# **Staff Report**

(with attachments)

# Presented to the

# Planning & Zoning Commission November 16, 2023

Planning & Zoning Commission Hearing: November 16, 2023

## Polestar Village PDP220010

#### **Summary of Request**

This is a request for a mixed neighborhood development on a 20-acre infill property. The plan includes a variety of housing types and a neighborhood center comprising a community building with upstairs B&B rooms, a mixed-use building with small commercial spaces, a place of assembly, and an agriculture support building for community gardens and landscape maintenance.

The plan provides stormwater detention facilities in coordination with a larger regional City system, and a natural area buffer along an irrigation canal that forms the southwestern portion of the property boundary.

The plan includes two modifications of standards.

#### **Zoning Map**



#### **Next Steps**

If approved, the applicant will be eligible to submit a Final Development Plan to finalize engineering and other details and record all plan documents; the applicant could then apply for construction and building permits.

#### Site Location

The project is located at the current western end of both Orchard Place and Plum Street, about 1/4 mile east of Overland Trail. Parcel #s 9716200037; 9716200023; 9716200031; 9716200001.

#### Zoning

Low Density Mixed-Use Neighborhood (L-M-N)

#### **Property Owner**

Polestar Gardens, Inc. PO Box 271582 Fort Collins, Colorado 80521

Pleasant Valley Acres LLC 2909 W. Mulberry St. Fort Collins, Colorado 80521

#### Applicant/Representative

Ken Merritt JR Engineers and Planners 2900 S. College Ave. Fort Collins, CO 80525

#### Staff

Clark Mapes, City Planner

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### **Staff Recommendation**

Approval of the two Modifications of Standards, and the Project Development Plan with one condition of approval.



# 1. Project Introduction

## A. PROJECT DESCRIPTION

The property is a 20-acre pasture and community garden property known for decades as Happy Heart Farm. The site is embedded within surrounding neighborhood development where West Plum Street and Orchard Place terminate at the property line. The property is about ¼ mile east of Overland Trail and is separated from West Elizabeth Street by a single-family residential parcel that used to be part of the subject property but was separated in a parcel split which allowed the owners to sell the Polestar property.

Polestar Village has worked closely with the original owners, who still reside in the existing house on West Elizabeth. Those owners commit to dedicating a pedestrian easement across their property to enable a future walkway connection to proposed West Elizabeth Bus Rapid Transit Corridor improvements which are being worked on by the City. A letter of intent for the easement is attached.

The plan extends Plum and Orchard through and across the property.



144 dwelling units are proposed in a variety of two-unit, townhome, multi-family, mixed use, and single family detached housing types, with both condominium and rental units included; and several modest nonresidential buildings including a community center, a place of assembly, and an elderly group home and wellness center with a caretaker, and an agricultural support building in conjunction with a community garden.

These uses are integrated into a campus-like neighborhood framework with an extensive walkway system.

The property is part of a regional floodway and drainage path, and the plan provides a large regional detention pond in collaboration with the City Stormwater utility.

The angled southwestern edge of the property is an irrigation canal with mature trees, and the plan provides natural resource buffer landscaping along the canal corridor.

The plan includes two modification requests – one for the number of parking spaces for nonresidential uses and one for two building ends facing the street without doorways.



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#### **B. DEVELOPMENT BACKGROUND & CONTEXT**

The former Happy Heart Farm was a community supportive agriculture and community events enterprise and destination. It included the house facing West Elizabeth Street, with a "back 20" - the 20-acre field behind the house.

In 2016, the Happy Heart owners brought a conceptual plan to preliminary meetings with the City for a neighborhood development called Three Seeds, with a mix of housing, community agriculture, and a community center, somewhat similar to Polestar.

The owners did not proceed but instead decided to split the property and sell the 20-acre portion to the Polestar development company.

### **Surrounding Zoning and Land Uses**

	North	South	East	West
Zoning	RL	LMN	RL	LMN
Land Use	Rogers Park Neighborhoodhouses	Older single-family houses facing Elizabeth St.	Rogers Park Neighborhoodhouses	Saddle Ridge Condos



View of site looking north







#### C. OVERVIEW OF MAIN CONSIDERATIONS IN STAFF'S REVIEW

Salient issues that were resolved through four rounds of design and review include:

- A large regional floodway and drainage system crosses the property and the applicants and staff
  collaborated on the solution to re-shape the floodway and create a large regional detention pond consistent
  with a stormwater master plan. This was a complex technical effort through several plan iterations.
- A large cottonwood tree beloved by long-time neighbors, is in the alignment where Orchard Place needs to be extended westward along the property. The design process resulted in deviating the street edge around the tree and eliminating a lot to preserve the tree in a small open space area.
- The campus-like walkway system was designed through iterations to be complete and convenient. It
  includes a walkway stub to the property to the south with an easement agreement for future connection to
  Elizabeth Street.
- The Pleasant Valley and Lake Canal runs along the angled southwest edge of the property and a Natural Area Buffer was carefully designed through iterations to improve the existing conditions and mitigate the loss of a small wetland vegetation area near the canal. This buffer corridor will be completely renovated with grading, weed eradication, and revegetation.

# 2. Land Use Code Article 2 – Applicable Standards

#### A. PROJECT DEVELOPMENT PLAN PROCEDURAL OVERVIEW

# 1. Conceptual Review - CDR210059

A Conceptual Review meeting was held on July 22, 2021.

#### 2. First Submittal

The Project Development Plan was submitted on July 1, 2022.

# 3. Neighborhood Meeting

A neighborhood meeting was held virtually on May 12, 2022. Q&A topics included traffic increase, extension of existing neighborhood streets in the area; potential for future street connections to Overland Trail and Elizabeth Street through adjoining properties; the uses in the non-residential buildings; the existing large cottonwood tree in the alignment of the needed Orchard Street extension; and walkways/trail connections.

# 4. Notice (Posted, Written and Published)

Posted Notice: May 2, 2022, Sign #701.

Written Hearing Notice: November 2, 2023, 797 addresses mailed.

Published Coloradoan Hearing Notice: Scheduled for November 5, 2023.



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#### **B. DIVISION 2.8 – MODIFICATION OF STANDARDS**

The applicant requests two modifications of standards. One is for the number of off-street parking for some of the nonresidential neighborhood center uses; the other is for two apartment buildings with ends facing the street without doorways.

The Land Use Code is adopted with the recognition that there will be instances where a project would be consistent with City Plan, but due to unique and unforeseen circumstances would not meet a specific standard of the Land Use Code as stated. Accordingly, code standards include provisions for modifications. The modification process and criteria in Land Use Code Division 2.8.2(H) provide for evaluation of these instances on a case-by-case basis, as follows:

#### Land Use Code Modification Criteria:

"The decision maker may grant a modification of standards only if it finds that the granting of the modification would not be detrimental to the public good, and that:

- (1) the plan as submitted will promote the general purpose of the standard for which the modification is requested equally well or better than would a plan which complies with the standard for which a modification is requested; or
- (2) the granting of a modification from the strict application of any standard would, without impairing the intent and purpose of this Land Use Code, substantially alleviate an existing, defined and described problem of city-wide concern or would result in a substantial benefit to the city by reason of the fact that the proposed project would substantially address an important community need specifically and expressly defined and described in the city's Comprehensive Plan or in an adopted policy, ordinance or resolution of the City Council, and the strict application of such a standard would render the project practically infeasible; or
- (3) by reason of exceptional physical conditions or other extraordinary and exceptional situations, unique to such property, including, but not limited to, physical conditions such as exceptional narrowness, shallowness or topography, or physical conditions which hinder the owner's ability to install a solar energy system, the strict application of the standard sought to be modified would result in unusual and exceptional practical difficulties, or exceptional or undue hardship upon the owner of such property, provided that such difficulties or hardship are not caused by the act or omission of the applicant; or
- (4) the plan as submitted will not diverge from the standards of the Land Use Code that are authorized by this Division to be modified except in a nominal, inconsequential way when considered from the perspective of the entire development plan and will continue to advance the purposes of the Land Use Code as contained in Section 1.2.2.

Any finding made under subparagraph (1), (2), (3) or (4) above shall be supported by specific findings showing how the plan, as submitted, meets the requirements and criteria of said subparagraph (1), (2), (3) or (4).

# 1. Modification to Section 3.2.2(K)(2) Number of Off-Street Parking Spaces

#### Overview

This modification is included for some of the nonresidential neighborhood center uses.

For purposes of evaluating parking, the site plan cover sheet assigns the following classifications to these uses:

 A mixed-use building with commercial space on the ground floor and bed and breakfast (B&B) use upstairs with 6 rental rooms. The B&B fits the standard for Lodging establishment, subsection 3.2.2(K)(2)(a).



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- A group home/wellness center with up to 8 residents plus medical/spiritual wellness space. The site plan assigns the standards for Group Home in 3.2.2(K)(1)(f) and Long Term Care Facility, 3.2.2(K)(2)(a).
- A place of assembly, with worship/meditation/yoga space and support space. This fits the definition and standards for Places of Assembly.
- A community facility that building fits the definition of Neighborhood support and recreation facility, which is an accessory use in neighborhood development, and has no stated parking requirement.
- An agriculture support building. This is also an accessory building and has no stated parking requirement.

The site plan shows a total of 38 spaces required for these uses, and 28 spaces provided. The request is to address the calculated shortfall of 10 spaces.

#### **Summary of Applicant Justification**

The applicants' modification request is attached. It emphasizes the overall approach to the whole development as a pedestrian-focused residential campus. Its neighborhood center uses are oriented and intended to serve residents, few of whom are likely to bother trying to drive to the center and park, particularly on an occasion when parking demand is higher than for typical everyday living in the neighborhood. The request notes that that the standards apply citywide to uses that cater to the public, with more users presumably arriving by vehicle.

It further explains several reasons why this unique overall development has ample parking for all its uses.

#### **Staff Findings**

Staff finds that the granting of the modification would not be detrimental to the public good and that the request satisfies criteria (1) and (4) in subsection 2.8.2(H):

- A. The modification meets criterion (1), "equal or better", because the uses are oriented to residents, who can easily access the neighborhood center without driving and parking. The standards apply citywide to uses that cater to the public. The streets in the plan provide ample parking for any occasions when the assigned parking spaces might be full. A larger parking lot would displace beneficial building uses and landscape spaces with unnecessary paving, detracting from the plan.
- B. The modification meets criterion (4), "nominal and inconsequential" when considered from the perspective of the entire development plan because the calculated shortfall of 10 spaces is offset by ample parking on the streets in the development which can accommodate any occasions when people would be driving to events that fill up the off-street parking. The available parking on the streets that is not included in residential calculations comprises 13 spaces on Plum and 42 spaces on Orchard, which provide a "cushion" for the whole development including the neighborhood center.

The plan will continue to advance the purposes of the Land Use Code as contained in Section 1.2.2, including:

- 1.2.2 (F) encouraging patterns of land use which decrease trip length of automobile travel and encourage trip consolidation.
- 1.2.2 (G) increasing public access to mass transit, sidewalks, trails, bicycle routes and other alternative modes of transportation.
- 1.2.2 (I) minimizing the adverse environmental impacts of development.
- 1.2.2 (J) improving the design, quality, and character of new development.
- 1.2.2 (L) encouraging the development of vacant properties within established areas.
- 1.2.2 (N) ensuring that development proposals are sensitive to natural areas and features.



# 2. Modification of a Standard for Street-Facing Facades - 3.5.2(D)(2)

This standard for residential development requires that buildings with 4 or more dwelling units must have a doorway facing adjacent neighborhood streets (could be secondary patio doors.) The intent is to avoid impersonal blank ends of multi-unit buildings, often with only utility meters as the most prominent feature, along neighborhood streets. A doorway indicates the presence of people as an animating architectural feature.

Two such buildings have ends facing Plum Street without doorways -- the two northernmost multi-family buildings -- one being a 6-plex and one a 5-plex.

#### Summary of applicant justification:

The applicants' modification request is attached. It explains why the request is not detrimental to the public good; and meets criteria (1) and (4) – "equal to or better than" and "nominal and inconsequential from the perspective of the whole plan".

#### It explains that:

- The side facades are visually interesting with quality design, materials, & windows.
- The two buildings are only two out of 28 buildings units in the plan, involving two of the 144 units in the plan.
- Applicants and staff agree that Final Plans will show whether electric meter banks must be placed on the ends; and if so, they will be screened with architectural fencing to complement the buildings.

### Staff Findings:

Staff finds that the granting of the modification would not be detrimental to the public good and that the plan satisfies criteria in subparagraph (4), "nominal and inconsequential" under Section 2.8.2(H) governing modification requests.

#### Detriment to the public good

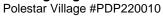
The two building ends are a negligible proportion of the building frontage along the streets.

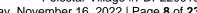
The building design does not consist of impersonal blank utilitarian walls but rather consists of windows, quality materials, and articulation consistent with the quality design character of the building fronts.

Therefore, the two buildings contribute to visual interest along the street. The elevation of the ends of the buildings is shown below, in two of three possible color schemes, so the two ends will vary in that regard.









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For background behind the standard, a Design Manual that accompanies the Land Use Code has a "This" "Not This" example and explanation for the standard. The intent for what to avoid is shown below.



Applicants and staff will ensure that any meter banks will be screened and integrated architecturally if they prove necessary on these building ends in final plans.

Criterion (4), "nominal and inconsequential". From the perspective of the entire development plan, the two building ends facing Plum Street without doorways are nominal and inconsequential for reasons stated above and do not affect the purposes of the Land Use Code in Section 1.2.2.



# 3. Land Use Code Article 3 – General Development Standards

# A. DIVISION 3.2 - SITE PLANNING AND DESIGN STANDARDS

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.2.1 Landscaping and Tree	The standards of this section require development plans to demonstrate a comprehensive approach to landscaping that enhances the appearance and function of the neighborhood, buildings, and pedestrian environment.	Complies
Protection 3.2.1(D) – Tree Planting	The plan includes two different types of landscaping, both thoroughly developed:      an elaborate highly maintained campus landscape setting to integrate the	
Standards 3.2.1(D)(1)(c) – Full Tree	<ul> <li>an elaborate, highly maintained campus landscape setting to integrate the varied buildings, outdoor spaces, and the walkway system in the developed neighborhood portion of the plan; and</li> </ul>	
Stocking 3.2.1(F) – Tree Preservation and Mitigation	<ul> <li>detailed restoration of a Natural Habitat Buffer Zone along the entire west edge of the property and the large regional stormwater detention pond with multiple specialized seed mixes for the gradations of topography from wetland to upland.</li> </ul>	
	Specific components include:	
	<ul> <li>An inventory of the 115 existing trees on the property. 35 trees are to remain; and mitigation for trees to be removed is accounted for. Perhaps the #1 concern of existing neighbors was the fate of a large cottonwood tree located within the alignment of the extension of Orchard Place. A special solution was found to retain this tree with a deviation in the street edge design and a small open space outlot:</li> </ul>	
	BLOCK 2  BLOCK 2  BLOCK 2  BLOCK 2  BLOCK 2  BLOCK 3  BLOCK 4  BLOCK 4  BLOCK 4  BLOCK 4  BLOCK 4  BLOCK 9  BLO	
	<ul> <li>Tree plantings around the buildings, walkways, and parking lots.</li> </ul>	
	<ul> <li>Street trees in irrigated turfgrass parkways along the streets.</li> </ul>	
	Mulched planting beds around buildings.	
	<ul> <li>Natural area buffer landscape restoration and landscaping, starting with eradication of existing smooth brome grass and weeds.</li> </ul>	
	Detention pond landscaping.	
	<ul> <li>Community garden spaces and edible landscape beds in several locations throughout the campus neighborhood area.</li> </ul>	



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3.2.2 – Access, Circulation and Parking – General Standard

This standard requires that development projects accommodate the movement of vehicles, bicycles, pedestrians, and transit throughout the project and to and from surrounding areas safely and conveniently and contribute to the attractiveness of the neighborhood. In compliance, the PDP includes the following:

- The plan has an elaborate framework of walkways linking all parts of the campus-like development.
- Existing attached sidewalks on streets in adjoining development are extended through the plan with today's detached sidewalk standard.
- Neckdowns with crosswalks are included in Plum Street to highlight the importance of the walkway system.
- Walkways are stubbed to enable useful connections to and through adjoining properties.
- Parking is provided in alley-like drives throughout the plan.



