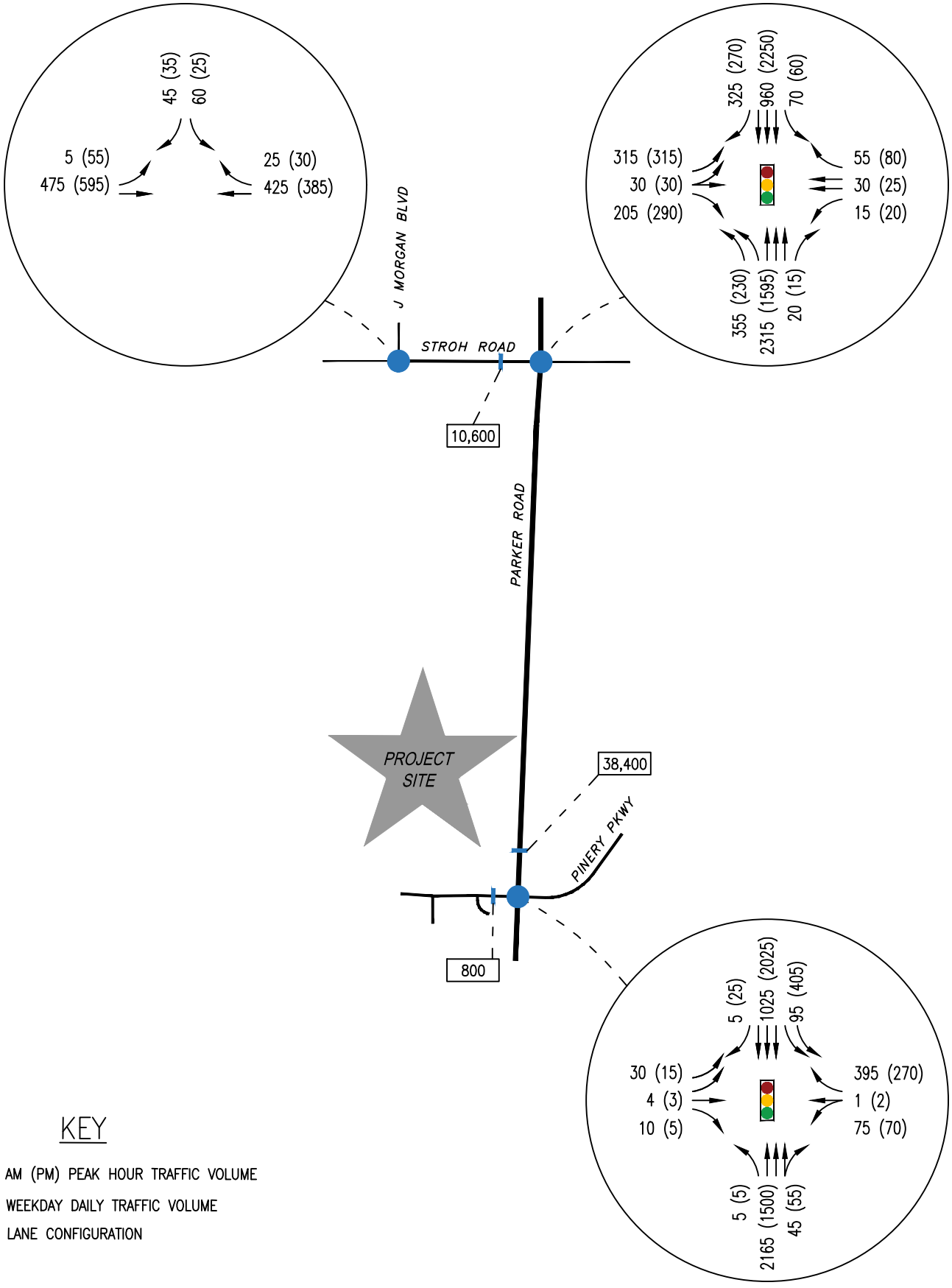
In order to forecast the future peak hour traffic volumes, background traffic growth assumptions were estimated based on various resources: DRCOG regional model, CDOT historic traffic volumes and 20-year factor, and previous traffic studies[3]. Based on this data, it is assumed there will be an annual growth rate of 1.5% throughout the study area which is consistent with CDOT data. Additional traffic was assumed for the east leg of the Parker Road & Stroh Road intersection to account for recent residential development in that area. Additionally, it was assumed that since the Pinery is largely built out that projected traffic growth along N. Pinery Parkway east of Parker Road would not be as high as the 1.5% annual growth assumed elsewhere in the study area.

The project is anticipated take 10 years to be fully permitted, constructed and occupied. On this basis, the Year 2030 was analyzed as the site "build out" year.

Future traffic connections (long-term) include the extension of Pinery Parkway to the west as a minor arterial roadway and the extension of Pinery Center Blvd. as a collector roadway north to Stroh Road and south to Scott Road. The future background traffic projections include a shift of some local traffic from Parker Road to this new north-south collector. These volumes were based on traffic studies provided by Douglas County for planned development to the south near Scott Road. The projections for future traffic with the connections also assumes a shift of traffic from Stroh Road (and future north) to Pinery Parkway to the west, as the future roadway network will provide alternatives to Parker Road in this area.

Using these assumptions, the 2030 background traffic is summarized on **Figure 4**; the 2040 background traffic without the Pinery Parkway and Pinery Center Blvd. connections is summarized on **Figure 5;** and the 2040 background traffic with these connections is summarized on **Figure 6**.

[3] Referenced: Pinery West Development Traffic Impact Study. Krager and Associates, Inc. September 2008.



KEY

XXX (XXX) AM (PM) PEAK HOUR TRAFFIC VOLUME

X,XXX WEEKDAY DAILY TRAFFIC VOLUME

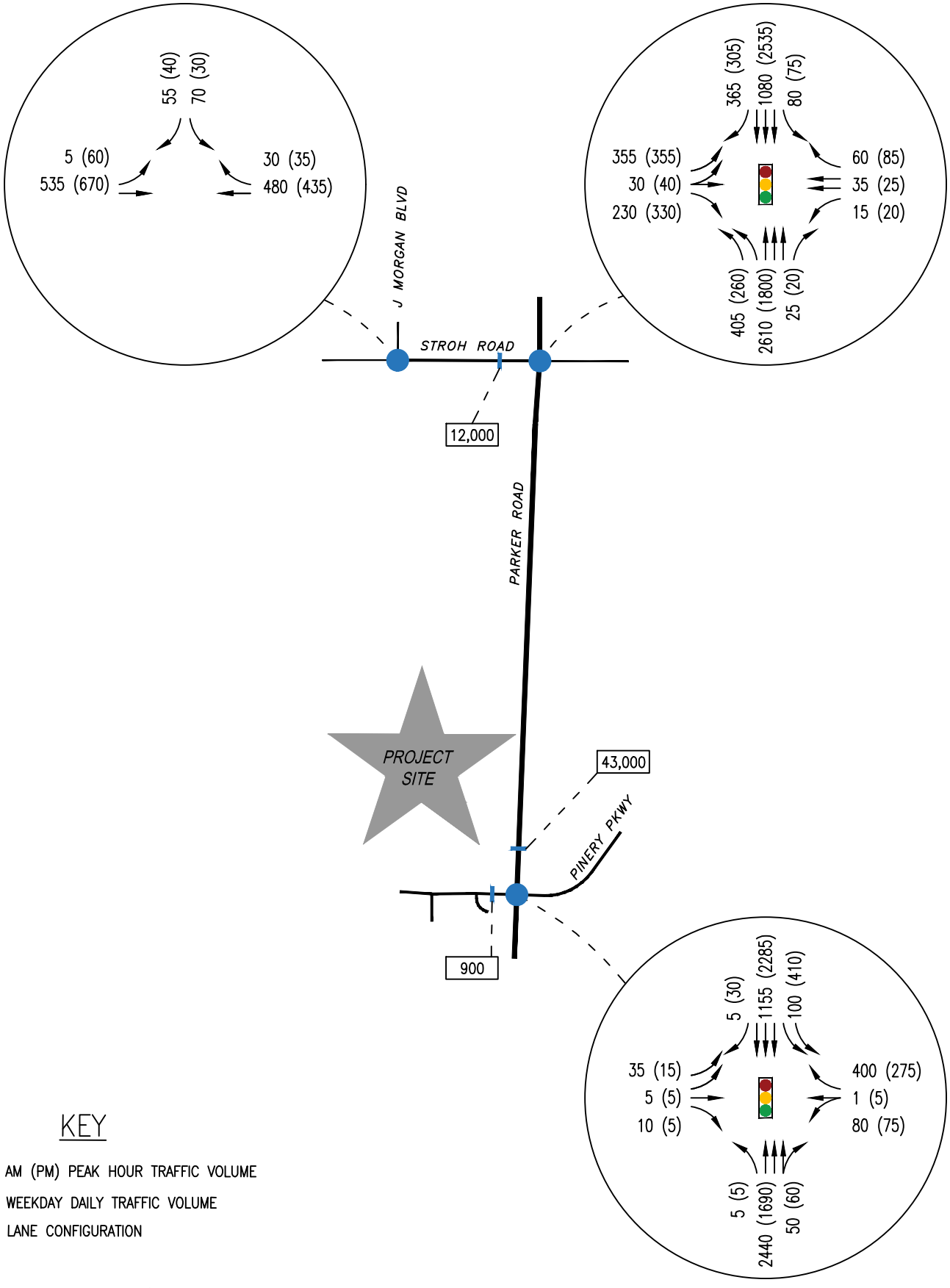
LANE CONFIGURATION

FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

YEAR 2030 BACKGROUND TRAFFIC VOLUMES

FT #	2004g	Pinery Village Filing 2 Minor Development	Diagram Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	4

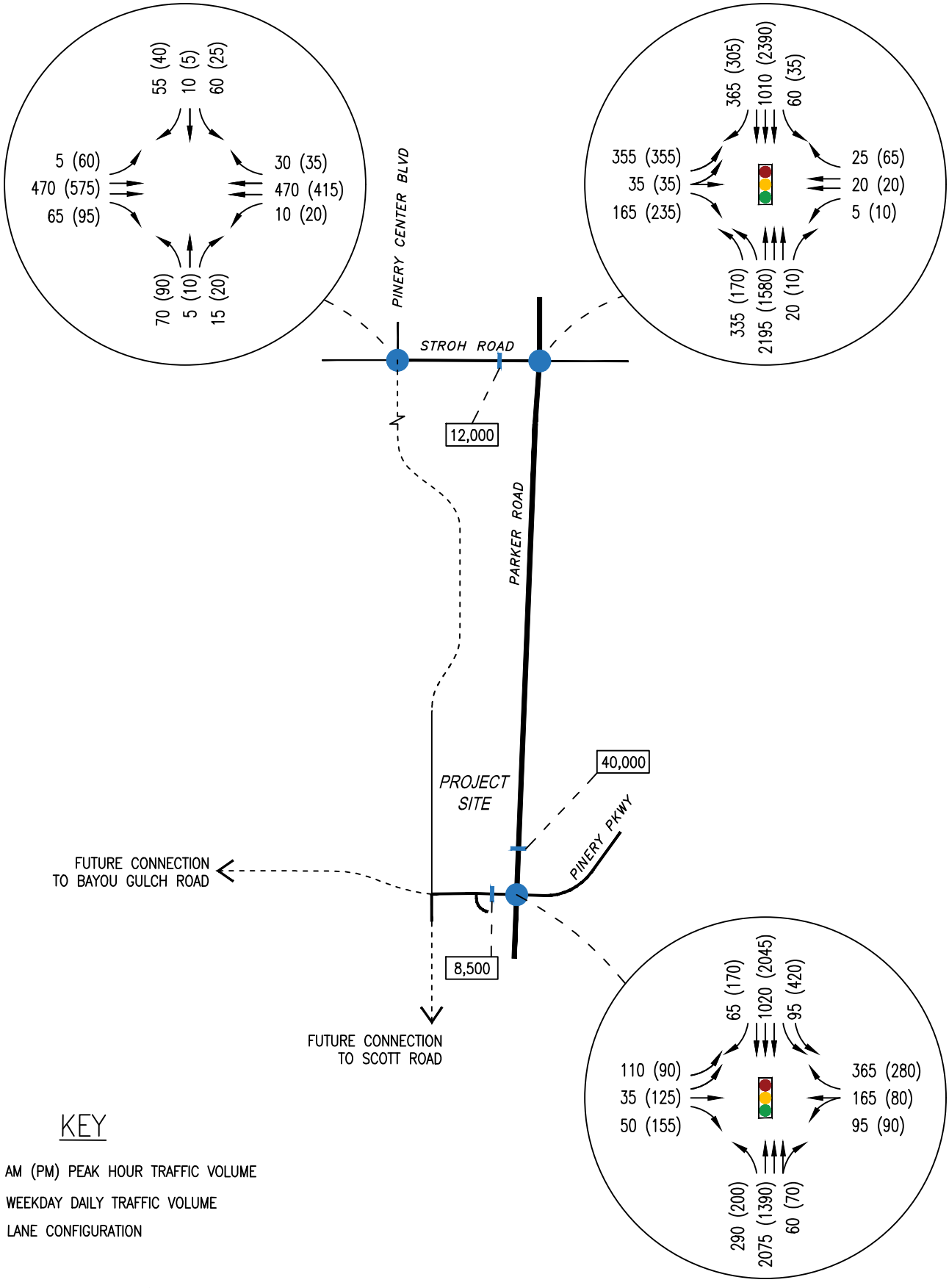


FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

YEAR 2040 BACKGROUND TRAFFIC VOLUMES (WITHOUT CONNECTIONS)

FT #	20049	Pinery Village Filing 3 Minor Development	Diagram Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	5



FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

YEAR 2040 BACKGROUND TRAFFIC VOLUMES (WITH CONNECTIONS)

FT #	20049	Pinery Village Filing 3 Minor Development	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	6

5.1.1 Year 2030 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the 2030 background scenario and to identify any capacity constraints associated with background traffic. The background volumes, lane configuration, and traffic control are illustrated on **Figure 4**.

The level of service criteria discussed previously was applied to the study area intersections to determine the impacts with the short-term background volumes. The results of the LOS calculations for the intersections are summarized in **Table 1A** and **Table 1B**. The intersection level of service worksheets and queue reports are attached in the **Appendix**. The Year 2030 background analysis assumed the existing lane configuration and signal phasing would remain the same at the study intersections.

All project intersections are shown to operate at LOS D or better overall in the AM and PM peak hours, which meets Douglas County requirements for overall intersection operations. There are several individual movements that are operating at LOS E or F, as noted below:

- Parker Road & N. Pinery Parkway: As noted with the existing conditions analysis, the westbound right-turn movement is calculated to operate at LOS F in the AM peak hour Parker Road with long queueing.

  To mitigate this existing deficiency, a northbound right-turn acceleration lane would need to be constructed on Parker Road to allow this movement to function as a “free right” turn movement, which would significantly reduce the delays and queuing. An acceleration lane would typically be installed for these volumes. This improvement would not be related to development of the Pinery West project but would be necessary to mitigate an existing deficiency. This improvement was not assumed to be installed for scenarios with project development to provide a conservative estimate of site traffic impacts.

- Parker Road & Stroh Road: This signalized intersection is projected to operate overall at LOS D and LOS C in the AM and PM hours, respectively, but with background (non-project) related improvements installed. Several side-street and left-turn movements are anticipated to operate at LOS E and/or LOS F in at least one peak hour.

  Widening of the east departure from the intersection is necessary to provide a dedicated westbound through lane and westbound dual left-lanes. This would remove the existing westbound shared left + through lane condition which requires split phasing of the signal, which is highly inefficient and would result in the intersection operating at LOS F in the

Year 2030 with background (non-project) traffic growth. This improvement is assumed in place for the Year 2030 background scenario.

5.1.2 Year 2040 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the Year 2040 background scenario and to identify any capacity constraints associated with background traffic in the long-term scenario with the project and without the Pinery Parkway and Pinery Center Blvd. extensions in place. Approach peak hour factors were adjusted, where appropriate, to account for peak hour spreading that will occur with traffic volume growth. The Year 2040 background volumes, lane configuration, and traffic control are illustrated on **Figure 5**.

The results of the LOS calculations for the intersections are summarized in **Table 1A** and **Table 1B**. The intersection level of service worksheets and queue reports are attached in the **Appendix**.

All project intersections are shown to be operate at LOS D or better overall in the AM and PM peak hours, with the following exceptions:

- Parker Road & N. Pinery Parkway: This signalized intersection is calculated to operate at LOS E overall in the AM peak hour. In addition to the continued delays for the westbound right-turn movement, which will increase with traffic growth on Parker Road, the northbound through movement is projected to operate at LOS E in the AM peak hour.

  To mitigate the existing westbound right-turn deficiency, a northbound right-turn acceleration lane would need to be constructed on Parker Road (as previously discussed). To mitigate the northbound approach delays, a northbound right-turn deceleration lane into the Pinery would need to be installed. Both are either existing or future-background growth deficiencies not related to development of the project. These improvements were not assumed to be installed for future scenarios with project development to provide a conservative estimate of site traffic impacts. As discussed further in this report, improvements needed to be installed to support both background and project-added traffic with site development will provide benefit to this intersection such that the intersection can be mitigated to acceptable Levels of Service.

- Parker Road & Stroh Road: This signalized intersection is calculated to operate acceptably overall at LOS C/D in the AM and PM peak hours, respectively. Some left-turn movements are projected to operate at LOS E or F, though all 95th percentile queues are calculated to be well within available storage lengths.

As discussed with the Year 2030 background scenario, widening of the east departure from the intersection is necessary to provide a dedicated eastbound through lane and eastbound dual left-lanes. This would remove the existing eastbound shared left + through lane condition which requires split phasing of the signal, which is highly inefficient and would result in the intersection operating at LOS F in the long-term with background (non-project) traffic growth. This improvement is assumed in place for the Year 2040 background scenario.

Left-turn delays shown at worse than LOS D are due to the protected-only left-turn operation of these movements and is common where a left-turn is protected along a major arterial. As the protected-only operation is due to safety concerns with left-turns across a major, three-lane arterial, no changes are recommended to mitigate these left-turn delays.

- J. Morgan Blvd. & Stroh Road: With the proposed future connection of Pinery Center Blvd. as a collector roadway south of Stroh Road to Scott Road, as well as potential development on the south side of Stroh Road, it is anticipated that a signal will be needed based on background (non-project) traffic that would be anticipated to shift from Parker Road to utilize this connection or access future development at this intersection.

6.0 FUTURE CONDITIONS WITH PINERY WEST DEVELOPMENT

6.1 Trip Generation

A trip generation estimate was performed to determine the traffic characteristics of the Pinery West development. Pinery West proposes to be an employment/commercial area will be a mix of retail, office, restaurants, hotel, recreation, and light industrial. The trip rates contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual*[4] were applied to estimate the traffic for the proposed land uses:

Specific land uses and tenants for most parcels is unknown at this time and will evolve based on market conditions. Within the existing zoning designations, it is anticipated that there will be variety of commercial uses, offices, flex space, pad retail, restaurants, lodging, day care, recreational and light industrial uses. There is also an RTD park-N-ride and Douglas County School District office proposed on the site. In order to estimate the site auto trips, land use designations within the ITE Trip Generation Manual were utilized. For the majority of commercial/retail land use on the site, the "Shopping Center" (ITE #820) land use category was applied as the data for this land use code is described as follows:

> *Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses). Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices.*

Given the applicability of the "Shopping Center" land use description to the majority of the site uses, these rates were applied to a large portion of the site. ITE trip generation rates for "General Light Industrial" (#110), "General Office Building" (#710), "Day Care Center" (#565), "Drive Thru Bank" (#912), "Hotel (#310), and "Park-and-Ride with Bus Service" (#090) were also utilized, where applicable.

[4] Trip Generation 10th Edition, Institute of Transportation Engineers, 2017.

The trip generation estimates using these rates are summarized on **Table 2** for the southwest, southeast, and north (main) portions of the site, with Pinery Parkway as the dividing line between these trip generation subareas.

The site is expected to experience the four basic trip types as discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis. It is expected that the proposed project will experience most primary trips.

Pass-By Trips. Pass-by trips are those that are already occurring on the adjacent roadway network but will divert into the site to visit a site use, typically retail/restaurant/services. An example would be a vehicle trip already occurring on Parker Road that would turn into the site to visit a bank, but the bank visit was not the primary purpose of the trip. Pass-by trips do not create any increase in the traffic volumes within the primary impact area. The only impact of the pass-by trips is at the site driveways and adjacent intersections where through movements become turning movements into and out of the site. Therefore, pass-by trips have no additional impact on the road system beyond the site's driveways or immediately adjacent intersections.

Pass-by was applied to the commercial portions of the Pinery West site. These land uses historically have shown to have pass-by trips as indicated by the national data in the *ITE Trip Generation Handbook*, which are those vehicles that utilize one of the adjacent roadways to travel between their origin and destination and choose to make a stop within the development site before they continue on route. This is not a reduction of trips, but a redirect of existing/background trips that will become a customer of the new businesses. The *ITE Trip Generation Handbook* defines pass-by as "trips made as intermediate stops on the way from an origin to primary trip destination without a route diversion". The pass-by trips percentages used for this analysis are shown on **Table 3.**

Multi-Use (Internal) Trips. These internal trips occur from one land use or building to another within the site boundaries. For example, a person that works in one of the offices may shop in the new retail center or one customer may visit several stores during one visit. Multi-use or multi-purpose trips typically do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network. The multi-use factors applied are shown on **Table 2**.

Non-Auto Trips. These trips are those that are completed by walking, bicycling, or riding transit. The existing transit, pedestrian, and bicycle amenities will encourage residents, employees, and customers to make non-auto trips to/from the Pinery West site. The non-auto trips are assumed to be accounted for within the multi-use (internal) trips.

Table 3 provides the trip type breakdown estimate for the Pinery West development, to include both “primary” (unique) and “pass-by” trip types.

FOX TUTTLE

Table 2. Trip Generation Estimate

Land Use	Size	Unit	Multi-Use Factor[1]	Average Daily Trips				A.M. Peak Hour Trips				P.M. Peak Hour Trips			
				Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
South of Pinery Parkway - West															
#565 Day Care Center	12.0	1,000 SF	0.0	47.62	571	286	285	11.00	132	70	62	11.12	133	63	70
#710 General Office Building	17.4	1,000 SF	0.0	9.74	169	85	84	1.16	20	17	3	1.15	20	3	17
South of Pinery Parkway - West - SUBTOTAL					740	371	369		152	87	65		153	66	87
South of Pinery - East															
#820 Shopping Center	5.3	1,000 SF	0.0	Used Fitted Equations	200	100	100	Used Fitted Equations	154	95	59	Used Fitted Equations	62	30	32
#912 Drive Thru Bank	7.0	1,000 SF	0.0	100.03	700	350	350	9.5	67	39	28	20.45	143	71	72
South of Pinery Parkway - East - SUBTOTAL					900	450	450		221	134	87		205	101	104
North of Pinery Parkway															
#820 Shopping Center	532.5	1,000 SF	0.1	Used Fitted Equations	16871	8436	8435	Used Fitted Equations	376	233	143	Used Fitted Equations	1686	809	877
#110 General Light Industrial	169.8	1,000 SF	0.0	Used Fitted Equations	702	351	351	Used Fitted Equations	66	58	8	Used Fitted Equations	53	7	46
#310 Hotel	150	Occupied Rooms	0.1	12.23	1651	826	825	0.62	84	49	35	0.73	99	49	50
#565 Day Care Center	12.0	1,000 SF	0	47.62	571	286	285	11.00	132	70	62	11.12	133	63	70
#710 General Office Building	50.0	1,000 SF	0.0	9.74	487	244	243	1.16	58	50	8	1.15	58	9	49
#090 Park-and-Ride with Bus Service	150	Parking Spaces	0	2.81	422	211	211	0.42	63	50	13	0.43	65	16	49
North of Pinery Parkway - SUBTOTAL					20704	10354	10350		779	510	269		2094	953	1141
TOTAL PROJECT					22344	11175	11169		1152	731	421		2452	1120	1332

Source: ITE Trip Generation 10th Edition. 2017.

[1] Accounts for auto and non-auto multi-use trips between two or more uses on site (ie: someone visits a coffee shop on their way to their office or walks to a restaurant from work for lunch, thus only one unique auto trip to the site was generated in these instances). This is separate from the internal trip distribution, which is a unique auto trip with an origin and destination within the site. Neither results in a new, unique auto trip to the external area roadway network.

FOX TUTTLE

Table 3. Trip Type Breakdown

	Trip Type %[1]		PRIMARY Trips						PASS-BY Trips					
Land Use	**Primary**	**Pass-By**	**Daily In**	**Daily Out**	**AM In**	**AM Out**	**PM In**	**PM Out**	**Daily In**	**Daily Out**	**AM In**	**AM Out**	**PM In**	**PM Out**
South of Pinery Parkway - West														
#565 Day Care Center	100%	0%	286	285	70	62	63	70	0	0	0	0	0	0
#710 General Office Building	100%	0%	85	84	17	3	3	17	0	0	0	0	0	0
South of Pinery Parkway - West - SUBTOTAL			**371**	**369**	**87**	**65**	**66**	**87**	**0**	**0**	**0**	**0**	**0**	**0**
South of Pinery - East														
#820 Shopping Center	66%	34%	66	66	63	39	20	21	34	34	32	20	10	11
#912 Drive Thru Bank	70%	30%	245	245	27	20	50	50	105	105	12	8	21	22
South of Pinery Parkway - East - SUBTOTAL			**311**	**311**	**90**	**59**	**70**	**72**	**139**	**139**	**44**	**28**	**32**	**32**
North of Pinery Parkway														
#820 Shopping Center	66%	34%	5568	5567	154	94	534	579	2868	2868	79	49	275	298
#110 General Light Industrial	100%	0%	351	351	58	8	7	46	0	0	0	0	0	0
#310 Hotel	100%	0%	826	825	49	35	49	50	0	0	0	0	0	0
#565 Day Care Center	100%	0%	286	285	70	62	63	70	0	0	0	0	0	0
#710 General Office Building	100%	0%	244	243	50	8	9	49	0	0	0	0	0	0
#090 Park-and-Ride with Bus Service	100%	0%	211	211	50	13	16	49	0	0	0	0	0	0
North of Pinery Parkway - SUBTOTAL			**7486**	**7482**	**431**	**220**	**678**	**843**	**2868**	**2868**	**79**	**49**	**275**	**298**
TOTAL PROJECT			**8168**	**8162**	**608**	**344**	**813**	**1001**	**3007**	**3007**	**123**	**77**	**307**	**331**

Source: ITE Trip Generation Handbook, 10th Edition. 2017.

[1] Per ITE average data for each land use or comparable land use.

6.2 Trip Distribution and Assignment

The estimated trip volumes were distributed onto the study area street network based on existing traffic characteristics, land uses, and traffic patterns in the area, as well as regional growth and future roadway infrastructure. The overall assumed distribution percentages are listed below with and without the future extensions of Pinery Parkway to the west and Pinery Center Boulevard to the north:

Without Connections:

- 55% to/from north Parker Road north of Stroh Road
- 30% to/from south Parker Road
- 3% to/from west Stroh Road
- 2% to/from north J. Morgan Boulevard
- 0% to/from west Pinery Parkway
- 5% to/from east Pinery Parkway
- 5% internal capture

With Connections:

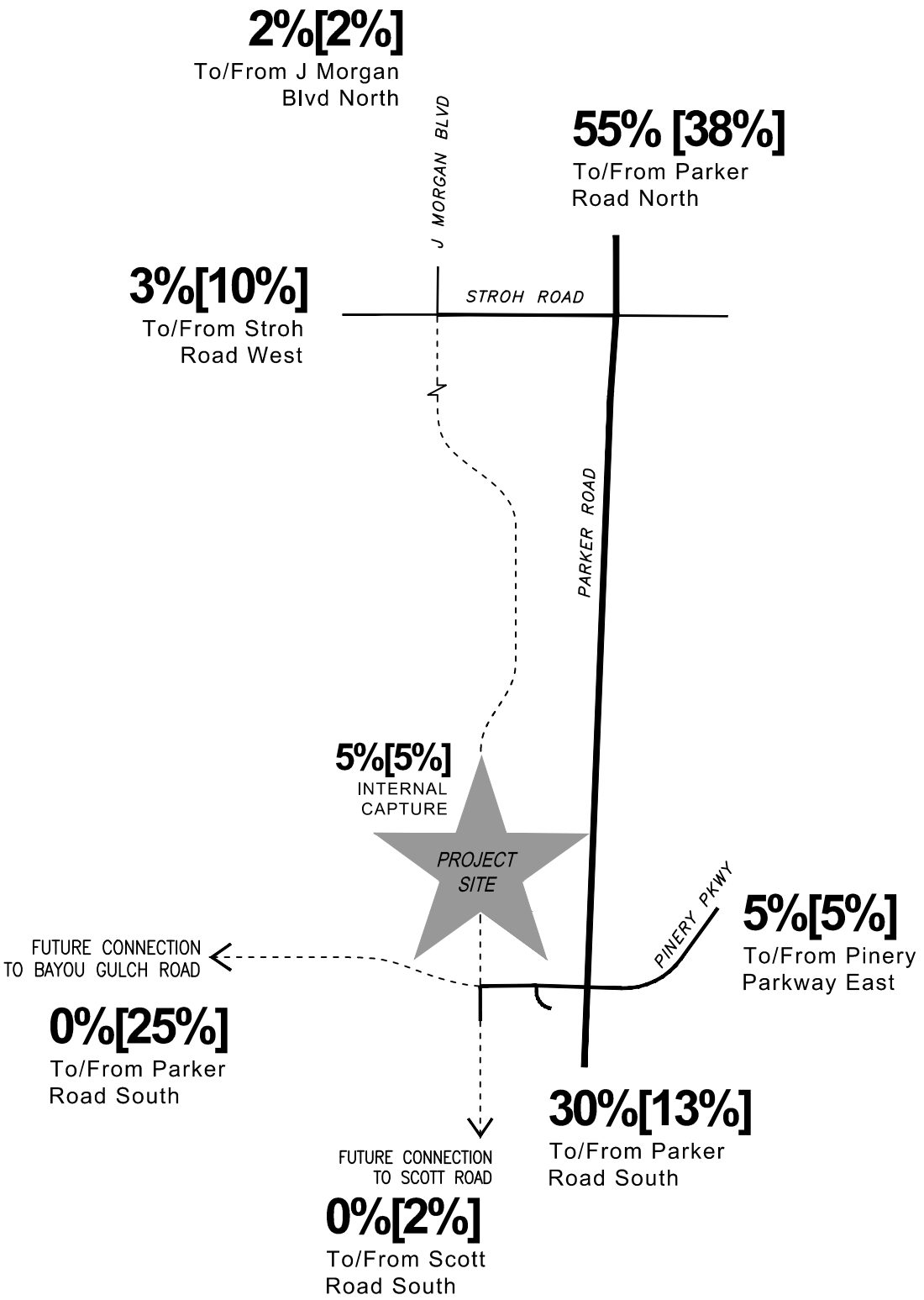
- 38% to/from north Parker Road north of Stroh Road
- 13% to/from south Parker Road
- 10% to/from west Stroh Road
- 2% to/from north J. Morgan Boulevard to Stroh Road
- 2% to/from south Pinery Center Boulevard to Scott Road
- 25% to/from west Pinery Parkway
- 5% to/from east Pinery Parkway
- 5% internal capture

Figure 7 summarizes the trip distribution assumptions. Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network for the weekday AM and PM peak hours. In Year 2030 with project build out, it is assumed that Pinery Parkway and Pinery Center Boulevard are not extended. These connections are assumed to be in place in the long-term, Year 2040 scenario. The site-generated volumes without the new roadway connections are shown on **Figure 8** and the site-generated volumes with the new roadway connections are shown on **Figure 9.**

KEY

XX% DISTRIBUTION WITHOUT CONNECTIONS

[XX%] DISTRIBUTION WITH CONNECTIONS

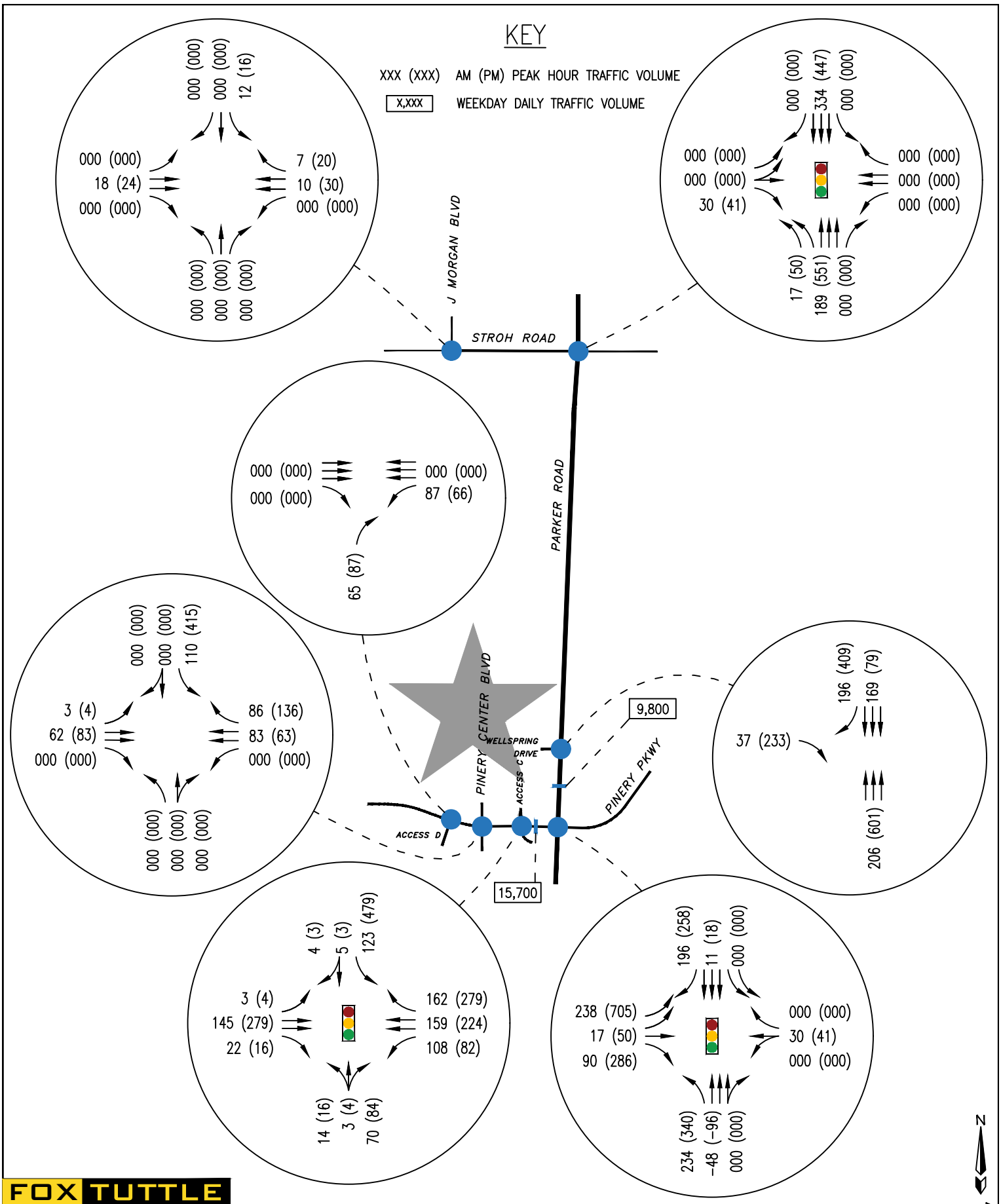


FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

SITE TRIP DISTRIBUTION

FT #	20049	Pinery Village Filing 3 Minor Development	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	7

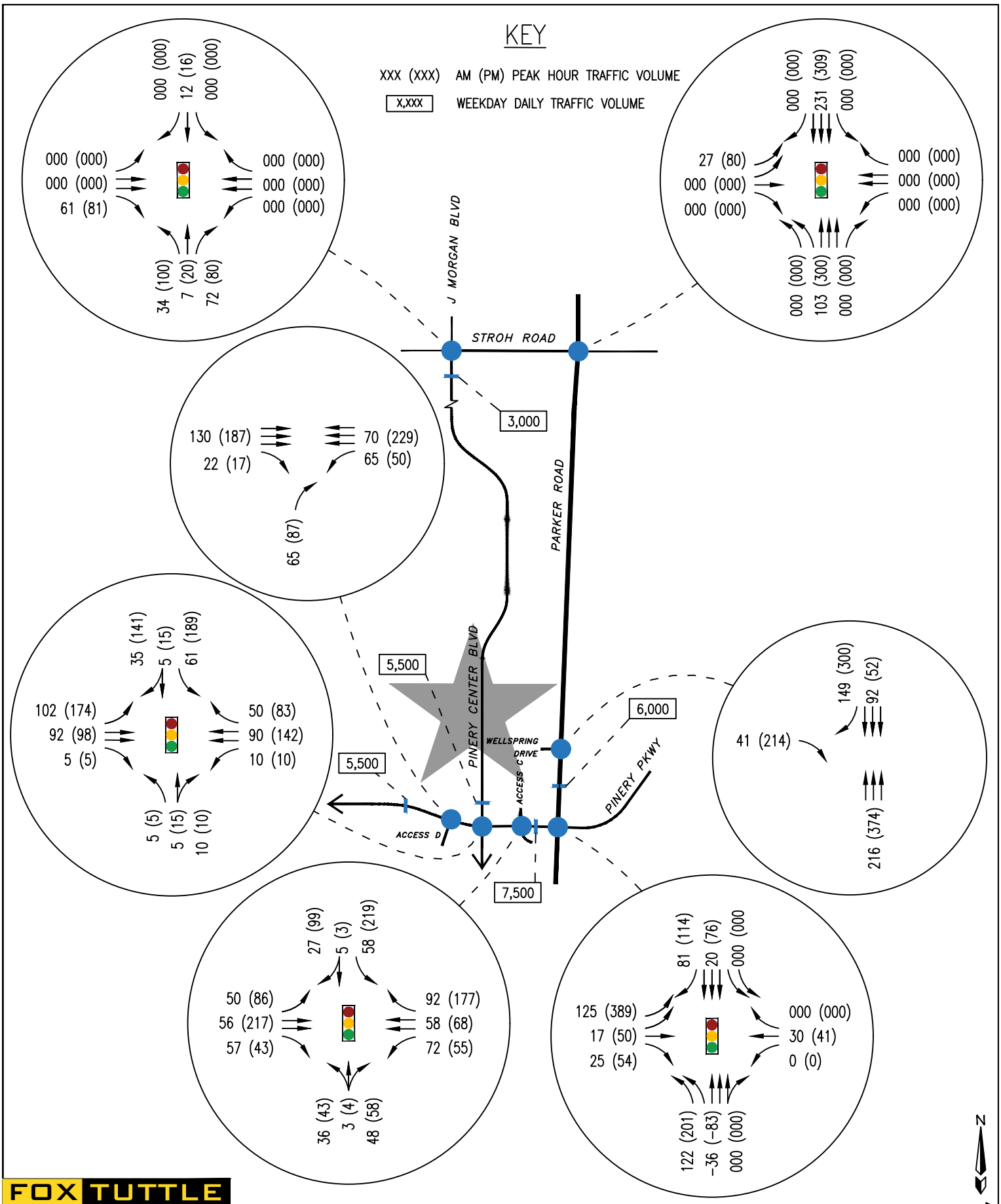


FOX TUTTLE
TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

SITE-GENERATED TRAFFIC VOLUMES (WITHOUT CONNECTIONS)

FT #	20049	Filing	03 Minor Development	Graphical Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	8



FOX TUTTLE
TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

SITE-GENERATED TRAFFIC VOLUMES (WITH CONNECTIONS)

FT #	20049	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	9

6.2.1 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the addition of the Pinery West development trips in the build out scenario with the project fully built out and fully occupied.