Complies

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3.2.2(C)(4)	Residential: A standard requires one bicycle space per bedroom for multi-family	Complies
Bicycle Parking Space Requirements	dwellings, for a total of 76 bicycle spaces required. Requirements include both "enclosed bicycle parking" and non-enclosed fixed bicycle racks, with at least 60% enclosed (covered), so 46 enclosed spaces are required out of the 76 total. Locations must be convenient and easily accessible to building entrances and walkways.	·
	<ul> <li>In compliance, the PDP greatly exceeds the requirements with 67 enclosed spaces and 120 outdoor fixed racks totaling 187 spaces.</li> </ul>	
	Locations are distributed throughout the plan.	
	Nonresidential: Standards are based on a chart of uses. Staff finds a total requirement of 13 spaces for Place of Assembly, Lodging Establishment (for the B&B), and Health Facilities (for the Long Term Care and Wellness Center).	
	<ul> <li>In compliance, the PDP greatly exceeds the requirements with 51 spaces including 11 enclosed spaces.</li> </ul>	
3.2.2(C)(6,7) Direct On/Off- Site Access to Pedestrian and Bicycle	These standards require that the on-site/off-site pedestrian and bicycle circulation system be designed to provide for direct connections to major pedestrian and bicycle destinations, including, trails, parks, schools, Neighborhood Centers, Neighborhood Commercial Districts, and transit stops that are located either within the development or adjacent to the development.	Complies
Destinations	<ul> <li>The plan provides a crucial walkway stub to the south which will be extended across the intervening house property to Elizabeth Street if and when a future City capital project builds a sidewalk along Elizabeth. A major effort in the plan review process resulted in a commitment by the owner of the intervening property to provide the needed easement.</li> </ul>	
	<ul> <li>Another useful connection is provided in the northwest portion of the site, with a walkway stub to the west that allows access to a path along the abutting detention/natural area, which connects north to the alignment of Orchard Place and is used by people walking in the larger neighborhood.</li> </ul>	
Section 3.2.2(K)(1)(a) & (b)	These standards require a minimum amount of parking for residential development of various housing types. For attached and multi-family dwellings the requirement is based on bedrooms. For single detached units the requirement is based on lot width.	Complies
Residential Parking Required	A detailed chart on the site plan cover sheet shows the required parking for 14 different unit types. The total required parking is 278 spaces.	
	<ul> <li>The plan exceeds this minimum requirement, with 291 spaces available off- street and along Plum Street internal to the plan.</li> </ul>	
Section 3.2.2(K)(2)	The site plan shows a total of 38 spaces required for these uses, and 28 spaces provided.	Complies via Modification
Nonresidential Parking Required	<ul> <li>The modification request above in this report explains the compliance finding the calculated shortfall of 10 spaces.</li> </ul>	
3.2.2(K)(5) – Handicap Parking	Handicap parking is required as a ratio of spaces in parking lots. The plan provides off-street parking in various private alleys with portions of the alleys configured as de facto parking lots.	Complies
	The plan provides 17 handicap-accessible spaces distributed throughout in a manner that exceeds minimum requirements for the parking lot areas.	

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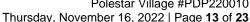
3.2.4 – Exterior Site Lighting	The purpose of this Section is to ensure adequate exterior lighting for the safety, security, enjoyment, and function of the proposed land use; conserve energy and resources; reduce light trespass, glare, artificial night glow, and obtrusive light; protect the local natural ecosystem from damaging effects of artificial lighting; and encourage quality lighting design and fixtures.	Complies
	Lighting standards are limits on the total quantity of light measured in lumens; detailed technical ratings for fixtures; and light trespass (spillover) across property boundaries.	
	<ul> <li>The plan shows limited, strategic lighting at walkway junctions. There is zero spillover anywhere near any property boundaries. The development will rely mostly on building lighting, which will comply with the standards as part of building permits.</li> </ul>	
	<ul> <li>Final Plans will include a summary table with a few additional technical ratings to match code terminology.</li> </ul>	
Section 3.2.5 – Trash and Recycling Enclosures	The purpose of this standard is to ensure the provision of facilities compatible with surrounding land uses, for the collection, separation, storage, loading and pickup of trash, waste cooking oil, compostable and recyclable materials.  • Adequately sized, conveniently located, accessible and fully screened trash and recycling enclosures are provided throughout the plan.	Complies

# **B. DIVISION 3.3 - ENGINEERING STANDARDS**

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.3.1(C) – Public Sites, Reservations and Dedications	This standard requires the applicant to dedicate rights-of-way for public streets, drainage easements and utility easements as needed to serve the area being developed.  • The project includes a subdivision plat that provides right-of-way for extension of W. Plum Street and Orchard Place expansion, and a complete framework of easements for drainage, access, and utilities throughout the plan.	Complies

# C. DIVISION 3.4 - ENVIRONMENTAL, NATURAL AREA, RECREATIONAL AND CULTURAL **RESOURCE PROTECTION STANDARDS**

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.4.1 – Natural Habitats	The purpose of this Section is to ensure that when property is developed consistent with its zoning designation, the way in which the physical elements of the development plan are designed and arranged on the site will protect the natural habitats and features both on the site and in the vicinity of the site, to the maximum extent feasible.	Complies





It applies when development is proposed within 500 feet of an identified natural habitat or feature. In this case, the Pleasant Valley and Lake Canal runs along the southwest edge and serves as a wildlife corridor, with riparian forest along part of its extent. A small area of wetland vegetation exists in a low spot near the southern part of this corridor. In the plan below, north is to the left.



The colored area along the southwest edge of the site is the NHBZ landscape plan including wetland mitigation.

The code requires establishment of natural habitat buffer zones (NHBZs) surrounding natural resources. The general buffer distance for both irrigation canals and wetlands <1/3 of an acre is 50 feet from the top of bank or wetland edge. That 50-foot dimension may be varied if certain qualitative performance standards are met in the development plan. Those performance standards are in Section 3.4.1(E).

An Ecological Characterization Study (ECS) was done for the site as required to evaluate habitat values and make recommendations regarding protection and enhancement. The ECS is attached.

The main findings of the ECS are that the site is highly disturbed by its history of agricultural operations and is predominately vegetated with non-native grasses and weeds. Wildlife value of the field is low.

The greatest habitat features are the small wetland area and riparian forest along the canal in the southern portion of the site.

The wetland and associated riparian forest provide some minor wildlife benefits, though those benefits are limited due to its small size and low structural or functional diversity.

The ECS recommends weed management to eradicate existing weeds in the buffer zone, followed by re-seeding with native grasses and other plants.

- The PDP includes a detailed landscape restoration and enhancement plan for the buffer zone that was carefully developed through multiple rounds of design and review with collaboration between applicants and staff.
- The minimum required area for the NHBZ based on a 50-foot wide buffer from the canal would be 71,230 s.f. The area provided is 75,860 s.f. The

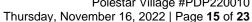




	<ul> <li>existing 2,520 sq. ft. wetland area is mitigated with a 4,609 sq. ft. wetland and total of 17,716 sq.ft. of buffer area.</li> <li>The plan includes grading and tailored seed mixes to establish a new wetland area which mitigates the filling of the existing small wetland.</li> <li>Extensive tree planting augments the existing riparian trees along the canal.</li> </ul>	
3.4.7 – Historic and Cultural Resources	This section applies if there are any historic resources within the area of adjacency of a proposal. The area of adjacency is measured at 200 feet in all directions from the perimeter of the development site.	Complies
	There are no historic resources on the development site. There is a potentially historic property abutting on the south the farmhouse, which was split off from the Polestar property, at 2820 W. Elizabeth. But in any case, the designs for the project within the Historic Influence Area meet the design requirements of LUC 3.4.7(E), Table 1, Column A. As a result, the historic survey requirement was waived and the property at 2820 W Elizabeth remains unevaluated but was treated as Eligible for the purposes of this project review.	
	Staff found that the project components that lie within the Historic Influence Area, specifically the Agricultural Building and the closest townhomes, comply with the design compatibility requirements of 3.4.7(E), Table 1, Column A. Staff analysis considered similar scale, massing and articulation, roof forms, lack of visibility from Elizabeth, exterior materials, and window patterns.	

# D. DIVISION 3.5 - BUILDING STANDARDS

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.5.1(A) and (B)  – Building  Project and  Compatibility,  Purpose, and  General  Standard	The purpose of this Section is to ensure compatibility of new buildings and uses with the surrounding context. Absent any established character, the standard requires that new buildings set an enhanced standard of quality for future projects or redevelopment in the area. The standards in this section complement the more specific requirements in Section 3.8.30 for multi-family development, and in Article 4 for the LMN zone.	Complies
	Overall, staff finds that the design of the PDP is compatible with the existing context surrounding the site, which includes residential development from different eras in different styles.	
	<ul> <li>The plan's collection of multiple building types demonstrates a high degree of variation within a distinct unifying overall vocabulary.</li> </ul>	
	<ul> <li>The design provides visual interest at a human scale consistent with the pedestrian orientation of the overall plan. The design vocabulary includes hip and gable roofs with 5/12 pitch; lap siding; porches and balconies; and details including shaped privacy walls with latticework, varied exposure of siding, and differently colored doors.</li> </ul>	
	<ul> <li>Color shades are common residential colors, and they vary dramatically within the unifying overall order to distinguish different dwelling units within buildings and highlight design features.</li> </ul>	





Buildings are mostly two stories with some three story portions and a few 3story apartment buildings which use secondary roofs to divide the mass into proportions that express the base, middle and top.

Staff finds no compatibility issue with this neighborhood development in the context of the larger neighborhood development in the general area.

The vocabulary is demonstrated below with just a few of the approximately 16 different residential building designs, with additional differences in exact color schemes. An image of the focal community building is included.



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3.5.2- Residential Building Standards	These standards are intended to promote variety, visual interest, and pedestrian- oriented streets in residential development. Development projects containing residential buildings shall place a high priority on building entryways and their relationship to the street. Pedestrian usability shall be prioritized over vehicular usability. Buildings shall include human-scaled elements, architectural articulation, and in projects containing more than one (1) building, design variation.  • The plan exemplifies the intent of each of these points.	Complies
3.5.2(D)(1) – Orientation to a Connecting Walkway 3.5.2.(D)(2) Street-Facing Facades	<ul> <li>This section requires that every front facade with a primary entrance to a dwelling unit faces a connecting walkway with no primary entrance more than two hundred (200) feet from a street sidewalk. A primary entrance may be up to three hundred fifty (350) feet from a street sidewalk if the primary entrance faces and opens directly onto a connecting walkway that qualifies as a major walkway spine.</li> <li>Additionally, a standard requires each multifamily building with four or more units to have at least one entrance facing the adjacent local street.</li> <li>All buildings comply, except for two buildings with four or more units that do not have doorways facing the street. These are the two northernmost buildings along Plum St.</li> <li>As discussed previously in the staff report, a modification to 3.5.2(D)(2) is included.</li> </ul>	Complies / Modification Requested
3.5.3(C)(1) – Orientation to a Connecting Walkway	This section requires that a main entrance to a commercial or mixed-use building must open onto a connecting walkway with pedestrian frontage, with no intervening vehicular use area.  • The buildings comply, facing onto a walkway with pedestrian frontage leading directly to and from Plum Street.	Complies

# **E. DIVISION 3.6 - TRANSPORTATION AND CIRCULATION**

This Section is intended to ensure that the transportation network of streets, alleys, roadways, and trails is in conformance with adopted transportation plans and policies established by the City.

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.6.2 – Streets, Streetscapes, Alleys, and Easements	This Section requires transportation network improvements for public health, safety, and welfare, with requirements in accordance with the Larimer County Urban Area Street Standards and requires necessary easements for utilities and access.  • The plan extends the streets that currently terminate at the property boundaries in conformance with standards.  • The plan includes a subdivision plat that dedicates needed ROW and	Complies
	easements.	



Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.6.3(F) – Street Pattern and Connectivity Standards	This Section requires development plans to connect and extend streets that are stubbed to the boundary of the plan by previous development.  The plan extends Plum Street and Orchard Place through the site, with Orchard stubbed to the western boundary for further extension in any future development. Existing development to the west limited the ability to continue Plum beyond this subject property.	Complies
3.6.4 – Transportation Level of Service Requirements	This Section contains requirements for the transportation needs of proposed development to be safely accommodated by the existing transportation system, or that appropriate mitigation of impacts will be provided by the development to meet adopted Level of Service (LOS) standards.	Complies
	<ul> <li>A Traffic Impact Study was reviewed and accepted by staff. The 143-page study is attached. It concludes that no operational concerns related to levels of service were identified.</li> </ul>	
	<ul> <li>Pedestrian facilities are mostly adequate in the area surrounding the Project site, which is primarily residential. Bicycle lanes are present along nearby major streets. Sidewalks and crosswalks are proposed as part of the Project.</li> </ul>	
	<ul> <li>Local streets within the Project site will have detached sidewalks on both sides.</li> </ul>	
	<ul> <li>Crosswalks will be installed at neck-downs in the street to promote safe pedestrian crossings.</li> </ul>	
	<ul> <li>Sidewalks along Orchard Place will provide access to the existing path along the canal west of the site.</li> </ul>	
3.6.6 – Emergency Access	This Section requires access for emergency vehicles and services.  The project has been reviewed by Poudre Fire Authority (PFA) and meets the needs and requirements for emergency access.	Complies

# F. DIVISION 3.7 - COMPACT URBAN GROWTH

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.7.3 – Adequate Public Facilities	The proposed project provides adequate service design for water, wastewater, storm drainage, fire and emergency services, and electric facilities. There are no special needs or requirements necessary to serve the development.	Complies



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# G. 3.8.30 MULTI-FAMILY AND SINGLE-FAMILY ATTACHED DWELLING DEVELOPMENT STANDARDS

The standards in this section apply to all multi-family developments that contain at least four (4) dwelling units and single-family attached developments that contain at least four (4) dwelling units where there is no reasonably sufficient area for outdoor activities and useable outdoor space on an individual per lot basis. This section is intended to promote variety in building form and product, visual interest, access to parks, pedestrian-oriented public or private streets and compatibility with surrounding neighborhoods.

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
3.8.30(B)(1)(2) (3)(4) – Mix of Housing Types	A complete range of the permitted housing types is encouraged in a neighborhood and within any individual development plan, to the extent reasonably feasible, depending on the size of the parcel. A minimum of two (2) housing types is required on any development parcel sixteen (16) acres or larger.	Complies
	<ul> <li>The plan greatly exceeds the standard and exemplifies aspirations in the comprehensive plan which are the basis for the standard. Nine housing types are provided which correspond to types recognized in the standard. Plus there are additional variations within several of those types involving garages/no garages, and side-by-side vs over/under.</li> </ul>	
3.8.30(C) – Access to a Park, Central Feature or Gathering Place	At least ninety (90) percent of the dwellings in all development projects containing two (2) or more acres shall be located within 1,320 feet (¼ mile) of either a neighborhood park, a privately owned park or a central feature or gathering place that is located either within the project or within adjacent development, which distance shall be measured along street frontage without crossing an arterial street.	Complies
	A privately owned park would have to be at least 10,000 sq. ft.	
	<ul> <li>Rogers Park, a City Neighborhood Park, is 1,000 feet to the northeast.</li> </ul>	
	<ul> <li>The plan includes park-like landscape areas with a pavilion plaza, an open picnic area, a tot lot, pickleball, a covered patio with tables at the community building, a large community garden, a walkway along the entire western edge of the property along the canal landscape corridor, and other seating areas and community garden spaces distributed throughout the plan, all of which are linked by the campus-like walkway system.</li> </ul>	
3.8.30(F) – Building Design	This subsection requires a basic level of building variation, with at least 3 different building designs; clear prominent entrances; roof forms; façade articulation; and use of color and materials for variety and individuality.	Complies
	<ul> <li>As discussed on other sections, the plan exceeds and exemplifies the standards.</li> </ul>	



# 4. Land Use Code Article 4 – Applicable Standards:

# A. DIVISION 4.4 – LOW DENSITY RESIDENTIAL NEIGHBORHOOD (R-L)

This zone district is intended for predominately single-family residential areas which were existing at the time of adoption of this Code. Only one standard pertains to this PDP, for density.

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
4.4(B) – Permitted Uses	This zone permits single-family houses along with a few other uses that characterize suburban subdivisions including parks, churches, schools, group homes and child care.  • The plan includes lots for single-family houses along Orchard Place, essentially as an extension of existing subdivisions along Orchard.	Complies
4.4(D)(1) – Density	This zone limits density with a minimum lot size of 6,000 sq. ft.  • The lots in the plan are at least 6,000 sq. ft.	Compliess

# B. DIVISION 4.5 – LOW DENSITY MIXED-USE NEIGHBORHOOD (L-M-N)

The Low Density Mixed-Use Neighborhood District is intended to be a setting for a predominance of low density housing combined with complementary and supporting land uses that serve a neighborhood and are developed and operated in harmony with the residential characteristics of a neighborhood. The main purpose of the District is to meet a wide range of needs of everyday living in neighborhoods that include a variety of housing choices, that invite walking to gathering places, services, and conveniences, and that are fully integrated into the larger community by the pattern of streets, blocks, and other linkages. A neighborhood center provides a focal point, and attractive walking and biking paths invite residents to enjoy the center as well as the small neighborhood parks.

Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings				
4.5(B)(2) and (3) – Permitted Uses	his zone envisions and permits a complete range of housing types along with eighborhood-supportive nonresidential uses.					
USES	<ul> <li>The mix of housing types on the site plan exemplify the list of permitted uses – the plan is an unprecedented model example of the vision for neighborhoods to accommodate a variety of households, especially with "missing middle" types that in the gap between single-use single detached house subdivisions and single-use apartment complexes.</li> </ul>					
	<ul> <li>Likewise, the proposed nonresidential uses exemplify the kinds of neighborhood-supporting uses envisioned for neighborhoods to provide focal points, gathering spaces, and services.</li> </ul>					
4.5(D)(1) – Density	This zone requires a housing density within a range of 4 dwelling units per acre minimum and 9 dwelling units per acre maximum.					
	The 144 dwelling units on 20.5 acres equal 7 du/acre.					
4.5(D)(2) – Mix	This zone would require at least three housing types on this 20.5-acre site.					
of Housing	<ul> <li>The plan includes nine housing types, with additional variations among those types.</li> </ul>					



Applicable Code Standard	Summary of Code Requirement and Analysis	Staff Findings
4.5(D)(6) – Small Neighborhood Parks	This zone requires access to a park that is redundant with the requirement in Section 3.8.30 discussed previously.  • As discussed under 3.8.30(C) above, the plan meets and exemplifies the standards.	Complies
4.5(E)(4) – Design Standards for 3-Story Apartment Buildings and Apartment Buildings Containing More Than 8 Units	This subsection builds upon and in some cases duplicates standards found in 3.8.30 as detailed earlier in the staff report.  The goal of these standards is to ensure that larger residential buildings can be aesthetically integrated into low density neighborhoods.  They require massing proportions, roof proportions, and other characteristics similar in scale to those of houses, so that such larger buildings can be aesthetically integrated into the low density neighborhood.  Standards call for variation among repeated buildings; clearly identifiable entrances; articulation of roofs, articulation of facades, and use of building materials and colors to provide variety and individuality.  • The plan meets and exceeds the standards.  • The plan meets and exceeds the standards for variation among repeated buildings; clearly identifiable entrances; roof forms and articulation; façade design; and use of building color and materials to provide variety and individuality as called for in the standards.	Complies
4.5(E)(2) – Design Standards for Nonresidential and Mixed Use Buildings	<ul> <li>This subsection contains a few basic standards for nonresidential buildings in LMN neighborhood development. They limit the size of buildings, require roof articulation, require entrances to face onto the adjoining local street.</li> <li>The plan meets the standards, with an interpretation that the private parking drive in front of the community facility and group home/B&amp;B buildings serves in lieu of a local street. The stated requirement in 4.5(E)(2)(f) calls for entrances to, "face and open directly onto the adjoining local street with parking and any service functions located in side or rear yards and incorporated into the development according to the provisions of this Code."</li> <li>This requirement overlaps with the requirement for buildings to face onto a 'connecting walkway' in Section 3.5.3, which the plan meets.</li> </ul>	Complies



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# 5. Comprehensive Plan Background:

# A. CITY PLAN (2019)

The City's comprehensive plan (2019 City Plan) was developed with the participation of thousands of community members and embodies the vision and values of the community for the future. The plan is the main basis for development standards in the Land Use Code.

Development plans are reviewed for compliance with the code. They are not reviewed for compliance with City Plan per se; rather, City Plan can be used to add perspective on the background and purposes behind the code standards; to help interpret standards that warrant a degree of interpretation; and to aid review of requests for modifications of standards.

Encouraging more housing options is a major theme in City Plan. And specifically, more housing options are encouraged (pp. 25, 29, 98.) General themes are a feeling of inclusion, a distinctive and attractive community, and framework of streets, walkways spines and other public spaces (p.42).

An overall premise is that additional housing options help support the plan's broader housing affordability goals to expand workforce and affordable housing.

The Polestar plan's wide variety of two-family, townhome, and apartment types, including 'micro units', add
options in addition to new single-family house lots.

#### **Pertinent Policies:**

# **Neighborhood Livability and Social Health**

Principle LIV 3: Maintain and enhance our unique character and sense of place as the community grows.

POLICY LIV 3.1 - PUBLIC AMENITIES. Design streets and other public spaces with the comfort and enjoyment of pedestrians in mind ...such as plazas, pocket parks, patios, children's play areas, sidewalks, pathways...

Principle LIV 5: Create more opportunities for housing choices.

Policy LIV 5.1 - HOUSING OPTIONS To enhance community health and livability, encourage a variety of housing types and densities, including mixed-used developments that are well served by public transportation and close to employment centers, shopping, services, and amenities.

Policy LIV 5.3 - LAND FOR RESIDENTIAL DEVELOPMENT Use density requirements to maximize the use of land for residential development to positively influence housing supply and expand housing choice.

#### **Culture and Recreation**

Policy CR 2.2 - INTERCONNECTED SYSTEM Support an interconnected regional and local system of parks, trails, and open lands that balances recreation needs with the need to protect wildlife habitat and other environmentally sensitive areas.

Fort Collins City Plan is easily found online.



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# 6. Findings of Fact/Conclusion

In evaluating the request for the Polestar Village Project Development Plan #PDP220010, Staff makes the following findings of fact and conclusions:

- 1. The Project Development Plan complies with the applicable procedural and administrative requirements of Article 2 of the Land Use Code.
- 2. The Project Development Plan complies with applicable criteria for approval of Modification of Standards located in Division 2.8 of the Land Use Code.

Staff supports the request for Modification of Standards to subsection 3.2.2(K)(2) for the Number of Off-Street Parking Spaces for nonresidential uses in a neighborhood center.

The modification would not be detrimental to the public good and the request satisfies criteria (1) and (4) in subsection 2.8.2(H) because the uses primarily serve residents of the neighborhood who will be familiar with the situation, and higher parking demands can be accommodated on the streets within the development.

Staff supports the request for Modification of Standards to subsection 3.5.2(D)(2) for street-facing facades on the ends of two buildings without doorways.

The modification would not be detrimental to the public good and the request satisfies criterion (4) in subsection 2.8.2(H) because the two building ends are a negligible proportion of the building frontage along the streets, and he building design does not consist of impersonal blank utilitarian walls but rather consists of windows, quality materials, and articulation consistent with the quality design character of the building fronts. Therefore, the two buildings contribute to visual interest along the street.

- 3. The Project Development Plan complies with relevant standards located in Article 3 General Development Standards, subject to approval of the three Modifications of Standards.
- 4. The Project Development Plan complies with relevant standards located in Division 4.5 Low Density Mixed Use Neighborhood (L-M-N) in Article 4.

## 7. Recommendation

- Staff recommends that the Planning and Zoning Commission make a motion to approve two Modifications of Standards to Land Use Code subsection 3.2.2(K)(2) for the Number of Off-Street Parking Spaces; and 3.5.2(D)(2) for Street-Facing Facades without doorways.
- Staff recommends that the Planning and Zoning Commission make a motion to approve the Polestar Village Development Plan, #PDP220010 based on the Findings of Fact and supporting explanations found in the staff report and hearing materials.
- Staff recommends a condition of approval that prior to signing of Final Plans for Polestar Village, the owners of 2820 West Elizabeth Street, which abuts the Polestar Village property on the south, provide a public access easement across the west portion of that property for a future 6' walkway that will connect from the Polestar Village property to West Elizabeth Street; including the needed 8' public access easement for this walkway and also a Temporary Construction Easement for construction of the walkway. The future walkway construction would be done by the City in conjunction with construction of a sidewalk on West Elizabeth Street to which it would connect.

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# 8. Attachments

- 1. Applicants' Narrative
- 2. Plan Illustration
- 3. Site Plan
- 4. Landscape Plan
- 5. Architecture
- 6. Lighting Plan
- 7. Utility Plans
- 8. Plat
- 9. Environmental Characterization Study
- 10. Traffic Impact Study
- 11. Letter of Intent for Walkway Easement to Elizabeth
- 12. Modification Request Nonresidential Parking
- 13. Neighborhood Meeting Notes
- 14. Staff Presentation

# **Project Information & Design Narrative**



#### **Site Vicinity Map & Project Location:**

The proposed Polestar Village development is generally located approximately ¼ mile east of South Overland Trail between West Elizabeth Street and Orchard Place. The proposed development is comprised four individual parcels of property totaling 20.5 ± acres of land. Currently the subject property is vacant and undeveloped. The parcel located south of the proposed Orchard Place ROW is approximately 18.9 acres and Zoned LMN – Low Density Mixed-Use Neighborhood and the parcel located north of the proposed Orchard Place ROW is approximately 1.6 ± acres of land is Zoned RL – Low Density Residential. The property was originally home to Happy Heart Farms Community Supported Agricultural Farm (CSA). The existing Happy Heart Homestead, located just south of the proposed development fronts onto West Elizabeth Street will remain and is not part of the proposed Polestar Village development.

# **Introduction:**

Polestar Gardens Inc. is an educational non-profit (501c3) founded in 2000. Polestar's Mission is to support the Physical, Mental and Spiritual development of students of all ages. Polestar Village has been designed as an Urban Agricultural Development with a centrally located Community

Farm with Pocket Gardens and Edible Trees and Shrubs planted throughout the development. It is a Pedestrian Focused and Walkable Neighborhood with extensive Open Space and Parks. The development also includes a variety of Diverse Housing Products that offer both home ownership and rental opportunities. Also included within the development is a Community Building and Wellness Center, a Place of Assembly for meditation, yoga and community gatherings. There is also a small neighborhood center intended to provide the daily goods and services its residents may need. The diversity of housing types coupled with the abundance of community services and site amenities will provide both those who share Polestar values and the overall Fort Collins community the opportunity to live, work and play within a fully sustainable urban agricultural community.

## **Property & Development Ownership**

When approved Polestar Gardens, Inc. an educational 501c3 non-profit company will own and maintain all of the Polestar Village Open Space and Community Activity Center Buildings and amenities throughout the development. The single-family homes, townhomes, duplex homes and condominiums when constructed will all be sold to individual homeowners while the multifamily apartments rentals will be owned and maintained be Polestar Gardens and/or their assigns.

#### **Polestar Village Community Design Values:**

The proposed Polestar Village has been designed to achieve the Key Core Values and Development Goals of the Polestar Gardens organization include the following:

- Create a Neighborhood that is inviting and built around Community Gardens and Gathering Spaces
- The design should be Pedestrian Focused minimizing reliance on carbon based vehicles and promoting the use of Electrical Car Share Vehicles and E-bikes
- Create a Contemplative Space for Meditation & Yoga
- Polestar Village should Build Upon the Legacy of Happy Heart Farm through the development of a central Urban Agriculture Farm, Pocket Gardens and a Community Farmers Market
- Create a Community with Ample Open Space, Parks and Active Play areas
- The Development should insure the Preservation of Existing Natural Environment along the Pleasant Valley Irrigation Canal
- Polestar Village should be designed to meet the City's Net Zero Goals by implementing Ground Breaking Construction Practices
- Polestar Village should be designed with a broad Diversity of Housing Products for ownership and rent that is be Economically Attainable

#### **Proposed Uses:**

Polestar Village is proposing 144 Residential Housing Units representing six distinct and diverse housing types. The Housing Types includes 18 - Single Family Detached Homes with front access garages, 1 - Single Family Detached Urban Cottage Home with alley access surface parking, 18 - Two Family Attached Homes with alley access garages, 8 - Two Family Attached Homes with alley access garages, 10 - Two Family Attached Urban Cottage Homes with surface parking, 21 - Single Family Attached Townhome with alley access surface parking, 22 - Single Family Attached Townhome with alley access Garage Parking, 11 - Condominiums with alley access surface parking, 32 Multi-Family Apartment Homes with surface parking and 3 - Micro Apartments with surface parking. Also included is a Neighborhood Activity Center with a small Retail/Commercial area a 2 story Community Center with a Community Dinning Hall and Kitchen and 6 Bed & Breakfast Rental Units on the second floor a 2 story Wellness Center with 8 Residence Beds, a Place of Place of Assembly and an Agricultural Support Building/Barn.

## **Community Agriculture & Activities:**

A portion of the Polestar Village property, approximately 3± acres will be for an Urban Agricultural Community Farm and Pocket Gardens located throughout the residential development area. The Community Farm and Pocket Gardens will be owned and managed by the Polestar Village HOA and will provide fresh vegetables and fruit to the entire Polestar Village Community. The Community Center, Wellness Center and Place of Assembly will also be owned and managed by the Polestar Village HOA. The Place of Assembly is intended for community events, meditation and yoga activities with some events being open to the public. Additionally, the Community Farm and Barn will also host Seasonal Plant Sales, Farmers Market and an occasional and Makers Market.

#### **Vehicular Access & Pedestrian Circulation:**

The Polestar Village community will be accessed by the extension of Orchard Place and Locust Drive on the north. Additionally West Plum will be extended from where it currently ends at the east boundary of the subject property and extent west and then north to intersect Orchard Place. A series of private drives and alleys will provide vehicular access to all of the proposed homes except for the single-family detached homes, which will have vehicle access directly from Orchard Place. Pedestrians will utilize the detached roadside sidewalks and tree lined streets along Orchard Place, West Plum and Polaris Street as well as being able to access a network of on-site pedestrian walkways that will extend throughout the site's green streets and open space areas, connecting each of the Polestar housing clusters to the various community facilities, site amenities and the community farm.

#### Neighborhood Compatibility & Natural Features:

Currently there are both single family and multi-family neighborhoods surrounding the proposed Polestar Village development. As such the building architecture throughout the Polestar community will be residential in scale and character and will seek to enhance the existing

surrounding neighborhoods with added interest, diverse housing types, extensive landscape and high quality architectural details. The large stand of existing trees located along the west property boundary and the Pleasant Valley & Lake Canal will be protected and incorporated into a Natural Habitat Buffer Area (NHBA). The NHBA will extend along the irrigation canal and continue north along the existing Saddle Ridge Condominiums and its existing retention pond. The Natural Habitat Buffer will serve a vital environmental function as well as a visual and acoustical buffer for the surrounding residential neighborhood.

## <u>Site Infrastructure & Public Improvement Development Schedule:</u>

Development of Polestar Gardens is expected to begin in the 2<sup>nd</sup> quarter of 2023. Polestar Gardens will be constructed as two sequences of development. Sequence 1 will begin in the 2<sup>nd</sup> Quarter of 2023 and Sequence 2 beginning in the second half of 2024. Each of the sequences of construction shall include the following:

The First Sequence of Construction will include of extending Orchard Place and its associated utilities from the eastern terminus of Orchard Place to the western boundary of the subject property. Also included will be the extension of Locust Grove Drive to intersect Orchard Place, overlot grading of the entire 20.5 acres site area, pedestrian sidewalks, tree lawn and street tree plantings, as well as the construction of the on-site Detention and Water Quality Pond. The development of this critical first sequence of infrastructure construction will allow for the development of 19 Single Family Detached Homes that will front onto Orchard Place.

The Second Sequence of Construction will likely begin in late 2023 or early 2024 and will include the extension of West Plum Street and its associated utilities from the eastern boundary of the property to the intersection of Orchard Place. Also included will be pedestrian sidewalks, tree lawns and street tree plantings, as well as the construction of several private drives and alley's, storm drainage infrastructure, Low Impact Design (LID) water quality features, reclamation and landscape construction of the 50' wide Natural Area Habitat Buffer and soft trail and the landscape of the common area open space tracts. The completion of this sequence of construction will allowing for the development of all other proposed housing products, neighborhood activity center and other community buildings and amenities.

#### Site & Landscape Design:

**Site Design** - Polestar Village with its diversity of housing types will satisfy a much-needed opportunity in Fort Collins for economically attainable home ownership and rental housing.

Open Space areas throughout the proposed development and the community farm and pocket garden areas will be owned and maintained by the Polestar Village HOA. Open space areas will be fully landscaped per the City's Landscape Development Standards. Orchard Place, West Plum Street and Polaris Street will include detached sidewalks with 8' wide tree lawns planted with street trees at approximately 40' on center. Native grasses and plant species will be used to reestablish the floodplain and detention pond areas. The remainder of the community open space areas will be landscaped with "water-wise" shade/ornamental trees, shrubs, perennials,

grasses and drought tolerant turf. Within the individual housing clusters, permaculture gardens or "Kitchen Pocket Gardens" will be integrated into the green courtyards allowing nearby residents to grow their own food in close proximity to their front door.