The projected 2030 background volumes were added to the site-generated volumes and are illustrated on **Figure 10**. This figure also illustrates the necessary traffic control and lane configurations for all of the proposed accesses. The results of the LOS calculations for the intersections are summarized on **Table 1A** and **Table 1B** (signalized and stop-controlled, respectively). The intersection level of service worksheets and queue reports are attached in the **Appendix**.

As shown on the Level of Service summary tables, all study area intersections are projected to operate acceptably overall (LOS D or better) and with the following improvements in place prior to full build out and site occupancy:

- Parker Road & N. Pinery Parkway:
    - Construct a 2nd northbound left-turn lane. This improvement is necessary to due to the projected high PM peak left-turn volumes vs. a high volume of southbound through traffic on Parker Road in the PM peak hour, which compete for allocation of the available cycle length. Roughly half of the projected left-turn volume is due to background traffic that is anticipated to shift to the Pinery Parkway extension. The width in the existing median is available to create this lane. This lane should be built to CDOT Access Code standards (see Section 7.0 for dimensions). The existing raised median on the west leg is planned to be narrowed to 4' to provide the width for a second accepting lane for the dual left-turn.
    - Reconfigure the westbound approach to include a new, exclusive westbound left-turn lane exiting the Pinery (cut into the existing median), with the existing left+through lane reconfigured as the westbound through lane and the existing westbound right-turn lane to remain as is. This will allow for more capacity for the westbound approach to address both existing and future capacity constraints.
- Pinery Parkway & Access C:
    - Install a traffic signal. The signal is warranted based on the projected volumes and is necessary to allow the intersection to operate at acceptable Levels of Service in at full build out and occupancy.

As shown on **Table 1A** and **Table 1B**, some individual movements are anticipated to operate at LOS E or F in the peak hours with short-term build out of the site that were not operating at this level with background conditions.

Some additional notes relative to the Year 2030, project build out capacity and queuing analysis are as follows:

- As shown on the queue reports, the 95th-percentile queues for the eastbound approach at the Parker Road & Pinery Parkway intersection are not shown to extend west to the Access C intersection.

- At Access C & Pinery Parkway, in the PM peak hour the southbound left-turn is anticipated to experience a 50%-percentile queue of 250' and a 95%-percentile queue of 481' (roughly 19 vehicles) and will operate acceptably at LOS D. Future site access and site design along Access C to the north should anticipate queue extending north up to this distance from Pinery Parkway.

- At Pinery Center Boulevard & Pinery Parkway, in the PM peak hour the southbound left-turn is anticipated to experience a 95th-percentile queue of roughly 5 vehicles. The southbound approach will operate acceptable at LOS C.

6.2.2 Year 2040 Background + Project Intersection Capacity Analysis

This section discusses impacts associated with the addition of the Pinery West development trips in the long-term, 20-year scenario with full build out and occupancy of the project.

The site-generated volumes were added to the projected 2040 background volumes and are illustrated on **Figure 11**. For the Year 2040 site build out scenario, the Pinery Parkway west connection and Pinery Center Blvd. connection are assumed to be constructed.

The results of the LOS calculations for the intersections are summarized in **Table 1A** and **Table 1B** (signalized and stop-controlled, respectively). The intersection level of service worksheets and queue reports are attached in the **Appendix**.

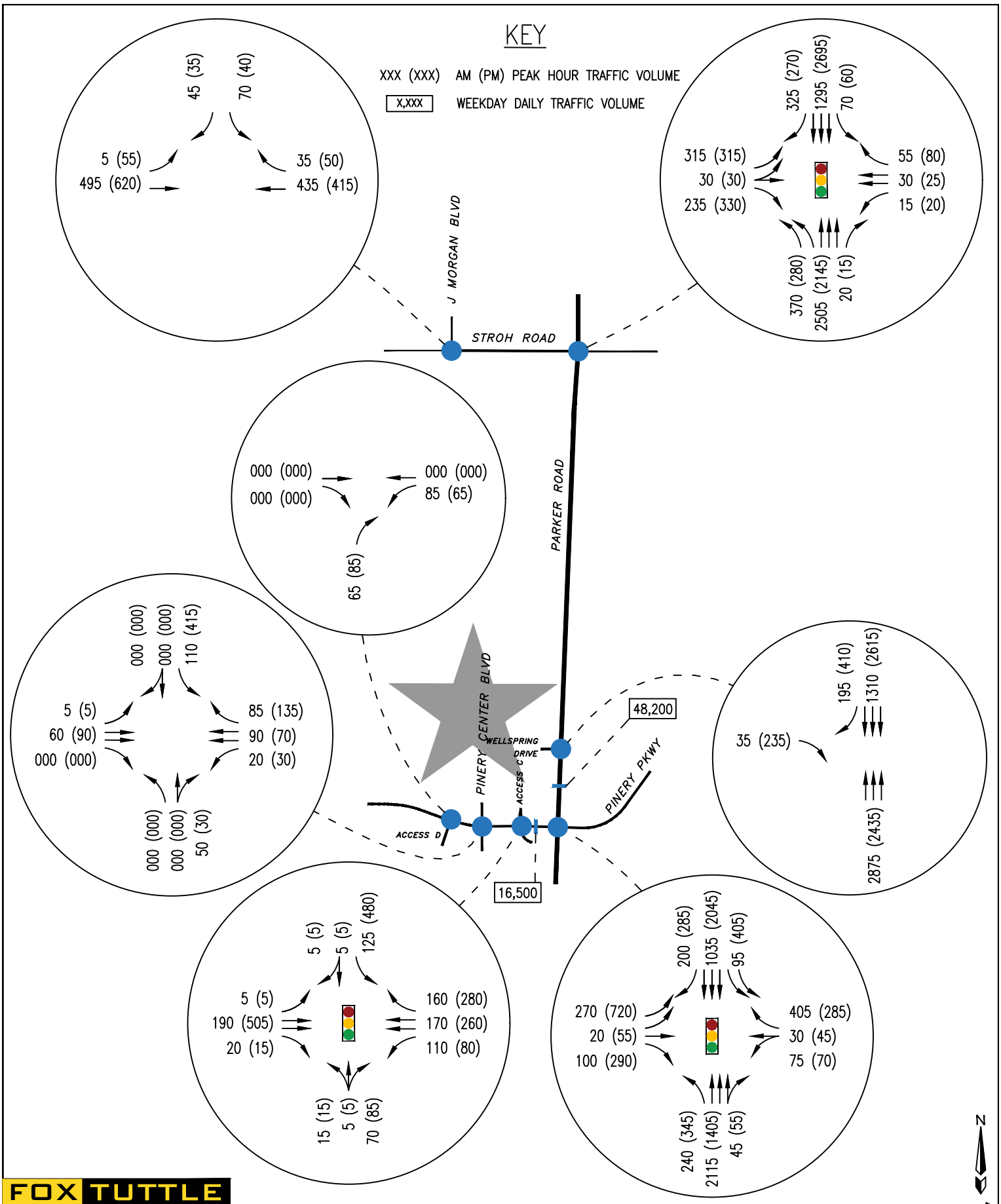
As shown on the Level of Service summary tables, all study area intersections are projected to operate acceptably overall (LOS D or better) and with the improvements identified in Section 6.2.1 in place, as well as the following long-term improvements:

- Pinery Parkway & J. Morgan Blvd.:
    - Install a traffic signal, when warranted. This signal may be needed to allow the intersection to operate at acceptable Levels of Service in the long-term planning scenario. The need for this signal will be dependent on background traffic shifts to Pinery Center Blvd. if connected from Stroh Road to Scott Road (as anticipated by the County), background traffic shifts to Pinery Parkway west of Parker Road when the connection to the west is in place, project traffic growth, and additional developments in the area that will utilize the Pinery Center Blvd. extension for access.

Some additional notes relative to the long-term, project build out capacity and queuing analysis are as follows:

- As shown on the queue reports, the 95th-percentile queues for the eastbound approach at the Parker Road & Pinery Parkway intersection are not shown to extend west to the Access C intersection.

Traffic signal warrant analysis was performed using criteria contained in the Manual on Uniform Traffic Control Devices (MUTCD). For planning-level purposes, the Peak Hour Signal Warrant was applied to this project since only peak hour volumes are projected for future development using ITE rates. The signal warrant analysis is summarized on **Figure 11**.

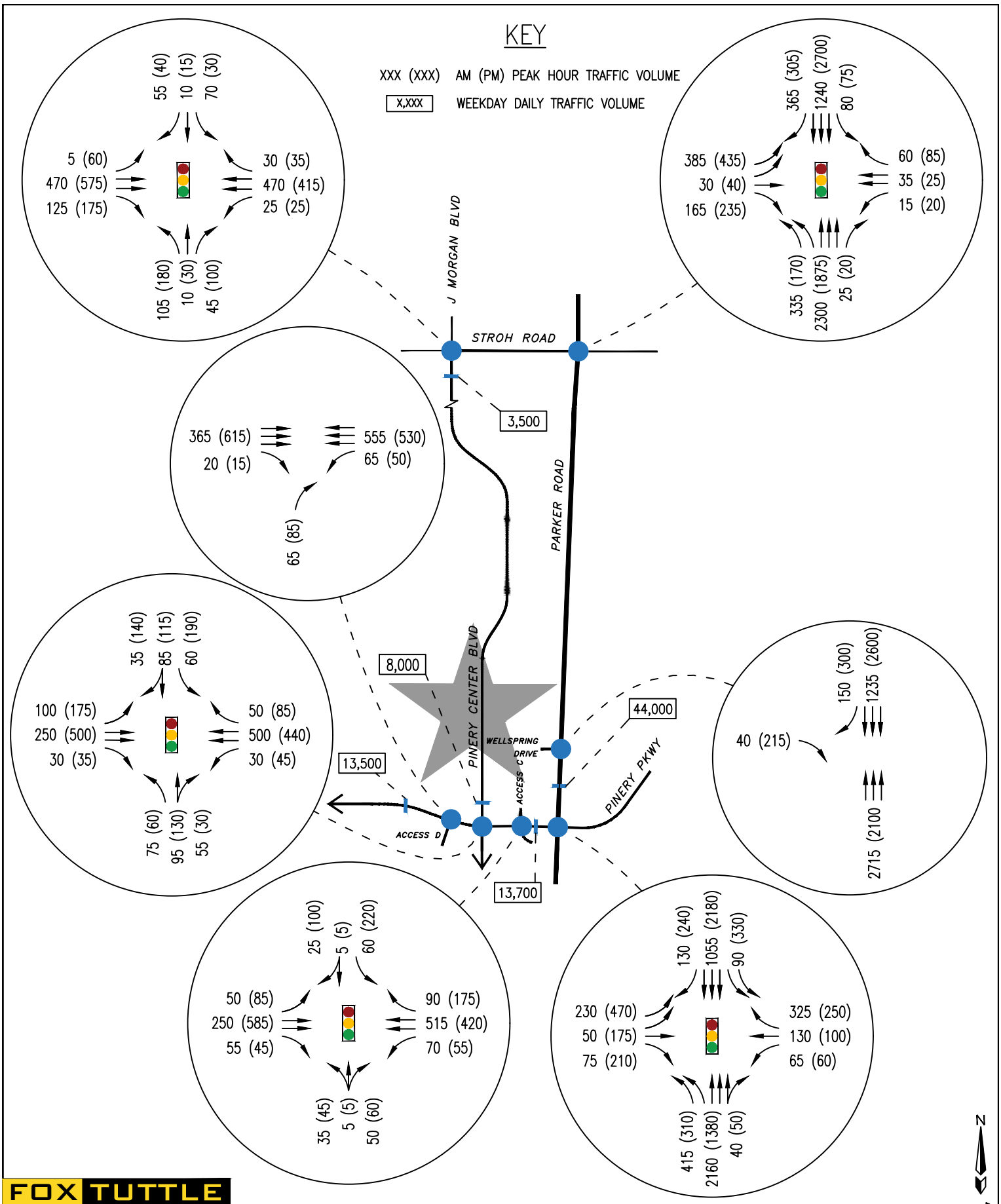


FOX TUTTLE
TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

YEAR 2030 TOTAL TRAFFIC VOLUMES

FT #	20049	Pinery Village Filing 3 Minor Development	Graphical Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	10



FOX TUTTLE
TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY UPDATE

YEAR 2040 TOTAL TRAFFIC VOLUMES

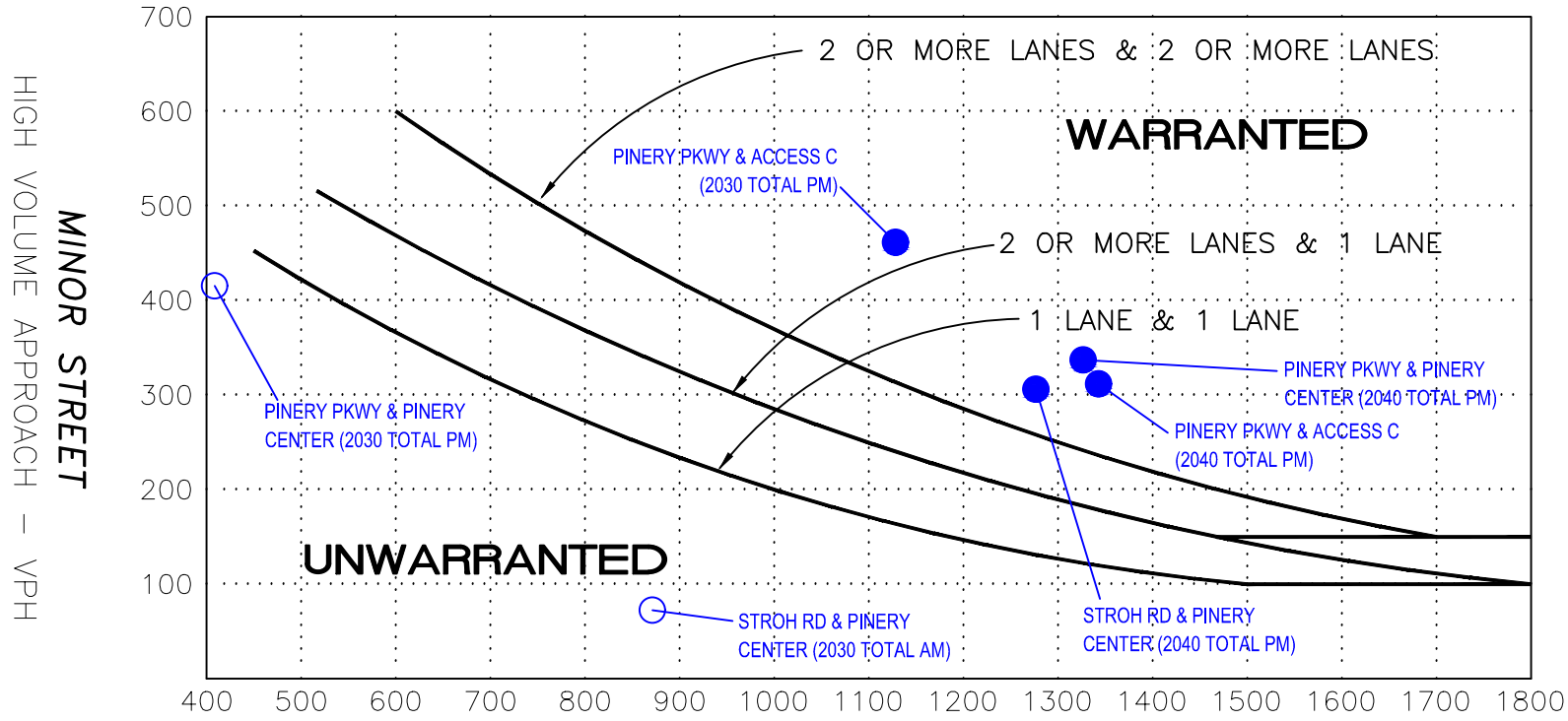
FT #	20049	Pinery Village Filing 3 Minor Development	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	11

PEAK HOUR VOLUME WARRANT

KEY

● = VOLUME EXCEEDS WARRANT THRESHOLD

○ = VOLUME DOES NOT EXCEED WARRANT THRESHOLD



NOTE: THE HIGHEST VOLUME PEAK HOUR IS SHOWN FOR EACH PLANNING HORIZON/SCENARIO

NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

FOX TUTTLE TRANSPORTATION GROUP

PINERY WEST TRAFFIC IMPACT STUDY
PEAK HOUR SIGNAL WARRANT

FT Project #	20049	Original Scale	NTS	Date	7/30/20	Drawn by	SGT	Figure #	12

7.0 AUXILIARY LANE EVALUATION

Auxiliary lanes were evaluated using the Level of Service results, queuing results, and auxiliary lane designs consistent with the State Highway Access Code for each roadway category and posted speed and based on an assume 12' lane width.

Direct access to the site is planned via the following access points:

- Access B: Right-In, right-out restricted access along Parker Road
- Access C: Full-movement, signalized access
- Pinery Center Blvd. at Pinery Parkway

All of these intersections are either fully or partially built today, with some existing auxiliary lanes in place that can remain. New or modified auxiliary lanes to be constructed with the project are summarized as follows for the short-term and long-term planning horizons:

- Access B & Parker Road (with Initial Development):
    - Southbound right-turn deceleration lane (378' lane + 222' taper, 600' total length)
    - Southbound right-turn acceleration lane (tie into the existing southbound right-turn deceleration lane approaching N. Pinery Parkway, approximately 370' south of Access B)
- Parker Road and Pinery Parkway (Short-Term):
    - Second northbound left-turn lane (build parallel to the existing 600' total lane length)
- Parker Road and Pinery Parkway (Long-Term):
    - New eastbound left-turn lane (110' lane + 60' taper)

8.0 CONCLUSIONS

The Pinery West project proposes to construct a mix of employment, commercial, and light industrial uses on a largely vacant 144± acre property. Based on conceptual site planning, it is anticipated that there will be a grocery marketplace, office space, flex office space, commercial plats for shops, restaurants, and services, daycare services, a hotel, RTD park-n-ride station, recreational space, and light industrial uses.

The project proposes to have two full-movement accesses on N. Pinery Parkway, a ¾-movement access along N. Pinery Parkway, and a right-in, right-out access on Parker Road. The curb-cuts on Pinery Parkway already exist and will be extended into the subject property to service the proposed land uses. In the short-term, trips from the Pinery West project will travel along Parker Road to get to/from their regional destinations. In the long-term, Pinery Parkway is anticipated to be extended to the west to Crowfoot Valley Road and Pinery Center Boulevard is anticipated to be extended to the north to Stroh Road and south to Scott Road (pending other development).

The project is anticipated to generate approximately 22,344 daily, 1,152 AM peak hour and 2,452 PM peak hour driveway trips at buildout within the site. Approximately 16,330 daily, 952 AM and 1,814 PM trips are projected to be unique (new) trips within the study area that are not already traveling on the adjacent roadway network.

It was determined that the existing and proposed roadway and intersection can adequately accommodate the projected traffic volumes for buildout conditions.

The following mitigation measures are recommended:

Recommended Background Improvements (Not Related to Project):

These improvements are recommended to mitigate existing and future background deficiencies (with non-project traffic) and would need to be implemented by the County, CDOT, or other developer(s) to mitigate non-project traffic impacts independent of development of the project site:

- Parker Road & N. Pinery Parkway:
    - Add a northbound right-turn acceleration lane on Parker Road to create a "free right" turn condition to mitigate existing and projected future delays for traffic exiting the Pinery in the AM peak hour
    - Add a northbound right-turn deceleration lane on Parker Road approaching N. Pinery Parkway to mitigate projected delays for northbound traffic in the long-term
- Parker Road & Stroh Road:
    - Widen the east departure from the intersection to provide a dedicated westbound through lane and westbound dual left-lanes. This would remove

the existing westbound shared left + through lane condition which requires split phasing of the signal and allow the intersection to operate more effectively to service long-term background traffic growth projections. This should be accomplished with development of the southeast corner of this intersection which may also need to provide right-of-way to accommodate the widening.

- Stroh Road & J. Morgan Blvd.: Install a traffic signal, if warranted (long-term, with extension of Pinery Center Blvd. to Pinery Parkway and ultimately south to Scott Road). The need for this signal will be dependent on background traffic shifts to Pinery Center Blvd. as a local alternative to Parker Road for north-south travel, background traffic shifts to Pinery Parkway west of Parker Road when the connection to the west is in place, project traffic growth, and additional developments adjacent to the intersection that will utilize the Pinery Center Blvd. extension for access.

Recommended Project-Related Improvements

These improvements are recommended to be in place by either project build out and full occupancy (Year 2030) or the long-term, 20-year planning horizon (Year 2040):

- Parker Road & N. Pinery Parkway:
    - Construct a 2nd northbound left-turn lane (installed by project build out, assumed Year 2030). The need for this lane is for project traffic accessing the site from Parker Road to the south, as well as projected long-term background (non-project) growth and a shift of traffic from Parker Road when the Pinery Parkway connection to the west is in place. This improvement will require narrowing of the existing raised median to create the 2nd accepting land on the westbound departure.
    - Add a new eastbound left-turn lane (cut into the existing median on the east leg) and reconfigure the existing westbound left+through lane as a through lane. The need for these improvements is to provide adequate level of service for motorists exiting The Pinery when the project is fully built and occupied, as well as to mitigate existing deficiencies (primarily the existing westbound right-turn delays that are incurred by the existing lane geometry and lack of a right-turn acceleration lane onto northbound Parker Road).

- Pinery Parkway & Access C: Install a traffic signal (installed by project build out, assumed in Year 2030).

- Pinery Parkway & Pinery Center Blvd.: Install a traffic signal, if warranted (long-term, with extension of Pinery Center Blvd. to Stroh Road). The need for this signal will be dependent on background traffic shifts to Pinery Center Blvd. as a local alternative to Parker Road for north-south travel, background traffic shifts to Pinery Parkway west of Parker Road when the connection to the west is in place, project traffic growth, and additional developments in the area that will utilize the Pinery Center Blvd. extension for access.
- Parker Road & Access B: Construct southbound right-turn deceleration and southbound acceleration lanes.

Appendix:

Existing Traffic Data

Level of Service Definitions

Intersection Capacity Worksheets and Time-Space (Progression) Diagrams

Existing Traffic Data

RDC
Ridgeview Data Collection

Parker, CO
Pinery West
AM Peak
Parker Rd and Pinery Parkway

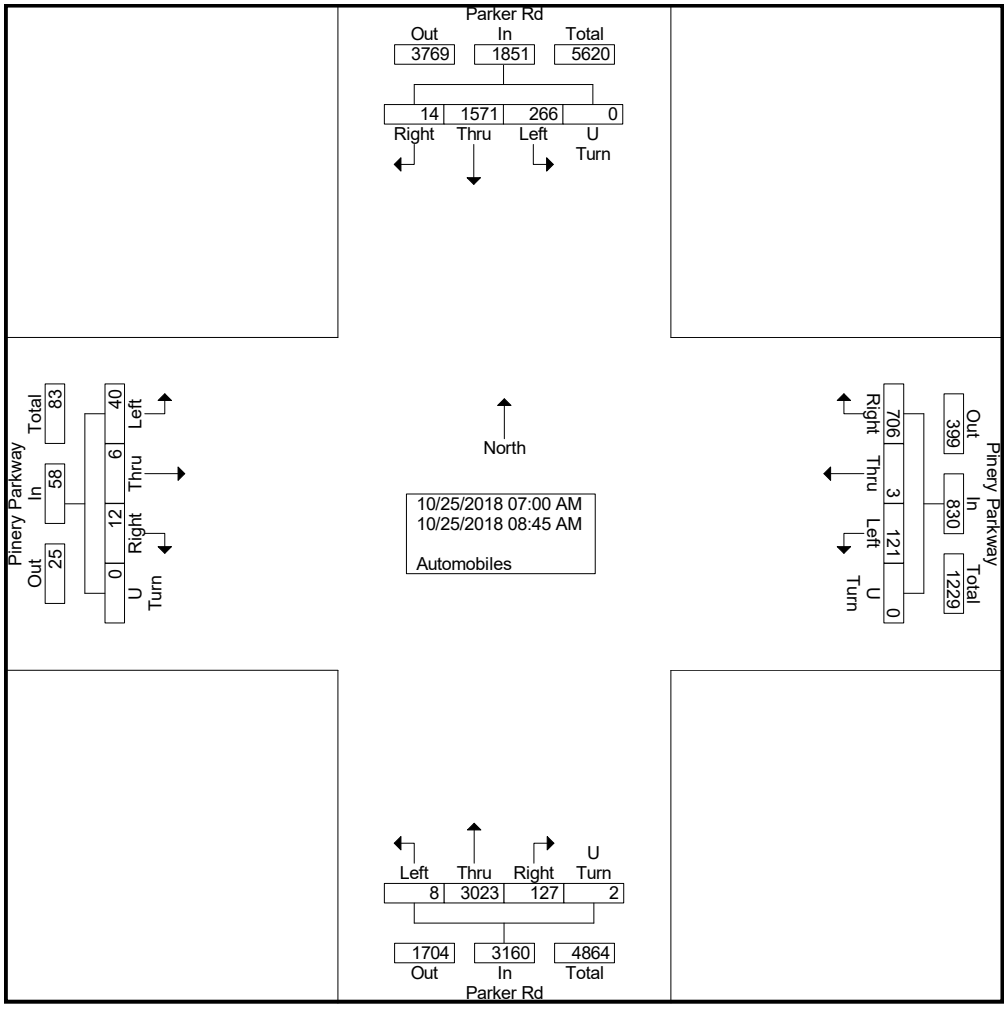
File Name : Parker and Pinery AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Pinery Parkway Eastbound					Pinery Parkway Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
07:00 AM	10	1	0	0	11	14	0	80	0	94	1	392	2	0	395	17	223	1	0	241	741
07:15 AM	3	0	2	0	5	10	0	101	0	111	0	499	10	0	509	11	188	2	0	201	826
07:30 AM	11	2	1	0	14	21	0	112	0	133	2	518	14	1	535	31	212	0	0	243	925
07:45 AM	3	1	3	0	7	27	1	102	0	130	0	402	18	1	421	33	235	0	0	268	826
Total	27	4	6	0	37	72	1	395	0	468	3	1811	44	2	1860	92	858	3	0	953	3318
08:00 AM	5	0	2	0	7	31	0	83	0	114	1	330	24	0	355	49	197	3	0	249	725
08:15 AM	4	1	2	0	7	8	1	86	0	95	2	295	6	0	303	38	185	1	0	224	629
08:30 AM	3	1	2	0	6	6	0	69	0	75	0	275	18	0	293	39	171	4	0	214	588
08:45 AM	1	0	0	0	1	4	1	73	0	78	2	312	35	0	349	48	160	3	0	211	639
Total	13	2	6	0	21	49	2	311	0	362	5	1212	83	0	1300	174	713	11	0	898	2581
Grand Total	40	6	12	0	58	121	3	706	0	830	8	3023	127	2	3160	266	1571	14	0	1851	5899
Apprch %	69	10.3	20.7	0		14.6	0.4	85.1	0		0.3	95.7	4	0.1		14.4	84.9	0.8	0		
Total %	0.7	0.1	0.2	0	1	2.1	0.1	12	0	14.1	0.1	51.2	2.2	0	53.6	4.5	26.6	0.2	0	31.4	

Parker, CO
Pinery West
AM Peak
Parker Rd and Pinery Parkway

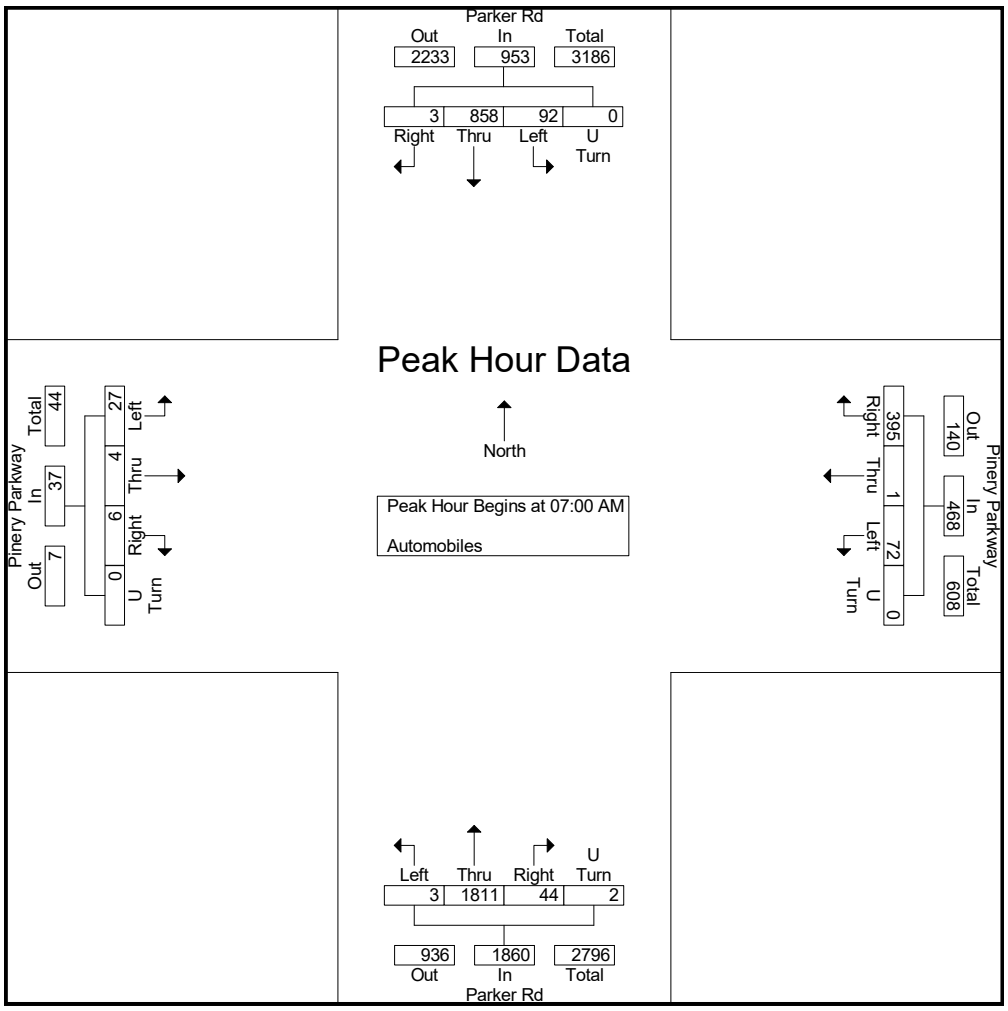
File Name : Parker and Pinery AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2



Parker, CO
Pinery West
AM Peak
Parker Rd and Pinery Parkway

File Name : Parker and Pinery AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Pinery Parkway Eastbound					Pinery Parkway Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	10	1	0	0	11	14	0	80	0	94	1	392	2	0	395	17	223	1	0	241	741
07:15 AM	3	0	2	0	5	10	0	101	0	111	0	499	10	0	509	11	188	**2**	0	201	826
07:30 AM	**11**	**2**	1	0	**14**	21	0	**112**	0	**133**	**2**	**518**	14	**1**	**535**	31	212	0	0	243	**925**
07:45 AM	3	1	**3**	0	7	**27**	**1**	102	0	130	0	402	**18**	1	421	**33**	**235**	0	0	**268**	826
Total Volume	27	4	6	0	37	72	1	395	0	468	3	1811	44	2	1860	92	858	3	0	953	3318
% App. Total	73	10.8	16.2	0		15.4	0.2	84.4	0		0.2	97.4	2.4	0.1		9.7	90	0.3	0		
PHF	.614	.500	.500	.000	.661	.667	.250	.882	.000	.880	.375	.874	.611	.500	.869	.697	.913	.375	.000	.889	.897



RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Parker Rd and Pinery Parkway

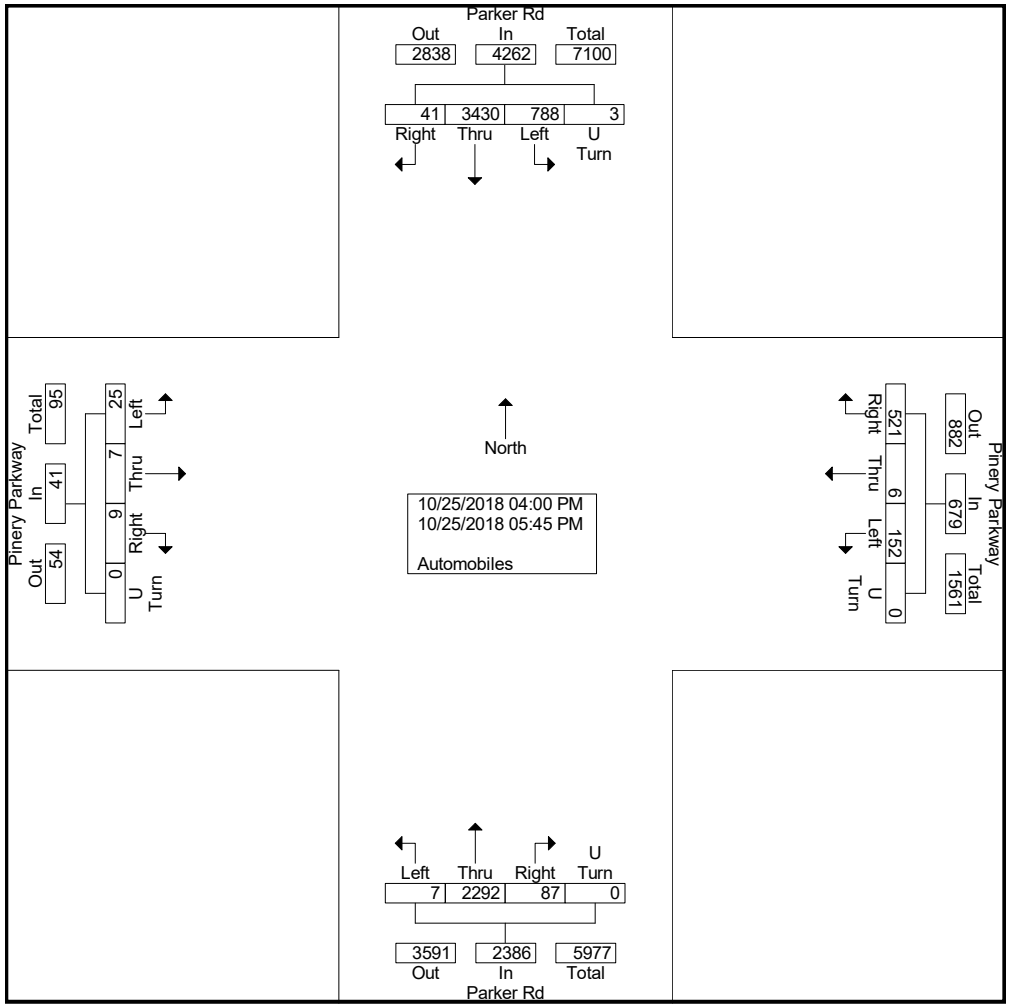
File Name : Parker and Pinery PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Pinery Parkway Eastbound					Pinery Parkway Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
04:00 PM	3	2	4	0	9	50	3	86	0	139	0	254	7	0	261	77	390	3	1	471	880
04:15 PM	2	1	1	0	4	19	1	73	0	93	0	284	12	0	296	100	417	3	2	522	915
04:30 PM	6	2	3	0	11	14	0	63	0	77	2	324	13	0	339	109	403	12	0	524	951
04:45 PM	4	0	0	0	4	12	1	64	0	77	3	342	12	0	357	90	439	1	0	530	968
Total	15	5	8	0	28	95	5	286	0	386	5	1204	44	0	1253	376	1649	19	3	2047	3714
05:00 PM	0	0	0	0	0	23	0	67	0	90	0	306	16	0	322	103	436	6	0	545	957
05:15 PM	3	2	0	0	5	20	0	56	0	76	2	259	7	0	268	90	462	9	0	561	910
05:30 PM	6	0	1	0	7	11	1	55	0	67	0	271	10	0	281	99	454	3	0	556	911
05:45 PM	1	0	0	0	1	3	0	57	0	60	0	252	10	0	262	120	429	4	0	553	876
Total	10	2	1	0	13	57	1	235	0	293	2	1088	43	0	1133	412	1781	22	0	2215	3654
Grand Total	25	7	9	0	41	152	6	521	0	679	7	2292	87	0	2386	788	3430	41	3	4262	7368
Apprch %	61	17.1	22	0		22.4	0.9	76.7	0		0.3	96.1	3.6	0		18.5	80.5	1	0.1		
Total %	0.3	0.1	0.1	0	0.6	2.1	0.1	7.1	0	9.2	0.1	31.1	1.2	0	32.4	10.7	46.6	0.6	0	57.8	

Parker, CO
Pinery West
PM Peak
Parker Rd and Pinery Parkway

File Name : Parker and Pinery PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2

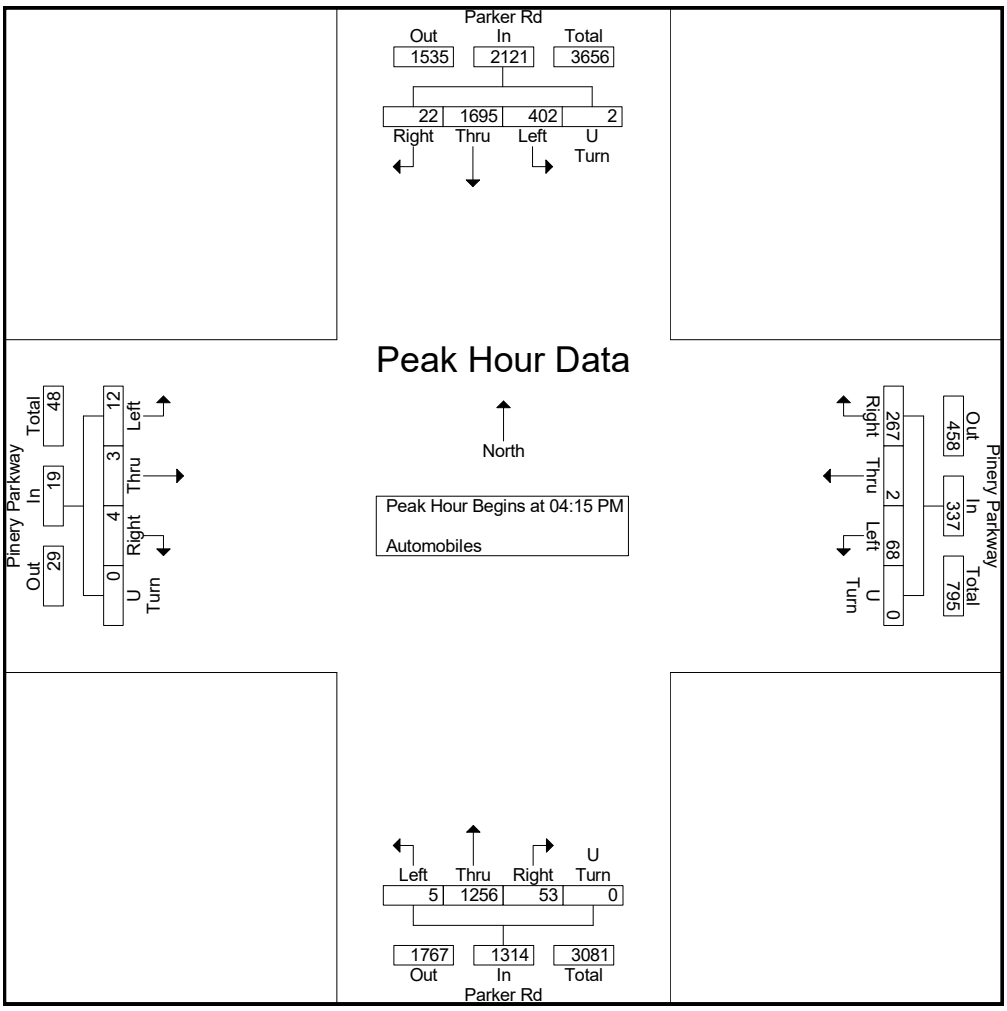


RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Parker Rd and Pinery Parkway

File Name : Parker and Pinery PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Pinery Parkway Eastbound					Pinery Parkway Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	2	1	1	0	4	19	**1**	**73**	0	**93**	0	284	12	0	296	100	417	3	**2**	522	915
04:30 PM	**6**	**2**	**3**	0	**11**	14	0	63	0	77	2	324	13	0	339	**109**	403	**12**	0	524	951
04:45 PM	4	0	0	0	4	12	1	64	0	77	**3**	**342**	12	0	**357**	90	**439**	1	0	530	**968**
05:00 PM	0	0	0	0	0	**23**	0	67	0	90	0	306	**16**	0	322	103	436	6	0	**545**	957
Total Volume	12	3	4	0	19	68	2	267	0	337	5	1256	53	0	1314	402	1695	22	2	2121	3791
% App. Total	63.2	15.8	21.1	0		20.2	0.6	79.2	0		0.4	95.6	4	0		19	79.9	1	0.1		
PHF	.500	.375	.333	.000	.432	.739	.500	.914	.000	.906	.417	.918	.828	.000	.920	.922	.965	.458	.250	.973	.979



RDC
Ridgeview Data Collection

Parker, CO
Pinery West
AM Peak
Parker Rd and Stroh Rd

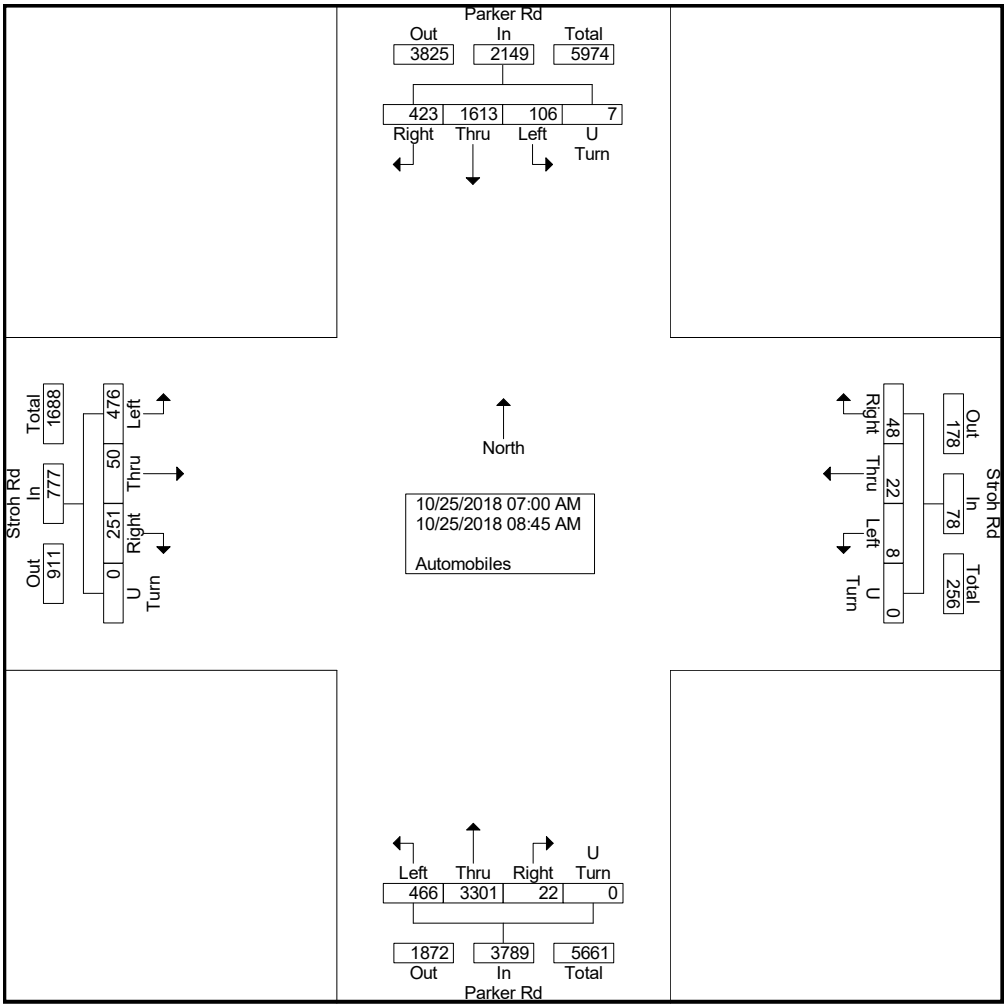
File Name : Parker and Stroh AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Stroh Rd Eastbound					Stroh Rd Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
07:00 AM	42	6	45	0	93	0	0	5	0	5	49	443	3	0	495	11	197	48	0	256	849
07:15 AM	47	4	28	0	79	2	2	3	0	7	67	535	2	0	604	13	186	50	1	250	940
07:30 AM	84	5	53	0	142	2	5	8	0	15	81	554	4	0	639	11	216	85	1	313	1109
07:45 AM	91	10	44	0	145	0	6	3	0	9	102	404	4	0	510	9	203	87	0	299	963
Total	264	25	170	0	459	4	13	19	0	36	299	1936	13	0	2248	44	802	270	2	1118	3861
08:00 AM	77	6	30	0	113	1	1	8	0	10	57	357	2	0	416	10	197	41	1	249	788
08:15 AM	49	9	15	0	73	0	4	8	0	12	35	352	4	0	391	17	214	38	0	269	745
08:30 AM	34	5	18	0	57	0	1	5	0	6	41	316	1	0	358	13	206	42	1	262	683
08:45 AM	52	5	18	0	75	3	3	8	0	14	34	340	2	0	376	22	194	32	3	251	716
Total	212	25	81	0	318	4	9	29	0	42	167	1365	9	0	1541	62	811	153	5	1031	2932
Grand Total	476	50	251	0	777	8	22	48	0	78	466	3301	22	0	3789	106	1613	423	7	2149	6793
Apprch %	61.3	6.4	32.3	0		10.3	28.2	61.5	0		12.3	87.1	0.6	0		4.9	75.1	19.7	0.3		
Total %	7	0.7	3.7	0	11.4	0.1	0.3	0.7	0	1.1	6.9	48.6	0.3	0	55.8	1.6	23.7	6.2	0.1	31.6	

Parker, CO
Pinery West
AM Peak
Parker Rd and Stroh Rd

File Name : Parker and Stroh AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2

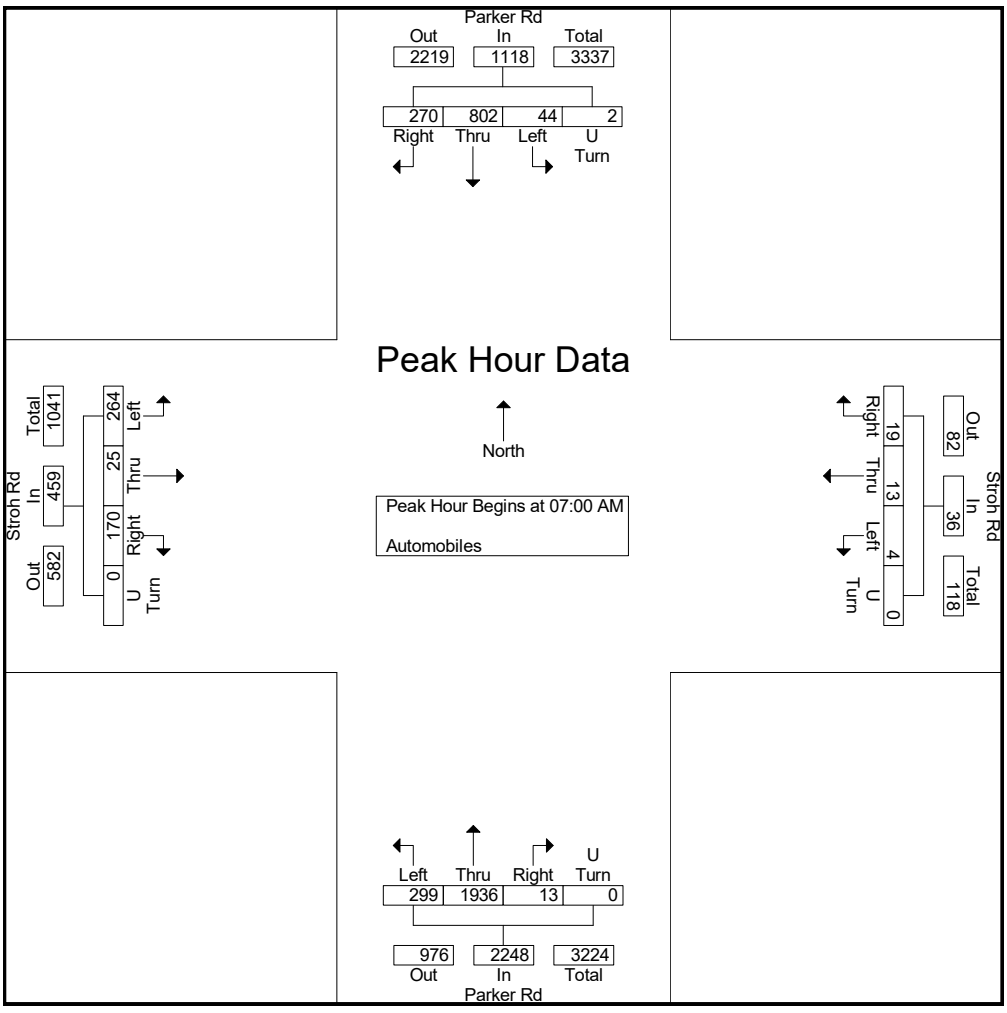


RDC
Ridgeview Data Collection

Parker, CO
Pinery West
AM Peak
Parker Rd and Stroh Rd

File Name : Parker and Stroh AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Stroh Rd Eastbound					Stroh Rd Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	42	6	45	0	93	0	0	5	0	5	49	443	3	0	495	11	197	48	0	256	849
07:15 AM	47	4	28	0	79	**2**	2	3	0	7	67	535	2	0	604	**13**	186	50	**1**	250	940
07:30 AM	84	5	**53**	0	142	2	5	**8**	0	**15**	81	**554**	**4**	0	**639**	11	**216**	85	1	**313**	**1109**
07:45 AM	**91**	**10**	44	0	**145**	0	**6**	3	0	9	**102**	404	4	0	510	9	203	**87**	0	299	963
Total Volume	264	25	170	0	459	4	13	19	0	36	299	1936	13	0	2248	44	802	270	2	1118	3861
% App. Total	57.5	5.4	37	0		11.1	36.1	52.8	0		13.3	86.1	0.6	0		3.9	71.7	24.2	0.2		
PHF	.725	.625	.802	.000	.791	.500	.542	.594	.000	.600	.733	.874	.813	.000	.879	.846	.928	.776	.500	.893	.870



RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Parker Rd and Stroh Rd

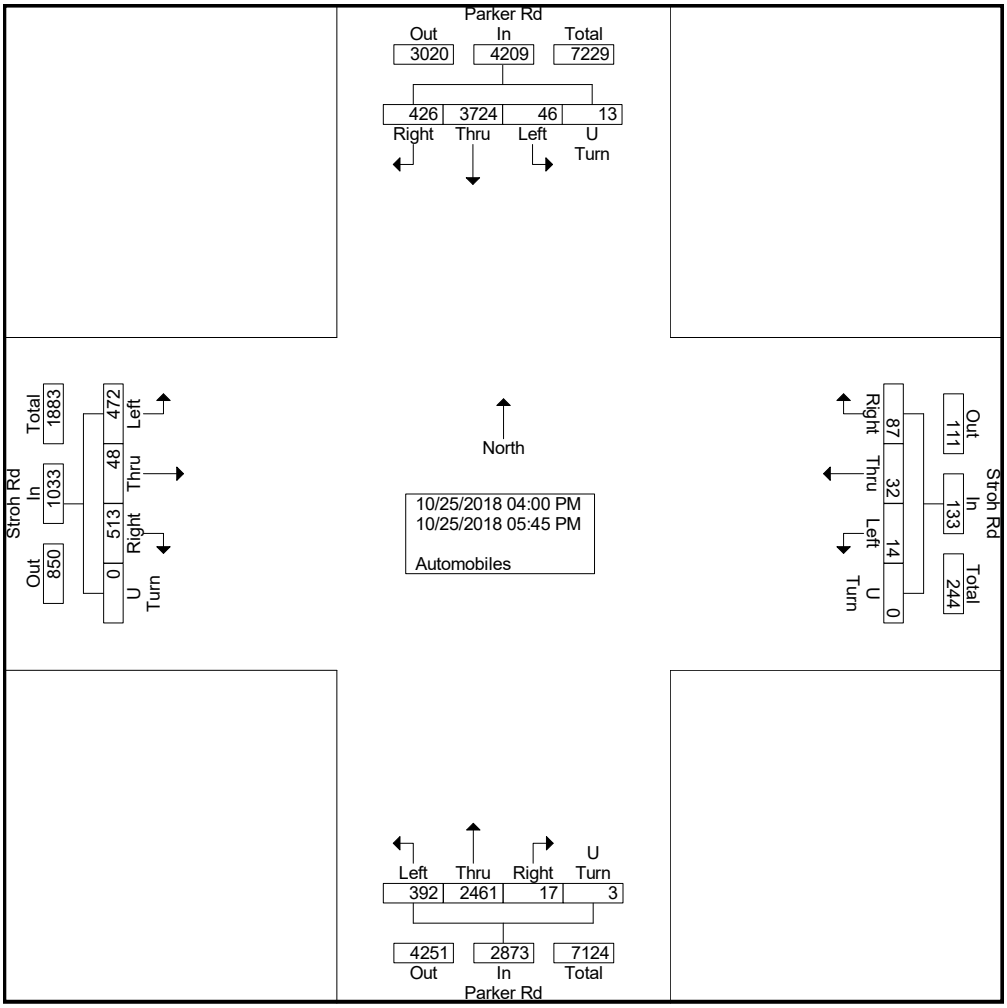
File Name : Parker and Stroh PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Stroh Rd Eastbound					Stroh Rd Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
04:00 PM	47	4	58	0	109	4	5	14	0	23	50	306	3	1	360	5	393	46	1	445	937
04:15 PM	70	2	72	0	144	3	3	13	0	19	47	302	3	0	352	7	462	46	1	516	1031
04:30 PM	66	11	65	0	142	1	4	13	0	18	52	334	3	1	390	7	446	63	1	517	1067
04:45 PM	71	7	56	0	134	1	3	8	0	12	45	370	2	0	417	5	472	53	2	532	1095
Total	254	24	251	0	529	9	15	48	0	72	194	1312	11	2	1519	24	1773	208	5	2010	4130
05:00 PM	57	7	51	0	115	2	5	13	0	20	49	329	1	0	379	7	501	64	2	574	1088
05:15 PM	56	7	75	0	138	1	8	8	0	17	46	263	0	0	309	5	497	53	2	557	1021
05:30 PM	49	6	69	0	124	1	1	7	0	9	49	298	2	0	349	6	489	45	0	540	1022
05:45 PM	56	4	67	0	127	1	3	11	0	15	54	259	3	1	317	4	464	56	4	528	987
Total	218	24	262	0	504	5	17	39	0	61	198	1149	6	1	1354	22	1951	218	8	2199	4118
Grand Total	472	48	513	0	1033	14	32	87	0	133	392	2461	17	3	2873	46	3724	426	13	4209	8248
Apprch %	45.7	4.6	49.7	0		10.5	24.1	65.4	0		13.6	85.7	0.6	0.1		1.1	88.5	10.1	0.3		
Total %	5.7	0.6	6.2	0	12.5	0.2	0.4	1.1	0	1.6	4.8	29.8	0.2	0	34.8	0.6	45.2	5.2	0.2	51	

Parker, CO
Pinery West
PM Peak
Parker Rd and Stroh Rd

File Name : Parker and Stroh PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2

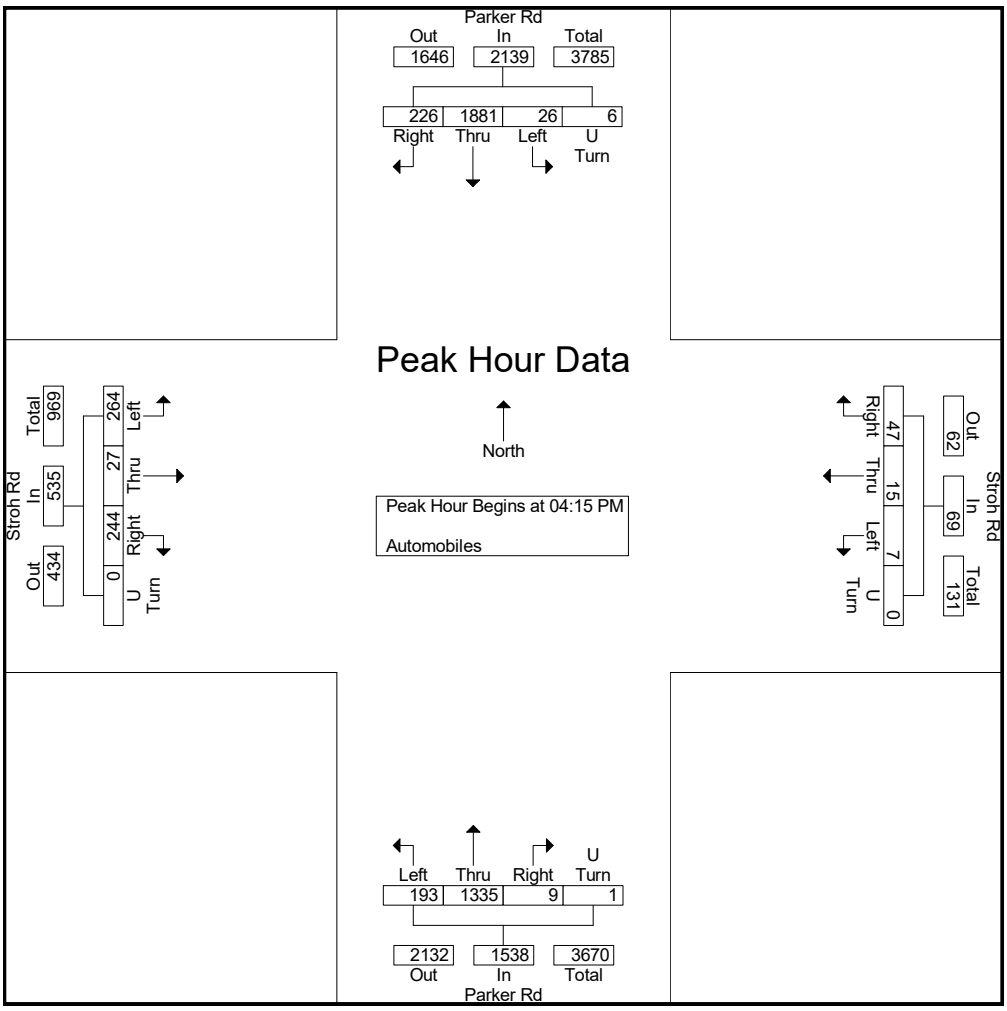


RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Parker Rd and Stroh Rd

File Name : Parker and Stroh PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Stroh Rd Eastbound					Stroh Rd Westbound					Parker Rd Northbound					Parker Rd Southbound					
Start Time	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Left	Thru	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	70	2	**72**	0	**144**	**3**	3	**13**	0	19	47	302	**3**	0	352	**7**	462	46	1	516	1031
04:30 PM	66	**11**	65	0	142	1	4	13	0	18	**52**	334	3	**1**	390	7	446	63	1	517	1067
04:45 PM	**71**	7	56	0	134	1	3	8	0	12	45	**370**	2	0	**417**	5	472	53	**2**	532	**1095**
05:00 PM	57	7	51	0	115	2	**5**	13	0	**20**	49	329	1	0	379	7	**501**	**64**	2	**574**	1088
Total Volume	264	27	244	0	535	7	15	47	0	69	193	1335	9	1	1538	26	1881	226	6	2139	4281
% App. Total	49.3	5	45.6	0		10.1	21.7	68.1	0		12.5	86.8	0.6	0.1		1.2	87.9	10.6	0.3		
PHF	.930	.614	.847	.000	.929	.583	.750	.904	.000	.863	.928	.902	.750	.250	.922	.929	.939	.883	.750	.932	.977



RDC
Ridgeview Data Collection

Parker, CO
Pinery West
AM Peak
Stroh Rd and J. Morgan Blvd

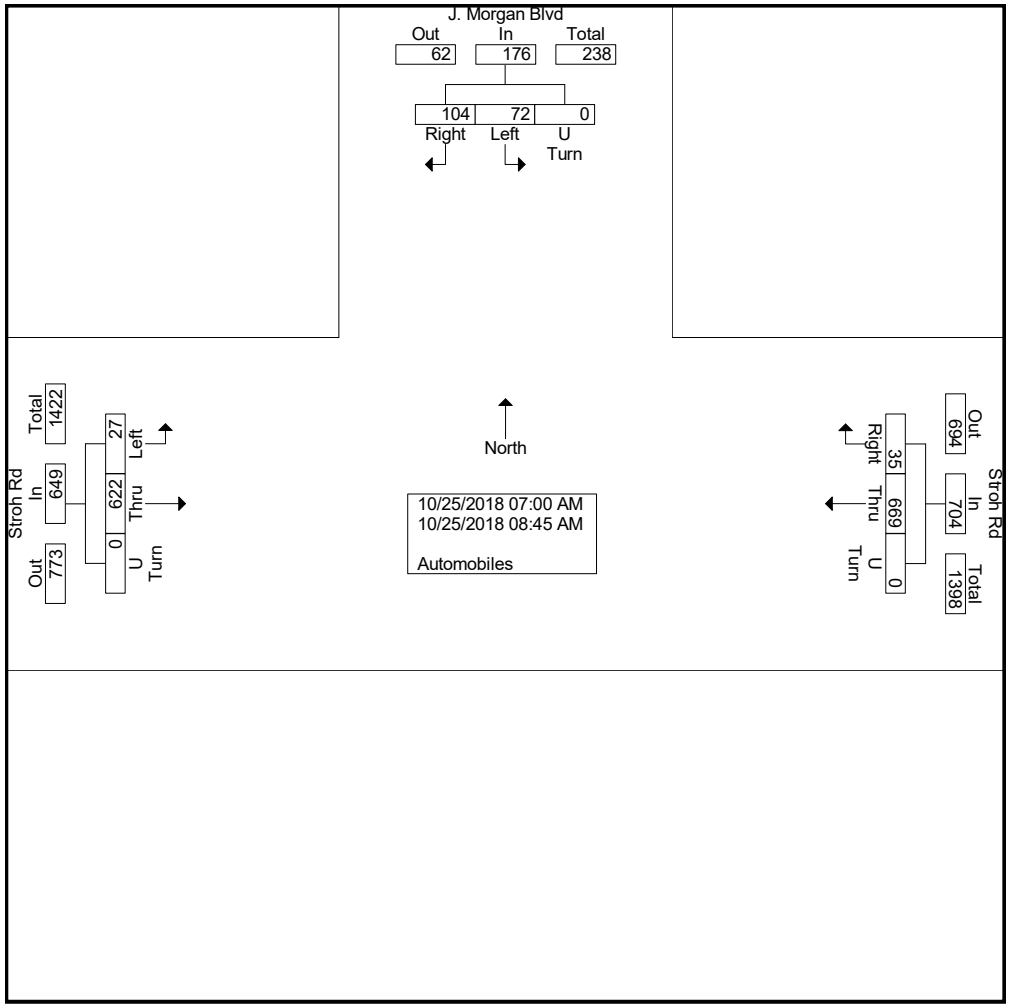
File Name : Stroh and J Morgan AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Stroh Rd Eastbound				Stroh Rd Westbound				J. Morgan Blvd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
07:00 AM	0	74	0	74	57	1	0	58	8	6	0	14	146
07:15 AM	1	81	0	82	81	4	0	85	9	13	0	22	189
07:30 AM	1	114	0	115	106	6	0	112	21	15	0	36	263
07:45 AM	3	127	0	130	112	12	0	124	14	5	0	19	273
Total	5	396	0	401	356	23	0	379	52	39	0	91	871
08:00 AM	5	68	0	73	113	7	0	120	4	18	0	22	215
08:15 AM	6	50	0	56	71	1	0	72	4	22	0	26	154
08:30 AM	9	57	0	66	66	3	0	69	7	9	0	16	151
08:45 AM	2	51	0	53	63	1	0	64	5	16	0	21	138
Total	22	226	0	248	313	12	0	325	20	65	0	85	658
Grand Total	27	622	0	649	669	35	0	704	72	104	0	176	1529
Apprch %	4.2	95.8	0		95	5	0		40.9	59.1	0		
Total %	1.8	40.7	0	42.4	43.8	2.3	0	46	4.7	6.8	0	11.5	

Parker, CO
Pinery West
AM Peak
Stroh Rd and J. Morgan Blvd

File Name : Stroh and J Morgan AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2

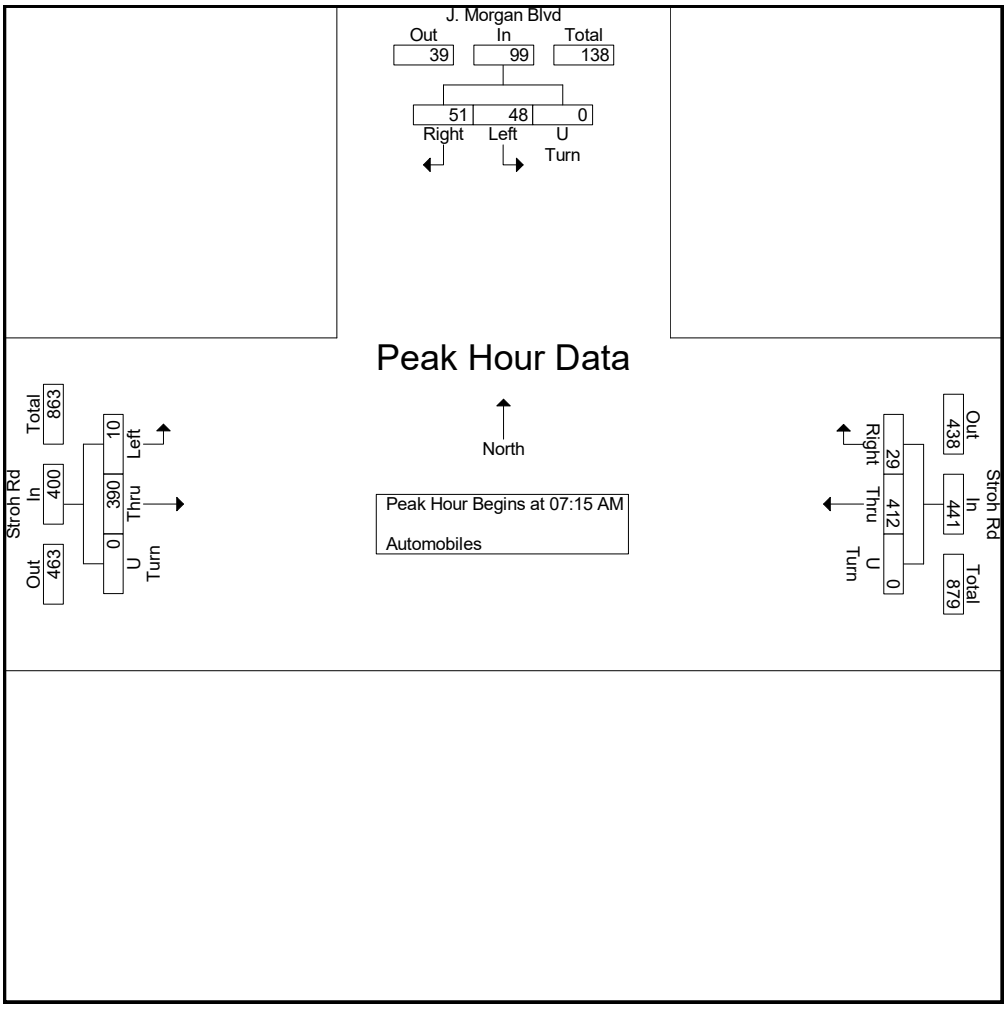


RDC
Ridgeview Data Collection

Parker, CO
Pinery West
AM Peak
Stroh Rd and J. Morgan Blvd

File Name : Stroh and J Morgan AM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Stroh Rd Eastbound				Stroh Rd Westbound				J. Morgan Blvd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	1	81	0	82	81	4	0	85	9	13	0	22	189
07:30 AM	1	114	0	115	106	6	0	112	**21**	15	0	**36**	263
07:45 AM	3	**127**	0	**130**	112	**12**	0	**124**	14	5	0	19	**273**
08:00 AM	**5**	68	0	73	**113**	7	0	120	4	**18**	0	22	215
Total Volume	10	390	0	400	412	29	0	441	48	51	0	99	940
% App. Total	2.5	97.5	0		93.4	6.6	0		48.5	51.5	0		
PHF	.500	.768	.000	.769	.912	.604	.000	.889	.571	.708	.000	.688	.861



RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Stroh Rd and J. Morgan Blvd