In addition to the public improvements mentioned above, the proposed on-site construction will include paved private drives and parking areas with curb and gutter, water and sewer services, storm drainage infrastructure, stormwater and LID water quality improvements, and site irrigation water being provided via the Pleasant Valley Irrigation Canal. The Polestar Village community will also include an abundance of Enclosed and Fixed Bike Parking Spaces and 14 Electric Vehicle Charging Stations distributed throughout the property. Additionally, Polestar Village will also include a robust E Bike-Share and Electric Vehicle Car-Share programs that will be accessible to all of the Polestar Village residents.

Tree Planting Standard - The project will provide streetscaping along West Orchard Place, West Plum Street and Polaris Street as well as in and around on-site private drives, alleys and parking areas, open space and around the individual duplex, townhomes and multi-family units. The builder of the single-family homes will landscape the front yard for each unit with the rear yards being the responsibility of the individual homeowners. Tree planting as per city standards shall be met in order to add to the urban tree canopy of the immediate area. The tree planting will be interspersed throughout all of the open space areas, and within LID storm drainage areas and designated Detention Pond areas as is feasible.

Landscape Standards - The Polestar Village landscape shall meet or exceed the City's standards for "tree stocking" for all community buildings, open space, streetscape and parking lot landscaping. All areas that are landscaped shall be irrigated with a permanent automatic underground irrigation with water being provided via the Pleasant Valley Irrigation Canal. Any areas identified on the Landscape Plan to be non-irrigated shall be irrigated with a temporary above or belowground irrigation system and irrigated until such time that proper establishment of seeded areas has been achieved, a minimum of two growing season.

**Trash and Recycling** - Fully enclosed and gated outdoor Trash and Recycling enclosures shall be provided in close proximity to all condominium homes, multi-family apartments, and community buildings to accommodate the collection, separation, storage, loading and pickup of trash and recyclable materials. Trash and Recycling containers shall be provided to each single-family homes, duplex homes and townhomes and shall be stored inside the garages and put outside for pickup and removal on the designated trash collection day.

#### **Site Drainage & Water Quality:**

**Existing Drainage Basin** - The site is located in the Canal Importation Basin, specifically north of West Elizabeth Street, east of South Overland Trail and directly East of the Scenic Views Subdivision. The site generally drains west to east from 1% to 2.5% slopes. The entire site currently drains into an existing drainage swale located within an existing 20' wide drainage easement near the northeast corner of the site. Much of the existing undeveloped site area is currently used for agricultural purposes with existing green houses, cultivate fields, and native grass. The existing Pleasant Valley and Lake Canal Irrigation Ditch is within the site and borders

the western boundary of the subject property. The northern portions site is located in the City of Fort Collins 100 year Floodplain. In the 100-year event, water overtops the Scenic Views Pond immediately west of the site and passes through the Polestar site.

Proposed Drainage Concept - The objective of this project is to detain the site's runoff and improve downstream conditions within the constraints of the allocated pond footprint and existing gravity outfall. The proposed improvements to the Polestar Village site will result in the proposed development being treated and detained in an interim full spectrum detention pond, which will gravity, drain to the existing outfall swale near the northeast corner of the site The proposed improvements will have no additional adverse impacts on the flow rate, character, or quality of runoff leaving the site. Onsite detention will be provided for the proposed development, with the detention pond discharging at the eastern property line to maintain historic flow paths. The proposed improvements will have no adverse impacts on adjacent properties and the floodplain once reshaped for the subject development will be in continuity with the current 100 Year Floodplain condition. Polestar Village is currently processing a Conditional Letter of Map Revision (CLOMR) with the City's Floodplain Management Department and we expect City approval prior to the approval of the Final Development Plan.

The 2020 Canal Importation Basin – Selected Plan Update Plan Prepared by Jacobs Engineering specifies that the Polestar Village Property will someday include a Regional Detention Facility in the same location as the proposed Polestar Detention Pond. Unfortunately, the proposed Polestar Detention Pond regional detention facility will not be deepened to allow for additional volume until the planned outfall pipe in Orchard Place is constructed at some point in the future.

Low Impact Development Treatment - A minimum of 75 percent of new impervious surface area will be treated by a Low-Impact Development (LID) best management practice (BMP) in accordance with City criteria. Low-impact development best management practices are proposed in order to improve the quality of runoff and aid in reducing peak flows. Rain gardens are proposed near the central and western portions of the site to treat and provide LID water quality for the majority of the development. The majority of the sites water quality will be treated within the onsite rain gardens. The LID rain gardens will need to be cleaned and maintained to allow for long-term protection of the receiving waters. The proposed LID's will have a positive effect in slowing down stormwater runoff through the site and will increase ground water infiltration and rainfall interception. The improvements will decrease the runoff coefficient from the site and are expected to have no adverse impact on the timing, quantity, or quality of stormwater runoff.

#### **Architectural Design:**

**Building and Project Compatibility** - Section 3.5.1 of the City's Land Use Code requires that the physical and operational characteristics of the proposed buildings and their uses be compatible with the context of the surrounding area. The proposed development is located within a residential community developed in the mid-twentieth century, consisting of modest single-family residences of one and two stories. While the Polestar Village includes small residential units, it also includes multi-story apartments, townhouses and community buildings at a scale larger than typical residential homes. The proposed building types are permitted by zoning

regulations and we believe the development can be determined to be compatible based upon the architectural character and quality of the proposed buildings and the careful siting of the larger scale buildings, set at a distance from the adjacent neighborhoods. In addition, the scale of building elements, forms and materials are compatible with the existing residential structures in close proximity to Polestar Village.

**Architectural Character** - The architecture of Polestar Village will be compatible with and enhance the existing standards of quality of the current neighborhoods. The proposed residential structures will employ durable materials and design elements to reflect a high quality of construction and an uplifting environment in order to the raise the standard for the entire area. Community buildings will be of similar materials and elements to help create a community of integrated design and high ideals.

**Building Size, Height, Bulk, Mass and Scale** - The proposed residential building size, height, bulk, mass, and scale are intended to be compatible with the existing neighborhood's character. Polestar Village will include smaller single-family residences as well as apartment buildings and townhomes up to three stories, but all building types will be composed of smaller human scale elements to help reduce the scale and mass of the structures. The use of elements such as hip roofs, balconies, porches and covered entries reduce the impact of the larger buildings and creates compatible character and scale. All larger scale buildings are intentionally located in the interior the development, while placing smaller scale residences adjacent to the existing neighborhoods, thereby easing the transition of scale and mass. Landscape buffer zones on all borders also help to decrease the impact of the Polestar Village Buildings on the surrounding area.

**Building Materials** - Polestar Village will established a distinct architectural theme, building style, use of materials and colors, to fit within the existing neighborhood. Similar building forms, architectural detailing, color and texture, shall be utilized throughout the entire Polestar Village development in order to enhance the overall architectural experience of the neighborhood and to insure continuity throughout the entire development.

**Building Height** - The height of all proposed residential structures shall be consistent with what is permitted by City's Land Use Code in the LMN and RL Zoning District. Maximum height of all eaves is to be below 30' to ensure that the Fire Department will not require ladder truck access and staging areas to service the buildings in the event of an emergency. Access to sunlight and desirable views have been considered in the overall site design and the proposed design creates minimal to no undesirable affects due to building heights or placement of the buildings within the proposed development.

# POLESTAR VILLAGE



POLESTAR GARDENS, INC ATTN: MICHAEL GORNIK PO BOX 271582 FORT COLLINS, CO 80521 P-808.443.4956

#### PLANNER/LANDSCAPE ARCHITECT

JR ENGINEERING, LLC ATNI: KEN MERRIIT, APA RLA 2400 SOUTH COLLEGE AVE, SUITE 3D FORT COLLINS, CO 80525 P-4TIO 305 6/154 KMERRITHFISURENGINEERING.COM

#### ENGINEER/SURVEYOR

JR ENGINEERING, LLC ATTN: JOEY FRANK, PE 2900 SOUTH COLLEGE AVE, SUITE 3D FORT COLLING, CO 80525 P~303.267.6232 JFRANKøJRENGINEERING.CON

#### TRAFFIC ENGINEER

JR ENGINEERING, LLC ATTN, ELI FARNEY, PLS 2900 SOUTH COLLEGE AVE, SUITE 3D FORT COLLING, CO. 60525 EFARNEY & JRENGINEERING.COM

#### ARCHITECT

J.T., HEATER ARCHITECTS ATTN: J.T. HEATER 14618 TYLER FOOTE ROAD NEVADA CITY, CA 95958 P-530-559,6949 JT@JTHEATER.COM

# PROJECT DEVELOPMENT PLAN POLESTAR VILLAGE

LOCATED IN THE NORTHWEST QUARTER OF SECTION 16, TOWNSHIP 7 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT COLLINS, COUNTY OF LARIMER, STATE OF COLORADO

#### ENVIRONMENTAL CONSULTANT

ALOTERRA RESTORATION SERVICES ATTN: JOHN WHITEMAN PO BOX 212 FORT COLLINS, CO 80522 P~470.420.7346 JAHITEMAN@ALOTERRASERVICES.COM

#### LAND USE DATA

EXISTING ZONING DISTRICTS  EXISTING LAND USE PROPOSED LAND USE PROXINITY TO EXISTING ROGERS PARK	LMN-LOW DENSITY MIXED USE NEIGHBORN-OOD = 18:9 : AC RL - RESIDENTIAL LOW DENSITY = 16:5 : AC VACANT RESIDENTIAL, MIXED USE RETAIL/COMMERCIAL 4 AGRICULTURE 16:00 LF NORTHEAST (SEE VICINITY MAP ON THIS SHEET)				
TOTAL SITE AREA	2Ø51: AC	893.4l6 : SF	100%		
<ul> <li>PUBLIC ROW (ORCHARD PLACE &amp; W. PLUM ST)</li> </ul>	2.50± AC	108,900± SF	12% OF TOTAL SITE AREA		
PRIVATE ALLEY & PARKING AREA	1.87 ± AC	81.767± SF	9% OF TOTAL SITE AREA		
<ul> <li>RESIDENTIAL/ NON-RESIDENTIAL LOT AREA</li> </ul>	6.14± AC	261,410± SF	30% OF TOTAL SITE AREA		
OPEN SPACE AREA	10.0± AC	435,600± SF	49% OF TOTAL SITE AREA		
TOTAL RESIDENTIAL UNITS	144 UNITS				
TOTAL RESIDENTIAL SF	189,794± SF (12	5,160± SF GROUND	FLOOR AREA, INCLUDES GARAGES)		
GROSS RESIDENTIAL DENSITY	7,Ø7 GROSS (	DUS/AC (BASED C	N 2051 TOTAL SITE AREA)		
NET RESIDENTIAL DENSITY (EXCLUDES ROW)	8.05 NET DU'	B/AC (BASED ON I	BØINET AREA)		

T	TAL RETAIL/COMMERCIAL 4 COMMUNITY BLDG'S SF	27,Ø5Ø SF (19	3,800 SF GROU	ND FLOOR AREA)		
Ξ						
	ROPOSED RESIDENTIAL HOUSING TYPES	* OF UNITS	% OF TOTAL	SF/EACH UNIT	TOTAL SF/HOUSING TYPE	TOTAL GFA(W/ GA
•	SINGLE FAMILY DETACHED DWELLING	19 UNITS	13%	3,150± SF	60,800± SF	42,000± SF (
	TWO FAMILY ATTACHED DWELLING (DUPLEX UNITS)	28 UNITS	19%	1202± , 1480± 5F	27500± SF	305001± SF
	CINCLE EARLY ATTACLED DUELLING (TOURISMES)	21 151170	220	TIGH IGREE OLDER	CE 46 400+ CE	24800+05

ı	PROPOSED RESIDENTIAL HOUSING TYPES	* OF UNITS	% OF TOTAL	SF/EACH UNIT TO	OTAL SP/HOUSING TYPE	TOTAL GFA(W/ GARAGE)
-	SINGLE FAMILY DETACHED DWELLING	I9 UNITS	13%	3,150± SF	60,800± SF	42,000± SF 6FA
•	TWO FAMILY ATTACHED DWELLING (DUPLEX UNITS)	28 UNITS	19%	1202± , 1480± SF	27,500± SF	30,5001± SF 6FA
	SINGLE FAMILY ATTACHED DWELLING (TOWNHOMES)	3I UNITS	22%	716± , 1635± , 2198± SI	F 46,400± SF	24,800± SF 6FA
٠	TWO FAMILY DWELLING (OVER/UNDER TOWNHOMES)	20 UNITS	14%	415± , 1085± SF	15,000± SF	16,000± SF GFA
	MULTI-FAMILY DWELLING (8 OR LESS)	II UNITS	296	1202± , 2016± SF	18,150± SF	4,950± SF GFA
٠	MULTI-FAMILY DWELLING (15 BEDS OR LESS)	32 UNITS	22%	576± , 783± SF	19,680± SF	6,910± SF GFA
	MIXED USE DWELLING (UNITS ABOVE RETAIL/COMM)	3 UNITS	2%	540± SF	1,605± SF	N/A (RETAIL/COMM.)
ľ	POTAL	144 UNITS	100%		189,135± SF	125,16ر SF GFA

#### PROPOSED MIXED USE, RETAIL/COMM. 4 COMMUNITY BUILDING USES 21,050 SF TOTAL BUILDING FLOOR PLAN

<ul> <li>MIXED USE: IST FL-RETAIL/COMM. W/ 2ND FL-LIVING UNITS</li> </ul>	I,700± SF (2 STORY - I700± SF SFA W/ (3)-2ND STORY LIVING UNIT
<ul> <li>COMMUNITY FACILITY BUILDING W 6 B&amp;B RENTAL UNITS</li> </ul>	10,850± SF (2 STORY - 5900± SF SFA)

PLACE OF WORSHIP GROUP HOME/WELLNESS CENTER W/ & RESIDENTS AGRICULTURE BUILDING

R	SIDENTIAL PARKING REQUIREMENTS:			NUMBER OF	OFF-STREET	OFF-STREET
	UNIT TYPE	REQUIRED PK	NUMBER	MULTI-FAMILY	PARKING SP.	PARKING SP.
		PER UNIT	OF UNITS	BEDROOMS	REQUIRED	PROVIDED
•	SINGLE FAMILY DETACHED DWELLING	2 SP/UNIT	18	N/A	36 PK SP	38 GARAGE PK SP
•	SINGLE FAMILY DETACHED DWELLING W/O GARAGES	2 SP/UNIT	1	N/A	2 PK SP	2 SURFACE PK SP (OFF-STREET)
•	TWO FAMILY ATTACHED DWELLING W/ GARAGES	2 SP/UNIT	18	N/A	36 PK SP	36 GARAGE PK SP
•	TWO FAMILY ATTACHED DWELLING WOUT GARAGES	2 SP/UNIT	10	N/A	20 PK SP	20 SURFACE PK SP (OFF-STREET)
•	SINGLE FAMILY ATTACHED DWELLING W GARAGES	2 SP/UNIT	10	N/A	20 PK SP	20 GARAGE PK SP
•	SINGLE FAMILY ATTACHED DWELLING WO GARAGES	2 SP/UNIT	21	N/A	42 PK SP	25 SURFACE PK SP (OFF-STREET)
•	THO FAMILY DWELLINGS W/ GARAGES	2 SP/UNIT	10	N/A	20 PK 5P	20 GARAGE PK SP
•	THO FAMILY DWELLINGS WOUT GARAGES(I BR UNITS)	I.5 SP/UNIT	10	N/A	I5 PK SP	15 SURFACE PK SP (OFF-STREET)
	MULTI-FAMILY DWELLINGS (8 OR LESS UNITS)		II	2I BR	19 PK SP	18 SURFACE PK SP (OFF-STREET)
	-I BEDROOM= 4 UNITS X I.5 SPACES/UNIT= 6 PF	< SPACES				
	-2 BEDROOM= 4 UNITS X 1.75 SPACES/UNIT= 7 PK	SPACES				
	-3 BEDROOM= 3 UNITS X 2.0 SPACES/UNIT= 6 PF	< SPACES				
•	MULTI-FAMILY DWELLING (15 BEDS OR LESS)		32	52 BR	63 PK SP	32 SURFACE PK SP
	=I PEDPOOM= 28 INITS X IS SPACES/INIT= 42 F	OK SPACES				

ı	-2 BEDROOM= 12 UNITS X 1.75 SPACES/UNIT=	21 PK SPACES					
Ι.	<ul> <li>MIXED USE DWELLING</li> </ul>		3	3 BR	4.5 PK SP	3 SURFACE PK SP (OFF-STREET)	4.
ı	-I BEDROOM= 3 UNITS X 1.5 SPACES=	I.5 SP/UNIT					
	TOTAL OFF-STREET PARKING		144 UNITS	T6 BR	218 PK SP REQ	229 OFF-STREET SP PROVIDED	
	TOTAL ON-STREET PARKING					63 SP PROVIDED	
ı	TOTAL PARKING PROVIDED (ON AND OFF STREET)					292 SP PROVIDED	
Ι,							5.
H	RESIDENTIAL BICYCLE PARKING REQUIRED			BIKE PARKING RE	QUIRED*	BIKE PARKING PROVIDED	
Ι.	<ul> <li>RESIDENTIAL ENGLOSED SPACES (HOOKS PROVI</li> </ul>	DED IN GARAGE/DWELLIN	N95)	46 ENGLOSED SPA	ACES	67 ENGLØSED BIKE SPACES	6.
Ι.	<ul> <li>FIXED SURFACE MOUNTED EXTERIOR SPACES</li> </ul>			30 FIXED EXTERIO		120 FIXED EXTERIOR BIKE SPACES	
ı						(15 FIXED BIKE RACKS W/ & SP. EACH)	7

\*BIKE PARKING SPACES REQUIRED ARE CALCULATED AS FOLLOWS:
MULTI-FAMILY DWELLING - 76 BEDROOMS X I BIKE SPACE PER BORM = 76 BIKE PARKING REQUIRED (EXCLUDES SINGLE FAMILY, TWO FAMILY & SINGLE

OTAL BIKE PARKING		16 BIKE SPACES REQUIRED	181 BIKE SPACES PROVIDED
ON-REGIDENTIAL RETAIL/COMMERCIAL 4 AGRICULT BUILDING TYPE	URE PARKING REQUIREMENTS: BUILDING SF	OFF-STREET PARKING SPACE REQUIRED	OFF-STREET PARKING SPACE PROVIDED
MIXED USE	1,700± SF	4 PK SP (2 SP/1000 SF)	4 PK SP
COMMUNITY BUILDING	10,850± SF	6 PK SP	6 PK SP
-COMMUNITY BUILDING	8,000± SF (IST & 2ND FLOORS)	(NONE LISTED IN LUC 3.2.2K)	
-B&B RENTALS	6 UNITS (2,850± SF)	6 PK SP (ISP/B&B UNIT)	
GROUP HOME/WELLNESS CENTER (& RESIDENTS)	8200± SF (IST & 2ND FLOORS)	IT PK SP	8 PK SP
-MEDICAL/SPIRITUAL WELLNESS	5,900± SF	12 PK SP (2 SP/1000 SF)	
-LONG TERM CARE ROOM	8 BEDS (2,300± SF)	3 PK SP (.33 SP/BED)	
-EMPLOYEES PER SHIFT	2 EMPLOYEES/SHIFT	2 PK SP (I SP/EMPLOYEE)	
PLACE OF ASSEMBLY	3.400± SF	8 PK SP	7 PK SP
-WORSHIP/MEDITATION/YOGA SPACE	2,000± SF	6 PK SP (3 SP/1000 SF)	
-SUPPORT USE AREAS	1.400± SF	2 PK SP (I SP/1000 SF)	
AGRICULTURE BUILDING	2,800± SF	3 PK SP (I SP/1000 SF)	3 PK SP
OTALS	27,050± 8F	38 PK 6P REQUIRED	28 PK 8P PROVIDED
IXED USE RETAIL/COMMERCIAL & AGRICULTURAL E	SICYCLE PARKING REQUIREMENTS	BIKE PARKING REQUIRED*	BIKE PARKING PROVIDED
ENCLOSED SPACES (HOOKS PROVIDED INSIDE E	ACH BUILDING)	2.4 ENCLOSED SPACES	II ENGLOSED BIKE SPACES
FIXED SURFACE MOUNTED EXTERIOR SPACES		17.6 FIXED EXTERIOR SPACES	40 FIXED EXTERIOR BIKE SPACE
OTAL BIKE PARKING		20 BIKE SPACES REQUIRED	51 BIKE SPACES PROVIDED

(20% ENGLOSED, 80% FIXED

FIRE THE SPACES BEQUIRED ARE CALCULATED AS POLLOHS, BETAIL - 194/4000 SF, NM A SP - COMMINT FACILITY - 1 SP/2,000 SF, NM, 4 SP - BROUP HOMPALLINESS CENTRE - 1 SP/4,000 SF, NM, 4 SP - PLACE OF WORSHIP - 1 SP/3,000 SF, NM, 4 SP - PLACE OF WORSHIP - 1 SP/3,000 SF, NM, 4 SP - AGRICLLTURE BUILDING - 1 SP/1,000 SF, NM, 4 SP

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- TERMINE TO FINAL DISTANCE OF THE PROPERTY OF THE PROPERTY OF THE SOUTH PROPERTY OF THE PROPERT
- MINOR EQUIPMENT SUCH AS COMDUT, METERS AND PLIMBNIS VENTS SHALL BE SCREENED OR PAINTED TO MATCH SURSCIDENTS
  BILLIPIES SUPPLACES. THE THIS DEVELOPMENT PLAN MUST BE COMPLETED IN ONE PHASE WILESS A PHASING PLAN IS SHOWN
  ANT THESE PLANS.

  ANT THESE PLANS.

  ALL EXTERIOR LIGHTING PROVIDED SHALL COMPLY WITH THE FOOT-CANDLE REQUIREMENTS IN SECTION 3.2.4 OF THE LAND USE
  CODE AND SHALL USE A CONCEALED, RILLY SHIELDED LIGHT SOURCE WITH SHARP OUT-OFF CAPABILITY SO AS TO MINIMIZE
  UP-LIGHT, SPILL LIGHT, GLARE AND UNRECESSARY DIPPRISION.

  T. SIGNAGE AND ADDRESSING ASE NOT PERSHITTED WITH THIS PLANNING DOCUMENT AND MUST BE APPROVED BY SEPARATE CITY
  PERSHIT PRICE TO CONSTRUCTION. SIGNS MUST COMPLY WITH CITY SIGN CODE VILLESS A SPECIFIC VARIANCE IS GRANTED BY
- THE CITY.

  FIRE HYDRANTS MUST MEET OR EXCEED POUDRE FIRE AUTHORITY STANDARDS. ALL BUILDINGS MUST PROVIDE AN APPROVED

- PREVIOUS TO CONSTRUCTION. SINCE PREVIOUS PRIES AUTHORITY STANDARDS, ALL BUILDINGS MUST PROVIDE PREVIOUS PROVIDED AT ALL STREET AND DRIVE INTEREST MAND STREET MAD BY TROUBLE BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY TROUBLE AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AT ALL STREET AND DRIVE INTEREST MAD BY THE PROVIDED AND AND THAT ALL STREET AND THE PROVIDED AND AND THAT ALL STREET AND THE PROVIDED AND THAT ALL STREET AND THAT AND THE ALL STREET AND THAT ALL STREET AND THE ALL STREET AND THAT ALL STREET AND THE ALL STREET AND THAT ALL STREET AND THAT ALL STREET AND THE ALL STR

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  OVERALL LANDSCAPE PLAN
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  LANDSCAPE NOTES & PLANT LIST
  LANDSCAPE DETAILS
- SITE DETAILS & FIRNISHINGS
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  MITIGATION HYDROSERES - PLAN VIEW
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  EROSION CONTROL AND SOIL AMENDMENTS
  SMOOTH BROME TREATMENT AREAS

- SEED MIXES
- PLANT PALETTES
- ARCHITECTURAL ELEVATIONS
  ENVIRONMENTAL RESTORATION & MITIGATION PLAN

# OWNERS CERTIFICATION

THE UNDERSIGNED DOES/DO HEREBY CERTIFY THAT I/ME ARE LAMFUL ONNERS OF REAL PROPERTY DESCRIBED ON THIS SITE PLAN AND DO HEREBY CERTIFY THAT I/ME ACCEPT THE CONDITIONS AND RESTRICTIONS SET FORTH ON SAID SITE

OWNER (SIGNED)	DATE
(PRINT NAME)	
THE FOREGOING INSTRUMENT WAS ACKNOWE	WLEDGED BEFORE
THIS DAY OF	, 20

MY COMMISSION EXPIRES.

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

# PLANNING CERTIFICATION

APPROVED BY THE DIRECTOR COMMUNITY DEVELOPMENT AND NEIGHBORHOOD SERVICES OF THE CITY OF FORT COLLINS. COLORADO

ON THIS DAY OF AD 20

COMMUNITY DEVELOPMENT AND NEIGHBORHOOD SERVICES

City of Fort Collins, Colorado PDP REVIEW Know what's below.



UNTIL SUCH TIME AS HHESE DRAWINGS ARE APPROPRIATE REVIEWING AGENCIES, IN ENGINEERING APPROVES THEIR USE DESIGNATED BY WRITTEN AUTHORIZATION.

 $\frac{S}{N}$ POLESTAR GARDENS, IN PO BOX 271582 FORT COLLINS, CO 805 (808) 443-9956

ENGINEERING

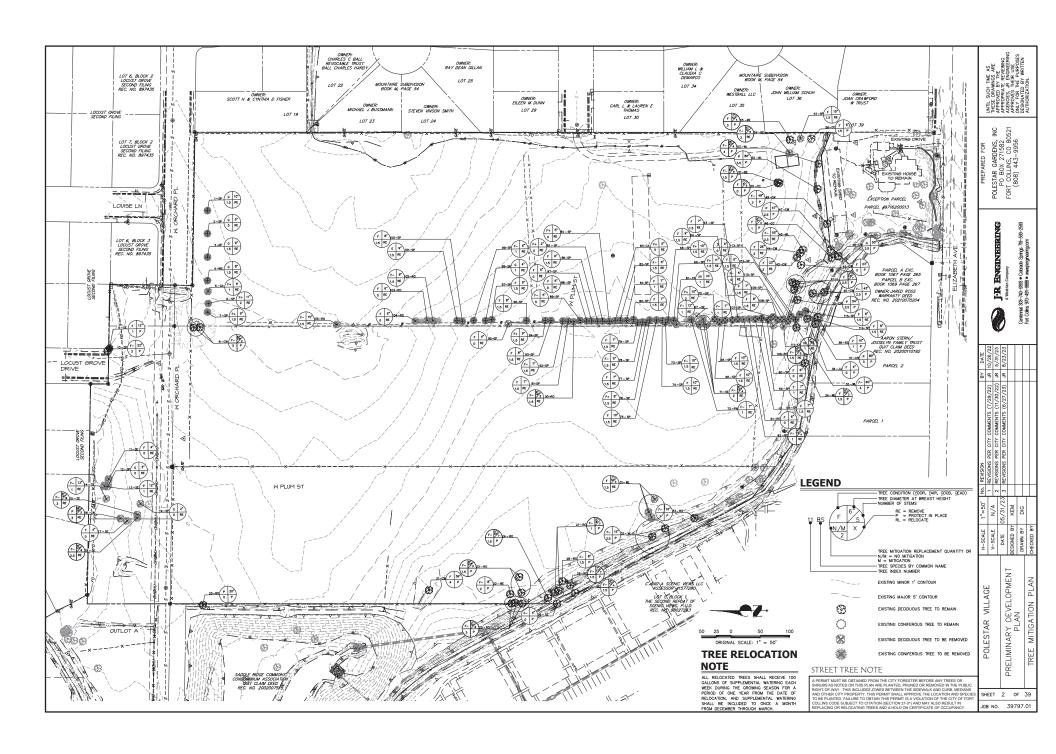
970-740-9993 • 970-491-9888 • Centernial Fort Colins

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DEVELOPMENT LAN VILLAGE POLESTAR PRELIMINARY (

SHEET 1

OF 39 JOB NO.



#### TREE MITIGATION MATRIX

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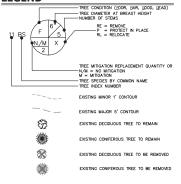
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П		2473	==	=	3-2	- :		-
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П		3-1.11			344 :	-	-210 3	1.3
П		21/3	==	13-1	28-2		:	-
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П		F0		:	9-2 :	- 1	-210 3	1.3
1		TTLUTE	200K	ALC: 175.4	_RETER	338		34.5

#### **LEGEND**



#### TREE PROTECTION NOTES

PER CITY LAND USE CODE 3.2.1 G THE FOLLOWING TREE PROTECTION SPECIFICATIONS SHALL APPLY

- WITHIN THE PRIP LINE OF ANY PROTECTED EXISTING TREE, THERE SHALL BE NO CUT OR FILL OVER A FOUR-INCH DEPTH UNLESS A QUALIFIED ARRORIST OR FORESTER HAS EVALUATED AND APPROVED THE DISTURBANCE.
- ALL PROTECTED EXISTING TREES SHALL BE PRUNED TO THE CITY OF FORT COLLINS FORESTRY DIVISION STANDARDS.
- 3. DURING THE CONSTRUCTION STAGE OF DEVLOPMENT, THE APPLICANT SHALL PREVENT THE CLEANING OF EQUIPMENT OR MATERIAL OR THE STORAGE AND DESPOSAL OF WASTE MATERIAL SUCH AS PAINTS, OILS, SQLVENTY, SASPIALT, CONCRETE, MOTORS OIL OX, ANY OTHER MATERIAL HARAMFUL TO THE LIFE OF A TREE WITHIN THE DIFFLE FOR OF ANY PROTECTED TREE OY GROUP OF TREES.
- NO DAMAGING ATTACHMENT, WIRES, SIGNS OR PERMITS MAY BE FASTENED TO ANY PROTECTED TREE.
- ALDNO. HE COTARE PERBORISE OF SYLVET AREAS RENO. CLEARAL

  THE INSTALLATION OF UTILITIES RESIGNATION LINES OR AN IVADESGROUND
  INTORE RECLURING DOCAMING RESERVE HAVE INC.

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  INTO RESERVE HAVE AN INSTALLATION OF THE PROPERTY OF THE PROPERTY

TREE DIAMETER AT BREAST HEIGHT (IN)	AUGER DISTANCE FROM FACE OF TREE (FT)
0-2	1
3-4	2
5-9	5
10-14	10
15-19	12
OVER 19	15

# TREE RELOCATION

#### NOTE

ALL RELOCATED TREES SHALL RECEIVE 100
GALLONS OF SUPPLEMENTAL WATERING EACH
WEEK DURING THE GROWING SEASON FOR A
PERIOD OF ONE YEAR FROM THE DATE OF
RELOCATION, AND SUPPLEMENTAL WATERING
SHALL BE INCLUDED TO ONCE A MONTH
FROM DECEMBER THROUGH MARCH.