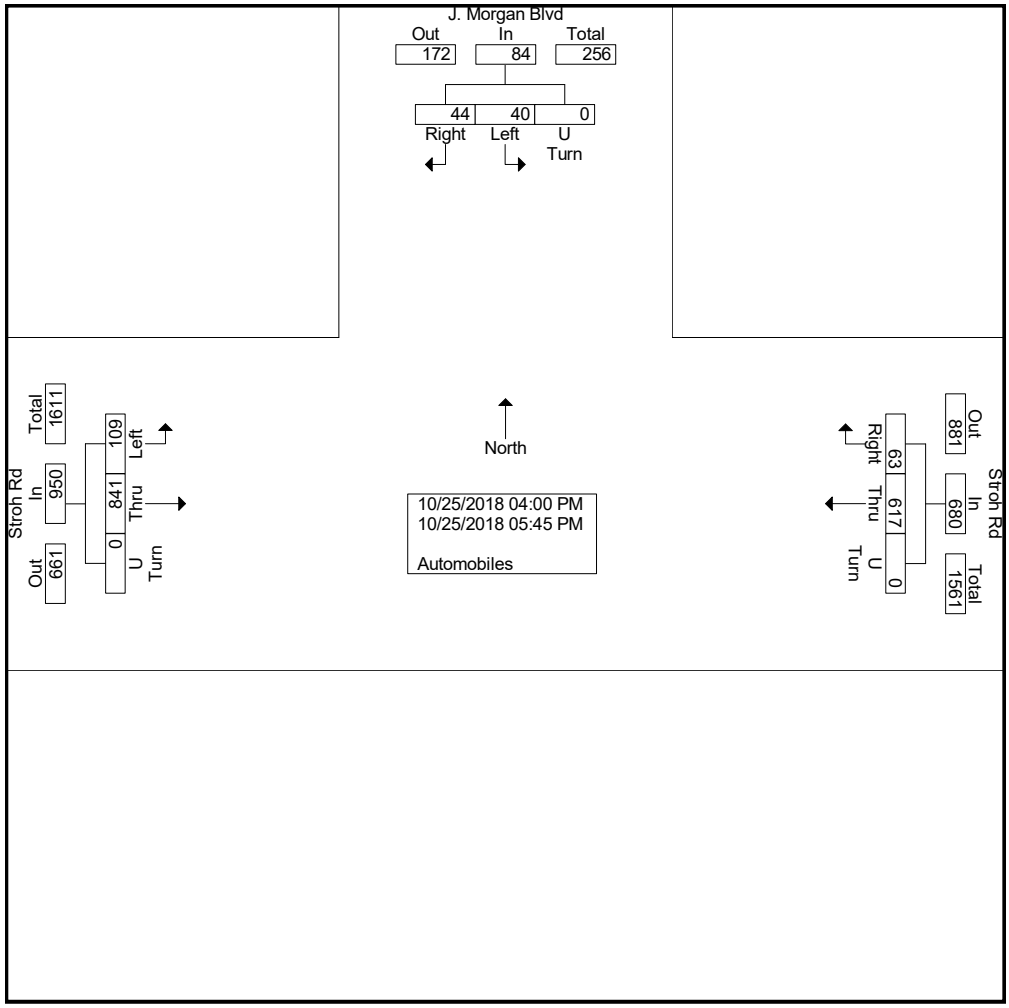
File Name : Stroh and J Morgan PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 1

Groups Printed- Automobiles

	Stroh Rd Eastbound				Stroh Rd Westbound				J. Morgan Blvd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
04:00 PM	24	96	0	120	76	9	0	85	3	6	0	9	214
04:15 PM	15	114	0	129	78	7	0	85	7	7	0	14	228
04:30 PM	13	104	0	117	83	9	0	92	7	9	0	16	225
04:45 PM	9	116	0	125	75	8	0	83	6	6	0	12	220
Total	61	430	0	491	312	33	0	345	23	28	0	51	887
05:00 PM	8	115	0	123	87	3	0	90	2	6	0	8	221
05:15 PM	12	104	0	116	76	11	0	87	5	2	0	7	210
05:30 PM	16	104	0	120	66	6	0	72	3	2	0	5	197
05:45 PM	12	88	0	100	76	10	0	86	7	6	0	13	199
Total	48	411	0	459	305	30	0	335	17	16	0	33	827
Grand Total	109	841	0	950	617	63	0	680	40	44	0	84	1714
Apprch %	11.5	88.5	0		90.7	9.3	0		47.6	52.4	0		
Total %	6.4	49.1	0	55.4	36	3.7	0	39.7	2.3	2.6	0	4.9	

Parker, CO
Pinery West
PM Peak
Stroh Rd and J. Morgan Blvd

File Name : Stroh and J Morgan PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 2

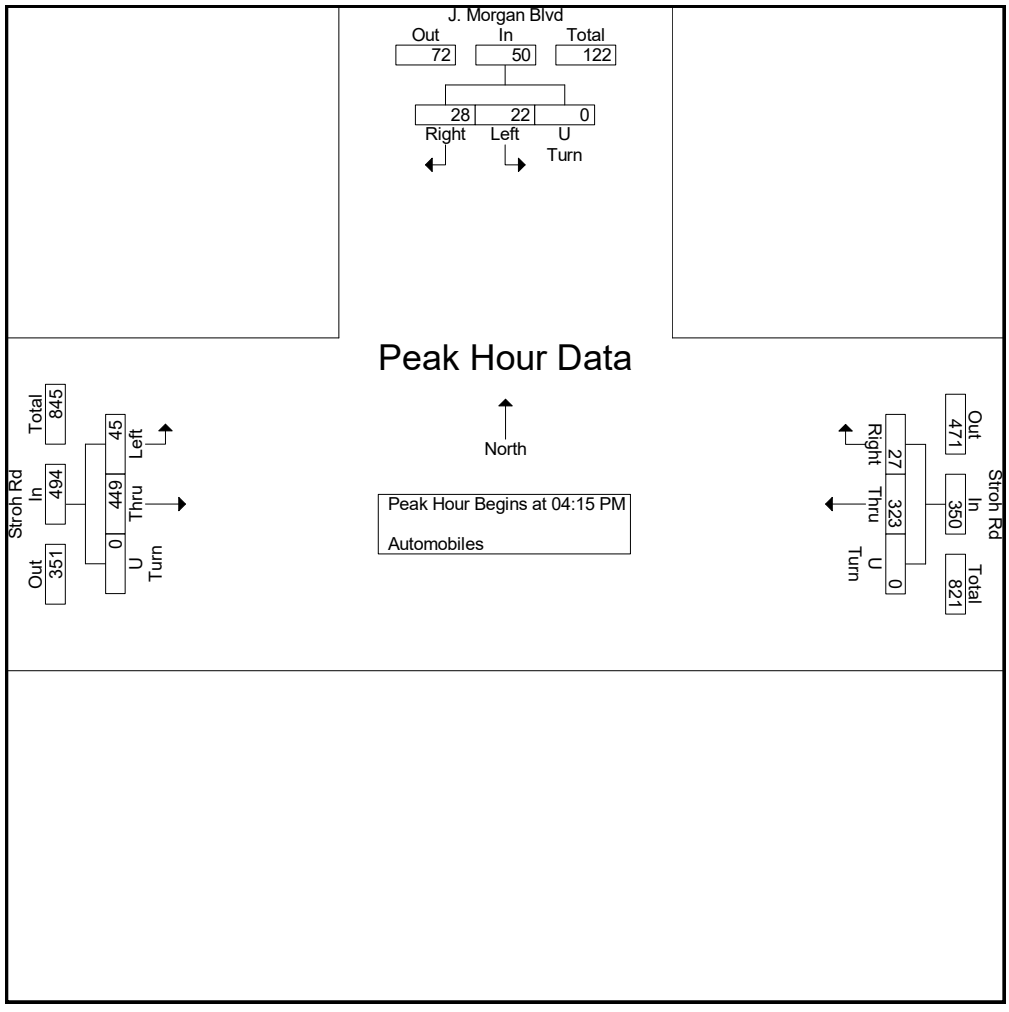


RDC
Ridgeview Data Collection

Parker, CO
Pinery West
PM Peak
Stroh Rd and J. Morgan Blvd

File Name : Stroh and J Morgan PM
Site Code : IPO 25
Start Date : 10/25/2018
Page No : 3

	Stroh Rd Eastbound				Stroh Rd Westbound				J. Morgan Blvd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	**15**	114	0	**129**	78	7	0	85	**7**	7	0	14	**228**
04:30 PM	13	104	0	117	83	**9**	0	**92**	7	**9**	0	**16**	225
04:45 PM	9	**116**	0	125	75	8	0	83	6	6	0	12	220
05:00 PM	8	115	0	123	**87**	3	0	90	2	6	0	8	221
Total Volume	45	449	0	494	323	27	0	350	22	28	0	50	894
% App. Total	9.1	90.9	0		92.3	7.7	0		44	56	0		
PHF	.750	.968	.000	.957	.928	.750	.000	.951	.786	.778	.000	.781	.980



Daily Vehicle Volume Report

Study Date: Thursday, 10/25/2018 / Friday, 10/26/2018
Unit ID: RDC 16
Location: Stroh Rd, Parker, CO
Comments: East of J. Morgan Blvd

	Westbound Volume	Eastbound Volume	Total Volume
05:00 - 05:59	49	53	**102**
06:00 - 06:59	151	130	**281**
07:00 - 07:59	408	464	**872**
08:00 - 08:59	315	252	**567**
09:00 - 09:59	220	224	**444**
10:00 - 10:59	224	214	**438**
11:00 - 11:59	241	255	**496**
12:00 - 12:59	215	244	**459**
13:00 - 13:59	244	268	**512**
14:00 - 14:59	276	333	**609**
15:00 - 15:59	413	460	**873**
16:00 - 16:59	332	493	**825**
17:00 - 17:59	339	434	**773**
18:00 - 18:59	290	332	**622**
19:00 - 19:59	166	188	**354**
20:00 - 20:59	127	106	**233**
21:00 - 21:59	90	76	**166**
22:00 - 22:59	55	34	**89**
23:00 - 23:59	22	16	**38**
00:00 - 00:59	8	15	**23**
01:00 - 01:59	2	7	**9**
02:00 - 02:59	7	7	**14**
03:00 - 03:59	7	6	**13**
04:00 - 04:59	8	4	**12**
Totals	**4209**	**4615**	**8824**
AM Peak Time	**07:20 - 08:19**	**07:00 - 07:59**	**07:12 - 08:11**
AM Peak Volume	**459**	**464**	**910**
PM Peak Time	**14:46 - 15:45**	**16:11 - 17:10**	**14:49 - 15:48**
PM Peak Volume	**415**	**511**	**878**

Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, "Levels of Service" (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle *(a)*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.

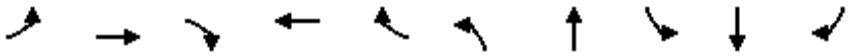
Intersection Capacity Worksheets and Time-Space (Progression) Diagrams

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	27	4	6	72	1	395	5	1826	92	858	3
Future Volume (vph)	27	4	6	72	1	395	5	1826	92	858	3
Turn Type	Prot	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases			Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	12.0	36.0		24.0	24.0	14.0	11.0	50.0	14.0	53.0	
Total Split (%)	12.0%	36.0%		24.0%	24.0%	14.0%	11.0%	50.0%	14.0%	53.0%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0			6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	None	Max	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 86.4
Natural Cycle: 110
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	41	6	9	83	449	6	2150	103	964	3
v/c Ratio	0.16	0.03	0.01	0.40	0.89	0.05	0.85	0.29	0.29	0.00
Control Delay	43.0	32.8	0.0	43.1	45.1	43.8	25.4	42.0	9.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	32.8	0.0	43.1	45.1	43.8	25.4	42.0	9.7	0.0
Queue Length 50th (ft)	11	3	0	46	200	3	428	29	92	0
Queue Length 95th (ft)	21	9	0	91	#328	16	#568	57	172	0
Internal Link Dist (ft)		553		790			779		6252	
Turn Bay Length (ft)	220		100			340		500		685
Base Capacity (vph)	285	663	1583	288	506	126	2538	366	3360	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.01	0.01	0.29	0.89	0.05	0.85	0.28	0.29	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	4	6	72	1	395	5	1826	44	92	858	3
Future Volume (vph)	27	4	6	72	1	395	5	1826	44	92	858	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0		6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1775	1583	1770	4972		3433	4988	1583
Flt Permitted	0.95	1.00	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1350	1583	1770	4972		3433	4988	1583
Peak-hour factor, PHF	0.66	0.66	0.66	0.88	0.88	0.88	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	41	6	9	82	1	449	6	2099	51	103	964	3
RTOR Reduction (vph)	0	0	0	0	0	78	0	2	0	0	0	0
Lane Group Flow (vph)	41	6	9	0	83	371	6	2148	0	103	964	3
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	Prot	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases			Free	8		8						Free
Actuated Green, G (s)	3.7	18.7	94.1		10.0	19.0	1.1	48.4		9.0	56.3	94.1
Effective Green, g (s)	3.7	18.7	94.1		10.0	19.0	1.1	48.4		9.0	56.3	94.1
Actuated g/C Ratio	0.04	0.20	1.00		0.11	0.20	0.01	0.51		0.10	0.60	1.00
Clearance Time (s)	5.0	6.0			6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	134	370	1583		143	319	20	2557		328	2984	1583
v/s Ratio Prot	c0.01	0.00				c0.11	0.00	c0.43		0.03	0.19	
v/s Ratio Perm			0.01		0.06	0.12						0.00
v/c Ratio	0.31	0.02	0.01		0.58	1.16	0.30	0.84		0.31	0.32	0.00
Uniform Delay, d1	44.0	30.3	0.0		40.1	37.5	46.1	19.5		39.7	9.4	0.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.3	0.0	0.0		5.9	102.0	8.3	3.5		0.6	0.3	0.0
Delay (s)	45.2	30.3	0.0		45.9	139.5	54.4	23.1		40.2	9.7	0.0
Level of Service	D	C	A		D	F	D	C		D	A	A
Approach Delay (s)		36.4			124.9			23.2			12.6	
Approach LOS		D			F			C			B	

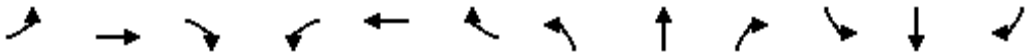
Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	94.1	Sum of lost time (s)	23.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	25	170	4	13	19	299	1936	13	46	802	270
Future Volume (vph)	264	25	170	4	13	19	299	1936	13	46	802	270
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	25.0	25.0		18.0	18.0		27.0	58.0	58.0	19.0	50.0	
Total Split (%)	20.8%	20.8%		15.0%	15.0%		22.5%	48.3%	48.3%	15.8%	41.7%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 100
Natural Cycle: 150
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Parker Road & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	184	182	215	7	22	32	340	2200	15	52	901	303
v/c Ratio	0.72	0.71	0.14	0.06	0.09	0.02	0.67	0.82	0.02	0.36	0.41	0.19
Control Delay	58.7	57.5	0.2	50.5	49.5	0.0	48.4	25.7	0.0	54.1	21.7	0.3
Queue Delay	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 Delay	58.7	57.5	0.2	50.5	49.5	0.0	48.4	25.7	0.0	54.1	21.7	0.3
Queue Length 50th (ft)	126	125	0	5	7	0	114	493	0	34	158	0
Queue Length 95th (ft)	184	183	0	13	14	0	162	#665	0	76	219	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	338	342	1583	225	450	1564	727	2699	914	230	2217	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.53	0.14	0.03	0.05	0.02	0.47	0.82	0.02	0.23	0.41	0.19

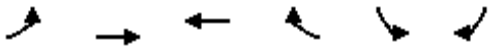
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	25	170	4	13	19	299	1936	13	46	802	270
Future Volume (vph)	264	25	170	4	13	19	299	1936	13	46	802	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1700	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1700	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.60	0.60	0.60	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	334	32	215	7	22	32	340	2200	15	52	901	303
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	184	182	215	7	22	32	340	2200	8	52	901	303
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Actuated Green, G (s)	15.2	15.2	103.7	3.8	3.8	103.7	14.8	54.1	54.1	6.7	46.0	103.7
Effective Green, g (s)	15.2	15.2	103.7	3.8	3.8	103.7	14.8	54.1	54.1	6.7	46.0	103.7
Actuated g/C Ratio	0.15	0.15	1.00	0.04	0.04	1.00	0.14	0.52	0.52	0.06	0.44	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	246	249	1583	64	129	1564	489	2602	825	114	2212	1583
v/s Ratio Prot	c0.11	0.11		0.00	0.01		c0.10	c0.44		0.03	0.18	
v/s Ratio Perm			0.14			0.02			0.00			c0.19
v/c Ratio	0.75	0.73	0.14	0.11	0.17	0.02	0.70	0.85	0.01	0.46	0.41	0.19
Uniform Delay, d1	42.4	42.3	0.0	48.3	48.4	0.0	42.3	21.2	11.9	46.7	19.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.2	9.9	0.2	0.8	0.6	0.0	3.9	3.6	0.0	2.1	0.6	0.3
Delay (s)	53.6	52.2	0.2	49.1	49.1	0.0	46.2	24.8	11.9	48.8	20.2	0.3
Level of Service	D	D	A	D	D	A	D	C	B	D	C	A
Approach Delay (s)		33.4			23.3			27.6			16.5	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	23.9
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	396	356	23	52	39
Future Volume (Veh/h)	5	396	356	23	52	39
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.77	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	6	514	396	26	75	57
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	423				923	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	423				923	397
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				75	91
cM capacity (veh/h)	1135				298	652

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	6	514	396	26	75	57
Volume Left	6	0	0	0	75	0
Volume Right	0	0	0	26	0	57
cSH	1135	1700	1700	1700	298	652
Volume to Capacity	0.01	0.30	0.23	0.02	0.25	0.09
Queue Length 95th (ft)	0	0	0	0	24	7
Control Delay (s)	8.2	0.0	0.0	0.0	21.1	11.1
Lane LOS	A				C	B
Approach Delay (s)	0.1		0.0		16.8	
Approach LOS					C	

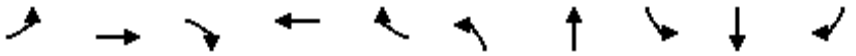
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	12	3	4	68	2	267	5	1256	404	1695	22
Future Volume (vph)	12	3	4	68	2	267	5	1256	404	1695	22
Turn Type	Perm	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases		4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					Free
Detector Phase	4	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	39.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	30.0	30.0		30.0	30.0	23.0	11.0	37.0	23.0	49.0	
Total Split (%)	33.3%	33.3%		33.3%	33.3%	25.6%	12.2%	41.1%	25.6%	54.4%	
Yellow Time (s)	4.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag						Lead	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	None	Max	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 70.8
Natural Cycle: 90
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	28	7	9	77	293	5	1423	416	1747	23
v/c Ratio	0.08	0.03	0.01	0.32	0.45	0.03	0.66	0.62	0.50	0.01
Control Delay	28.2	27.7	0.0	32.7	14.4	34.2	19.6	31.2	8.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	27.7	0.0	32.7	14.4	34.2	19.6	31.2	8.2	0.0
Queue Length 50th (ft)	5	3	0	32	73	2	192	91	130	0
Queue Length 95th (ft)	8	6	0	74	131	13	275	138	267	0
Internal Link Dist (ft)		553		790			779		6252	
Turn Bay Length (ft)	220		100			340		500		685
Base Capacity (vph)	888	647	1583	471	747	154	2161	895	3510	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.01	0.16	0.39	0.03	0.66	0.46	0.50	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	3	4	68	2	267	5	1256	53	404	1695	22
Future Volume (vph)	12	3	4	68	2	267	5	1256	53	404	1695	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0		6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1776	1583	1770	4961		3433	4988	1583
Flt Permitted	0.71	1.00	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2555	1863	1583		1354	1583	1770	4961		3433	4988	1583
Peak-hour factor, PHF	0.43	0.43	0.43	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	28	7	9	75	2	293	5	1365	58	416	1747	23
RTOR Reduction (vph)	0	0	0	0	0	33	0	4	0	0	0	0
Lane Group Flow (vph)	28	7	9	0	77	260	5	1419	0	416	1747	23
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	Perm	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						Free
Actuated Green, G (s)	9.3	9.3	76.3		9.3	23.2	1.1	35.1		13.9	47.9	76.3
Effective Green, g (s)	9.3	9.3	76.3		9.3	23.2	1.1	35.1		13.9	47.9	76.3
Actuated g/C Ratio	0.12	0.12	1.00		0.12	0.30	0.01	0.46		0.18	0.63	1.00
Clearance Time (s)	6.0	6.0			6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	311	227	1583		165	481	25	2282		625	3131	1583
v/s Ratio Prot		0.00				c0.10	0.00	c0.29		c0.12	0.35	
v/s Ratio Perm	0.01		0.01		0.06	0.07						0.01
v/c Ratio	0.09	0.03	0.01		0.47	0.54	0.20	0.62		0.67	0.56	0.01
Uniform Delay, d1	29.7	29.5	0.0		31.2	22.1	37.2	15.6		29.0	8.1	0.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.0		2.1	1.2	3.9	1.3		2.7	0.7	0.0
Delay (s)	29.9	29.6	0.0		33.3	23.3	41.1	16.9		31.7	8.9	0.0
Level of Service	C	C	A		C	C	D	B		C	A	A
Approach Delay (s)		23.7			25.4			17.0			13.1	
Approach LOS		C			C			B			B	

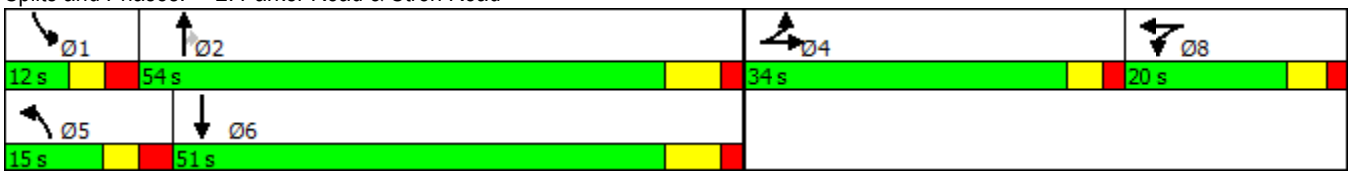
Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	76.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

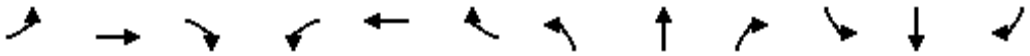
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	27	244	7	15	47	193	1335	9	32	1881	226
Future Volume (vph)	264	27	244	7	15	47	193	1335	9	32	1881	226
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	4	4		8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	34.0	34.0		20.0	20.0		15.0	54.0	54.0	12.0	51.0	
Total Split (%)	28.3%	28.3%		16.7%	16.7%		12.5%	45.0%	45.0%	10.0%	42.5%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 89.9
Natural Cycle: 150
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Parker Road & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	156	157	262	8	17	55	210	1451	10	34	2023	243
v/c Ratio	0.62	0.62	0.17	0.06	0.06	0.04	0.62	0.49	0.01	0.30	0.82	0.15
Control Delay	48.2	47.9	0.2	44.3	43.3	0.0	49.7	14.5	0.0	50.8	24.6	0.2
Queue Delay	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 Delay	48.2	47.9	0.2	44.3	43.3	0.0	49.7	14.5	0.0	50.8	24.6	0.2
Queue Length 50th (ft)	82	82	0	4	4	0	56	166	0	18	303	0
Queue Length 95th (ft)	166	167	0	19	16	0	#121	313	0	55	#583	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	545	551	1583	288	577	1564	340	2936	983	115	2471	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.28	0.17	0.03	0.03	0.04	0.62	0.49	0.01	0.30	0.82	0.15

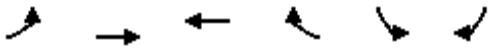
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	264	27	244	7	15	47	193	1335	9	32	1881	226
Future Volume (vph)	264	27	244	7	15	47	193	1335	9	32	1881	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1700	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1700	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	284	29	262	8	17	55	210	1451	10	34	2023	243
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	4	0	0	0
Lane Group Flow (vph)	156	157	262	8	17	55	210	1451	6	34	2023	243
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Actuated Green, G (s)	13.4	13.4	96.0	2.5	2.5	96.0	8.9	52.9	52.9	3.3	47.3	96.0
Effective Green, g (s)	13.4	13.4	96.0	2.5	2.5	96.0	8.9	52.9	52.9	3.3	47.3	96.0
Actuated g/C Ratio	0.14	0.14	1.00	0.03	0.03	1.00	0.09	0.55	0.55	0.03	0.49	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	234	237	1583	46	92	1564	318	2748	872	60	2457	1583
v/s Ratio Prot	c0.09	0.09		0.00	0.00		c0.06	c0.29		0.02	c0.41	
v/s Ratio Perm			c0.17			0.04			0.00			0.15
v/c Ratio	0.67	0.66	0.17	0.17	0.18	0.04	0.66	0.53	0.01	0.57	0.82	0.15
Uniform Delay, d1	39.2	39.2	0.0	45.7	45.8	0.0	42.1	13.6	9.7	45.6	20.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.3	6.1	0.2	1.8	1.0	0.0	4.6	0.7	0.0	9.6	3.3	0.2
Delay (s)	45.5	45.3	0.2	47.5	46.7	0.0	46.7	14.4	9.7	55.2	24.1	0.2
Level of Service	D	D	A	D	D	A	D	B	A	E	C	A
Approach Delay (s)		24.8			14.7			18.4			22.0	
Approach LOS		C			B			B			C	

Intersection Summary					
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	96.0	Sum of lost time (s)	23.9		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D		
Analysis Period (min)	15				

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	449	323	27	22	28
Future Volume (Veh/h)	45	449	323	27	22	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.95	0.95	0.78	0.78
Hourly flow rate (vph)	47	468	340	28	28	36
Pedestrians					15	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	383				917	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				917	355
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				90	95
cM capacity (veh/h)	1159				286	679

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	47	468	340	28	28	36
Volume Left	47	0	0	0	28	0
Volume Right	0	0	0	28	0	36
cSH	1159	1700	1700	1700	286	679
Volume to Capacity	0.04	0.28	0.20	0.02	0.10	0.05
Queue Length 95th (ft)	3	0	0	0	8	4
Control Delay (s)	8.2	0.0	0.0	0.0	19.0	10.6
Lane LOS	A				C	B
Approach Delay (s)	0.8		0.0		14.3	
Approach LOS					B	

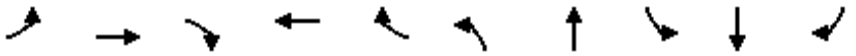
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	30	4	10	75	1	395	5	2165	95	1025	5
Future Volume (vph)	30	4	10	75	1	395	5	2165	95	1025	5
Turn Type	Prot	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases			Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	12.0	36.0		24.0	24.0	14.0	11.0	50.0	14.0	53.0	
Total Split (%)	12.0%	36.0%		24.0%	24.0%	14.0%	11.0%	50.0%	14.0%	53.0%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0			6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	None	Max	

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 86.5
Natural Cycle: 140
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Parker Road & Pinery Parkway



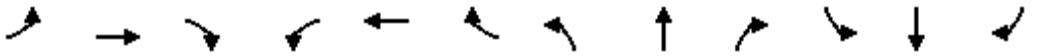


Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	45	6	15	86	449	6	2541	107	1152	6
v/c Ratio	0.18	0.03	0.01	0.41	0.89	0.05	1.00	0.30	0.34	0.00
Control Delay	43.2	32.8	0.0	43.4	44.9	44.0	43.3	42.2	10.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	32.8	0.0	43.4	44.9	44.0	43.3	42.2	10.2	0.0
Queue Length 50th (ft)	13	3	0	48	201	3	~639	30	116	0
Queue Length 95th (ft)	23	9	0	94	#325	16	#756	59	214	0
Internal Link Dist (ft)		553		790			779		6252	
Turn Bay Length (ft)	220		100			340		500		685
Base Capacity (vph)	284	662	1583	288	507	125	2538	366	3357	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.01	0.01	0.30	0.89	0.05	1.00	0.29	0.34	0.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	4	10	75	1	395	5	2165	45	95	1025	5
Future Volume (vph)	30	4	10	75	1	395	5	2165	45	95	1025	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0		6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1775	1583	1770	4974		3433	4988	1583
Flt Permitted	0.95	1.00	1.00		0.72	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1350	1583	1770	4974		3433	4988	1583
Peak-hour factor, PHF	0.66	0.66	0.66	0.88	0.88	0.88	0.87	0.87	0.87	0.89	0.89	0.89
Adj. Flow (vph)	45	6	15	85	1	449	6	2489	52	107	1152	6
RTOR Reduction (vph)	0	0	0	0	0	78	0	2	0	0	0	0
Lane Group Flow (vph)	45	6	15	0	86	371	6	2539	0	107	1152	6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	Prot	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases			Free	8		8						Free
Actuated Green, G (s)	3.7	18.8	94.2		10.1	19.1	1.1	48.4		9.0	56.3	94.2
Effective Green, g (s)	3.7	18.8	94.2		10.1	19.1	1.1	48.4		9.0	56.3	94.2
Actuated g/C Ratio	0.04	0.20	1.00		0.11	0.20	0.01	0.51		0.10	0.60	1.00
Clearance Time (s)	5.0	6.0			6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	134	371	1583		144	320	20	2555		327	2981	1583
v/s Ratio Prot	c0.01	0.00				c0.11	0.00	c0.51		0.03	0.23	
v/s Ratio Perm			0.01		0.06	0.12						0.00
v/c Ratio	0.34	0.02	0.01		0.60	1.16	0.30	0.99		0.33	0.39	0.00
Uniform Delay, d1	44.1	30.3	0.0		40.1	37.5	46.2	22.7		39.8	9.9	0.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.0	0.0		6.5	100.7	8.3	16.4		0.6	0.4	0.0
Delay (s)	45.5	30.3	0.0		46.6	138.2	54.4	39.2		40.4	10.3	0.0
Level of Service	D	C	A		D	F	D	D		D	B	A
Approach Delay (s)		33.8			123.5			39.2			12.8	
Approach LOS		C			F			D			B	

Intersection Summary			
HCM 2000 Control Delay	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

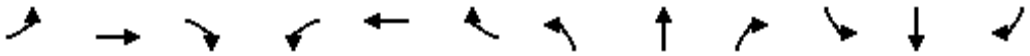
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Future Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	19.0	26.0		11.0	18.0		27.0	67.0	67.0	16.0	56.0	
Total Split (%)	15.8%	21.7%		9.2%	15.0%		22.5%	55.8%	55.8%	13.3%	46.7%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 106.7
Natural Cycle: 150
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Parker Road & Stroh Road



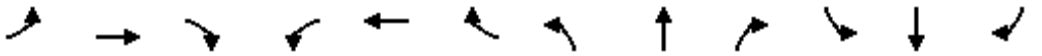


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	399	38	367	33	42	133	261	1813	17	67	2528	303
v/c Ratio	0.75	0.18	0.23	0.20	0.17	0.09	0.60	0.63	0.02	0.48	1.00	0.19
Control Delay	48.5	46.0	0.3	39.5	51.8	0.1	51.5	18.1	0.0	61.8	46.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.5	46.0	0.3	39.5	51.8	0.1	51.5	18.1	0.0	61.8	46.3	0.3
Queue Length 50th (ft)	131	25	0	19	15	0	95	346	0	48	~730	0
Queue Length 95th (ft)	156	51	0	31	23	0	132	402	0	94	#870	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	550	367	1583	162	419	1564	676	2894	992	164	2523	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.10	0.23	0.20	0.10	0.09	0.39	0.63	0.02	0.41	1.00	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

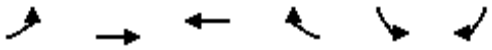
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Future Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.41	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1490	1863	1583	1774	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.60	0.60	0.60	0.88	0.88	0.88	0.89	0.89	0.89
Adj. Flow (vph)	399	38	367	33	42	133	261	1812	17	67	2528	303
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	399	38	367	33	42	133	261	1813	10	67	2528	303
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	23.1	14.5	110.4	7.3	4.2	110.4	13.4	61.9	61.9	7.0	55.5	110.4
Effective Green, g (s)	23.1	14.5	110.4	7.3	4.2	110.4	13.4	61.9	61.9	7.0	55.5	110.4
Actuated g/C Ratio	0.21	0.13	1.00	0.07	0.04	1.00	0.12	0.56	0.56	0.06	0.50	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	547	244	1583	117	134	1564	416	2796	887	112	2507	1583
v/s Ratio Prot	c0.09	0.02		0.01	0.01		c0.08	c0.36		0.04	c0.51	
v/s Ratio Perm	c0.06		0.23	0.01		0.09			0.01			0.19
v/c Ratio	0.73	0.16	0.23	0.28	0.31	0.09	0.63	0.65	0.01	0.60	1.01	0.19
Uniform Delay, d1	39.2	42.5	0.0	49.1	51.7	0.0	46.1	16.7	10.7	50.3	27.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.2	0.3	1.3	1.3	0.1	2.6	1.2	0.0	7.0	20.0	0.3
Delay (s)	43.7	42.7	0.3	50.4	53.0	0.1	48.7	17.9	10.7	57.3	47.5	0.3
Level of Service	D	D	A	D	D	A	D	B	B	E	D	A
Approach Delay (s)		23.9			18.8			21.7			42.8	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	23.9
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	475	425	25	60	45
Future Volume (Veh/h)	5	475	425	25	60	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.77	0.77	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	6	617	472	28	87	65
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	501				1102	473
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501				1102	473
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				63	89
cM capacity (veh/h)	1062				233	591

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	6	617	472	28	87	65
Volume Left	6	0	0	0	87	0
Volume Right	0	0	0	28	0	65
cSH	1062	1700	1700	1700	233	591
Volume to Capacity	0.01	0.36	0.28	0.02	0.37	0.11
Queue Length 95th (ft)	0	0	0	0	41	9
Control Delay (s)	8.4	0.0	0.0	0.0	29.4	11.8
Lane LOS	A				D	B
Approach Delay (s)	0.1		0.0		21.9	
Approach LOS					C	

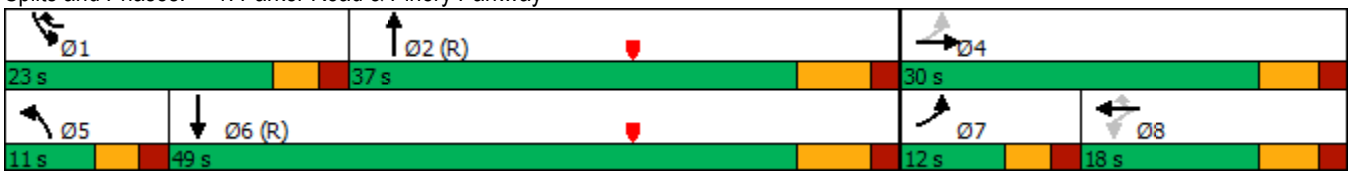
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