#### STREET TREE NOTE

NAME THAT IT COMMAND THAT HE OF FORESTER BEFORE ANY THESE OF RESIDENCE AND THE OFFICE ANY THESE OF RESIDENCE AND THE OFFICE AN

UNTIL SUCH TIME AS HERSE DRAWMIGS ARE APROPED BY THE ARROPHEN TENEMING AGBNORES, AR ENOMERING ARROPES ARE BIOMERING FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

POLESTAR GARDENS, INC PO BOX 271582 FORT COLLINS, CO 80521 (808) 443-9956

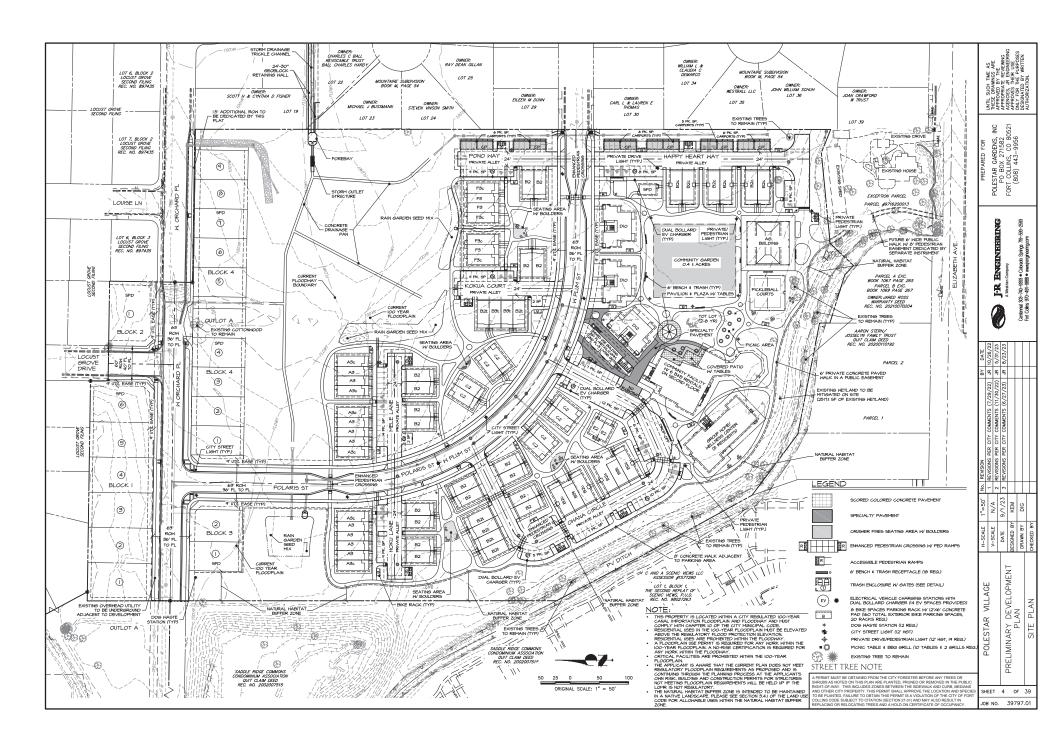
J-R ENGINEERING 309-740-9993 • Colorado 970-491-9888 • wwwjren

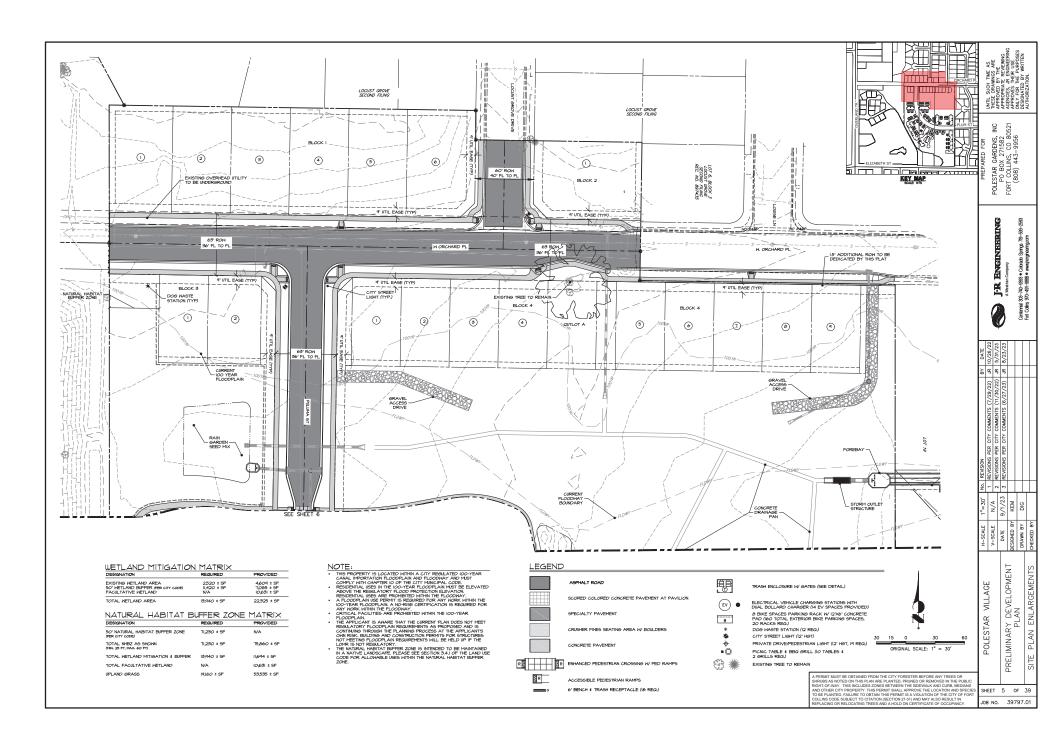


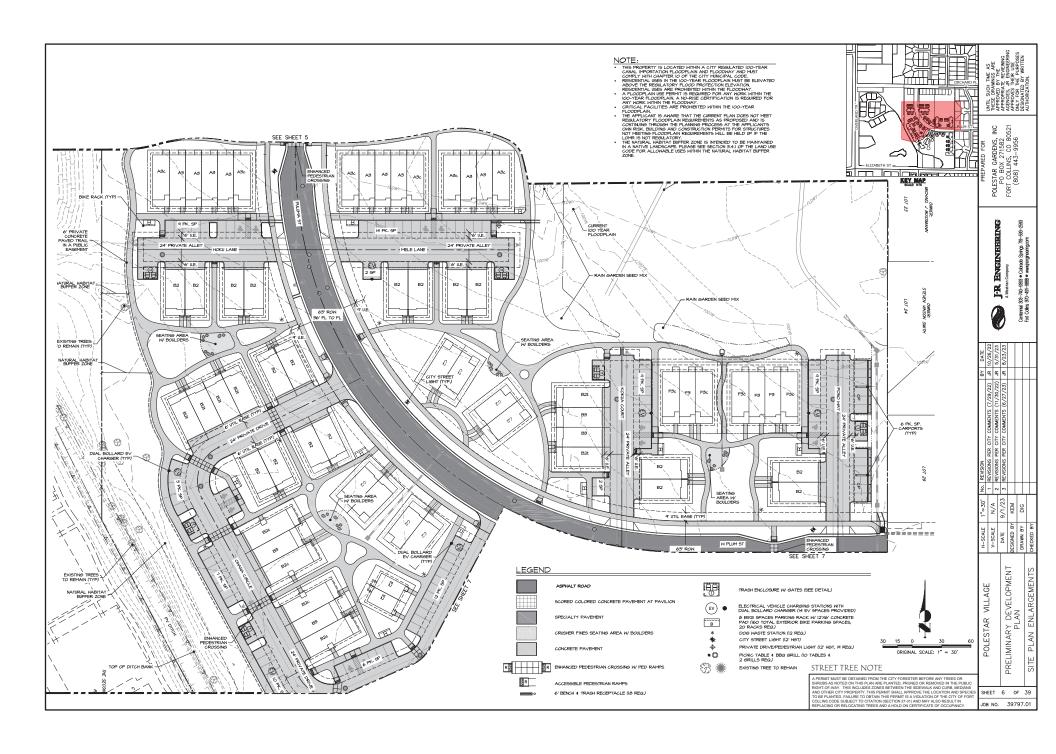
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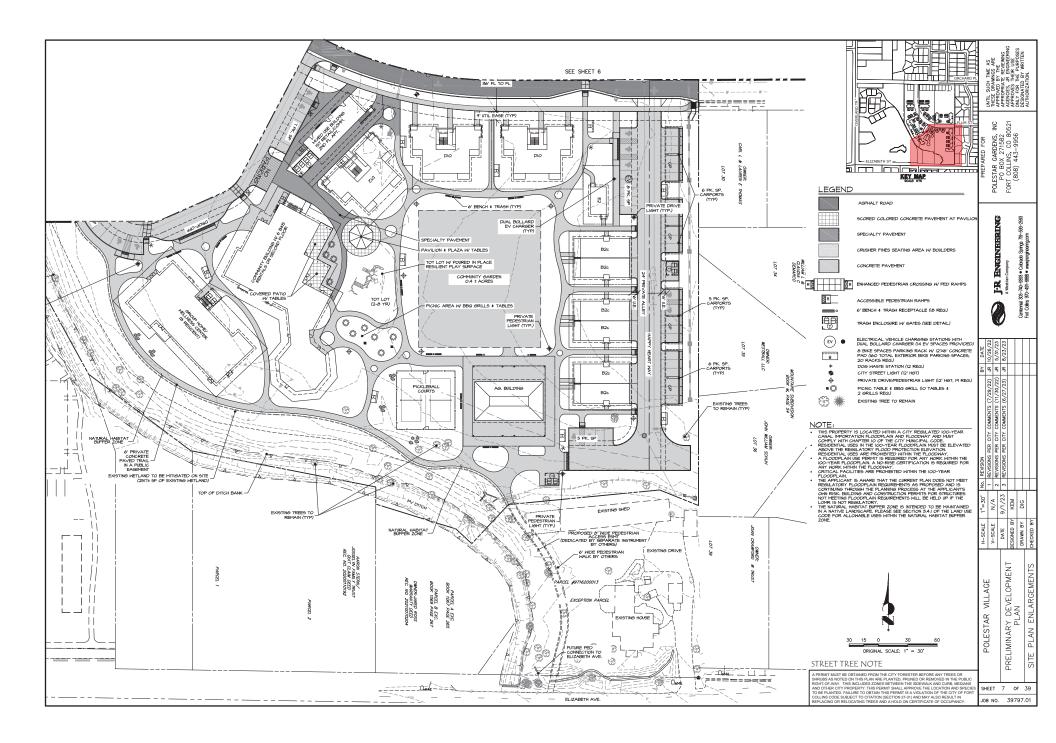
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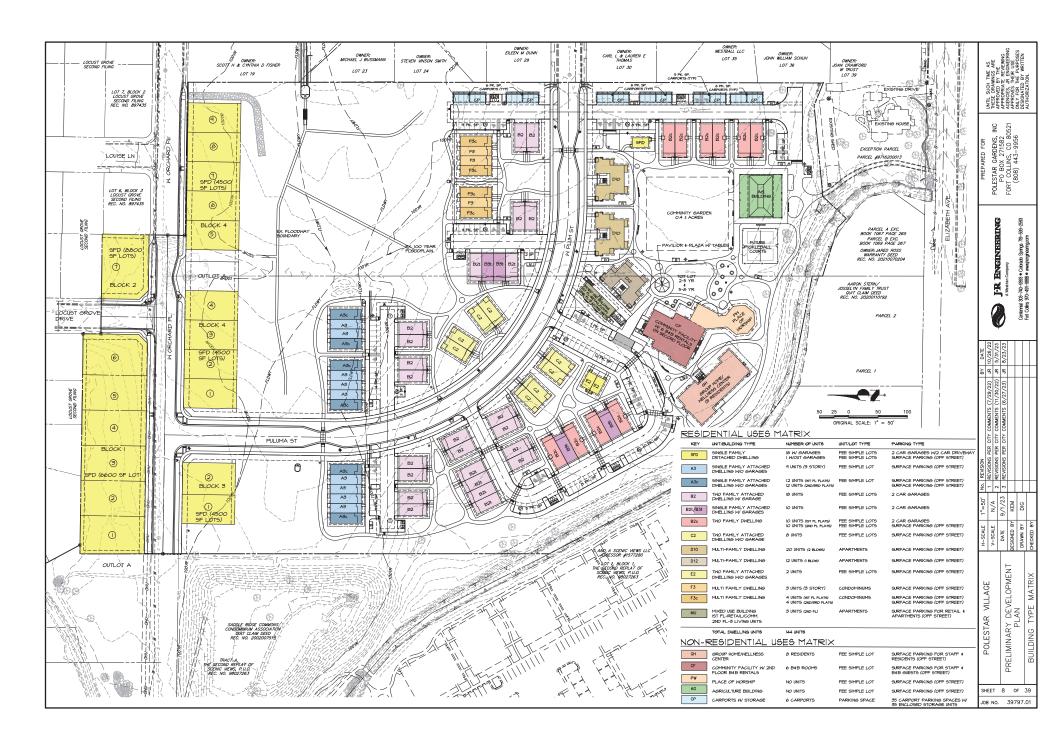
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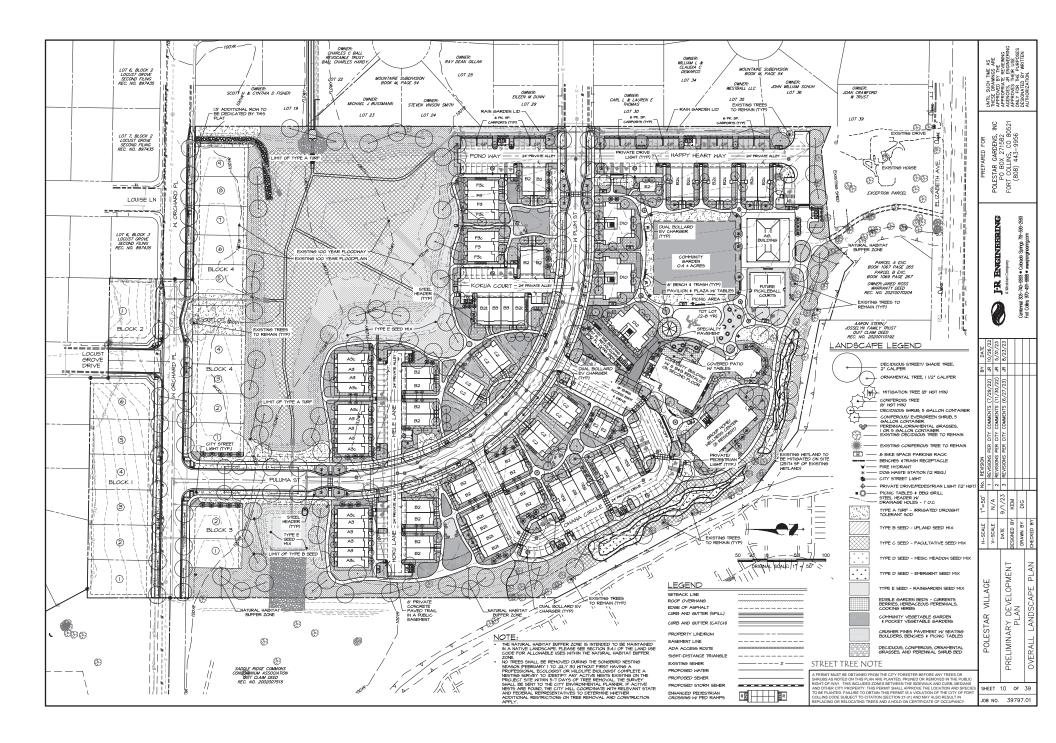