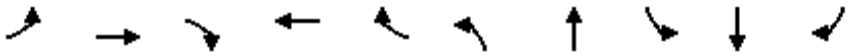
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	15	3	5	70	2	270	5	1500	405	2025	25
Future Volume (vph)	15	3	5	70	2	270	5	1500	405	2025	25
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	12.0	30.0		18.0	18.0	23.0	11.0	37.0	23.0	49.0	
Total Split (%)	13.3%	33.3%		20.0%	20.0%	25.6%	12.2%	41.1%	25.6%	54.4%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0			6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	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: 90
Actuated Cycle Length: 90
Offset: 68 (76%), Referenced to phase 2:NBT and 6:SBT, Start of FDW or yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	35	7	12	79	297	5	1690	418	2088	26
v/c Ratio	0.11	0.04	0.01	0.44	0.47	0.04	0.75	0.69	0.62	0.02
Control Delay	33.3	31.7	0.0	44.4	11.3	40.4	27.1	41.0	13.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	31.7	0.0	44.4	11.3	40.4	27.1	41.0	13.5	0.0
Queue Length 50th (ft)	9	4	0	42	51	3	338	114	277	0
Queue Length 95th (ft)	8	6	0	87	113	14	#472	160	459	0
Internal Link Dist (ft)		553		790			779		6252	
Turn Bay Length (ft)	220		100			340		500		685
Base Capacity (vph)	334	496	1583	180	672	118	2250	686	3367	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.01	0.01	0.44	0.44	0.04	0.75	0.61	0.62	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	3	5	70	2	270	5	1500	55	405	2025	25
Future Volume (vph)	15	3	5	70	2	270	5	1500	55	405	2025	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0		6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1776	1583	1770	4964		3433	4988	1583
Flt Permitted	0.46	1.00	1.00		0.73	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1677	1863	1583		1354	1583	1770	4964		3433	4988	1583
Peak-hour factor, PHF	0.43	0.43	0.43	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	35	7	12	77	2	297	5	1630	60	418	2088	26
RTOR Reduction (vph)	0	0	0	0	0	116	0	3	0	0	0	0
Lane Group Flow (vph)	35	7	12	0	79	181	5	1687	0	418	2088	26
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						Free
Actuated Green, G (s)	18.6	18.6	90.0		9.6	25.4	1.2	37.6		15.8	52.2	90.0
Effective Green, g (s)	18.6	18.6	90.0		9.6	25.4	1.2	37.6		15.8	52.2	90.0
Actuated g/C Ratio	0.21	0.21	1.00		0.11	0.28	0.01	0.42		0.18	0.58	1.00
Clearance Time (s)	5.0	6.0			6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	424	385	1583		144	446	23	2073		602	2893	1583
v/s Ratio Prot	c0.00	0.00				0.07	0.00	c0.34		c0.12	c0.42	
v/s Ratio Perm	0.01		0.01		c0.06	0.04						0.02
v/c Ratio	0.08	0.02	0.01		0.55	0.41	0.22	0.81		0.69	0.72	0.02
Uniform Delay, d1	28.8	28.4	0.0		38.1	26.2	43.9	23.1		34.8	13.7	0.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	0.0		4.2	0.6	4.7	3.6		3.5	1.6	0.0
Delay (s)	28.8	28.4	0.0		42.4	26.8	48.7	26.7		38.3	15.2	0.0
Level of Service	C	C	A		D	C	D	C		D	B	A
Approach Delay (s)		22.4			30.1			26.8			18.9	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

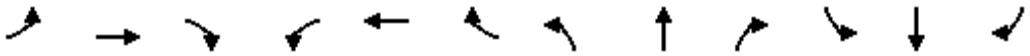
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Future Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	19.0	26.0		11.0	18.0		27.0	67.0	67.0	16.0	56.0	
Total Split (%)	15.8%	21.7%		9.2%	15.0%		22.5%	55.8%	55.8%	13.3%	46.7%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 105.9
Natural Cycle: 150
Control Type: Semi Act-Uncoord

Splits and Phases: 2: Parker Road & Stroh Road

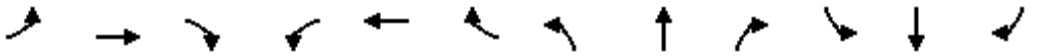




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	339	32	312	23	29	93	250	1734	16	65	2419	290
v/c Ratio	0.65	0.15	0.20	0.14	0.12	0.06	0.60	0.59	0.02	0.47	0.94	0.18
Control Delay	44.7	45.6	0.3	38.0	51.4	0.1	51.5	17.2	0.0	61.0	35.1	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	45.6	0.3	38.0	51.4	0.1	51.5	17.2	0.0	61.0	35.1	0.3
Queue Length 50th (ft)	109	21	0	13	10	0	91	322	0	46	619	0
Queue Length 95th (ft)	155	51	0	34	25	0	131	385	0	93	#811	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	553	370	1583	163	422	1564	682	2918	999	165	2560	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.09	0.20	0.14	0.07	0.06	0.37	0.59	0.02	0.39	0.94	0.18

Intersection Summary

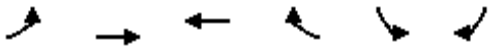
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Future Volume (vph)	315	30	290	20	25	80	230	1595	15	60	2250	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.42	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1522	1863	1583	1863	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	339	32	312	23	29	93	250	1734	16	65	2419	290
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	339	32	312	23	29	93	250	1734	9	65	2419	290
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	22.4	13.8	109.6	7.1	4.0	109.6	12.9	62.0	62.0	6.8	55.9	109.6
Effective Green, g (s)	22.4	13.8	109.6	7.1	4.0	109.6	12.9	62.0	62.0	6.8	55.9	109.6
Actuated g/C Ratio	0.20	0.13	1.00	0.06	0.04	1.00	0.12	0.57	0.57	0.06	0.51	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	535	234	1583	118	129	1564	404	2821	895	109	2544	1583
v/s Ratio Prot	c0.07	0.02		0.01	0.01		c0.07	c0.35		0.04	c0.49	
v/s Ratio Perm	c0.05		0.20	0.01		0.06			0.01			0.18
v/c Ratio	0.63	0.14	0.20	0.19	0.22	0.06	0.62	0.61	0.01	0.60	0.95	0.18
Uniform Delay, d1	38.6	42.6	0.0	48.6	51.3	0.0	46.0	15.8	10.4	50.1	25.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.2	0.3	0.8	0.9	0.1	2.4	1.0	0.0	7.1	9.6	0.3
Delay (s)	40.8	42.8	0.3	49.4	52.2	0.1	48.4	16.9	10.4	57.2	35.1	0.3
Level of Service	D	D	A	D	D	A	D	B	B	E	D	A
Approach Delay (s)		22.4			18.3			20.8			32.0	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	109.6	Sum of lost time (s)	23.9
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	595	385	30	25	35
Future Volume (Veh/h)	55	595	385	30	25	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.95	0.95	0.78	0.78
Hourly flow rate (vph)	57	620	405	32	32	45
Pedestrians					15	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	452				1154	420
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	452				1154	420
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				84	93
cM capacity (veh/h)	1093				204	624

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	57	620	405	32	32	45
Volume Left	57	0	0	0	32	0
Volume Right	0	0	0	32	0	45
cSH	1093	1700	1700	1700	204	624
Volume to Capacity	0.05	0.36	0.24	0.02	0.16	0.07
Queue Length 95th (ft)	4	0	0	0	14	6
Control Delay (s)	8.5	0.0	0.0	0.0	25.9	11.2
Lane LOS	A				D	B
Approach Delay (s)	0.7		0.0		17.3	
Approach LOS					C	

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	270	20	100	75	30	405	240	2115	95	1035	200
Future Volume (vph)	270	20	100	75	30	405	240	2115	95	1035	200
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	12.0	36.0		24.0	24.0	14.0	31.0	70.0	14.0	53.0	
Total Split (%)	10.0%	30.0%		20.0%	20.0%	11.7%	25.8%	58.3%	11.7%	44.2%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	C-Max	None	C-Max	
Act Effct Green (s)	19.7	18.6	120.0	13.9	13.9	21.3	14.6	70.7	9.0	65.0	120.0
Actuated g/C Ratio	0.16	0.16	1.00	0.12	0.12	0.18	0.12	0.59	0.08	0.54	1.00
v/c Ratio	0.78	0.04	0.07	0.53	0.16	1.19	0.64	0.82	0.40	0.42	0.14
Control Delay	58.4	37.2	0.1	61.8	48.4	138.1	57.0	24.1	57.9	18.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	37.2	0.1	61.8	48.4	138.1	57.0	24.1	57.9	18.5	0.2
LOS	E	D	A	E	D	F	E	C	E	B	A
Approach Delay		42.3			121.6			27.4		18.6	
Approach LOS		D			F			C		B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.19	
Intersection Signal Delay: 36.8	Intersection LOS: D
Intersection Capacity Utilization 88.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	307	23	114	85	34	460	267	2400	103	1125	217
v/c Ratio	0.78	0.04	0.07	0.53	0.16	1.19	0.64	0.82	0.40	0.42	0.14
Control Delay	58.4	37.2	0.1	61.8	48.4	138.1	57.0	24.1	57.9	18.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	37.2	0.1	61.8	48.4	138.1	57.0	24.1	57.9	18.5	0.2
Queue Length 50th (ft)	106	7	0	64	24	~303	103	538	39	189	0
Queue Length 95th (ft)	138	17	0	111	54	#471	142	681	69	266	0
Internal Link Dist (ft)		553			790			779		1277	
Turn Bay Length (ft)	220		100	100			340		500		
Base Capacity (vph)	396	884	1583	207	279	385	743	2931	257	2702	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.03	0.07	0.41	0.12	1.19	0.36	0.82	0.40	0.42	0.14

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

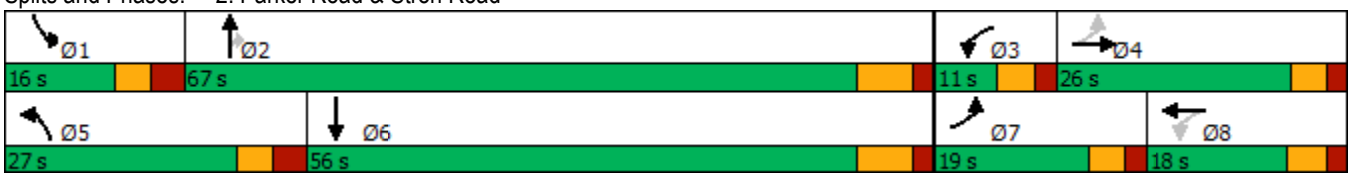
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	270	20	100	75	30	405	240	2115	45	95	1035	200
Future Volume (vph)	270	20	100	75	30	405	240	2115	45	95	1035	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0	6.0	6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	3433	4974		3433	4988	1583
Flt Permitted	0.51	1.00	1.00	0.74	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1851	3539	1583	1381	1863	1583	3433	4974		3433	4988	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.90	0.90	0.90	0.92	0.92	0.92
Adj. Flow (vph)	307	23	114	85	34	460	267	2350	50	103	1125	217
RTOR Reduction (vph)	0	0	0	0	0	105	0	2	0	0	0	0
Lane Group Flow (vph)	307	23	114	85	34	355	267	2398	0	103	1125	217
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						Free
Actuated Green, G (s)	23.5	23.5	120.0	11.5	11.5	20.5	14.6	69.5		9.0	63.9	120.0
Effective Green, g (s)	23.5	23.5	120.0	11.5	11.5	20.5	14.6	69.5		9.0	63.9	120.0
Actuated g/C Ratio	0.20	0.20	1.00	0.10	0.10	0.17	0.12	0.58		0.08	0.53	1.00
Clearance Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	454	693	1583	132	178	270	417	2880		257	2656	1583
v/s Ratio Prot	c0.04	0.01			0.02	c0.10	0.08	c0.48		0.03	0.23	
v/s Ratio Perm	0.09		0.07	0.06		0.13						0.14
v/c Ratio	0.68	0.03	0.07	0.64	0.19	1.31	0.64	0.83		0.40	0.42	0.14
Uniform Delay, d1	44.0	39.1	0.0	52.3	50.0	49.8	50.2	20.5		52.9	16.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.0	0.0	0.1	10.3	0.5	165.0	3.3	3.0		1.0	0.5	0.2
Delay (s)	48.0	39.1	0.1	62.6	50.5	214.8	53.5	23.5		54.0	17.4	0.2
Level of Service	D	D	A	E	D	F	D	C		D	B	A
Approach Delay (s)		35.2			182.8			26.5			17.4	
Approach LOS		D			F			C			B	

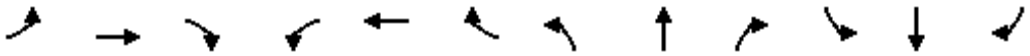
Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	235	15	30	55	370	2505	20	70	1295	325
Future Volume (vph)	315	30	235	15	30	55	370	2505	20	70	1295	325
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	19.0	26.0		11.0	18.0		27.0	67.0	67.0	16.0	56.0	
Total Split (%)	15.8%	21.7%		9.2%	15.0%		22.5%	55.8%	55.8%	13.3%	46.7%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Act Effct Green (s)	20.6	14.0	107.1	9.7	7.3	107.1	16.9	62.2	62.2	8.6	51.0	107.1
Actuated g/C Ratio	0.19	0.13	1.00	0.09	0.07	1.00	0.16	0.58	0.58	0.08	0.48	1.00
v/c Ratio	0.73	0.15	0.18	0.12	0.17	0.05	0.75	0.95	0.02	0.54	0.59	0.22
Control Delay	47.6	43.7	0.3	37.7	51.9	0.1	53.1	32.6	0.1	64.0	23.3	0.3
Queue Delay	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 Delay	47.6	43.7	0.3	37.7	51.9	0.1	53.1	32.6	0.1	64.0	23.3	0.3
LOS	D	D	A	D	D	A	D	C	A	E	C	A
Approach Delay		28.2			21.3			35.0			20.6	
Approach LOS		C			C			D			C	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 107.1		
Natural Cycle: 150		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.95		
Intersection Signal Delay: 29.4	Intersection LOS: C	
Intersection Capacity Utilization 84.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 2: Parker Road & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	384	37	287	20	40	73	407	2753	22	76	1408	353
v/c Ratio	0.73	0.15	0.18	0.12	0.17	0.05	0.75	0.95	0.02	0.54	0.59	0.22
Control Delay	47.6	43.7	0.3	37.7	51.9	0.1	53.1	32.6	0.1	64.0	23.3	0.3
Queue Delay	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 Delay	47.6	43.7	0.3	37.7	51.9	0.1	53.1	32.6	0.1	64.0	23.3	0.3
Queue Length 50th (ft)	127	22	0	12	15	0	149	~813	0	54	284	0
Queue Length 95th (ft)	157	51	0	27	27	0	200	#918	0	105	355	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	547	383	1583	160	417	1564	673	2897	993	163	2374	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.10	0.18	0.13	0.10	0.05	0.60	0.95	0.02	0.47	0.59	0.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	235	15	30	55	370	2505	20	70	1295	325
Future Volume (vph)	315	30	235	15	30	55	370	2505	20	70	1295	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.41	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1490	1863	1583	1774	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.82	0.82	0.82	0.75	0.75	0.75	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	384	37	287	20	40	73	407	2753	22	76	1408	353
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	10	0	0	0
Lane Group Flow (vph)	384	37	287	20	40	73	407	2753	12	76	1408	353
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	23.1	15.6	110.8	6.2	4.2	110.8	16.9	62.2	62.2	7.1	52.4	110.8
Effective Green, g (s)	23.1	15.6	110.8	6.2	4.2	110.8	16.9	62.2	62.2	7.1	52.4	110.8
Actuated g/C Ratio	0.21	0.14	1.00	0.06	0.04	1.00	0.15	0.56	0.56	0.06	0.47	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	545	262	1583	99	134	1564	523	2800	888	113	2358	1583
v/s Ratio Prot	c0.09	0.02		0.00	0.01		c0.12	c0.55		0.04	0.28	
v/s Ratio Perm	c0.06		0.18	0.01		0.05			0.01			0.22
v/c Ratio	0.70	0.14	0.18	0.20	0.30	0.05	0.78	0.98	0.01	0.67	0.60	0.22
Uniform Delay, d1	39.2	41.7	0.0	49.9	51.9	0.0	45.1	23.8	10.7	50.7	21.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	0.2	0.3	1.0	1.3	0.1	6.9	13.5	0.0	13.4	1.1	0.3
Delay (s)	43.0	41.9	0.3	50.9	53.1	0.1	52.1	37.3	10.8	64.1	22.6	0.3
Level of Service	D	D	A	D	D	A	D	D	B	E	C	A
Approach Delay (s)		25.6			23.7			39.0			20.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.8	Sum of lost time (s)	23.9
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	495	435	30	70	45
Future Vol, veh/h	5	495	435	30	70	45
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	240	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	77	80	93	90	69	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	619	468	33	101	65

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	502	0	-	0	1100	469
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	631	-
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	1062	-	-	-	235	594
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	530	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1061	-	-	-	233	593
Mov Cap-2 Maneuver	-	-	-	-	233	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	529	-

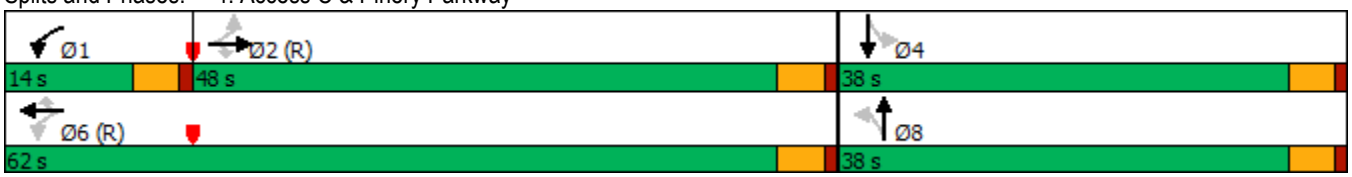
Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	24
HCM LOS			C

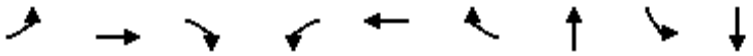
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1061	-	-	-	233	593
HCM Lane V/C Ratio	0.006	-	-	-	0.435	0.11
HCM Control Delay (s)	8.4	-	-	-	31.9	11.8
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	-	2.1	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	190	20	110	170	160	15	5	125	5
Future Volume (vph)	5	190	20	110	170	160	15	5	125	5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	1	6	6	8	8	4	4
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)	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	48.0	48.0	48.0	14.0	62.0	62.0	38.0	38.0	38.0	38.0
Total Split (%)	48.0%	48.0%	48.0%	14.0%	62.0%	62.0%	38.0%	38.0%	38.0%	38.0%
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
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	Lag	Lead						
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None
Act Effct Green (s)	62.0	62.0	62.0	74.2	74.2	74.2		16.8	16.8	16.8
Actuated g/C Ratio	0.62	0.62	0.62	0.74	0.74	0.74		0.17	0.17	0.17
v/c Ratio	0.01	0.10	0.02	0.15	0.08	0.15		0.32	0.75	0.04
Control Delay	10.2	9.0	0.1	4.9	4.3	1.1		13.6	61.5	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	10.2	9.0	0.1	4.9	4.3	1.1		13.6	61.5	23.3
LOS	B	A	A	A	A	A		B	E	C
Approach Delay		8.2			3.3			13.6		58.6
Approach LOS		A			A			B		E

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 36.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Access C & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	6	224	24	129	200	188	106	147	12
v/c Ratio	0.01	0.10	0.02	0.15	0.08	0.15	0.32	0.75	0.04
Control Delay	10.2	9.0	0.1	4.9	4.3	1.1	13.6	61.5	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	9.0	0.1	4.9	4.3	1.1	13.6	61.5	23.3
Queue Length 50th (ft)	1	27	0	19	15	0	13	90	3
Queue Length 95th (ft)	8	52	0	44	31	17	49	137	16
Internal Link Dist (ft)		575			553		284		431
Turn Bay Length (ft)	80		80	160				150	
Base Capacity (vph)	722	2194	1005	856	2625	1223	589	391	581
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.02	0.15	0.08	0.15	0.18	0.38	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	190	20	110	170	160	15	5	70	125	5	5
Future Volume (vph)	5	190	20	110	170	160	15	5	70	125	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.90		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1654		1770	1723	
Flt Permitted	0.63	1.00	1.00	0.57	1.00	1.00		0.96		0.63	1.00	
Satd. Flow (perm)	1166	3539	1583	1063	3539	1583		1596		1170	1723	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	6	224	24	129	200	188	18	6	82	147	6	6
RTOR Reduction (vph)	0	0	9	0	0	49	0	68	0	0	5	0
Lane Group Flow (vph)	6	224	15	129	200	139	0	38	0	147	7	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	62.0	62.0	62.0	74.2	74.2	74.2		16.8		16.8	16.8	
Effective Green, g (s)	62.0	62.0	62.0	74.2	74.2	74.2		16.8		16.8	16.8	
Actuated g/C Ratio	0.62	0.62	0.62	0.74	0.74	0.74		0.17		0.17	0.17	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	722	2194	981	843	2625	1174		268		196	289	
v/s Ratio Prot		0.06		c0.01	0.06						0.00	
v/s Ratio Perm	0.01		0.01	c0.10		0.09		0.02		c0.13		
v/c Ratio	0.01	0.10	0.02	0.15	0.08	0.12		0.14		0.75	0.02	
Uniform Delay, d1	7.3	7.7	7.3	3.7	3.5	3.7		35.5		39.6	34.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1	0.0	0.1	0.1	0.2		0.2		14.8	0.0	
Delay (s)	7.3	7.8	7.3	3.8	3.6	3.9		35.7		54.4	34.8	
Level of Service	A	A	A	A	A	A		D		D	C	
Approach Delay (s)		7.7			3.7			35.7			53.0	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	60	0	20	90	85	0	0	50	110	0	0
Future Vol, veh/h	5	60	0	20	90	85	0	0	50	110	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	150	-	150	150	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	65	0	22	98	92	0	0	54	120	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	65	0	0	168	309	33	185	217	49
Stage 1	-	-	-	-	-	-	75	75	-	142	142	-
Stage 2	-	-	-	-	-	-	93	234	-	43	75	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1381	-	-	1535	-	-	780	604	1033	759	680	1009
Stage 1	-	-	-	-	-	-	926	832	-	846	778	-
Stage 2	-	-	-	-	-	-	904	710	-	966	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1381	-	-	1535	-	-	769	593	1033	709	668	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	769	593	-	709	668	-
Stage 1	-	-	-	-	-	-	922	829	-	843	767	-
Stage 2	-	-	-	-	-	-	891	700	-	912	829	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.8	8.7	11.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1033	1381	-	-	1535	-	-	709	-
HCM Lane V/C Ratio	-	0.053	0.004	-	-	0.014	-	-	0.169	-
HCM Control Delay (s)	0	8.7	7.6	-	-	7.4	-	-	11.1	0
HCM Lane LOS	A	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	-	0.2	0	-	-	0	-	-	0.6	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	35	0	2875	1310	195
Future Vol, veh/h	0	35	0	2875	1310	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	38	0	3125	1424	212

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	-	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	0	-	-	0
Stage 1	0	0	0	-	-	0
Stage 2	0	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	-	-	-	-	-
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
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	7.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	85	0	0	65
Future Vol, veh/h	0	0	85	0	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	92	0	0	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	-	1
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	1620	-	0	1083
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	-	1083
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

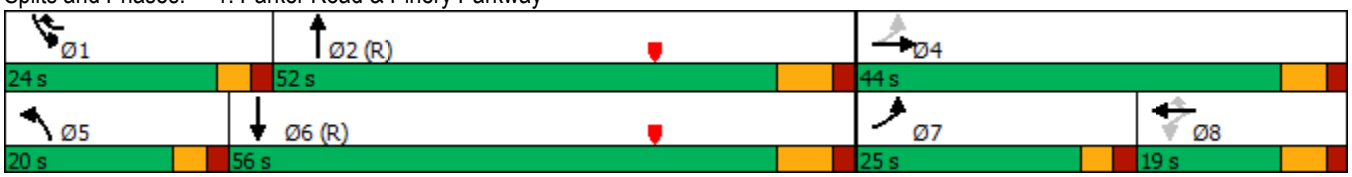
Approach	EB	WB	NB
HCM Control Delay, s	0	7.4	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1083	-	-	1620	-
HCM Lane V/C Ratio	0.065	-	-	0.057	-
HCM Control Delay (s)	8.6	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	720	55	290	70	45	285	345	1405	405	2045	285
Future Volume (vph)	720	55	290	70	45	285	345	1405	405	2045	285
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	25.0	44.0		19.0	19.0	24.0	20.0	52.0	24.0	56.0	
Total Split (%)	20.8%	36.7%		15.8%	15.8%	20.0%	16.7%	43.3%	20.0%	46.7%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?											
Recall Mode	None	None		None	None	None	None	C-Max	None	C-Max	
Act Effct Green (s)	34.8	31.2	120.0	12.4	12.4	32.8	14.9	50.2	18.0	53.2	120.0
Actuated g/C Ratio	0.29	0.26	1.00	0.10	0.10	0.27	0.12	0.42	0.15	0.44	1.00
v/c Ratio	0.99	0.07	0.20	0.56	0.25	0.64	0.88	0.76	0.81	0.95	0.19
Control Delay	70.3	29.5	0.3	67.3	53.0	32.9	73.8	34.2	62.6	44.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	29.5	0.3	67.3	53.0	32.9	73.8	34.2	62.6	44.3	0.3
LOS	E	C	A	E	D	C	E	C	E	D	A
Approach Delay		49.2			41.2			41.7		42.5	
Approach LOS		D			D			D		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 112 (93%), Referenced to phase 2:NBT and 6:SBT, Start of FDW or yellow	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 43.4	Intersection LOS: D
Intersection Capacity Utilization 91.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	783	60	315	77	49	313	375	1587	418	2108	294
v/c Ratio	0.99	0.07	0.20	0.56	0.25	0.64	0.88	0.76	0.81	0.95	0.19
Control Delay	70.3	29.5	0.3	67.3	53.0	32.9	73.8	34.2	62.6	44.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	29.5	0.3	67.3	53.0	32.9	73.8	34.2	62.6	44.3	0.3
Queue Length 50th (ft)	275	17	0	58	36	149	148	403	161	~633	0
Queue Length 95th (ft)	#389	33	0	110	75	243	#231	473	219	#738	0
Internal Link Dist (ft)		553			790			779		1277	
Turn Bay Length (ft)	220		100	100			340		500		
Base Capacity (vph)	787	1120	1583	144	201	505	429	2078	543	2213	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.05	0.20	0.53	0.24	0.62	0.87	0.76	0.77	0.95	0.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

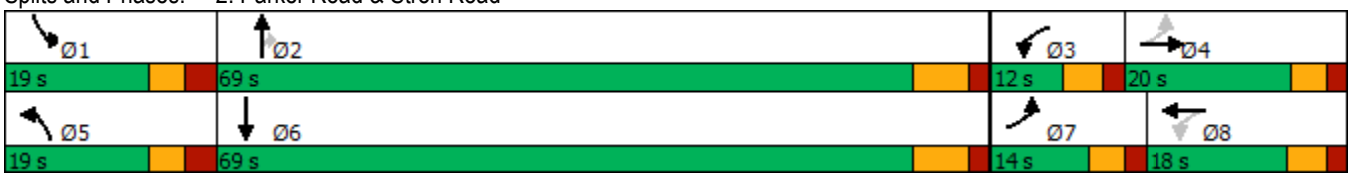
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	720	55	290	70	45	285	345	1405	55	405	2045	285
Future Volume (vph)	720	55	290	70	45	285	345	1405	55	405	2045	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0	6.0	6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	3433	4963		3433	4988	1583
Flt Permitted	0.48	1.00	1.00	0.72	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1747	3539	1583	1333	1863	1583	3433	4963		3433	4988	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.97	0.97	0.97
Adj. Flow (vph)	783	60	315	77	49	313	375	1527	60	418	2108	294
RTOR Reduction (vph)	0	0	0	0	0	63	0	4	0	0	0	0
Lane Group Flow (vph)	783	60	315	77	49	250	375	1583	0	418	2108	294
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						Free
Actuated Green, G (s)	35.0	35.0	120.0	10.0	10.0	28.0	14.9	49.0		18.0	52.1	120.0
Effective Green, g (s)	35.0	35.0	120.0	10.0	10.0	28.0	14.9	49.0		18.0	52.1	120.0
Actuated g/C Ratio	0.29	0.29	1.00	0.08	0.08	0.23	0.12	0.41		0.15	0.43	1.00
Clearance Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	790	1032	1583	111	155	369	426	2026		514	2165	1583
v/s Ratio Prot	c0.17	0.02			0.03	0.10	0.11	0.32		c0.12	c0.42	
v/s Ratio Perm	c0.12		c0.20	0.06		0.06						0.19
v/c Ratio	0.99	0.06	0.20	0.69	0.32	0.68	0.88	0.78		0.81	0.97	0.19
Uniform Delay, d1	40.3	30.6	0.0	53.5	51.8	41.9	51.7	30.8		49.4	33.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.7	0.0	0.3	17.1	1.2	4.9	18.6	3.1		9.5	14.1	0.3
Delay (s)	70.0	30.6	0.3	70.6	53.0	46.8	70.3	33.9		58.9	47.3	0.3
Level of Service	E	C	A	E	D	D	E	C		E	D	A
Approach Delay (s)		49.0			51.7			40.9			44.1	
Approach LOS		D			D			D			D	

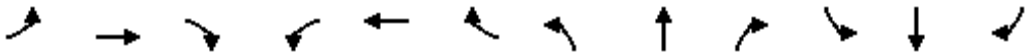
Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	91.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	330	20	25	80	280	2145	15	60	2695	270
Future Volume (vph)	315	30	330	20	25	80	280	2145	15	60	2695	270
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	14.0	20.0		12.0	18.0		19.0	69.0	69.0	19.0	69.0	
Total Split (%)	11.7%	16.7%		10.0%	15.0%		15.8%	57.5%	57.5%	15.8%	57.5%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Act Effct Green (s)	14.3	8.5	109.2	10.6	7.1	109.2	12.4	68.3	68.3	9.0	62.2	109.2
Actuated g/C Ratio	0.13	0.08	1.00	0.10	0.07	1.00	0.11	0.63	0.63	0.08	0.57	1.00
v/c Ratio	0.95	0.22	0.22	0.13	0.13	0.06	0.78	0.75	0.02	0.45	1.02	0.18
Control Delay	82.4	52.8	0.3	41.2	51.7	0.1	62.8	18.9	0.0	58.5	46.8	0.3
Queue Delay	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 Delay	82.4	52.8	0.3	41.2	51.7	0.1	62.8	18.9	0.0	58.5	46.8	0.3
LOS	F	D	A	D	D	A	E	B	A	E	D	A
Approach Delay		41.0			16.9			23.8			42.9	
Approach LOS		D			B			C			D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 109.2	
Natural Cycle: 150	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 34.6	Intersection LOS: C
Intersection Capacity Utilization 91.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Parker Road & Stroh Road



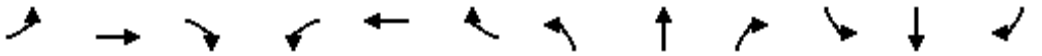


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	339	32	355	23	29	93	304	2332	16	65	2898	290
v/c Ratio	0.95	0.22	0.22	0.13	0.13	0.06	0.78	0.75	0.02	0.45	1.02	0.18
Control Delay	82.4	52.8	0.3	41.2	51.7	0.1	62.8	18.9	0.0	58.5	46.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.4	52.8	0.3	41.2	51.7	0.1	62.8	18.9	0.0	58.5	46.8	0.3
Queue Length 50th (ft)	117	22	0	14	11	0	114	477	0	47	~870	0
Queue Length 95th (ft)	#190	55	0	36	25	0	#180	598	0	90	#967	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	355	253	1583	174	406	1564	403	3119	1038	208	2842	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.13	0.22	0.13	0.07	0.06	0.75	0.75	0.02	0.31	1.02	0.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	30	330	20	25	80	280	2145	15	60	2695	270
Future Volume (vph)	315	30	330	20	25	80	280	2145	15	60	2695	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.43	1.00	1.00	0.98	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1571	1863	1583	1817	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	339	32	355	23	29	93	304	2332	16	65	2898	290
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	6	0	0	0
Lane Group Flow (vph)	339	32	355	23	29	93	304	2332	10	65	2898	290
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	18.0	9.2	112.8	7.8	4.1	112.8	12.4	68.3	68.3	7.7	63.6	112.8
Effective Green, g (s)	18.0	9.2	112.8	7.8	4.1	112.8	12.4	68.3	68.3	7.7	63.6	112.8
Actuated g/C Ratio	0.16	0.08	1.00	0.07	0.04	1.00	0.11	0.61	0.61	0.07	0.56	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	395	151	1583	124	128	1564	377	3020	958	120	2812	1583
v/s Ratio Prot	c0.07	0.02		0.01	0.01		c0.09	c0.47		0.04	c0.58	
v/s Ratio Perm	c0.07		0.22	0.01		0.06			0.01			0.18
v/c Ratio	0.86	0.21	0.22	0.19	0.23	0.06	0.81	0.77	0.01	0.54	1.03	0.18
Uniform Delay, d1	45.0	48.4	0.0	49.5	52.8	0.0	49.0	16.5	8.8	50.8	24.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.4	0.5	0.3	0.7	0.9	0.1	11.6	2.0	0.0	3.9	25.4	0.3
Delay (s)	61.5	48.9	0.3	50.2	53.7	0.1	60.6	18.5	8.9	54.7	50.0	0.3
Level of Service	E	D	A	D	D	A	E	B	A	D	D	A
Approach Delay (s)		31.0			18.8			23.2			45.7	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	112.8	Sum of lost time (s)	23.9
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	55	620	415	50	40	35
Future Vol, veh/h	55	620	415	50	40	35
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	240	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	95	95	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	646	437	53	51	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	505	0	-	0	1212	452
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	760	-
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	1060	-	-	-	201	608
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	462	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1045	-	-	-	185	599
Mov Cap-2 Maneuver	-	-	-	-	185	-
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	456	-

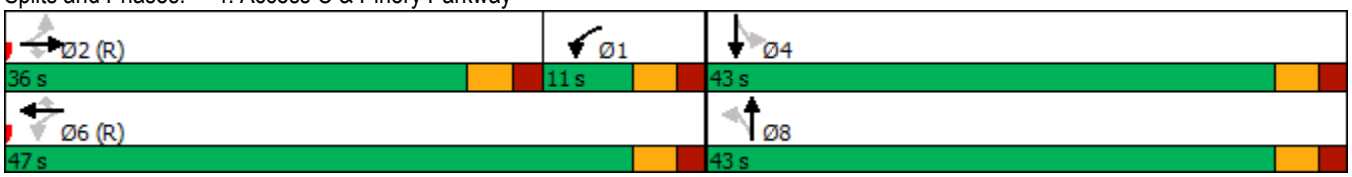
Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	22.3
HCM LOS			C

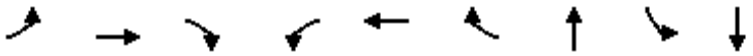
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1045	-	-	-	185	599
HCM Lane V/C Ratio	0.055	-	-	-	0.277	0.075
HCM Control Delay (s)	8.6	-	-	-	31.8	11.5
HCM Lane LOS	A	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	5	505	15	80	260	280	15	5	480	5
Future Volume (vph)	5	505	15	80	260	280	15	5	480	5
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	1	6	6	8	8	4	4
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)	23.5	23.5	23.5	10.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	36.0	36.0	36.0	11.0	47.0	47.0	43.0	43.0	43.0	43.0
Total Split (%)	40.0%	40.0%	40.0%	12.2%	52.2%	52.2%	47.8%	47.8%	47.8%	47.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lead	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes						
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	33.2	33.2	33.2	42.0	42.0	42.0		38.0	38.0	38.0
Actuated g/C Ratio	0.37	0.37	0.37	0.47	0.47	0.47		0.42	0.42	0.42
v/c Ratio	0.01	0.42	0.03	0.22	0.17	0.34		0.15	0.93	0.01
Control Delay	19.6	23.2	0.1	16.8	14.3	2.9		5.6	50.7	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	19.6	23.2	0.1	16.8	14.3	2.9		5.6	50.7	11.8
LOS	B	C	A	B	B	A		A	D	B
Approach Delay		22.5			9.4			5.6		49.9
Approach LOS		C			A			A		D

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 64.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 4: Access C & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	5	549	16	87	283	304	113	522	10
v/c Ratio	0.01	0.42	0.03	0.22	0.17	0.34	0.15	0.93	0.01
Control Delay	19.6	23.2	0.1	16.8	14.3	2.9	5.6	50.7	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	23.2	0.1	16.8	14.3	2.9	5.6	50.7	11.8
Queue Length 50th (ft)	2	125	0	27	47	0	7	275	2
Queue Length 95th (ft)	9	173	0	53	71	42	38	#481	11
Internal Link Dist (ft)		575			553		284		431
Turn Bay Length (ft)	80		80	160				150	
Base Capacity (vph)	396	1305	637	396	1651	900	734	562	730
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.42	0.03	0.22	0.17	0.34	0.15	0.93	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	505	15	80	260	280	15	5	85	480	5	5
Future Volume (vph)	5	505	15	80	260	280	15	5	85	480	5	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.89		1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1646		1770	1723	
Flt Permitted	0.58	1.00	1.00	0.37	1.00	1.00		0.97		0.72	1.00	
Satd. Flow (perm)	1077	3539	1583	697	3539	1583		1613		1333	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	549	16	87	283	304	16	5	92	522	5	5
RTOR Reduction (vph)	0	0	10	0	0	162	0	53	0	0	3	0
Lane Group Flow (vph)	5	549	6	87	283	142	0	60	0	522	7	0
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	32.2	32.2	32.2	42.0	42.0	42.0		38.0		38.0	38.0	
Effective Green, g (s)	32.2	32.2	32.2	42.0	42.0	42.0		38.0		38.0	38.0	
Actuated g/C Ratio	0.36	0.36	0.36	0.47	0.47	0.47		0.42		0.42	0.42	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	385	1266	566	382	1651	738		681		562	727	
v/s Ratio Prot		c0.16		0.01	0.08						0.00	
v/s Ratio Perm	0.00		0.00	0.09		c0.09		0.04		c0.39		
v/c Ratio	0.01	0.43	0.01	0.23	0.17	0.19		0.09		0.93	0.01	
Uniform Delay, d1	18.6	22.0	18.6	18.1	13.9	14.1		15.6		24.7	15.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.1	0.0	0.3	0.2	0.6		0.3		23.9	0.0	
Delay (s)	18.7	23.1	18.7	18.4	14.1	14.6		15.9		48.6	15.1	
Level of Service	B	C	B	B	B	B		B		D	B	
Approach Delay (s)		22.9			14.9			15.9			48.0	
Approach LOS		C			B			B			D	

Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	90	0	30	70	135	0	0	30	415	0	0
Future Vol, veh/h	5	90	0	30	70	135	0	0	30	415	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	150	-	150	150	-	150	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	98	0	33	76	147	0	0	33	451	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	223	0	0	98	0	0	212	397	49	201	250	38
Stage 1	-	-	-	-	-	-	108	108	-	142	142	-
Stage 2	-	-	-	-	-	-	104	289	-	59	108	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
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	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1343	-	-	1493	-	-	726	539	1009	739	652	1026
Stage 1	-	-	-	-	-	-	886	805	-	846	778	-
Stage 2	-	-	-	-	-	-	890	672	-	946	805	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1343	-	-	1493	-	-	711	525	1009	701	635	1026
Mov Cap-2 Maneuver	-	-	-	-	-	-	711	525	-	701	635	-
Stage 1	-	-	-	-	-	-	882	802	-	843	761	-
Stage 2	-	-	-	-	-	-	870	657	-	912	802	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	8.7	18.9
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	1009	1343	-	-	1493	-	-	701	-
HCM Lane V/C Ratio	-	0.032	0.004	-	-	0.022	-	-	0.643	-
HCM Control Delay (s)	0	8.7	7.7	-	-	7.5	-	-	18.9	0
HCM Lane LOS	A	A	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	-	0.1	0	-	-	0.1	-	-	4.7	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	235	0	2435	2615	410
Future Vol, veh/h	0	235	0	2435	2615	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	Free
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	95	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	255	0	2647	2753	446

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	-	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	0	-	-	0
Stage 1	0	0	0	-	-	0
Stage 2	0	0	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	-	-	-	-	-
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
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	0	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	65	0	0	85
Future Vol, veh/h	0	0	65	0	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	71	0	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	-	1
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	1620	-	0	1083
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1620	-	-	1083
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1083	-	-	1620	-
HCM Lane V/C Ratio	0.085	-	-	0.044	-
HCM Control Delay (s)	8.6	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	230	50	75	65	130	325	415	2160	90	1055	130
Future Volume (vph)	230	50	75	65	130	325	415	2160	90	1055	130
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Free
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					Free
Detector Phase	7	4		8	8	1	5	2	1	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	
Total Split (s)	13.0	37.0		24.0	24.0	16.0	31.0	67.0	16.0	52.0	
Total Split (%)	10.8%	30.8%		20.0%	20.0%	13.3%	25.8%	55.8%	13.3%	43.3%	
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0	5.0	7.0	
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lead	Lag	Lag	
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		Ped	Ped	None	None	C-Max	None	C-Max	
Act Effct Green (s)	27.2	25.9	120.0	18.0	18.0	30.0	20.9	60.0	11.0	50.1	120.0
Actuated g/C Ratio	0.23	0.22	1.00	0.15	0.15	0.25	0.17	0.50	0.09	0.42	1.00
v/c Ratio	0.51	0.07	0.05	0.35	0.51	0.72	0.75	0.96	0.31	0.55	0.09
Control Delay	32.0	23.8	0.1	51.4	54.0	29.3	55.3	40.1	53.9	28.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	23.8	0.1	51.4	54.0	29.3	55.3	40.1	53.9	28.3	0.1
LOS	C	C	A	D	D	C	E	D	D	C	A
Approach Delay		24.1			38.3			42.6		27.2	
Approach LOS		C			D			D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 24 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 36.6	Intersection LOS: D
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	250	54	82	71	141	353	451	2391	98	1147	141
v/c Ratio	0.51	0.07	0.05	0.35	0.51	0.72	0.75	0.96	0.31	0.55	0.09
Control Delay	32.0	23.8	0.1	51.4	54.0	29.3	55.3	40.1	53.9	28.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	23.8	0.1	51.4	54.0	29.3	55.3	40.1	53.9	28.3	0.1
Queue Length 50th (ft)	52	11	0	50	102	127	172	631	37	242	0
Queue Length 95th (ft)	74	23	0	98	169	216	219	#770	64	310	0
Internal Link Dist (ft)		553			790			779		1277	
Turn Bay Length (ft)	220		100	100			340		500		
Base Capacity (vph)	486	914	1583	201	279	491	743	2488	314	2081	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.06	0.05	0.35	0.51	0.72	0.61	0.96	0.31	0.55	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

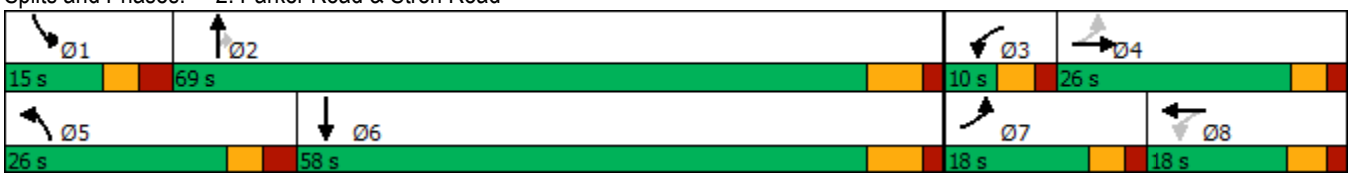
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	50	75	65	130	325	415	2160	40	90	1055	130
Future Volume (vph)	230	50	75	65	130	325	415	2160	40	90	1055	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0	6.0	6.0	5.0	5.0	7.0		5.0	7.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	3433	4976		3433	4988	1583
Flt Permitted	0.44	1.00	1.00	0.72	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1607	3539	1583	1341	1863	1583	3433	4976		3433	4988	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	54	82	71	141	353	451	2348	43	98	1147	141
RTOR Reduction (vph)	0	0	0	0	0	96	0	2	0	0	0	0
Lane Group Flow (vph)	250	54	82	71	141	257	451	2390	0	98	1147	141
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Free
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						Free
Actuated Green, G (s)	31.0	31.0	120.0	18.0	18.0	29.0	20.9	60.0		11.0	50.1	120.0
Effective Green, g (s)	31.0	31.0	120.0	18.0	18.0	29.0	20.9	60.0		11.0	50.1	120.0
Actuated g/C Ratio	0.26	0.26	1.00	0.15	0.15	0.24	0.17	0.50		0.09	0.42	1.00
Clearance Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0		5.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)	536	914	1583	201	279	382	597	2488		314	2082	1583
v/s Ratio Prot	c0.03	0.02			0.08	c0.06	0.13	c0.48		0.03	0.23	
v/s Ratio Perm	0.09		0.05	0.05		0.10						0.09
v/c Ratio	0.47	0.06	0.05	0.35	0.51	0.67	0.76	0.96		0.31	0.55	0.09
Uniform Delay, d1	35.9	33.5	0.0	45.8	46.9	41.2	47.1	28.9		51.0	26.4	0.0
Progression Factor	0.75	0.70	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.0	0.1	1.1	1.4	4.6	5.4	10.9		0.6	1.1	0.1
Delay (s)	27.6	23.4	0.1	46.8	48.3	45.8	52.5	39.7		51.5	27.5	0.1
Level of Service	C	C	A	D	D	D	D	D		D	C	A
Approach Delay (s)		21.2			46.6			41.8			26.4	
Approach LOS		C			D			D			C	

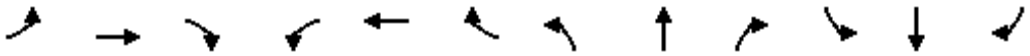
Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	30	165	15	35	60	335	2300	25	80	1240	365
Future Volume (vph)	385	30	165	15	35	60	335	2300	25	80	1240	365
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	18.0	26.0		10.0	18.0		26.0	69.0	69.0	15.0	58.0	
Total Split (%)	15.0%	21.7%		8.3%	15.0%		21.7%	57.5%	57.5%	12.5%	48.3%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Act Effct Green (s)	20.2	13.9	109.2	8.7	7.3	109.2	15.8	62.3	62.3	8.3	54.8	109.2
Actuated g/C Ratio	0.18	0.13	1.00	0.08	0.07	1.00	0.14	0.57	0.57	0.08	0.50	1.00
v/c Ratio	0.83	0.14	0.11	0.11	0.16	0.04	0.72	0.86	0.03	0.64	0.53	0.25
Control Delay	56.0	43.8	0.1	38.3	51.9	0.1	53.7	25.0	0.0	72.3	20.8	0.4
Queue Delay	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 Delay	56.0	43.8	0.1	38.3	51.9	0.1	53.7	25.0	0.0	72.3	20.8	0.4
LOS	E	D	A	D	D	A	D	C	A	E	C	A
Approach Delay		39.5			21.8			28.4			18.8	
Approach LOS		D			C			C			B	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 109.2		
Natural Cycle: 150		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.86		
Intersection Signal Delay: 26.3	Intersection LOS: C	
Intersection Capacity Utilization 82.4%	ICU Level of Service E	
Analysis Period (min) 15		

Splits and Phases: 2: Parker Road & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	418	33	179	16	38	65	356	2447	27	85	1319	388
v/c Ratio	0.83	0.14	0.11	0.11	0.16	0.04	0.72	0.86	0.03	0.64	0.53	0.25
Control Delay	56.0	43.8	0.1	38.3	51.9	0.1	53.7	25.0	0.0	72.3	20.8	0.4
Queue Delay	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 Delay	56.0	43.8	0.1	38.3	51.9	0.1	53.7	25.0	0.0	72.3	20.8	0.4
Queue Length 50th (ft)	141	19	0	9	14	0	130	568	0	62	247	0
Queue Length 95th (ft)	193	52	0	29	32	0	177	662	0	#133	315	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	504	370	1583	141	406	1564	625	2844	978	143	2502	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.09	0.11	0.11	0.09	0.04	0.57	0.86	0.03	0.59	0.53	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	385	30	165	15	35	60	335	2300	25	80	1240	365
Future Volume (vph)	385	30	165	15	35	60	335	2300	25	80	1240	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.41	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1490	1863	1583	1774	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	418	33	179	16	38	65	356	2447	27	85	1319	388
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	12	0	0	0
Lane Group Flow (vph)	418	33	179	16	38	65	356	2447	15	85	1319	388
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	22.5	15.3	111.5	5.9	4.2	111.5	15.8	62.3	62.3	8.3	54.8	111.5
Effective Green, g (s)	22.5	15.3	111.5	5.9	4.2	111.5	15.8	62.3	62.3	8.3	54.8	111.5
Actuated g/C Ratio	0.20	0.14	1.00	0.05	0.04	1.00	0.14	0.56	0.56	0.07	0.49	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	523	255	1583	93	133	1564	486	2787	884	131	2451	1583
v/s Ratio Prot	c0.09	0.02		0.00	0.01		c0.10	c0.49		0.05	0.26	
v/s Ratio Perm	c0.07		0.11	0.01		0.04			0.01			0.25
v/c Ratio	0.80	0.13	0.11	0.17	0.29	0.04	0.73	0.88	0.02	0.65	0.54	0.25
Uniform Delay, d1	40.6	42.2	0.0	50.5	52.2	0.0	45.8	21.3	11.0	50.2	19.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	0.2	0.1	0.9	1.2	0.0	5.3	4.3	0.0	9.4	0.9	0.4
Delay (s)	48.7	42.4	0.1	51.3	53.4	0.0	51.1	25.6	11.0	59.6	20.5	0.4
Level of Service	D	D	A	D	D	A	D	C	B	E	C	A
Approach Delay (s)		34.6			24.0			28.7			18.0	
Approach LOS		C			C			C			B	

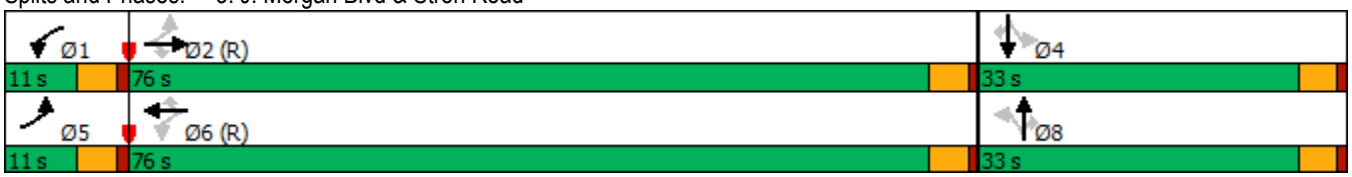
Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	23.9
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		

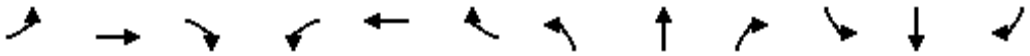
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	470	125	25	470	30	105	10	45	70	10	55
Future Volume (vph)	5	470	125	25	470	30	105	10	45	70	10	55
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	4
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	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	11.0	76.0	76.0	11.0	76.0	76.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	9.2%	63.3%	63.3%	9.2%	63.3%	63.3%	27.5%	27.5%	27.5%	27.5%	27.5%	27.5%
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	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Ped	Ped	Ped	Ped	Ped	Ped
Act Effct Green (s)	89.3	85.9	85.9	91.5	90.2	90.2	18.7	18.7	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.74	0.72	0.72	0.76	0.75	0.75	0.16	0.16	0.16	0.16	0.16	0.16
v/c Ratio	0.01	0.44	0.13	0.05	0.36	0.03	0.53	0.04	0.17	0.47	0.05	0.25
Control Delay	3.6	9.2	1.8	3.7	6.6	0.8	55.9	42.7	11.0	53.5	42.9	11.5
Queue Delay	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 Delay	3.6	9.2	1.8	3.7	6.6	0.8	55.9	42.7	11.0	53.5	42.9	11.5
LOS	A	A	A	A	A	A	E	D	B	D	D	B
Approach Delay		7.6			6.1			42.4			35.5	
Approach LOS		A			A			D			D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 46.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: J. Morgan Blvd & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	6	588	156	27	505	32	114	11	49	101	14	80
v/c Ratio	0.01	0.44	0.13	0.05	0.36	0.03	0.53	0.04	0.17	0.47	0.05	0.25
Control Delay	3.6	9.2	1.8	3.7	6.6	0.8	55.9	42.7	11.0	53.5	42.9	11.5
Queue Delay	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 Delay	3.6	9.2	1.8	3.7	6.6	0.8	55.9	42.7	11.0	53.5	42.9	11.5
Queue Length 50th (ft)	1	188	4	4	101	0	83	7	0	73	9	0
Queue Length 95th (ft)	4	244	20	12	234	5	141	24	30	94	22	20
Internal Link Dist (ft)		1161			1370			528			716	
Turn Bay Length (ft)	240		150	150		150	150		150	150		
Base Capacity (vph)	670	1333	1172	576	1400	1175	330	442	417	331	442	436
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.44	0.13	0.05	0.36	0.03	0.35	0.02	0.12	0.31	0.03	0.18

Intersection Summary

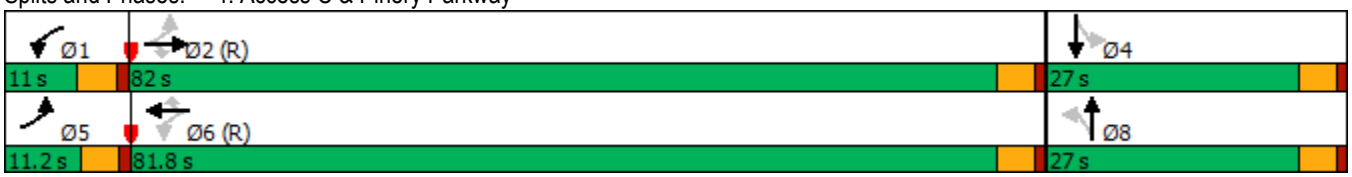
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	470	125	25	470	30	105	10	45	70	10	55
Future Volume (vph)	5	470	125	25	470	30	105	10	45	70	10	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (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
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1546	1770	1863	1583	1770	1863	1583
Flt Permitted	0.44	1.00	1.00	0.36	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00
Satd. Flow (perm)	827	1863	1583	678	1863	1546	1394	1863	1583	1398	1863	1583
Peak-hour factor, PHF	0.80	0.80	0.80	0.93	0.93	0.93	0.92	0.92	0.92	0.69	0.69	0.69
Adj. Flow (vph)	6	588	156	27	505	32	114	11	49	101	14	80
RTOR Reduction (vph)	0	0	41	0	0	9	0	0	41	0	0	68
Lane Group Flow (vph)	6	588	115	27	505	23	114	11	8	101	14	12
Confl. Peds. (#/hr)						1						
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	85.3	84.1	84.1	90.3	86.6	86.6	18.7	18.7	18.7	18.7	18.7	18.7
Effective Green, g (s)	85.3	84.1	84.1	90.3	86.6	86.6	18.7	18.7	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.71	0.70	0.70	0.75	0.72	0.72	0.16	0.16	0.16	0.16	0.16	0.16
Clearance 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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	597	1305	1109	543	1344	1115	217	290	246	217	290	246
v/s Ratio Prot	0.00	c0.32		c0.00	0.27			0.01			0.01	
v/s Ratio Perm	0.01		0.07	0.04		0.01	c0.08		0.00	0.07		0.01
v/c Ratio	0.01	0.45	0.10	0.05	0.38	0.02	0.53	0.04	0.03	0.47	0.05	0.05
Uniform Delay, d1	5.2	7.8	5.8	4.8	6.4	4.7	46.6	43.0	43.0	46.1	43.1	43.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	1.1	0.2	0.0	0.8	0.0	2.3	0.1	0.1	1.6	0.1	0.1
Delay (s)	5.2	9.0	6.0	4.8	7.2	4.8	48.9	43.1	43.0	47.7	43.2	43.2
Level of Service	A	A	A	A	A	A	D	D	D	D	D	D
Approach Delay (s)		8.3			6.9			46.8			45.5	
Approach LOS		A			A			D			D	

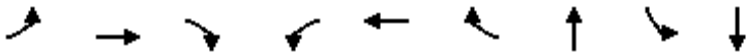
Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	50	250	55	70	515	90	35	5	60	5
Future Volume (vph)	50	250	55	70	515	90	35	5	60	5
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
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	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	11.2	82.0	82.0	11.0	81.8	81.8	27.0	27.0	27.0	27.0
Total Split (%)	9.3%	68.3%	68.3%	9.2%	68.2%	68.2%	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	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
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				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	84.9	79.7	79.7	84.9	79.7	79.7		22.5	22.5	22.5
Actuated g/C Ratio	0.71	0.66	0.66	0.71	0.66	0.66		0.19	0.19	0.19
v/c Ratio	0.10	0.13	0.06	0.10	0.26	0.31		0.33	0.32	0.11
Control Delay	4.2	8.0	2.8	11.6	17.0	14.1		27.7	46.7	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	4.2	8.0	2.8	11.6	17.0	14.1		27.7	46.7	17.8
LOS	A	A	A	B	B	B		C	D	B
Approach Delay		6.7			16.1			27.7		37.2
Approach LOS		A			B			C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 59 (49%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.33	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 42.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Access C & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	59	294	65	82	606	90	106	71	35
v/c Ratio	0.10	0.13	0.06	0.10	0.26	0.31	0.33	0.32	0.11
Control Delay	4.2	8.0	2.8	11.6	17.0	14.1	27.7	46.7	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	8.0	2.8	11.6	17.0	14.1	27.7	46.7	17.8
Queue Length 50th (ft)	12	47	3	28	119	22	40	48	4
Queue Length 95th (ft)	18	63	14	m54	158	m55	86	89	30
Internal Link Dist (ft)		575			553		284		431
Turn Bay Length (ft)	80		80	160				150	
Base Capacity (vph)	583	2350	1073	791	2350	294	321	223	329
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.13	0.06	0.10	0.26	0.31	0.33	0.32	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

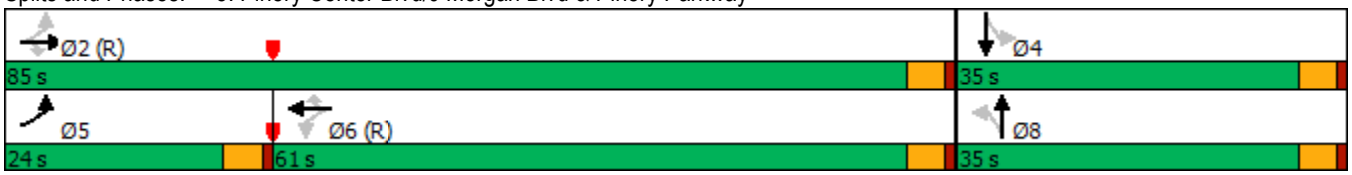
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	250	55	70	515	90	35	5	50	60	5	25
Future Volume (vph)	50	250	55	70	515	90	35	5	50	60	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.25		1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.92		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	398		1690		1770	1631	
Flt Permitted	0.40	1.00	1.00	0.57	1.00	1.00		0.88		0.64	1.00	
Satd. Flow (perm)	744	3539	1583	1066	3539	398		1515		1194	1631	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	59	294	65	82	606	90	41	6	59	71	6	29
RTOR Reduction (vph)	0	0	22	0	0	31	0	37	0	0	24	0
Lane Group Flow (vph)	59	294	43	82	606	59	0	69	0	71	11	0
Confl. Peds. (#/hr)						515						
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	84.0	78.8	78.8	84.0	78.8	78.8		22.5		22.5	22.5	
Effective Green, g (s)	84.0	78.8	78.8	84.0	78.8	78.8		22.5		22.5	22.5	
Actuated g/C Ratio	0.70	0.66	0.66	0.70	0.66	0.66		0.19		0.19	0.19	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	565	2323	1039	776	2323	261		284		223	305	
v/s Ratio Prot	0.00	0.08		c0.00	c0.17						0.01	
v/s Ratio Perm	0.07		0.03	0.07		0.15		0.05		c0.06		
v/c Ratio	0.10	0.13	0.04	0.11	0.26	0.23		0.24		0.32	0.04	
Uniform Delay, d1	5.7	7.7	7.3	5.7	8.5	8.3		41.5		42.1	39.9	
Progression Factor	0.87	1.01	1.41	2.52	1.94	6.03		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.1	0.1	0.1	0.2	1.8		2.0		3.7	0.2	
Delay (s)	5.0	7.9	10.3	14.4	16.8	51.9		43.5		45.8	40.1	
Level of Service	A	A	B	B	B	D		D		D	D	
Approach Delay (s)		7.9			20.6			43.5			44.0	
Approach LOS		A			C			D			D	

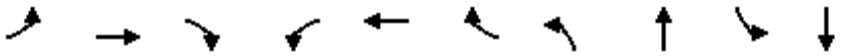
Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	100	250	30	30	500	50	75	95	60	85
Future Volume (vph)	100	250	30	30	500	50	75	95	60	85
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	6	6	6	8	8	4	4
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	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	24.0	85.0	85.0	61.0	61.0	61.0	35.0	35.0	35.0	35.0
Total Split (%)	20.0%	70.8%	70.8%	50.8%	50.8%	50.8%	29.2%	29.2%	29.2%	29.2%
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	Lag	Lag				
Lead-Lag Optimize?										
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	80.5	80.5	80.5	67.9	67.9	67.9	30.5	30.5	30.5	30.5
Actuated g/C Ratio	0.67	0.67	0.67	0.57	0.57	0.57	0.25	0.25	0.25	0.25
v/c Ratio	0.20	0.11	0.03	0.05	0.27	0.06	0.28	0.35	0.25	0.28
Control Delay	7.8	7.2	2.3	11.5	12.8	3.8	39.1	33.8	38.7	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	7.2	2.3	11.5	12.8	3.8	39.1	33.8	38.7	33.0
LOS	A	A	A	B	B	A	D	C	D	C
Approach Delay		7.0			11.9			35.6		34.9
Approach LOS		A			B			D		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 80 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 46.9%	ICU Level of Service A
Analysis Period (min) 15	

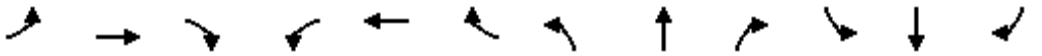
Splits and Phases: 5: Pinery Center Blvd/J Morgan Blvd & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	272	33	33	543	54	82	163	65	130
v/c Ratio	0.20	0.11	0.03	0.05	0.27	0.06	0.28	0.35	0.25	0.28
Control Delay	7.8	7.2	2.3	11.5	12.8	3.8	39.1	33.8	38.7	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	7.2	2.3	11.5	12.8	3.8	39.1	33.8	38.7	33.0
Queue Length 50th (ft)	27	35	0	8	73	0	51	88	40	70
Queue Length 95th (ft)	48	52	11	18	86	13	98	152	82	126
Internal Link Dist (ft)		446			575			367		49
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	655	2374	1072	615	2003	919	293	464	264	465
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.11	0.03	0.05	0.27	0.06	0.28	0.35	0.25	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	250	30	30	500	50	75	95	55	60	85	35
Future Volume (vph)	100	250	30	30	500	50	75	95	55	60	85	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1760		1770	1781	
Flt Permitted	0.39	1.00	1.00	0.58	1.00	1.00	0.62	1.00		0.56	1.00	
Satd. Flow (perm)	723	3539	1583	1088	3539	1583	1153	1760		1042	1781	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	272	33	33	543	54	82	103	60	65	92	38
RTOR Reduction (vph)	0	0	11	0	0	23	0	17	0	0	13	0
Lane Group Flow (vph)	109	272	22	33	543	31	82	146	0	65	117	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	80.5	80.5	80.5	67.9	67.9	67.9	30.5	30.5		30.5	30.5	
Effective Green, g (s)	80.5	80.5	80.5	67.9	67.9	67.9	30.5	30.5		30.5	30.5	
Actuated g/C Ratio	0.67	0.67	0.67	0.57	0.57	0.57	0.25	0.25		0.25	0.25	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	555	2374	1061	615	2002	895	293	447		264	452	
v/s Ratio Prot	c0.01	0.08			c0.15			c0.08			0.07	
v/s Ratio Perm	0.12		0.01	0.03		0.02	0.07			0.06		
v/c Ratio	0.20	0.11	0.02	0.05	0.27	0.03	0.28	0.33		0.25	0.26	
Uniform Delay, d1	7.4	7.0	6.6	11.7	13.4	11.5	35.9	36.4		35.6	35.7	
Progression Factor	1.00	1.00	1.00	0.92	0.91	1.14	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.0	0.2	0.3	0.1	2.4	1.9		2.2	1.4	
Delay (s)	7.6	7.1	6.6	10.9	12.5	13.2	38.3	38.3		37.8	37.1	
Level of Service	A	A	A	B	B	B	D	D		D	D	
Approach Delay (s)		7.2			12.5			38.3			37.4	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	40	0	2715	1235	150
Future Vol, veh/h	0	40	0	2715	1235	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	0	2951	1342	163

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	20	65	550	0	65
Future Vol, veh/h	315	20	65	550	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	342	22	71	598	0	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	364	0	-	182
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	1191	-	0	829
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1191	-	-	829
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

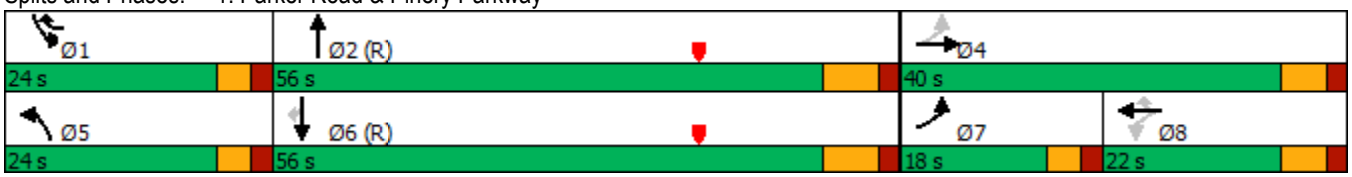
Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	829	-	-	1191	-
HCM Lane V/C Ratio	0.085	-	-	0.059	-
HCM Control Delay (s)	9.7	-	-	8.2	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	470	175	210	60	100	250	310	1380	330	2180	240
Future Volume (vph)	470	175	210	60	100	250	310	1380	330	2180	240
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	5	2	1	6	
Permitted Phases	4		Free	8		8					6
Detector Phase	7	4		8	8	1	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	5.0		12.0	12.0	8.0	1.0	20.0	8.0	20.0	20.0
Minimum Split (s)	10.0	39.0		39.0	39.0	13.0	6.0	27.0	13.0	27.0	27.0
Total Split (s)	18.0	40.0		22.0	22.0	24.0	24.0	56.0	24.0	56.0	56.0
Total Split (%)	15.0%	33.3%		18.3%	18.3%	20.0%	20.0%	46.7%	20.0%	46.7%	46.7%
Yellow Time (s)	3.0	4.0		4.0	4.0	3.0	3.0	5.0	3.0	5.0	5.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0	5.0	7.0	7.0
Lead/Lag	Lead			Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?											
Recall Mode	None	None		None	None	None	None	C-Max	None	C-Max	C-Max
Act Effct Green (s)	32.3	31.3	120.0	13.3	13.3	35.9	16.2	54.1	16.6	54.5	54.5
Actuated g/C Ratio	0.27	0.26	1.00	0.11	0.11	0.30	0.14	0.45	0.14	0.45	0.45
v/c Ratio	0.80	0.21	0.14	0.50	0.53	0.51	0.70	0.67	0.72	0.99	0.30
Control Delay	44.5	31.1	0.2	63.6	59.8	26.8	58.0	28.3	58.1	50.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	31.1	0.2	63.6	59.8	26.8	58.0	28.3	58.1	50.2	8.6
LOS	D	C	A	E	E	C	E	C	E	D	A
Approach Delay		30.9			40.2			33.6		47.5	
Approach LOS		C			D			C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 12 (10%), Referenced to phase 2:NBT and 6:SBT, Start of FDW or yellow	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 40.2	Intersection LOS: D
Intersection Capacity Utilization 93.5%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Parker Road & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	511	190	228	65	109	272	326	1506	340	2247	247
v/c Ratio	0.80	0.21	0.14	0.50	0.53	0.51	0.70	0.67	0.72	0.99	0.30
Control Delay	44.5	31.1	0.2	63.6	59.8	26.8	58.0	28.3	58.1	50.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	31.1	0.2	63.6	59.8	26.8	58.0	28.3	58.1	50.2	8.6
Queue Length 50th (ft)	153	54	0	49	82	121	125	325	130	613	35
Queue Length 95th (ft)	185	71	0	94	138	193	171	414	178	#819	97
Internal Link Dist (ft)		553			790			779		1277	
Turn Bay Length (ft)	220		100	100			340		500		
Base Capacity (vph)	642	1002	1583	156	248	560	543	2240	543	2265	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.19	0.14	0.42	0.44	0.49	0.60	0.67	0.63	0.99	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	470	175	210	60	100	250	310	1380	50	330	2180	240
Future Volume (vph)	470	175	210	60	100	250	310	1380	50	330	2180	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	4.0	6.0	6.0	5.0	5.0	7.0		5.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	3433	4965		3433	4988	1583
Flt Permitted	0.47	1.00	1.00	0.63	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1685	3539	1583	1178	1863	1583	3433	4965		3433	4988	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	511	190	228	65	109	272	326	1453	53	340	2247	247
RTOR Reduction (vph)	0	0	0	0	0	62	0	3	0	0	0	91
Lane Group Flow (vph)	511	190	228	65	109	210	326	1503	0	340	2247	156
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases	7	4			8	1	5	2		1	6	
Permitted Phases	4		Free	8		8						6
Actuated Green, G (s)	31.3	31.3	120.0	13.3	13.3	29.9	16.2	54.1		16.6	54.5	54.5
Effective Green, g (s)	31.3	31.3	120.0	13.3	13.3	29.9	16.2	54.1		16.6	54.5	54.5
Actuated g/C Ratio	0.26	0.26	1.00	0.11	0.11	0.25	0.13	0.45		0.14	0.45	0.45
Clearance Time (s)	5.0	6.0		6.0	6.0	5.0	5.0	7.0		5.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	5.0		3.0	5.0	5.0
Lane Grp Cap (vph)	628	923	1583	130	206	394	463	2238		474	2265	718
v/s Ratio Prot	c0.09	0.05			0.06	0.07	0.09	0.30		c0.10	c0.45	
v/s Ratio Perm	c0.12		c0.14	0.06		0.06						0.10
v/c Ratio	0.81	0.21	0.14	0.50	0.53	0.53	0.70	0.67		0.72	0.99	0.22
Uniform Delay, d1	39.7	34.6	0.0	50.2	50.4	39.0	49.6	26.0		49.5	32.5	19.8
Progression Factor	0.92	0.89	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.5	0.1	0.2	3.0	2.4	1.4	4.8	1.6		5.1	17.1	0.7
Delay (s)	44.0	30.9	0.2	53.2	52.8	40.4	54.4	27.6		54.6	49.7	20.5
Level of Service	D	C	A	D	D	D	D	C		D	D	C
Approach Delay (s)		30.5			45.3			32.4			47.7	
Approach LOS		C			D			C			D	

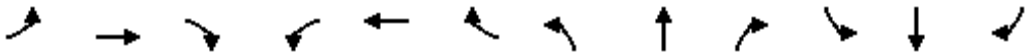
Intersection Summary			
HCM 2000 Control Delay	40.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	435	40	235	20	25	85	170	1875	20	75	2700	305
Future Volume (vph)	435	40	235	20	25	85	170	1875	20	75	2700	305
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	19.0	19.0	6.0	19.0	
Minimum Split (s)	37.2	37.2		37.5	37.5		16.2	35.0	35.0	12.2	35.0	
Total Split (s)	18.0	25.0		13.0	20.0		16.0	65.0	65.0	17.0	66.0	
Total Split (%)	15.0%	20.8%		10.8%	16.7%		13.3%	54.2%	54.2%	14.2%	55.0%	
Yellow Time (s)	3.2	3.2		3.5	3.5		3.2	5.0	5.0	3.2	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		3.0	2.0	2.0	3.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	Max	Max	None	Max	
Act Effct Green (s)	20.0	12.7	107.6	11.2	7.1	107.6	9.8	62.7	62.7	9.0	59.2	107.6
Actuated g/C Ratio	0.19	0.12	1.00	0.10	0.07	1.00	0.09	0.58	0.58	0.08	0.55	1.00
v/c Ratio	0.89	0.19	0.15	0.12	0.12	0.06	0.57	0.68	0.02	0.53	1.03	0.20
Control Delay	61.1	45.7	0.2	37.1	50.6	0.1	55.7	19.2	0.1	61.5	49.3	0.3
Queue Delay	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 Delay	61.1	45.7	0.2	37.1	50.6	0.1	55.7	19.2	0.1	61.5	49.3	0.3
LOS	E	D	A	D	D	A	E	B	A	E	D	A
Approach Delay		40.1			15.5			22.0			44.8	
Approach LOS		D			B			C			D	

Intersection Summary		
Cycle Length: 120		
Actuated Cycle Length: 107.6		
Natural Cycle: 150		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.03		
Intersection Signal Delay: 35.7	Intersection LOS: D	
Intersection Capacity Utilization 94.9%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 2: Parker Road & Stroh Road