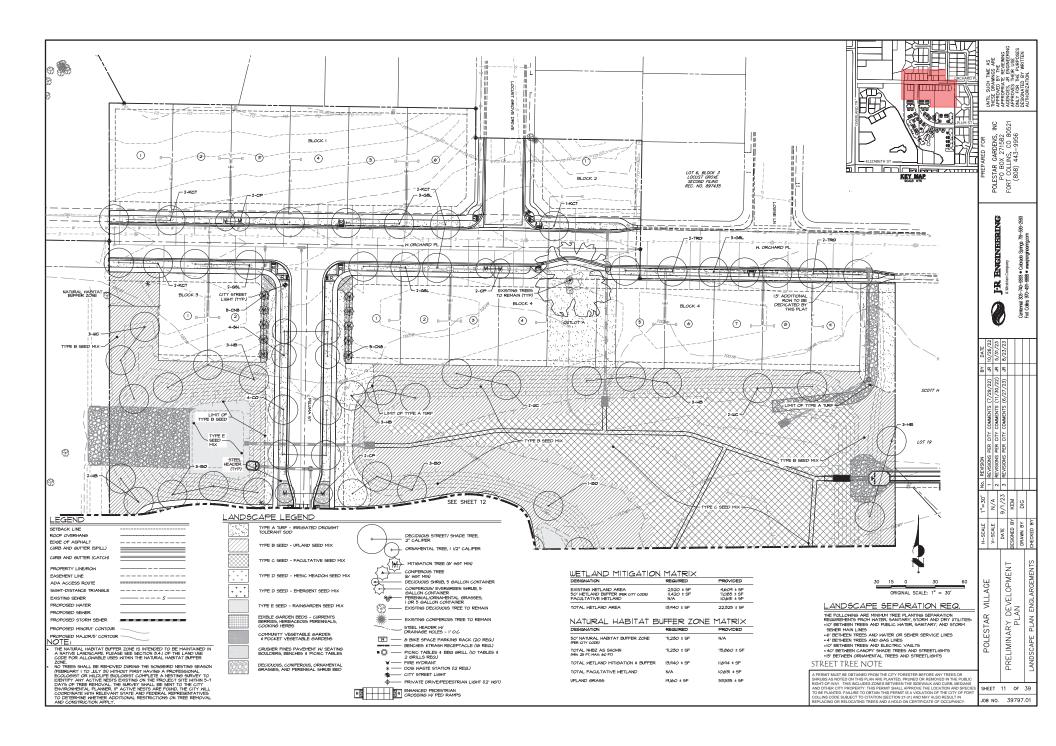


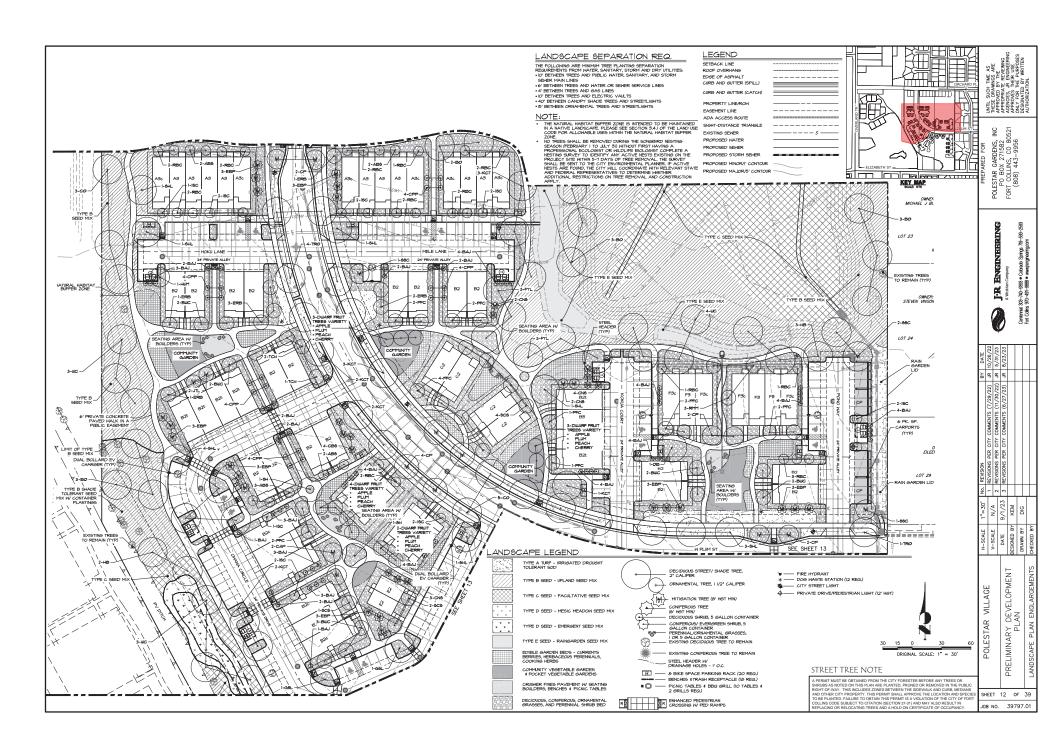


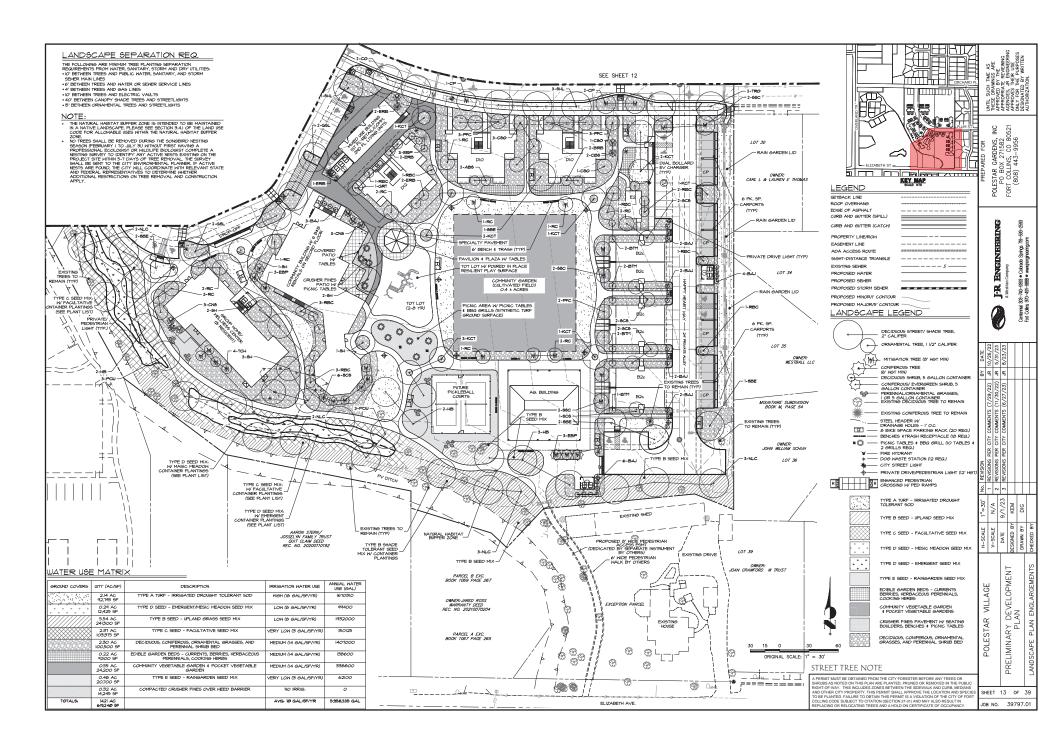












### CITY OF FORT COLLING LANDSCAPE NOTES

- PLANT QUALITY, ALL PLANT MATERIAL SHALL BE A-GRADE OR NO.1 GRADE FREE OF ANY DEFECTS, OF NORMAL HEALTH, HEIGHT, LEAF DENTY AND SPREAD APPROPRIATE TO THE SPECIES AS DEFINED BY THE AFERCAN ASSOCIATION OF NURSERVITIEN (AUN) CAMPON MANY AND SPECIAL PROPERTY OF DECINAL PROPERTY.
- EXMANDS ALL AUDICAME AREAS WITHIN THE STEE INCLUDING TURN, SHEER BEDD AND TREE AREAS WILL BE REGISTED UTIL
  AN AUTOMATIC REGISTATION STEELING THE REGISTATION FALL WHIST BE REVISITED AND APPROXIDE BY THE CITY FOR OFFICE COLLING
  MUTER UTILITIES DEPARTMENT PRIOR TO THE SOULANCE OF A BUILDING PERFOT. ALL THEY AREAS SHALL BE REGISTED WITH AN
  AUTOMATIC POPUL PRESIDATION STEELY ALL BEAUTH BEDS AND TREES AND AUDICAME NATURE SEED AREAS SHALL BE REGISTED.
  THE AUTOMATIC POPUL PRESIDATION STEELY ALL BEAUTH AND AUTOMATIC AND AUTOMATICAL BEING AND AUTOMATICAL BEING AUTOMATICAL BY AND AUTOMATICAL BEING AUTOMATICAL BY AND AUTOMATICAL BY AUTOMATICAL BY AND AUTOMATICAL BY AUTOMAT
- 3. TOPSOIL: TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.
- SOIL APERCENTS SOIL APPRIMENTS SHALL BE FROMED AND DOCUMENTED IN ACCORDANCE BITH CITY CODE SECTION PLBS.

  THE SOIL RIGH. LAMPLICATE, RESEARCH, NICLENSE REMAINS AD PERSONAND, SHALL BET MERCHESTLY LOMBROWNED TO A DIETH OF

  NOT LESS THAN EGATION JOCKES AND SOIL APPROPRIET SHALL BET HOROUGHAT INCORPORATED INTO THE SOIL, OF ALL

  LAMBOLARY REASON TO A DEPTH OF AT LEAST SHOW, INCRES BY TILLIAN, DISCHAR OF OTHERS BUILDED, THAT OF AT

  LEAST THREE (3) CUBIC YARDS OF SOIL APPROPRIET PER ONE THORSAND (JORDON SOLMER RET OF LAMPSCAFE AREA, PRICOR TO

  THE SIGNANCE OF ANY CERTIFICATION COCCUPANCY, AURTINA CERTIFICATION MIST BE BUILDED HITTED TO THE CITY THAT ALL

  RECLINED MEMORY AND CERTIFICATION LAWS BEEN THOROUGHLY LOOSENED AND THE SOIL APENCED. CONSISTENT WITH THE

  RECLINED THE SET FORTH IN SECTION 3-10.
- NOTALLATION AND GUISMANTEE: ALL LANGECAPING SHALL BE NOTALLED ACCORDING TO SOUND HORTICULTURAL PRACTICES IN A HANDER DESIGNED TO ENCORMAGE QUICK STABLISHMENT AND HEALTHY GROUTH, ALL LANDSCAPING FOR EACH PHASE MIST BE EITHER NOTALLED OR THE INSTALLATION HIST BE SOURCED LITH AN REVOLCABLE LETTER OF CREDIT, FEROVANCE GOOD, OR EGODOU JACCOUNT FOR 1956 OF THE VALUATION OF THE MATERIALS AND LABOR PRIOR TO ISSUANCE OF A CERTIFICATE OF COCEPANCY FOR MY BULLDIAN IS NOT PHASE.
- MANITAMACE: TREES AND VEGETATION INRIGATION SYSTEMS, FENCES, MALLS AND OTHER LANDSCAPE ELEPTONS WITH THESE FINAL
  THAN SHALL BE CONSIDERED AS ELEPTONS OF THE PROJECT IN THE SAFE YAMBER AS PARKING, BUILDING PATERIALS AND
  THE SAFE YAMBER AS PARKING, BUILDING PATERIALS AND THE SAFE YAMBER AS PARKING, BUILDING PATERIALS AND
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  THE SAFE YAMBER AS PARKING, BUILDING PATERIALS AS PARKING, BUILDING PATERIALS AND
  THE SAFE YAMBER AS PARKING, BUILDING PATERIALS AND
- REPLACEMENT: ANY LANDSCAPE ELEMENT THAT DIES, OR IS OTHERWISE REMOVED, SHALL BE PROMPTLY REPLACED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS.
- 8. THE FOLLOWING SEPARATIONS SHALL BE PROVIDED BETWEEN TREES/SHRUBS AND UTILITIES

- 40 PET DETLEDI CAMPY TREES AND STREET LIGHTS
  5 PET DETLEDI CAMPY TREES AND STREET LIGHTS
  5 PET DETLEDI CAMPY TREES AND STREET LIGHTS
  6 PET DETLEDI TREES AND PAUL GUATRE SANTARY AND STORY SELER MAN LINES
  6 PET DETLEDI SHEES AND PAUL GUATRE SANTARY AND STORY SELER DETLYCE LINES.
  6 PET DETLEDI SHEES AND GAS LINES AND SANTARY AND STORY SELER LINES.
  6 PET DETLEDIS TREES AND GAS LINES
  6 PET DETLEDIS TREES
  6 PET DETLEDIS TREES
  6 PET DETLEDIS TREES AND GAS LINES
  6 PET DETLED
- ALL STREET TREES SHALL BE PLACED A MINITUM EIGHT (8) FIET AWAY FROM THE EDGES OF DRIVEWAYS AND ALLEYS PER LUC
   TO TO TO Thomises Cockepp Haubton
   Cetaegae Conv.
   Cetaegae Conv.
   Cetaegae Conv.
- 19. PLACEMENT OF ALL LANDSCAPING SMALL BE IN ACCORDANCE WITH THE SIGHT DISTANCE CRITERIA AS SPECIFIED BY THE CITY OF PORT COLLING. NO STRIKELURES OR LANDSCAPE ELEMENTS GREATER THAN 24" SMALL BE ALLOWED WITHIN THE SIGHT DISTANCE TRANSLE OR EASEMENTS WITH THE EXCEPTION OF PROCEDIDUOLS TREES PROCEDED THAT THE LOWEST PRENCH IS AT LEAST OF PROCEDED. ANY TENCHES WITHIN THE SIGHT DISTANCE TRANSLE OR EASEMENT MUST BE NOT MORE THAN 42" IN HEIGHT AND OF AN OPEN DESIGN.
- IL THE FINAL LANDSCAPE PLAN SHALL BE COORDINATED WITH ALL OTHER FINAL PLAN ELEMENTS SO THAT THE PROPOSED GRADNG, 510KM DRANAGE, AND OTHER DEVELOPMENT IMPROVEDED DO NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND 468 TOUI Trees MAINTENANCE CHANDSCAPE ELEMENTS ON THIS PLAN.
- 19. HOMO CHAMES N. RECIES AND PLANT LOCATIONS TAY BY MADE DURING CONTRIGION. -- AS REQUIRED BY SITE CONDITIONS ON PLANT AVAILABILITY. OPERATION CHAMITY, AND DESING ACCORPT THAT BE COMPOSTED WITH THE APPROVINCE PLAN IN THE SUNNI OF COMPLICY SITE OF ANY PROPERTY OF THE PLANT LIST, PRICESS AND QUANTIES LLUSTRATED WALL SE INVALLATION. CHAMESS OF PLANT SPECIES AND LOCATION THIS THAT WHITEN APPROVINCE BY THE CITY PROPERTY OF
- 13. ALL PLANTING BEDS SHALL BE MULCHED TO A MINIMUM DEPTH OF THREE INCHES.

## CITY OF FORT COLLING STREET TREE NOTES

- A RESPIT HAS DE CRETALED FROM THE CITY BECKER, ANY TREES OR SANDES AN ACTED ON HAR FLAN ARE FLANTED FRANCE OR REPORTED IN THE RESLECT SOUTH OF-MAILY. THIS NULLESS ZONES BETWEEN THE STREAM, AND CITIES FROM AND OTHER CITY PROPERTY. THIS PERSY'S SALL APPROVE THE LOCATION AND SPECIES TO BE FLANTED. PALLINE TO CRETAIN THIS PRIENT IS A VICALITION AND HAY ALSO RESLECT IN REPLACED OR RESLECATION TREES AND A HOUD OF CRETIFICATE OF COCUPANCY.
- CONTACT THE CITY TO INSPECT ALL STREET TREE PLANTINGS AT THE COMPLETION OF EACH PHASE OF THE DEVELOPMENT. ALL MAST BE INSTALLED AS SHOWN ON THE LANDSCAPE PLAN. APPROVIAL OF STREET TREE PLANTING IS REQUIRED DEFORE FINAL APPROVIAL OF EACH PHASE.
- STREET LANDSCAPING, INCLUDING STREET TREES, SHALL BE SELECTED IN ACCORDANCE WITH ALL CITY CODES AND POLI-ALL TREE PRENING AND REMOVAL BORKS SHALL BE PERFORMED BY A LICENSED ARBORS WHERE REQUIRED BY COD'S STREET TREES SHALL BE SUPPLIED AND PLATTED BY THE DEVELOPER USING A GUALIFIED LANDSCAPE CONTRACTOR.
- 4. THE DEVELOPER SHALL REPLACE DEAD OR DYING STREET TREES AFTER PLANTING UNTIL FINAL MAINTENANCE INSPECTION AND ACCEPTANCE BY THE CITY.
- 9. SERECT TO APPROVALE BY THE CITY. STREET THEIL LOCATIONS PLAY DE ADJAINED TO ACCOMPOSATE DRIVELLY LOCATIONS. THEIR THE PROVINCE BETWEEN THEIR STREET SHOWS AND STREET LOCATION, STREET THEIRS OF DE CONTRIBUTOR IN THE MODILE OF THE CITY TO THE EXTENT FEASURE. QUARTITIES SHOUN ON PLAN THIST BE INSTALLED INLESS A REDUCTION IS APPROVIDE BY THE CITY TO THEIR SEPREMENTS AND ANDADEDS.