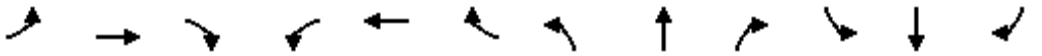


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	453	42	245	22	27	92	179	1974	21	78	2813	318
v/c Ratio	0.89	0.19	0.15	0.12	0.12	0.06	0.57	0.68	0.02	0.53	1.03	0.20
Control Delay	61.1	45.7	0.2	37.1	50.6	0.1	55.7	19.2	0.1	61.5	49.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	45.7	0.2	37.1	50.6	0.1	55.7	19.2	0.1	61.5	49.3	0.3
Queue Length 50th (ft)	151	24	0	13	10	0	65	394	0	55	~831	0
Queue Length 95th (ft)	#218	63	0	35	25	0	103	469	0	105	#926	0
Internal Link Dist (ft)		589			1174			1592			712	
Turn Bay Length (ft)				315		155	350		285	530		560
Base Capacity (vph)	510	361	1583	192	478	1564	313	2905	975	178	2744	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.12	0.15	0.11	0.06	0.06	0.57	0.68	0.02	0.44	1.03	0.20

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	435	40	235	20	25	85	170	1875	20	75	2700	305
Future Volume (vph)	435	40	235	20	25	85	170	1875	20	75	2700	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	5.2	4.0	5.5	5.5	4.0	6.2	7.0	7.0	6.2	7.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.95	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	3539	1564	3433	4988	1583	1770	4988	1583
Flt Permitted	0.42	1.00	1.00	0.98	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1506	1863	1583	1817	3539	1564	3433	4988	1583	1770	4988	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	0.96	0.96	0.96
Adj. Flow (vph)	453	42	245	22	27	92	179	1974	21	78	2812	318
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	9	0	0	0
Lane Group Flow (vph)	453	42	245	22	27	92	179	1974	12	78	2813	318
Confl. Peds. (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	4%	2%
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free			2			Free
Actuated Green, G (s)	22.4	14.1	111.2	6.9	4.1	111.2	9.8	62.7	62.7	7.7	60.6	111.2
Effective Green, g (s)	22.4	14.1	111.2	6.9	4.1	111.2	9.8	62.7	62.7	7.7	60.6	111.2
Actuated g/C Ratio	0.20	0.13	1.00	0.06	0.04	1.00	0.09	0.56	0.56	0.07	0.54	1.00
Clearance Time (s)	5.2	5.2		5.5	5.5		6.2	7.0	7.0	6.2	7.0	
Vehicle Extension (s)	2.5	2.5		3.0	3.0		2.5	5.0	5.0	2.5	5.0	
Lane Grp Cap (vph)	525	236	1583	111	130	1564	302	2812	892	122	2718	1583
v/s Ratio Prot	c0.10	0.02		0.00	0.01		c0.05	0.40		0.04	c0.56	
v/s Ratio Perm	c0.07		0.15	0.01		0.06			0.01			c0.20
v/c Ratio	0.86	0.18	0.15	0.20	0.21	0.06	0.59	0.70	0.01	0.64	1.03	0.20
Uniform Delay, d1	41.2	43.4	0.0	49.5	52.0	0.0	48.8	17.5	10.7	50.4	25.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.6	0.3	0.2	0.9	0.8	0.1	2.6	1.5	0.0	9.3	27.1	0.3
Delay (s)	54.8	43.6	0.2	50.4	52.8	0.1	51.4	19.0	10.7	59.7	52.4	0.3
Level of Service	D	D	A	D	D	A	D	B	B	E	D	A
Approach Delay (s)		36.1			18.0			21.6			47.4	
Approach LOS		D			B			C			D	

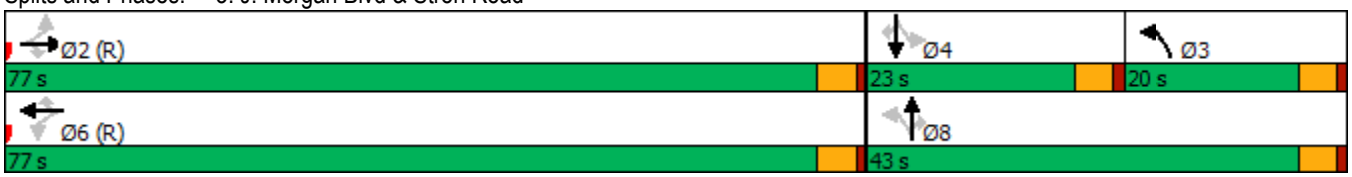
Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	111.2	Sum of lost time (s)	23.9
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

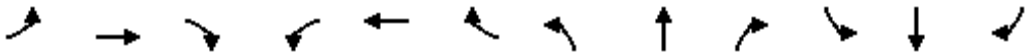
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	575	175	25	415	35	180	30	100	30	15	40
Future Volume (vph)	60	575	175	25	415	35	180	30	100	30	15	40
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	2	2	2	6	6	6	3	8	8	4	4	4
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	22.5	22.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	77.0	77.0	77.0	77.0	77.0	77.0	20.0	43.0	43.0	23.0	23.0	23.0
Total Split (%)	64.2%	64.2%	64.2%	64.2%	64.2%	64.2%	16.7%	35.8%	35.8%	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	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							Lag			Lead	Lead	Lead
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	Ped	Ped	Ped	Ped	Ped
Act Effct Green (s)	82.7	82.7	82.7	82.7	82.7	82.7	28.3	28.3	28.3	18.0	18.0	18.0
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.69	0.69	0.24	0.24	0.24	0.15	0.15	0.15
v/c Ratio	0.13	0.56	0.19	0.07	0.35	0.04	0.57	0.08	0.24	0.21	0.08	0.20
Control Delay	7.1	11.6	2.4	6.8	8.6	0.9	48.1	36.0	8.0	47.8	44.9	13.1
Queue Delay	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 Delay	7.1	11.6	2.4	6.8	8.6	0.9	48.1	36.0	8.0	47.8	44.9	13.1
LOS	A	B	A	A	A	A	D	D	A	D	D	B
Approach Delay		9.3			7.9			34.0			30.9	
Approach LOS		A			A			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: J. Morgan Blvd & Stroh Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	75	719	219	27	446	38	196	33	109	43	22	58
v/c Ratio	0.13	0.56	0.19	0.07	0.35	0.04	0.57	0.08	0.24	0.21	0.08	0.20
Control Delay	7.1	11.6	2.4	6.8	8.6	0.9	48.1	36.0	8.0	47.8	44.9	13.1
Queue Delay	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 Delay	7.1	11.6	2.4	6.8	8.6	0.9	48.1	36.0	8.0	47.8	44.9	13.1
Queue Length 50th (ft)	18	252	13	6	126	0	132	20	0	30	15	0
Queue Length 95th (ft)	32	298	30	17	188	7	203	47	46	49	30	20
Internal Link Dist (ft)		1161			1370			528			716	
Turn Bay Length (ft)	240		150	150		150	150		150	150		
Base Capacity (vph)	586	1283	1140	379	1283	1082	488	597	581	211	287	293
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.56	0.19	0.07	0.35	0.04	0.40	0.06	0.19	0.20	0.08	0.20

Intersection Summary

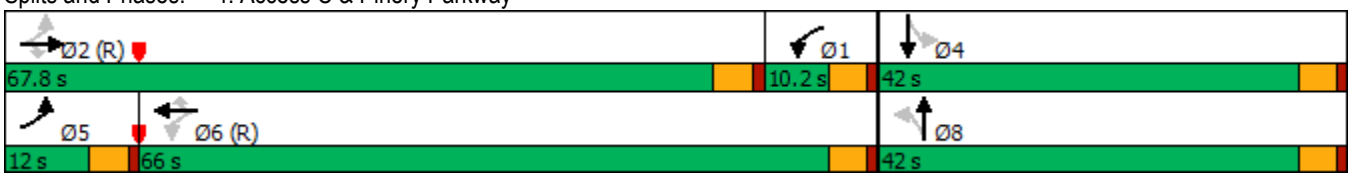
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	575	175	25	415	35	180	30	100	30	15	40
Future Volume (vph)	60	575	175	25	415	35	180	30	100	30	15	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1546	1770	1863	1583	1770	1863	1583
Flt Permitted	0.46	1.00	1.00	0.30	1.00	1.00	0.74	1.00	1.00	0.74	1.00	1.00
Satd. Flow (perm)	852	1863	1583	551	1863	1546	1384	1863	1583	1370	1863	1583
Peak-hour factor, PHF	0.80	0.80	0.80	0.93	0.93	0.93	0.92	0.92	0.92	0.69	0.69	0.69
Adj. Flow (vph)	75	719	219	27	446	38	196	33	109	43	22	58
RTOR Reduction (vph)	0	0	50	0	0	12	0	0	83	0	0	49
Lane Group Flow (vph)	75	719	169	27	446	26	196	33	26	43	22	9
Confl. Peds. (#/hr)						1						
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	82.7	82.7	82.7	82.7	82.7	82.7	28.3	28.3	28.3	18.0	18.0	18.0
Effective Green, g (s)	82.7	82.7	82.7	82.7	82.7	82.7	28.3	28.3	28.3	18.0	18.0	18.0
Actuated g/C Ratio	0.69	0.69	0.69	0.69	0.69	0.69	0.24	0.24	0.24	0.15	0.15	0.15
Clearance 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
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	587	1283	1090	379	1283	1065	345	439	373	205	279	237
v/s Ratio Prot		c0.39			0.24		c0.03	0.02			0.01	
v/s Ratio Perm	0.09		0.11	0.05		0.02	c0.11		0.02	0.03		0.01
v/c Ratio	0.13	0.56	0.15	0.07	0.35	0.02	0.57	0.08	0.07	0.21	0.08	0.04
Uniform Delay, d1	6.4	9.4	6.5	6.1	7.6	5.9	40.8	35.7	35.6	44.8	43.9	43.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.8	0.3	0.4	0.7	0.0	2.1	0.1	0.1	0.5	0.1	0.1
Delay (s)	6.8	11.2	6.8	6.5	8.4	5.9	43.0	35.7	35.7	45.3	44.0	43.7
Level of Service	A	B	A	A	A	A	D	D	D	D	D	D
Approach Delay (s)		9.9			8.1			39.9			44.3	
Approach LOS		A			A			D			D	

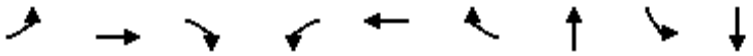
Intersection Summary			
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	85	585	45	55	420	175	45	5	220	5
Future Volume (vph)	85	585	45	55	420	175	45	5	220	5
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2		1	6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	1	6	6	8	8	4	4
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	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	12.0	67.8	67.8	10.2	66.0	66.0	42.0	42.0	42.0	42.0
Total Split (%)	10.0%	56.5%	56.5%	8.5%	55.0%	55.0%	35.0%	35.0%	35.0%	35.0%
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
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	Lead	Lead	Lag	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	65.3	65.3	65.3	61.8	61.8	61.8		37.5	37.5	37.5
Actuated g/C Ratio	0.54	0.54	0.54	0.52	0.52	0.52		0.31	0.31	0.31
v/c Ratio	0.19	0.33	0.06	0.14	0.25	0.21		0.24	0.62	0.20
Control Delay	11.8	12.7	1.6	10.0	8.9	1.3		18.7	43.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	11.8	12.7	1.6	10.0	8.9	1.3		18.7	43.4	7.1
LOS	B	B	A	B	A	A		B	D	A
Approach Delay		11.9			6.9			18.7		31.6
Approach LOS		B			A			B		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 35 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 50.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Access C & Pinery Parkway

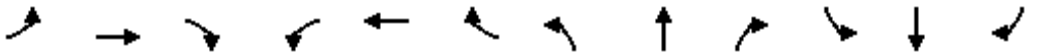




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	92	636	49	60	457	190	119	239	114
v/c Ratio	0.19	0.33	0.06	0.14	0.25	0.21	0.24	0.62	0.20
Control Delay	11.8	12.7	1.6	10.0	8.9	1.3	18.7	43.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	12.7	1.6	10.0	8.9	1.3	18.7	43.4	7.1
Queue Length 50th (ft)	33	125	3	10	40	0	37	157	3
Queue Length 95th (ft)	m47	143	m7	m25	72	11	85	249	45
Internal Link Dist (ft)		575			553		284		431
Turn Bay Length (ft)	80		80	160				150	
Base Capacity (vph)	480	1926	887	441	1821	906	494	387	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.33	0.06	0.14	0.25	0.21	0.24	0.62	0.20

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	585	45	55	420	175	45	5	60	220	5	100
Future Volume (vph)	85	585	45	55	420	175	45	5	60	220	5	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.93		1.00	0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1691		1770	1596	
Flt Permitted	0.41	1.00	1.00	0.41	1.00	1.00		0.85		0.66	1.00	
Satd. Flow (perm)	767	3539	1583	764	3539	1583		1466		1238	1596	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	636	49	60	457	190	49	5	65	239	5	109
RTOR Reduction (vph)	0	0	23	0	0	92	0	36	0	0	75	0
Lane Group Flow (vph)	92	636	26	60	457	98	0	83	0	239	39	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	64.4	64.4	64.4	61.8	61.8	61.8		37.5		37.5	37.5	
Effective Green, g (s)	64.4	64.4	64.4	61.8	61.8	61.8		37.5		37.5	37.5	
Actuated g/C Ratio	0.54	0.54	0.54	0.51	0.51	0.51		0.31		0.31	0.31	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5		4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	471	1899	849	432	1822	815		458		386	498	
v/s Ratio Prot	0.01	c0.18		0.01	c0.13						0.02	
v/s Ratio Perm	0.09		0.02	0.07		0.06		0.06		c0.19		
v/c Ratio	0.20	0.33	0.03	0.14	0.25	0.12		0.18		0.62	0.08	
Uniform Delay, d1	14.0	15.7	13.1	15.3	16.2	15.0		30.1		35.2	29.1	
Progression Factor	0.78	0.78	0.48	0.59	0.52	0.36		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5	0.1	0.1	0.3	0.3		0.9		7.3	0.3	
Delay (s)	11.0	12.7	6.4	9.2	8.8	5.8		30.9		42.4	29.4	
Level of Service	B	B	A	A	A	A		C		D	C	
Approach Delay (s)		12.1			8.0			30.9			38.2	
Approach LOS		B			A			C			D	

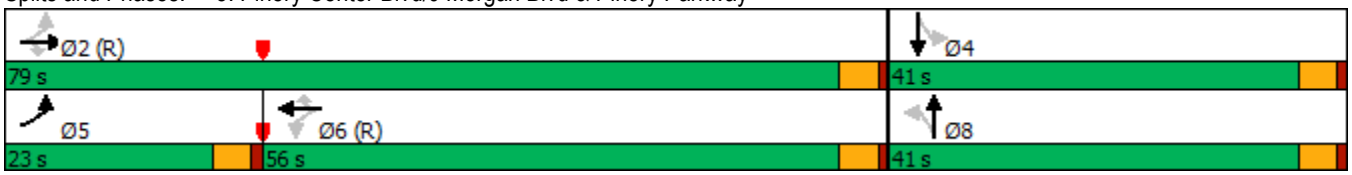
Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

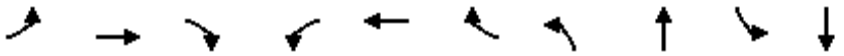
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	175	500	35	45	440	85	60	130	190	115
Future Volume (vph)	175	500	35	45	440	85	60	130	190	115
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases	5	2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	5	2	2	6	6	6	8	8	4	4
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	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	23.0	79.0	79.0	56.0	56.0	56.0	41.0	41.0	41.0	41.0
Total Split (%)	19.2%	65.8%	65.8%	46.7%	46.7%	46.7%	34.2%	34.2%	34.2%	34.2%
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	Lag	Lag				
Lead-Lag Optimize?	Yes			Yes	Yes	Yes				
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	C-Max	Max	Max	Max	Max
Act Effct Green (s)	74.5	74.5	74.5	59.0	59.0	59.0	36.5	36.5	36.5	36.5
Actuated g/C Ratio	0.62	0.62	0.62	0.49	0.49	0.49	0.30	0.30	0.30	0.30
v/c Ratio	0.34	0.25	0.04	0.12	0.27	0.11	0.28	0.31	0.64	0.50
Control Delay	11.5	10.5	2.8	21.2	18.4	7.3	35.7	32.1	46.8	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	10.5	2.8	21.2	18.4	7.3	35.7	32.1	46.8	31.1
LOS	B	B	A	C	B	A	D	C	D	C
Approach Delay		10.4			17.0			33.1		37.8
Approach LOS		B			B			C		D

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 46 (38%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 21.2	Intersection LOS: C
Intersection Capacity Utilization 56.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Pinery Center Blvd/J Morgan Blvd & Pinery Parkway





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	190	543	38	49	478	92	65	174	207	277
v/c Ratio	0.34	0.25	0.04	0.12	0.27	0.11	0.28	0.31	0.64	0.50
Control Delay	11.5	10.5	2.8	21.2	18.4	7.3	35.7	32.1	46.8	31.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	10.5	2.8	21.2	18.4	7.3	35.7	32.1	46.8	31.1
Queue Length 50th (ft)	58	92	0	14	72	0	38	97	139	142
Queue Length 95th (ft)	92	121	13	42	132	36	79	160	228	228
Internal Link Dist (ft)		446			575			367		49
Turn Bay Length (ft)	150		150	150		150	150		150	
Base Capacity (vph)	624	2197	997	410	1739	825	236	557	322	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.25	0.04	0.12	0.27	0.11	0.28	0.31	0.64	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	500	35	45	440	85	60	130	30	190	115	140
Future Volume (vph)	175	500	35	45	440	85	60	130	30	190	115	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1810		1770	1709	
Flt Permitted	0.40	1.00	1.00	0.45	1.00	1.00	0.42	1.00		0.57	1.00	
Satd. Flow (perm)	753	3539	1583	837	3539	1583	776	1810		1059	1709	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	190	543	38	49	478	92	65	141	33	207	125	152
RTOR Reduction (vph)	0	0	14	0	0	47	0	7	0	0	36	0
Lane Group Flow (vph)	190	543	24	49	478	45	65	167	0	207	241	0
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2			6			8			4	
Permitted Phases	2		2	6		6	8			4		
Actuated Green, G (s)	74.5	74.5	74.5	59.0	59.0	59.0	36.5	36.5		36.5	36.5	
Effective Green, g (s)	74.5	74.5	74.5	59.0	59.0	59.0	36.5	36.5		36.5	36.5	
Actuated g/C Ratio	0.62	0.62	0.62	0.49	0.49	0.49	0.30	0.30		0.30	0.30	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	560	2197	982	411	1740	778	236	550		322	519	
v/s Ratio Prot	c0.03	0.15			0.14			0.09			0.14	
v/s Ratio Perm	c0.18		0.01	0.06		0.03	0.08			c0.20		
v/c Ratio	0.34	0.25	0.02	0.12	0.27	0.06	0.28	0.30		0.64	0.46	
Uniform Delay, d1	10.2	10.2	8.8	16.5	17.9	16.0	31.7	32.0		36.1	33.8	
Progression Factor	1.00	1.00	1.00	1.15	0.98	1.95	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.3	0.0	0.6	0.4	0.1	2.9	1.4		9.5	3.0	
Delay (s)	10.5	10.5	8.8	19.6	17.9	31.3	34.6	33.4		45.6	36.8	
Level of Service	B	B	A	B	B	C	C	C		D	D	
Approach Delay (s)		10.4			20.0			33.7			40.6	
Approach LOS		B			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	214	0	2100	2600	300
Future Vol, veh/h	0	214	0	2100	2600	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	-	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	233	0	2211	2737	316

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

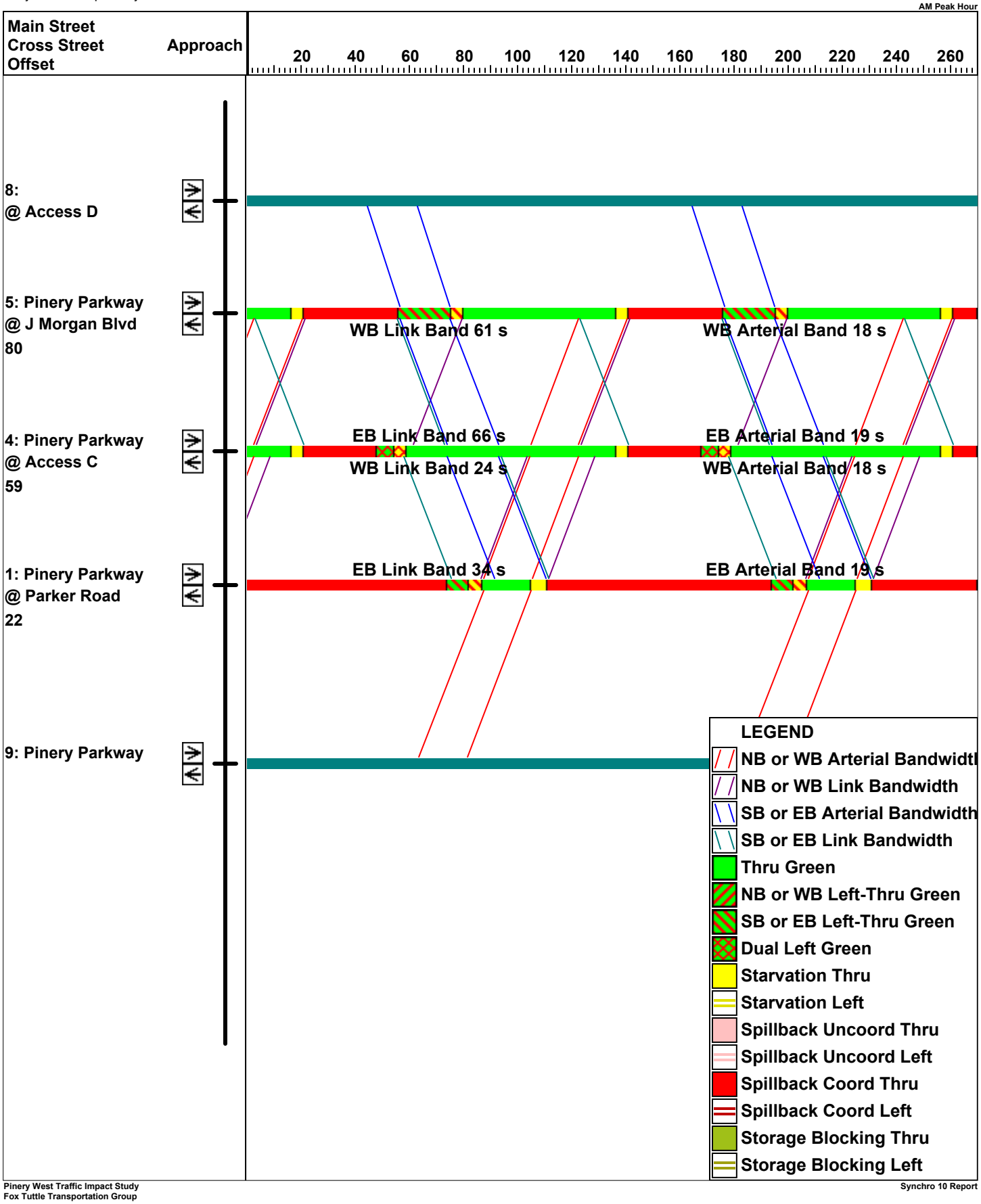
Intersection	
Int Delay, s/veh	1

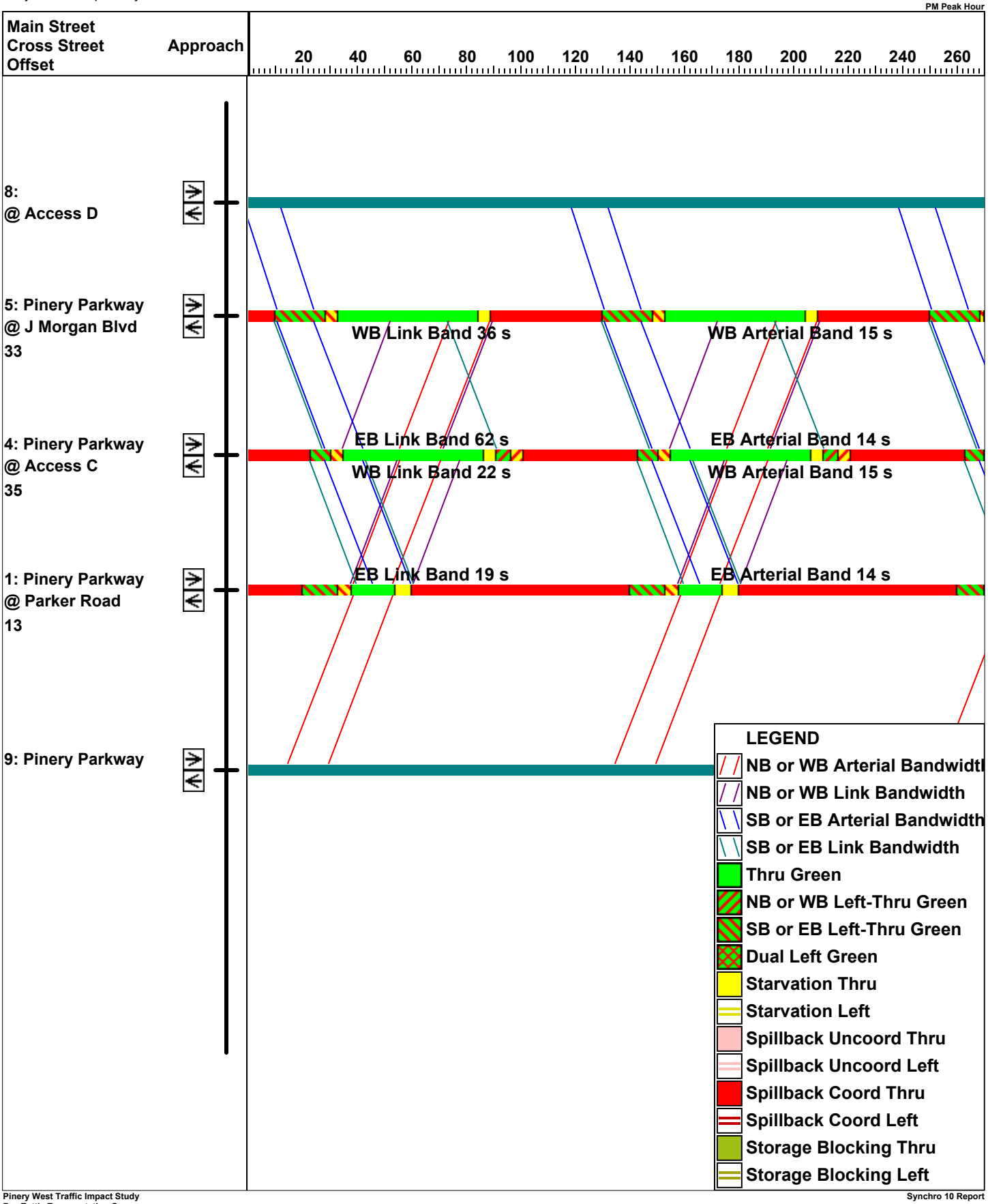
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	625	15	50	600	0	85
Future Vol, veh/h	625	15	50	600	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	679	16	54	652	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	695	0	-	348
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	897	-	0	648
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	897	-	-	648
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	648	-	-	897	-
HCM Lane V/C Ratio	0.143	-	-	0.061	-
HCM Control Delay (s)	11.5	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-


Main Street
Cross Street
Offset
Approach
20
40
60
80
100
120
140
160
180
200
220
240
260
8:
@ Access D
5: Pinery Parkway
@ J Morgan Blvd
80
WB Link Band 61 s
WB Arterial Band 18 s
4: Pinery Parkway
@ Access C
59
EB Link Band 66 s
WB Link Band 24 s
EB Arterial Band 19 s
WB Arterial Band 18 s
1: Pinery Parkway
@ Parker Road
22
EB Link Band 34 s
EB Arterial Band 19 s
9: Pinery Parkway
LEGEND
NB or WB Arterial Bandwidth
NB or WB Link Bandwidth
SB or EB Arterial Bandwidth
SB or EB Link Bandwidth
Thru Green
NB or WB Left-Thru Green
SB or EB Left-Thru Green
Dual Left Green
Starvation Thru
Starvation Left
Spillback Uncoord Thru
Spillback Uncoord Left
Spillback Coord Thru
Spillback Coord Left
Storage Blocking Thru
Storage Blocking Left


Main Street
Cross Street
Offset
Approach
20
40
60
80
100
120
140
160
180
200
220
240
260
8:
@ Access D
5: Pinery Parkway
@ J Morgan Blvd
33
WB Link Band 36 s
WB Arterial Band 15 s
4: Pinery Parkway
@ Access C
35
EB Link Band 62 s
WB Link Band 22 s
EB Arterial Band 14 s
WB Arterial Band 15 s
1: Pinery Parkway
@ Parker Road
13
EB Link Band 19 s
EB Arterial Band 14 s
9: Pinery Parkway
LEGEND
NB or WB Arterial Bandwidth
NB or WB Link Bandwidth
SB or EB Arterial Bandwidth
SB or EB Link Bandwidth
Thru Green
NB or WB Left-Thru Green
SB or EB Left-Thru Green
Dual Left Green
Starvation Thru
Starvation Left
Spillback Uncoord Thru
Spillback Uncoord Left
Spillback Coord Thru
Spillback Coord Left
Storage Blocking Thru
Storage Blocking Left

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1, AND LOT 2 & TRACT E, PINERY VILLAGE FILING NO. 1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
87.848 ACRES - 3 COMMERCIAL LOTS - 7 TRACTS SB2021-049

LEGAL DESCRIPTION

A PARCEL OF LAND SITUATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10, TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF DOUGLAS, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS;

COMMENCING AT THE CENTER-SOUTH ONE-SIXTEENTH CORNER OF SAID SECTION 3, WHENCE THE NORTH LINE OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SAID SECTION 3 BEARS NORTH 89°32'31"EAST, A DISTANCE OF 2635.68 FEET WITH ALL BEARINGS HEREON REFERENCED TO SAID LINE;

THENCE ALONG SAID NORTH LINE, NORTH 89°32'31"EAST, A DISTANCE OF 40.73 FEET TO THE NORTHEAST CORNER OF PINERY VILLAGE FILING NO. 1 AS RECORDED AT RECEPTION NO. 2020006468 IN THE OFFICIAL RECORDS OF THE DOUGLAS COUNTY CLERK AND RECORDER'S OFFICE, AND THE **POINT OF BEGINNING**;

THENCE CONTINUING ALONG SAID NORTH LINE, NORTH 89°32'31" EAST, A DISTANCE OF 1,817.24 FEET TO THE WESTERLY RIGHT-OF-WAY OF PARKER ROAD, RECORDED IN BOOK 1805 AT PAGE 1143, OF SAID RECORDS;

THENCE ALONG SAID WESTERLY RIGHT-OF-WAY THE FOLLOWING FOUR (4) COURSES:

1. SOUTH 01°44'50" WEST, A DISTANCE OF 1,329.43 FEET;
2. SOUTH 19°39'08" WEST, A DISTANCE OF 211.40 FEET;
3. SOUTH 01°44'27" WEST, A DISTANCE OF 749.39 FEET;
4. SOUTH 18°46'51" EAST, A DISTANCE OF 86.02 FEET TO THE BOUNDARY OF SAID PINERY VILLAGE FILING NO. 1;

THENCE ALONG SAID BOUNDARY THE FOLLOWING SIXTEEN (16) COURSES;

1. SOUTH 01°44'50" WEST, A DISTANCE OF 316.60 FEET TO THE BEGINNING OF A NON-TANGENT CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 35.00 FEET, THE RADIUS POINT OF SAID CURVE BEARS NORTH 23°37'47" WEST;
2. SOUTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 23°34'56", AN ARC LENGTH OF 14.41 FEET;
3. SOUTH 89°57'09" WEST, A DISTANCE OF 1,163.73 FEET;
4. NORTH 45°19'53" WEST, A DISTANCE OF 42.44 FEET;
5. NORTH 00°37'01" WEST, A DISTANCE OF 528.99 FEET;
6. SOUTH 89°45'03" WEST, A DISTANCE OF 66.50 FEET;
7. NORTH 00°37'01" WEST, A DISTANCE OF 780.33 FEET;
8. NORTH 00°36'54" WEST, A DISTANCE OF 116.93 FEET;
9. SOUTH 89°39'16" WEST, A DISTANCE OF 330.91 FEET;
10. NORTH 06°01'28" EAST, A DISTANCE OF 235.83 FEET;
11. NORTH 17°28'32" EAST, A DISTANCE OF 468.15 FEET;
12. NORTH 03°50'12" EAST, A DISTANCE OF 121.74 FEET;
13. NORTH 16°22'12" WEST, A DISTANCE OF 279.83 FEET;
14. NORTH 37°38'54" WEST, A DISTANCE OF 83.00 FEET;
15. NORTH 68°29'08" WEST, A DISTANCE OF 133.51 FEET;
16. NORTH 00°32'20" WEST, A DISTANCE OF 24.94 FEET TO THE **POINT OF BEGINNING**.

CONTAINING AN AREA OF 87.848 ACRES, (3,826,658 SQUARE FEET), MORE OR LESS.

DEDICATION STATEMENT

THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, BENEFICIARIES OF DEEDS OF TRUST AND HOLDERS OF OTHER INTERESTS IN THE LANDS DESCRIBED HEREIN, HAVE LAID OUT, SUBDIVIDED AND PLATTED SAID LANDS INTO LOTS, TRACTS, STREETS AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF **PINERY VILLAGE FILING NO. 2**. THE UTILITY EASEMENTS SHOWN HEREON ARE HEREBY DEDICATED FOR PUBLIC UTILITIES AND CABLE COMMUNICATION SYSTEMS AND OTHER PURPOSES AS SHOWN HEREON. THE ENTITIES RESPONSIBLE FOR PROVIDING THE SERVICES FOR WHICH THE EASEMENTS ARE ESTABLISHED ARE HEREBY GRANTED THE PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTIES FOR INSTALLATION, MAINTENANCE AND REPLACEMENT OF UTILITY LINES AND RELATED FACILITIES. THE RIGHT-OF-WAY DEDICATION KNOWN AS PINERY CENTER BOULEVARD, AND TRACT F RIGHTS-OF-WAY, AS SHOWN HEREON ARE DEDICATED AND CONVEYED TO DOUGLAS COUNTY, COLORADO, IN FEE SIMPLE ABSOLUTE, WITH MARKETABLE TITLE, FOR PUBLIC USES AND PURPOSES. UTILITY EASEMENTS, DRAINAGE AND BLANKET ACCESS EASEMENTS, TEMPORARY ACCESS EASEMENT, AND DRAINAGE EASEMENTS ARE DEDICATED AND CONVEYED TO DOUGLAS COUNTY, COLORADO, FOR PUBLIC USES AND PURPOSES.

OWNER

PINERY OWNER, LLC, A COLORADO LIMITED LIABILITY COMPANY

BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____, 20__
BY _____ AS _____
OF PINERY OWNER, LLC, A COLORADO LIMITED LIABILITY COMPANY

WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC

OWNER

PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 1,

BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____, 20__
BY _____ AS _____
OF PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 1,

WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC

OWNER

PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2,

BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____
BY _____ AS _____
OF PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2,

WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC

ACCEPTANCE CERTIFICATE

THE DEDICATION OF TRACTS A, B, C, D, E, AND G ARE HEREBY ACCEPTED FOR OWNERSHIP AND MAINTENANCE BY THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2;

THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2:

BY: _____

STATE OF COLORADO)
)SS
COUNTY OF DOUGLAS)

ACKNOWLEDGED BEFORE ME THIS ___ DAY OF _____, 20__
BY _____, AS _____
OF THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2

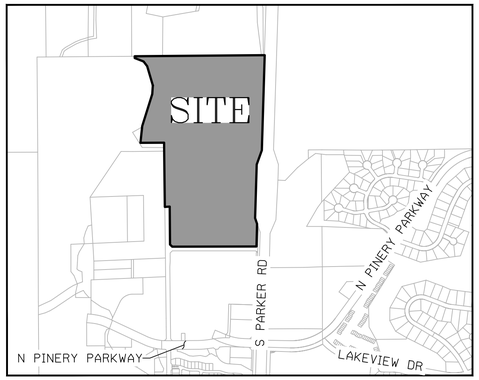
WITNESS MY HAND
AND OFFICIAL SEAL

MY COMMISSION
EXPIRES: _____ _____
NOTARY PUBLIC

PLANNING COMMISSIONERS CERTIFICATE

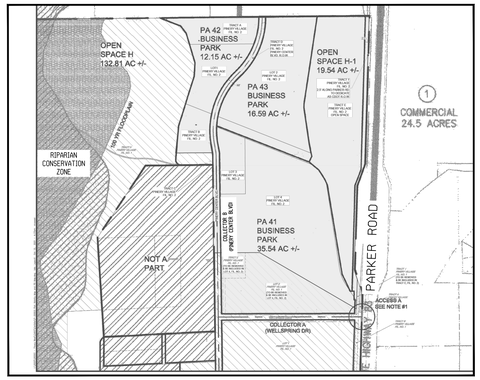
THE MINOR DEVELOPMENT FINAL PLAT (SB2021-049) WAS REVIEWED BY THE PLANNING COMMISSION ON _____ __, 20__

_____ _____
PLANNING DIRECTOR, ON BEHALF OF THE PLANNING COMMISSION DATE



VICINITY MAP

SCALE 1" = 1,000'



PLANNED DEVELOPMENT

SCALE = NOT TO SCALE

TITLE VERIFICATION

WE, FIRST AMERICAN TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LAND IS IN THE DEDICATOR(S) FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES.

FIRST AMERICAN TITLE INSURANCE COMPANY

BY: _____

TITLE: _____

DATE: _____

STATE OF COLORADO)
)SS
COUNTY OF _____)

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20__

BY _____ AS _____

OF FIRST AMERICAN TITLE INSURANCE COMPANY

WITNESS MY HAND AND OFFICIAL SEAL

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

BOARD OF COUNTY COMMISSIONERS CERTIFICATE

THIS PLAT WAS APPROVED FOR FILING BY THE BOARD OF COUNTY COMMISSIONERS OF DOUGLAS COUNTY,

COLORADO, ON THE _____DAY OF _____ , 20__, SUBJECT TO ANY CONDITIONS SPECIFIED HEREON.

PINERY CENTER BOULEVARD, AND TRACT F, UTILITY EASEMENTS, DRAINAGE AND BLANKET ACCESS EASEMENTS, TEMPORARY ACCESS EASEMENT, AND DRAINAGE EASEMENTS ARE ACCEPTED.

ALL EXPENSES INCURRED WITH RESPECT TO IMPROVEMENTS FOR ALL UTILITY SERVICES, PAVING, GRADING, LANDSCAPING, CURBS, GUTTER, SIDEWALKS, ROAD LIGHTING, ROAD SIGNS, FLOOD PROTECTION DEVICES, DRAINAGE STRUCTURES, AND ALL OTHER IMPROVEMENTS THAT MAY BE REQUIRED SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER AND NOT DOUGLAS COUNTY.

THIS ACCEPTANCE DOES NOT GUARANTEE THAT SOIL CONDITIONS, SUBSURFACE GEOLOGY, GROUNDWATER CONDITIONS OR FLOODING CONDITIONS OF ANY LOTS SHOWN HEREON ARE SUCH THAT A BUILDING PERMIT, WELL PERMIT OR SEWAGE DISPOSAL PERMIT WILL BE ISSUED.

_____
CHAIR, BOARD OF COUNTY COMMISSIONERS

LAND USE TABLE

TRACT	AREA (SQ.FT)	AREA (AC ±)	USE	OWNED BY / MAINTAINED BY
LOT 1	212,152	4.870	COMMERCIAL	OWNER
LOT 2	656,732	15.076	COMMERCIAL	OWNER
LOT 3	1,417,710	32.546	COMMERCIAL	OWNER
ROW DEDICATION	139,327	3.199	RIGHT-OF-WAY	DOUGLAS COUNTY
TRACT A	162,913	3.740	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT B	113,415	2.604	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT C	537	0.012	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT D	128,796	2.957	REGIONAL TRANSPORTATION DISTRICT (RTD)	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT E	988,789	22.699	OPEN SPACE / DRAINAGE	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
TRACT F	3,333	0.077	RIGHT-OF-WAY	DOUGLAS COUNTY
TRACT G	2,954	0.068	LIFT STATION	THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2
LOT TOTAL	2,286,595	52.492		
TRACT TOTAL	1,400,737	32.157		
ROW (STREET) TOTAL	139,327	3.199		
TOTAL	3,826,658	87.848		

(SEE ADDITIONAL TRACT NOTES THIS SHEET)

SHEET INDEX

SHEET 1 COVER SHEET

SHEET 2 OVERALL SHEET

SHEETS 3-4 LOT AND EASEMENT DETAIL SHEETS

GENERAL NOTES

1. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND BOUNDARY MONUMENT OR ACCESSORY COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, COLORADO REVISED STATUTE.
2. PER C.R.S. 38-51-106, "ALL LINEAL UNITS DEPICTED ON THIS LAND SURVEY PLAT ARE U.S. SURVEY FEET. ONE METER EQUALS 39.37/12 U.S. SURVEY FEET, EXACTLY ACCORDING TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY."
3. THE FIELD WORK FOR THIS SURVEY WAS PERFORMED BY AN AZTEC CONSULTANTS, INC. SURVEY CREW AND COMPLETED ON APRIL 01, 2021.
4. BASIS OF BEARINGS - BEARINGS SHOWN HEREON ARE GRID BEARINGS DERIVED FROM GPS OBSERVATION BASED UPON THE COLORADO COORDINATE SYSTEM OF 1983 CENTRAL ZONE (NAD 83, 2011) REFERENCED TO THE NORTH LINE OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 3, TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN BEING MONUMENTED AS SHOWN HEREON, TAKEN TO BEAR NORTH 89°32'31" EAST, A DISTANCE OF 2,635.68 FEET.
5. FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NO. NCS-927312-CO, EFFECTIVE 10/21/2020 AT 5:00 P.M. WAS RELIED UPON FOR RECORD INFORMATION REGARDING RIGHTS-OF-WAY, EASEMENTS AND ENCUMBRANCES. THIS SURVEY DOES NOT REPRESENT A TITLE SEARCH BY AZTEC CONSULTANTS INC. TO DETERMINE OWNERSHIP, RIGHTS-OF-WAY, EASEMENTS OR OTHER MATTERS OF PUBLIC RECORD.
6. BASED ON A GRAPHICAL REPRESENTATION OF FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NO. 08035C0184G, WITH AN EFFECTIVE DATE OF MARCH 16, 2016, THE SUBJECT PROPERTY LIES WITHIN ZONE "AE" AREAS WHERE BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED, WITHIN ZONE "X" OTHER AREAS, AND WITHIN "ZONE X" BEING DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
7. TRACTS A, B, C, D, E & G SHALL BE OWNED AND MAINTAINED BY THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2, ITS SUCCESSORS AND ASSIGNS, FOR OPEN SPACE.
8. DRAINAGE EASEMENTS ARE HEREBY GRANTED TO DOUGLAS COUNTY ACROSS TRACTS A, B, C, E, AND THE DRAINAGE EASEMENTS ON LOTS 1 & 2 IN PINERY VILLAGE FILING NO. 2 (THE "SUBDIVISION") FOR THE PURPOSE OF ACCESSING, MAINTAINING AND REPAIRING STORM WATER MANAGEMENT IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES, RIPRAP, DETENTION BASINS, FOREBAYS, MICROPOOLS AND WATER QUALITY FACILITIES (COLLECTIVELY, THE "FACILITIES"). IN THE EVENT THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2, ITS SUCCESSORS, AND ASSIGNS ("SYSTEM OWNER") FAILS TO SATISFACTORILY MAINTAIN SAID FACILITIES, A BLANKET ACCESS EASEMENT OVER THE SUBDIVISION IS ALSO GRANTED TO DOUGLAS COUNTY, BUT ONLY FOR THE PURPOSE OF ACCESSING THE FACILITIES IN THE EVENT THAT THE DRAINAGE EASEMENTS DO NOT PROVIDE ADEQUATE ACCESS. THE MAINTENANCE AND REPAIR OF THE FACILITIES LOCATED IN THE SUBDIVISION, AS SHOWN ON THE CONSTRUCTION PLANS ACCEPTED BY DOUGLAS COUNTY OR ON THE PLAT FOR THE SUBDIVISION, SHALL BE THE RESPONSIBILITY OF THE SYSTEM OWNER IN THE EVENT SUCH MAINTENANCE AND REPAIR ARE NOT PERFORMED BY THE SYSTEM OWNER TO THE SATISFACTION OF DOUGLAS COUNTY, THEN DOUGLAS COUNTY SHALL HAVE THE RIGHT, BUT NOT THE OBLIGATION TO ENTER SAID SUBDIVISION AFTER A TEN (10) DAY PRIOR WRITTEN NOTICE TO THE SYSTEM OWNER. UNLESS THERE IS AN EMERGENCY, IN WHICH CASE DOUGLAS COUNTY SHALL GIVE NOTICE AS SOON AS PRACTICABLE, TO PERFORM ALL NECESSARY WORK, THE COST OF WHICH SHALL BE PAID BY THE SYSTEM OWNER UPON BILLING. IN THE EVENT THE SYSTEM OWNER FAILS TO REIMBURSE DOUGLAS COUNTY WITHIN THIRTY (30) DAYS AFTER SUBMISSION OF THE BILL FOR THE COSTS INCURRED, DOUGLAS COUNTY SHALL HAVE THE RIGHT TO ENFORCE SUCH OBLIGATION BY APPROPRIATE LEGAL ACTION. IT IS THE SYSTEM OWNER'S RESPONSIBILITY TO CONSTRUCT, MAINTAIN, AND REPAIR THE FACILITIES IN A MANNER CONSISTENT WITH ALL APPLICABLE PLANS APPROVED OR ACCEPTED BY DOUGLAS COUNTY.
9. PERMANENT STRUCTURES, IMPROVEMENTS, OBJECTS, BUILDINGS, WELLS, WATER METERS AND OTHER OBJECTS THAT MAY INTERFERE WITH THE UTILITY FACILITIES OR USE THEREOF (INTERFERING OBJECTS) SHALL NOT BE PERMITTED WITHIN SAID UTILITY EASEMENTS AND THE UTILITY PROVIDERS, AS GRANTEES, MAY REMOVE ANY INTERFERING OBJECTS AT NO COST TO SUCH GRANTEES, INCLUDING, WITHOUT LIMITATION, VEGETATION. PUBLIC SERVICE COMPANY OF COLORADO (PSCO) AND ITS SUCCESSORS RESERVE THE RIGHT TO REQUIRE ADDITIONAL EASEMENTS AND TO REQUIRE THE PROPERTY OWNER TO GRANT PSCO AN EASEMENT ON ITS STANDARD FORM.
10. A TEMPORARY ACCESS EASEMENT IS GRANTED TO DOUGLAS COUNTY AT THE NORTH END OF NORTH PINERY PARKWAY FOR TEMPORARY USE UNTIL FUTURE CONNECTION TO THE NORTH IS ESTABLISHED.
11. THE SANITARY EASEMENT LABELED AS "PCMD" SHALL BE DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR A SANITARY FORCE MAIN.

ADDITIONAL TRACT AND EASEMENTS NOTES:

1. TRACT A, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
2. TRACT B, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
3. TRACT C, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
4. TRACT D, AS SHOWN HEREON SHALL BE OWNED AND MAINTAINED BY THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2, ITS SUCCESSORS AND ASSIGNS, FOR THE REGIONAL TRANSPORTATION DISTRICT (RTD) FACILITY, AND SHALL BE DEDICATED TO RTD WITHIN 30 DAYS OF REQUEST FOR RTD'S OWNERSHIP AND MAINTENANCE.
5. TRACT E, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR OPEN SPACE AND DRAINAGE PURPOSES.
6. TRACT F, AS SHOWN HEREON IS DEDICATED TO DOUGLAS COUNTY FOR FUTURE IMPROVEMENTS TO STATE HIGHWAY 83, RIGHT-OF-WAY, ACCESS, AND UTILITY PURPOSES.
7. TRACT G, AS SHOWN HEREON IS DEDICATED TO THE PINERY COMMERCIAL METROPOLITAN DISTRICT NO. 2 FOR SANITATION LIFT STATION, BUILDING, OPERATION, AND MAINTENANCE PURPOSES.
8. THE 20' LANDSCAPE EASEMENTS SHOWN HEREON SHALL BE OWNED AND MAINTAINED BY THE PINERY COMMERCIAL METRO DISTRICTS #1 AND #2, ITS SUCCESSORS AND ASSIGNS

SURVEYOR'S CERTIFICATE

I, MICHAEL J. NOFFSINGER, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON APRIL 28, 2021, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND, ALL SURVEYING REGULATORY RULES, REQUIREMENTS, AND STANDARDS OF PRACTICE, AND ALL APPLICABLE PROVISIONS OF THE DOUGLAS COUNTY SUBDIVISION RESOLUTION. THIS CERTIFICATION IS BASED ON MY KNOWLEDGE, INFORMATION AND BELIEF AND IS NOT A GUARANTY OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 20__

FOR REVIEW

MICHAEL J. NOFFSINGER, LICENSED PROFESSIONAL LAND SURVEYOR COLORADO P.L.S. NO. 38367
FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC.

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

NOTICE: PER THE STATE OF COLORADO BOARD OF LICENSURE FOR ARCHITECTS, PROFESSIONAL ENGINEERS, AND PROFESSIONAL LAND SURVEYORS RULE 1.6.B.2 THE WORD "CERTIFY" AS USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED. THE SURVEY REPRESENTED HEREON HAS BEEN PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH APPLICABLE STANDARDS OF PRACTICE AND IS BASED UPON MY KNOWLEDGE, INFORMATION AND BELIEF.

CLERK AND RECORDERS CERTIFICATE

STATE OF COLORADO)
COUNTY OF DOUGLAS)

I HEREBY CERTIFY THAT THIS PLAT WAS FILED IN MY OFFICE ON THIS __ DAY OF _____ 20__,

A.D., AT _____ A.M./P.M. AND WAS RECORDED AT RECEPTION NO. _____

_____
DOUGLAS COUNTY CLERK AND RECORDER

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No: 54820-23 Drawn By: RDR

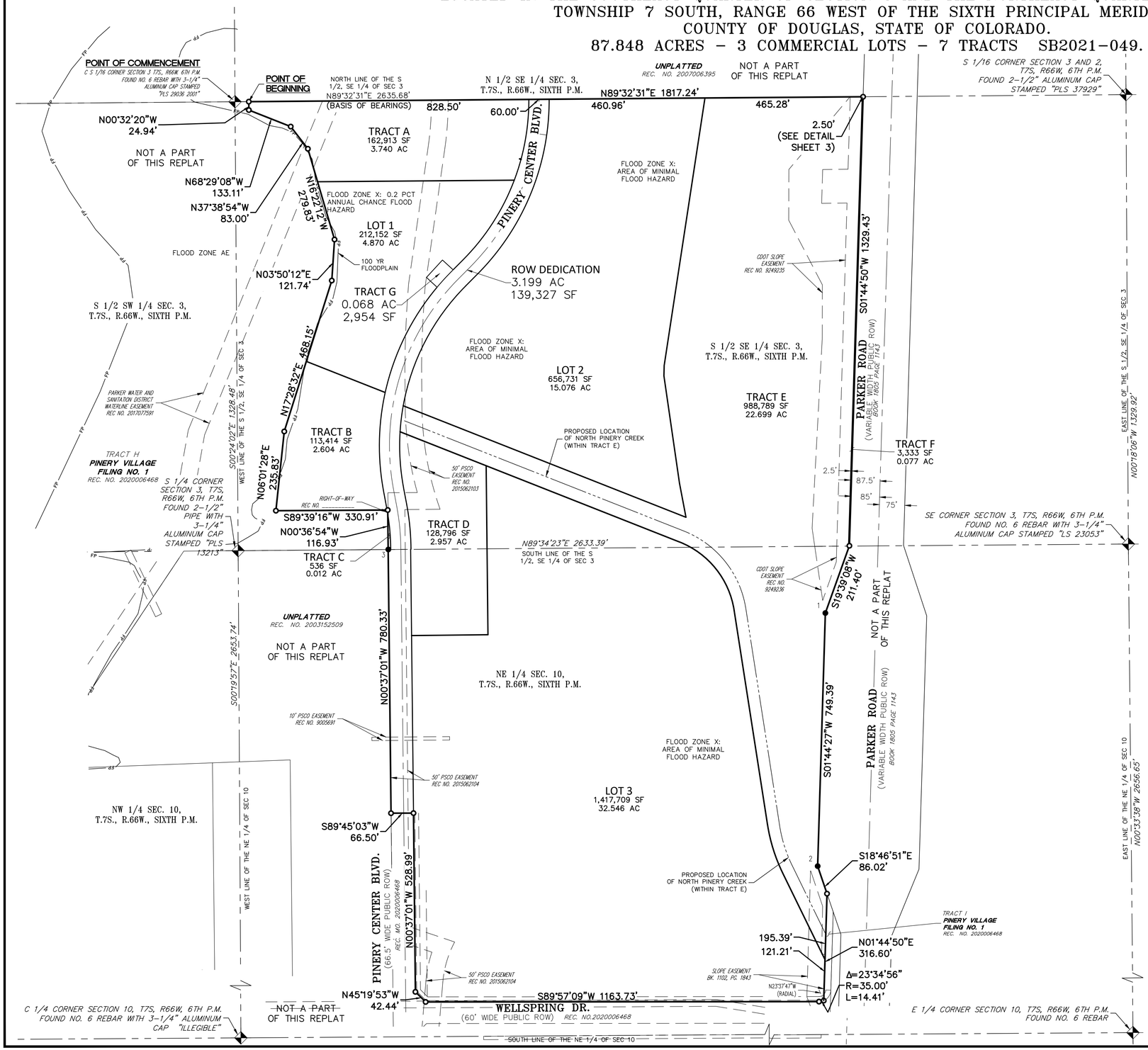
DEVELOPER
PINERY OWNER, LLC
2040 14TH STREET, SUITE 210
BOULDER, CO 80302

DATE OF PREPARATION:	2026-02-17
SCALE:	NA

SHEET 1 OF 4

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1, AND LOT 2 & TRACT E, PINERY VILLAGE FILING NO. 1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
87.848 ACRES - 3 COMMERCIAL LOTS - 7 TRACTS SB2021-049.



MONUMENT SYMBOL LEGEND

- ○ SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 ● FOUND 4"X4" CONCRETE WITH NO. 5
- 2 ● FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 ● FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"
- (ROW) RIGHT-OF-WAY
- FP LIMITS OF FLOOD PLAIN

LINETYPE LEGEND

- SECTION LINES
- SUBJECT PARCEL (BOUNDARY)
- SUBJECT PARCEL (LOT LINE)
- ADJOINING PROPERTY BOUNDARIES
- PROPOSED CENTERLINE OF NORTH PINERY CREEK. (ALSO SEE LABEL)
- PROPOSED EASEMENT (SEE LABEL FOR TYPE & FACILITY)
- EXISTING EASEMENT (SEE LABEL FOR TYPE, FACILITY, & RECEPTION NUMBER)
- FP FLOODPLAIN

N

0' 75' 150' 300'
SCALE: 1" = 150'

FOR REVIEW

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 54820-23 Drawn By: RDR

DEVELOPER
PINERY OWNER, LLC
2040 14TH STREET, SUITE 210
BOULDER, CO 80302

DATE OF PREPARATION:	2026-02-17
SCALE:	1"=150'
SHEET 2 OF 4	

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1, AND LOT 2 & TRACT E, PINERY VILLAGE FILING NO. 1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
87.848 ACRES - 3 COMMERCIAL LOTS - 7 TRACTS SB2021-049.

NOT A PART OF THIS REPLAT

POINT OF COMMENCEMENT
C S 1/16 CORNER SECTION 3 T7S, R66W, 6TH P.M.
FOUND NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "PLS 29036, 2001"

POINT OF BEGINNING

N 1/2 SE 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

NORTH LINE OF THE S 1/2, SE 1/4 OF SEC 3
N89°32'31"E 2635.68'
(BASIS OF BEARINGS)

N00°32'20"W 24.94'
N68°29'08"W 133.11'
N37°38'54"W 83.00'

PARKER WATER AND SANITATION DISTRICT WATERLINE EASEMENT REC NO. 2017077591

TRACT A
162,913 SF
3.740 AC

828.50'

TEMPORARY CONSTRUCTION/ACCESS EASEMENT. (TO BE REMOVED WHEN PINERY CENTER BLVD COMPLETED TO PROPERTY LINE)

4' LANDSCAPE EASEMENT

S74°57'20"E 30.00'

Δ=15°14'54" R=640.00' L=170.32'

S05°49'42"W 58.00'

L=448.68'

R=700.00'

L=448.68'

N81°53'42"W 30.00'

S64°05'07"E 89.34'

Δ=17°08'25" R=800.00' L=155.50'

S76°22'08"E 143.39'
N76°22'16"W 139.42'
S72°52'46"E 138.85'
N72°52'46"W 136.35'

DRAINAGE EASEMENT

S62°09'22"E 82.48'
N62°09'22"W 79.39'
S55°13'05"E 106.96'
N55°13'05"W 81.88'
N07°40'47"W 42.40'

TEMPORARY CONSTRUCTION/ACCESS EASEMENT. (TO BE REMOVED WHEN PINERY CENTER BLVD COMPLETED TO PROPERTY LINE)

30.00' (TIE)
S08°39'47"W (TIE) 192.56'

460.96'
N89°32'31"E 1817.24'
465.28'
2.50'

SEE DETAIL "C" THIS SHEET

S 1/16 CORNER SECTION 3 AND 2, T7S, R66W, 6TH P.M.
FOUND 2-1/2" ALUMINUM CAP STAMPED "PLS 37929"

N89°32'31"E 65.89' (TIE)

S89°32'31"W 581.94' (NR)

DRAINAGE EASEMENT (REFER TO NOTE #8)

50' PSCO EASEMENT REC NO. 2015062103

15' UTILITY EASEMENT

N47°28'15"W 42.78'

N42°36'39"E 70.00'

TRACT G
0.068 AC
2,954 SF

ROW DEDICATION
139,327 SF
3.199 AC

Δ=45°03'54" R=730.00' L=574.17'

Δ=15°02'42" R=670.00' L=175.85'

15' UTILITY EASEMENT

TRACT F
3,333 SF
0.077 AC

N08°39'47"E 800.99'

N08°39'47"E 206.95'

N02°57'55"E 15.11'

CDOT SLOPE EASEMENT REC NO. 9249235

S01°44'50"W 1337.08'

S01°44'50"W 1329.43'

NOT A PART OF THIS REPLAT

TRACT E
988,789 SF
22.699 AC

S 1/2 SE 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

N16°22'12"W 279.83'

178.13'

S14°53'10"W 116.64'
S14°53'10"W 107.68'
S34°35'01"W 9.65'
S34°35'01"W 29.34'

100 YR FLOODPLAIN

N03°50'12"E 121.74'

NOT A PART OF THIS REPLAT

TRACT H
PINERY VILLAGE FILING NO. 1
REC. NO. 2020006468

N47°23'21"W 5.57' (TIE)
N42°36'39"E 8.21'
S47°23'21"E 42.66'
S47°24'37"E 29.55'

LOT 1
212,152 SF
4.870 AC

250.81'

N44°49'47"E 50.00'
N44°49'47"E 41.42'
N44°49'47"E 8.58'
N44°49'47"E 50.00'

30' 30'

SANITARY EASEMENT

15' UTILITY EASEMENT
5' SANITARY EASEMENT (PCMD)

LOT 2
656,731 SF
15.076 AC

Δ=6°06'42" R=730.00' L=77.87' (TIE)

L=235.71'

L=676.55'

L=707.63'

Δ=55°32'25" R=730.00' L=707.63'

Δ=55°32'25" R=670.00' L=649.47'

L=635.21'

Δ=9°12'48" R=670.00' L=107.74' (TIE)

20' PWWD SANITARY EASEMENT (TO BE DEDICATED BY SEPARATE DOCUMENT)

N17°28'32"E 468.15'

N68°28'01"W 250.68' (NR)

FLOOD ZONE X:
0.2 PCT ANNUAL CHANCE FLOOD HAZARD

FLOOD ZONE AE

ZONE AE: FLOODWAY

S03°36'40"E 43.20' (TIE)

TRACT B
113,414 SF
2.604 AC

N01°25'57"E 30.54'

N01°25'57"E 32.76'

N08°15'34"W 320.62'

N81°44'53"E 16.44'

N10°46'00"W 92.97' (TIE)

N10°46'00"W 102.98'

20' LANDSCAPE EASEMENT

2.5'

87.5'

85'

75'

SEE DETAIL "B" THIS SHEET

8.13'

203.26'

S19°39'08"W 211.40'

PARKER ROAD
(VARIABLE WIDTH PUBLIC ROW)
BOOK 1805 PAGE 1143

S 1/2 SW 1/4 SEC. 3, T.7S., R.66W., SIXTH P.M.

S00°24'02"E 1328.48'
WEST LINE OF THE S 1/2, SE 1/4 OF SEC 3

N06°01'28"E 235.83'

SEE DETAIL "A" THIS SHEET

N10°42'38"W 50.00'

RIGHT-OF-WAY REC NO. _____

328.97'

S89°39'16"W 330.91'

N00°36'54"W 116.93'

TRACT C
536 SF
0.012 AC

S00°37'01"E 500.09'

273.90'

N68°28'01"W 899.35'

N68°28'01"W 888.82'

614.92'

20' SANITARY EASEMENT (PCMD)

S00°37'01"E 693.58'

N00°37'01"W 393.58'
S00°37'01"E 438.37'

S 1/4 CORNER SECTION 3, T7S, R66W, 6TH P.M.
FOUND 2-1/2" PIPE WITH 3-1/4" ALUMINUM CAP STAMPED "PLS 13213"

N89°34'23"E 2633.39'
SOUTH LINE OF THE S 1/2, SE 1/4 OF SEC 3

Δ=59°37'08" R=260.00' L=270.54'

SEE SHEET 4

SE CORNER SECTION 3, T7S, R66W, 6TH P.M.
FOUND NO. 6 REBAR WITH 3-1/4" ALUMINUM CAP STAMPED "LS 23053"

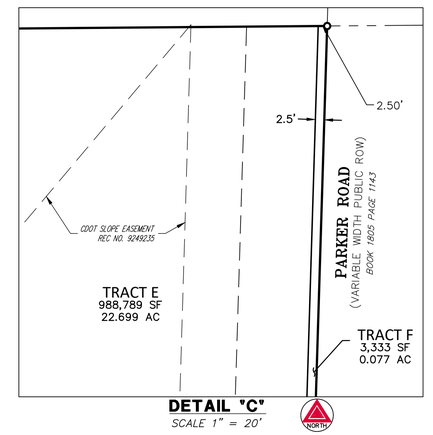
EAST LINE OF THE S 1/2, SE 1/4 OF SEC 3
N00°18'06"W 1329.92'

N
0' 50' 100' 200'
SCALE: 1" = 100'

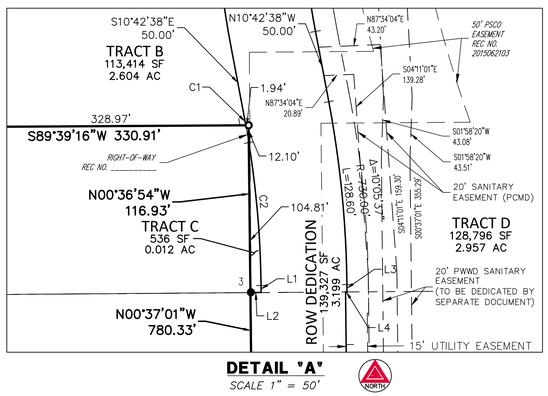
LINETYPE LEGEND

- SECTION LINES
- SUBJECT PARCEL (BOUNDARY)
- SUBJECT PARCEL (LOT LINE)
- ADJOINING PROPERTY BOUNDARIES
- PROPOSED CENTERLINE OF NORTH PINERY CREEK. (ALSO SEE LABEL)
- PROPOSED EASEMENT (SEE LABEL FOR TYPE & FACILITY)
- EXISTING EASEMENT (SEE LABEL FOR TYPE, FACILITY, & RECEPTION NUMBER)
- FP — FLOODPLAIN

DETAIL "C"
SCALE 1" = 20'



DETAIL "A"
SCALE 1" = 50'

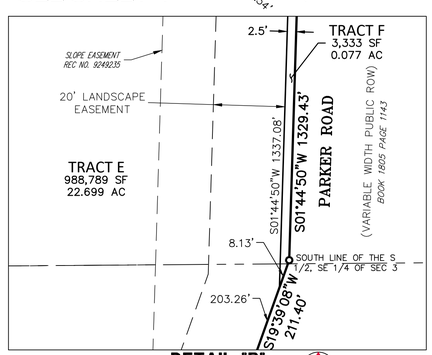


MONUMENT SYMBOL LEGEND

- ○ SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 ● FOUND 4"X4" CONCRETE WITH NO. 5
- 2 ● FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 ● FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"

(ROW) RIGHT-OF-WAY
U.E. UTILITY EASEMENT
PWWD PINERY WATER & WASTE WATER DISTRICT
——"—— LIMITS OF FLOOD PLAIN
(NR) NON RADIAL
CDOT COLORADO DEPT. OF TRANSPORTATION

DETAIL "B"
SCALE 1" = 20'



CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	0°27'56"	670.00'	5.44'
C2	8°34'46"	670.00'	100.33'
C3	1°43'29"	666.00'	20.05'
C4	5°16'14"	666.00'	61.27'
C5	10°05'37"	700.00'	123.32'

LINE TABLE		
LINE	BEARING	LENGTH
L1	S00°37'01"E	4.88'
L2	N89°34'30"E	7.50'
L3	N00°37'01"W	5.08'
L4	N89°34'30"E	1.00'
L9	N33°28'57"E	20.80'

FOR REVIEW

FOR AND ON BEHALF OF
AZTEC CONSULTANTS, INC

AZTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

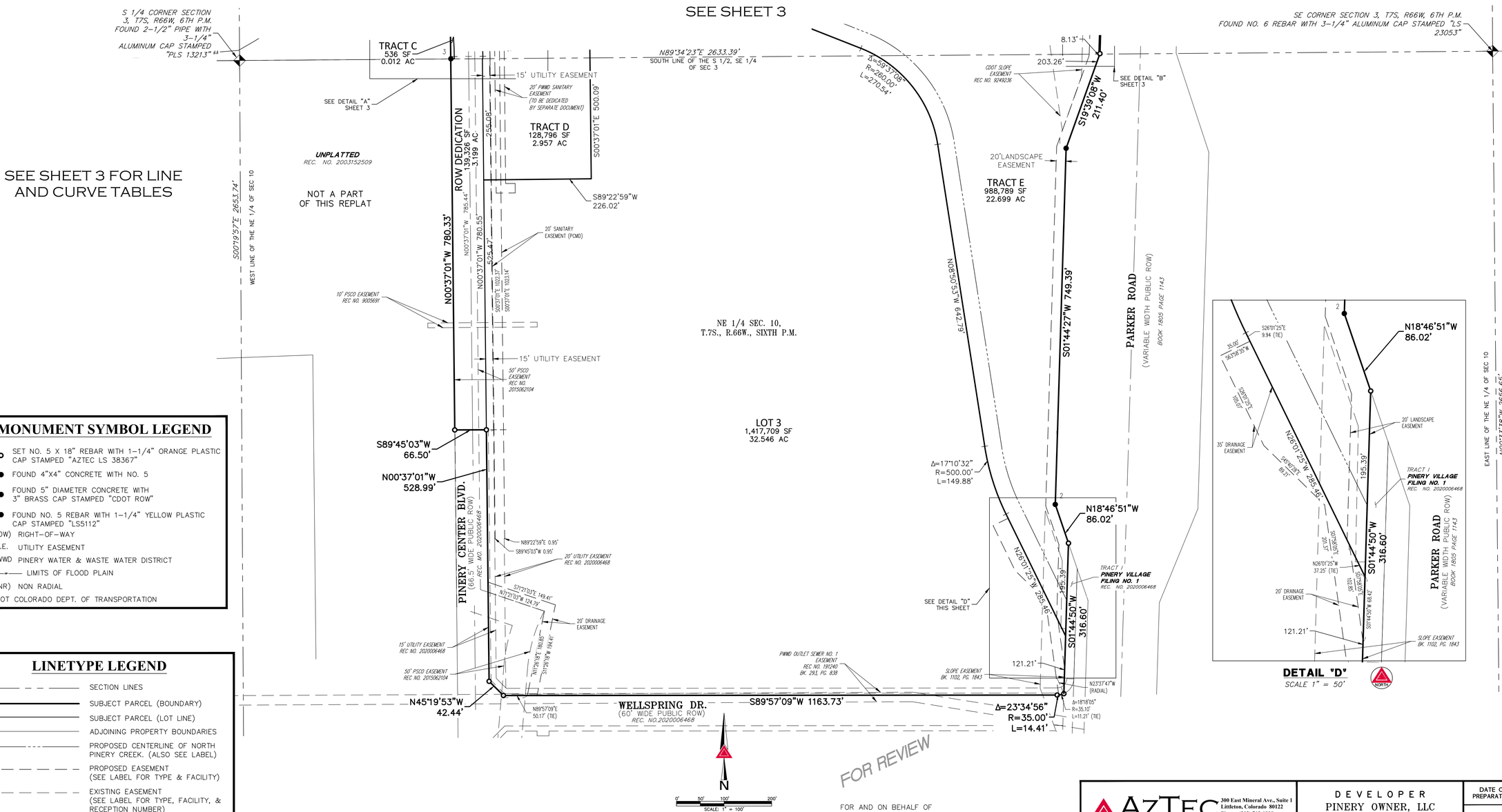
AzTec Proj. No.: 54820-23 Drawn By: RDR

DEVELOPER
PINERY OWNER, LLC
2040 14TH STREET, SUITE 210
BOULDER, CO 80302

DATE OF PREPARATION:	2026-02-17
SCALE:	1"=100'
SHEET 3 OF 4	

PINERY VILLAGE FILING NO. 2

A PORTION OF PLANNING AREAS 41, 42, 43, & OPEN SPACE H-1, AND LOT 2 & TRACT E, PINERY VILLAGE FILING NO. 1
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 3 AND THE NORTHEAST QUARTER OF SECTION 10,
TOWNSHIP 7 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF DOUGLAS, STATE OF COLORADO.
87.848 ACRES - 3 COMMERCIAL LOTS - 7 TRACTS SB2021-049.



MONUMENT SYMBOL LEGEND

- ○ SET NO. 5 X 18" REBAR WITH 1-1/4" ORANGE PLASTIC CAP STAMPED "AZTEC LS 38367"
- 1 ● FOUND 4"X4" CONCRETE WITH NO. 5
- 2 ● FOUND 5" DIAMETER CONCRETE WITH 3" BRASS CAP STAMPED "CDOT ROW"
- 3 ● FOUND NO. 5 REBAR WITH 1-1/4" YELLOW PLASTIC CAP STAMPED "LS5112"
- (ROW) RIGHT-OF-WAY
- U.E. UTILITY EASEMENT
- PWWD PINERY WATER & WASTE WATER DISTRICT
- ——"—— LIMITS OF FLOOD PLAIN
- (NR) NON RADIAL
- CDOT COLORADO DEPT. OF TRANSPORTATION

LINETYPE LEGEND

- ——— – – ——— SECTION LINES
- ——————— SUBJECT PARCEL (BOUNDARY)
- ——————— SUBJECT PARCEL (LOT LINE)
- ——————— ADJOINING PROPERTY BOUNDARIES
- ——————— PROPOSED CENTERLINE OF NORTH PINERY CREEK. (ALSO SEE LABEL)
- – – – – – – PROPOSED EASEMENT (SEE LABEL FOR TYPE & FACILITY)
- – – – – – – EXISTING EASEMENT (SEE LABEL FOR TYPE, FACILITY, & RECEPTION NUMBER)
- ——— FP ——— FLOODPLAIN

FOR REVIEW

FOR AND ON BEHALF OF AZTEC CONSULTANTS, INC

AzTEC CONSULTANTS, INC.
300 East Mineral Ave., Suite 1
Littleton, Colorado 80122
Phone: (303) 713-1898
Fax: (303) 713-1897
www.aztecconsultants.com

AzTec Proj. No.: 54820-23 Drawn By: RDR

DEVELOPER
PINERY OWNER, LLC
2040 14TH STREET, SUITE 210
BOULDER, CO 80302

DATE OF PREPARATION:	2026-02-17
SCALE:	1"=100'
SHEET 4 OF 4	