## GENERAL LANDSCAPE NOTES

- LET TREES OR SHRUBS ARE LOCATED ON TOP OF FIELD VERIFIED UTILITIES, CONTRACTOR SHALL NOTIFY OUNERS REPRESENTATIVE BEFORE ANY DISGING COMPENCES, VERRY WITH OWNER REPRESENTATIVE WHICH SHRUBSY TREES NEED TO BE RELOCATED OR REPVOLD PRICE TO PLANING.
- ALL LADSCAPE AREAS SHALL BE HANTARED, ROCLUMS MOUNS, WITER AND FERTILIZING BY CONTRACTOR UNTIL FINAL ACCEPTANCE BY CHARRES REPRESENTATION AT SUCH THE CHARRE OF EACH LOT SHALL BE RESPONSIBLE FOR ALL HANTENANCE. LIGHT CHARCE HAS CHARRES BY CHARRES AND AN EXPENSIVE ACCEPTANCE THE MANTENANCE LOCATION BY THE WASHINGTON OF THE PROPERTY OF THE THIND AND THE PROPERTY OF T
- EXCAVATED MATERIAL, TO BE USED AS FILL WILL HAVE ALL ROCKS, DEBRIS, WATER MATERIAL, FROZEN MATERIAL, VEGETATION LARGER THAN 3" IN ANY DIVENSION REMOVED BEFORE PLACEMENT AND COMPACTION OF SOIL.
- PROVIDE POSITIVE DRAINAGE AULY FROM BUILDING AND WALL FOUNDATIONS AND A SMOOTH TRANSITION BETWEEN ALL ADJACENT EXISTING GRADES AND PROPOSED GRADES.
- B. UNFORTLY COMPACT AND FINE GRADE ALL AREAS TO BE PLANTED TO A SHOOTH SURFACE, PREE FROM INTREGULAR SURFACE GRADES, RE-COMPACT SOFT SPOTS, FILL IN LOW AREAS AND TRIM HIGH SPOTS TO COMPLY WITH REQUIRED GRADE TOLERANCES, REPER TO CIVIL. PLANS FOR REQUIRED FINISH SPOT GRADES AND CONTOURS.
- 6. ONCE 80D 18 LAID IT SHALL BE PROPERLY ROLLED, COMPACTED, AND 80D JOINTS SHALL BE PUSHED TOGETHER TO ELIMINATE ANY GAP'S BETWEEN ROLL EDGES, APPLY FERTILIZER IN THESE AREAS PER 80D FARM'S RECOMMENDATIONS
- ALL MINIMUM PLANT MATERIAL SIZES ARE SHOWN IN THE PLANT LIST, ALL PLANTS SHALL BE PLANTED IN AMENDED SOIL AND TREES SHALL BE STAKED AS SHOWN IN DETAILS.
- 8. ALL PLANT MATERIAL SHALL HAVE WIRE TUNE, BASKETS, BURLAPAND ALL OTHER NON-BIODEGRADABLE CONTAINMENT MATERIAL REMOVED FROM THE TRINK AND/OR ROOT BALL OF THE PLANT PRIOR TO PLANTING.
- 9. ALL GHRUB BEDG SHALL HAVE A YNN'M13' DEPTH OF 7'-3" AND 4"-6" DIA\*TERR GYOOTH WAGNED RIVER ROCK UNLESS OTHERWISE NOTED, BEE LANDSCAPE PLANS FOR LOCATIONS OF SHREDDED REPUIXOD BARK HALCH A CONTINUOUS LAYER OF APPROVED WEED BARREEK LANDSCAPE FASING CHALL DE SINSTLLED NALL SHRED BEDG WITH 6" OVERLAP AT SEATS WITH 4" STAPLES 4" O.C. N. ALL DIRECTIONS, DO NOT USE WEED BARREER WERRE TREES ARE PLANTED IN TURP AREAS.
- IO. STEELHEADER BETUEEN GRASS AND SHRUB BEDS/ROCK COBBLE AREAS ETC. SHALL BE HEAVY DUTY STEEL EDGER MIN IA GA X 4" WITH ROLLED TOP 4 DRANAGE HOLES I" MINIMM ON CENTER STEEL HEADERS SHALL BE SET LEVEL WITH THE TOP OF THE ADJACENT SOO.
- IL REFER TO ALOTERRA PLANS AND SPECIFICATIONS FOR SOIL PREPARATION, SOIL AMENDMENTS, SEEDING, AND PLANTING REQUIREMENTS, SHEETS EILET

#### PLANT LIST

Quantit	u Sumbool	Common Name	Botanical Name	Mitigation Size	Species Diversity
2	CAP	Capital Pear	Pyrus Cylleryara 'Capital'	2" Cal Min.	0.4%
6	CB6	Columnar Blue Spruce	Picea Pungens "Iseli Fastigiate"	8' Hgt. Min.	1,1%
17	CP	Chanticleer Pear	Purus Calleryana 'Chanticleer'	2" Gal Min.	3,0%
27	CNS	Columnar Norway Spruce	Picea ables 'Cupressina'	8' Hat. Min.	4,7%
31	EBP	Enerald Arrow Bosnian Pine	Pirus Leucodernis Enerald Arrow'	8' Hat. Min.	5.4%
2	JTL	Japanese Tree Lilac	Syringa Reticulata	2" Cal Min.	0.4%
5	RBC	Red Barron Crabapple	Malus 'Red Barron'	2" Cal Min.	Ø.9%
10	88C	Spring Snow Crabapple	Malus 'Spring Snow'	2" Cal Min.	l,etc

#### DECIDUOUS TREES

14   CO							
Quantitu	Sumbol	Common Name	Botanical Name	Size	Cond.	Kc Value	Species Diversity
18	BO	Burr Oak	Quercus Macrocarpa	2" Cal	B#B		3.2%
14	co	Chinkapin Oak	Quercus Mushlenberall	2" Cal	B4B	M	
5			Quercus Robur 'Crimschmidt'	2" Cal	BB	M	
6	FYL	Front Yard Linden	Tilia Americana 'Batluard'	2" Cal	B4B	М	1.1%
16	GSL	Greenwoire Linden	Tilla Cordata 'Greenspire'	2" Cal	B4B	м	2.8%
29	HB	Hackberry	Celtie Occidentalie	2" Cal	B#B	L	5.1%
31	KCT	Kentucky Coffee Tree	Gumocladus Diolcus 'Espresso'	2" Cal	B4B	L	
Ø		Narrowleaf Cottonwood	Populus Angustifolia		BB	L	
1	OB	Ohlo Buckeus	Ageculus Glabra	2" Cal	B4B	М	Ø2%
6	PCW	Prairie Cascade Willow	Salix alioa 'Prairie Cascade'	2" Cal	B4B	L	L1%
B	SHI	Imperial Honeylocust	Gleditala triacanthos inermis 'imperial'	2" Cal	B#B	Ĺ.	2.6%
16	SHL	Skyline Honeylocust	Gleditala Triacanthos Inermia 'Skuline'	2" Cal	B4B	L	2,8%
6						L	
ÍÍ.	TRO	Texas Red Oak	Quercus Buckleut	2 1/2" Ca	B4B	Ē	1.9%

	<b>'</b>	INIAL INLLO					
Quantity	Sumbol	Common Name	Botanical Name	Size	Cond. Kc	Value	Species Diversity
11	AB6	Autumn Brillance Serviceberry	Amelanchier x Grandiflora 'Autumn Brillance'	Ig" Cal	B4B, multi trunk	L	1,9%
11	BILLC	Brandwine Crabappie	Malue 'Branduuine'	15" Cal	B4B	м	1,9%
20	CPP	Crimson Point Flowering Plum	Prunus x Cerasifera 'Cripolzan'	Iš" Cal	B4B	7	3.5%
15	ERB	Eastern Redioud	Cercis Canadensis	2° Cal	B4B, multi trunk	. M	2.6%
1	GRT	Golden Rain Tree	Koelreuteria Paniculata	Ig" Cal	B4B	м	Ø2%
1	HWM	Hot Wings Maple	Acer Tataricum 'Hot Wings'	lg" Cal	B4B, multi trunk	L	Ø2%
14	15C	Ivoru Spruce Crabappie	Malus 'Ivoru Spins'	Iš" Cal	B4B	М	2.5%
24	PFC	Prairifire Crabapple	Malus 'Pratriffre'	l½" Cal	B4B,	М	4.2%
38	RBC	Red Barron Crabapple	Malus 'Red Barron'	il" Cal	Cont.	L	6.7%
16	RC	Radiant Crabappie	Malue 'Radiant'	2" Cal	B4B	м	2,8%
3	RMM	Rocky Mountain Maple	Ager Glalorum	16" Cal	B4B	L	Ø5%
20	868	Snoucloud Serviceberry	Amelanchier Laevis 'Snoucloud'	Ig" Cal	B4B.	Ē.	3.5%

	nicol Common Name	Botanical Name	Size	Cond.	Kc Value	Species Diversity
80 B		Juniperus Scopulorum 'Blue Arrow'	6' Hgt. Min.	B4B	L	14.1%
T B1	M Big Tuna Mugo Pine	Pinus Mugo 'Big Tuna'	6' Hgt. Min.	B4B	L	1.2%

## SHRUB BED & PRIVATE LOT PLANT LIST

THE ROLLOWING IS A GENERAL PLANT LIST OF DECIDIOUS CONFERONS, GRAVIENTAL GRAVE AND PRENNIALS FROM WHICH PLANT MATERIAL ROLL PRENNIALS FROM WHICH PLANT MATERIAL ROLL PRENNIALS FROM THE ROLLOWING PLANTS SHALL HAVE AS A MINISTH FROM THE ROLLOWING PLANTS SHALL HAVE AS A MINISTH PETAL FOR DUPE FROM THE ADDITIONAL PLANTS (1904) AND LANDSCAME (1904)

## SHRUBS

Sunicol	Common Name	Botanical Name	5/ze
AUS	Anthony Waterer Spirea	Spirea × Bunaida 'Anthony Waterer'	5 Gal.
BCJ	Blue Chip Juniper	Juniperus Horizontalis 'Blue Chip'	5 Gal,
BDJ	Blueberry Delight Juniper	Juniperus Communis 'Blueberry Delight'	5 Gal,
BJ	Blue Creeper Juniper	Juniperus Scopulorum 'Blue Creeper'	5 Gal.
BMH	Berri Magic Holly	Liex X Meservese 'Berri Magic'	5 Gal.
CPB	Crimson Pugny Barloerry	Berberis Thunbergii 'Autropurpurea Nana'	5 Gal.
DG	Dakota Goldcharm Spirea	Spirea Japonica Mertyam' TM	5 Gal,
DG8	Duarf Globe Blue spruce	Pices Pungens 'Glauca Globosa'	5 Gal,
DKD	Duarf Kelsey Dogwood	Corrus Stolonifera 'Kelsey'	5 Gal.
DKS	Dark Knight Spirea	Caruppterie Clandonenele	5 Gal.
DMM	Duarf Minesota Mockorange	Philadelphus x Virginalis 'Duarf Snowflake'	5 Gal.
DNB	Duarf Ninebark	Physocarpus Opulifolius 'Nano'	5 Gal,
GL8	Gro-Lou Sunac	Rhus Aromatica 'Gro-lou'	5 Gal,
GMS	Goldmound Spires	8pirea X 'Goldmound'	5 Gal.
LPS	Little Princess Spires	Spiraea Japonica "Little Princess"	5 Gal.
MBS	Montgomery Blue Spruce	Picea Pungens Montgomeru	5 Gal.
MKC	Miss Kim Lifac	Syringa Patula Miss Kim'	5 Gal,
MMP	Maps Mugio Pine	Pirus Mugo Mops'	5 Gal,
RJB	Redleaf Japanese Barberry	Berberis Thumberall 'Atropurpures'	5 Gal.
RSB	Regent Serviceberru	Anelancher Alnifolia 'Regent'	5 Gal.
TMP	Tarrieribaum Mugo Pine	Pirus Mugo 'Tarnerioaum'	5 Gal.
WMP	White Bud Mugo Pine	Pinus Mugo 'White Bud'	5 Gal,

Bumbol	Connon Name	Botanical Nane	Size
AJS	Autumn Joy Sedum	Sedum x 'Autumn Joy'	I Gal.
BAG	Blue Avena Grass	Helictotrichon Sempervirens	l Gal.
BES	Black-Eued Susan	Rudbeckia Fulgida 'Goldsturm'	I Gal.
BG	Blonde Ambition Blue Grana	Boutelous Gracilis 'Blonde Ambition'	I Gal,
CRH	Coronado Huseop	Agastache x 'Coronado Red'	I Gal.
DDC	Duarf Double Coreopsis	Coreopsis Grandiflora 'Sun Ray'	I Gal.
DFG	Duarf Fountain Grass	Pemisetum Alopecuroides 'Hamein'	I Gal.
KFG	Karl Forester Grass	Calamagrostis Acutifiora Karl Forester	I Gal.
LB6	Little Bluesten	Schizachurium Scoparium 'The Blues'	I Gal,
MSY	Moonshine Yarrow	Achilles Millefolium Moonshine'	I Gal.
NPS	Night Purple Salvia	Salvia Nenorosa 'May Night'	I Gal.
PCF	Purole Conellower	Echinacea Purpurea	I Gal.
RMP	Rocky Mountain Penetemon	Pensterion Strictus	l Gal.

# UNTL. SUCH TIME AS HHESE DRAWINGS ARE APPROPRIATE REVIEWING AGENCIES, IN ENGINEERING APPROVES THEIR USE DESIGNATED BY WRITTEN AUTHORIZATION.

POLESTAR GARDENS, INC POLESTAR GARDENS, INC PO BOX 271582 FORT COLLINS, CO 80521 (808) 443-9956

ENGINEERING 303-740-9993 • (970-491-9888 • H



H-SCALE	N/A	è.	REVISION	Ъ	DATE
V-SCALE	V/ N	-	REVISIONS PER CITY COMMENTS (7/29/22)	œ,	8/10/22
1	٠,٠	2	REVISIONS PER CITY COMMENTS (7/29/22) JR 5/31/23	땈	5/31/23
DATE	9/1/23		3 REVISIONS PER CITY COMMENTS (6/27/23) JR 8/23/23	땈	8/23/23
DESIGNED BY	KEM			П	
DRAWN BY	Sid				
	2				
CHECKED BY				Γ	
		l		l	

### STREET TREE NOTE

A PERMIT MUST BE OBTAINED FROM THE CITY FORESTER BEFORE ANY TREES OR SHUBS AS NOTEO ON THIS PLAN ARE PLANTED, PRUNED OR REMOVED IN THE PUBLIC RIGHTOF-MAY, THIS INCLIDES SOMES BETWEEN THE SIDEMAX AND CURR, MEDIANS AND CHER CITY PROPERTY. THIS PERMIT SHALL APPROVE THE LOCATION AND SPECIES TO BE PLANTED FAILURE TO GETAIN THIS PERMIT SHALL AS VIOLATION OF THE CITY OF FORT OLLINS CODE SUBJECT TO CITATION (SECTION 27-31) AND MAY ALSO RESULT IN EPLACING OR RELOCATING TREES AND A HOLD ON CERTIFICATE OF OCCUPANCY.

PRELIMINARY I LANDSCAPE SHEET 14 OF 39 JOB NO. 39797.01

VELOPMENT PLANT LIST

AN.

VILLAGE

POLESTAR

#### TYPE A TURF: DROUGHT TOLERANT IRRIGATED SOD MIX

HYBRID KENTUCKY X TEXAS BLUEGRASS BEING A MIX OF 100% TEXAS BLUEGRASS HYBRID SEED. THE SEED SOURCE & TURF BASED MIX FOR SOD SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE INSTALLATION SOURCE ! TURN BASED MIX FOR SOU SHALL SOURCE ! TURN BASED MIX FOR SOU SHALL SOURCE ! TURN BASED MIX: UPLAND SEED MIX

Scientific Name (USDA)	Common Name (USDA)	Cultiver or Ecotype	Ufe- History	N Ma	Pounds PLS Needed
Achilles lanulous ser. occidentalis	Western yarrow	Eagle or Yakima	- NPF	5	0.02
Administrativisi	Lewis Rec	Maple Grove or CO ecotypic	NP		9.46
bromus cilietus	fringed become	Central CO	NPG-6	12	1.15
Bromus rearginativa	requiritain become	Cold Springs Economy	NPG-L	12	3.24
Correspois tilectorie	plains correspois	CO Econype (or VNS)	1488	1	0.03
Dymus conadensis	Canada wildrys	Mandan	WHG-L	10	1.99
Elymus tentroletur sup. Lancroletus	thickspike schnalgrass.	Critama	NPG-L	12	2.01
Elymos trechyratolox	slender schratgrass	Pryor	NRG-L	12	1.86
Gallimaia artistete	Mankethower	CD Ecotype for VMV	Net	2.	0.24
Minarda pertineta	Surgament.	CO Eurotype preferred	NA	4.	0.07
Postogyrum smithil	western wheatgrass	Arriba	NPG-L		1.59
Persitemen virgotus	Front Sange Seanthongue	CO Ecotype or Morbockle	169		0.17
Pas fenderland	multangrass	Huin Care	NPG-L		0.15
Solidago missouriensis	Missouri goldonrod	CO Ecotype for VNSJ	609	5	8.06
Builterhin hirts	Mackeyed Society	CO Ecotope for VNSI	1444	1	0.03

### TYPE C SEED MIX: FACULTATIVE SEED MIX

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	N Mix	PLS Needed
Antroproper present?	hig Marsten	Bonita	NFG-L		1.10
Antiquina spervane	Microry Millionand	CO Ecotype preferred	3010	9.5	9.29
Bromin citiess	Irlegati tecesse	Central CO	NFG-L		1.39
Cover proviprocitis	Dustaned Sield sedge:	CO Rootype (or VISS)	NHS-L	2	0.12
District/lis apricate	saftgrass	CO Ecotype (or VMS)	NPG-L		0.63
Elymus considerals	Canada wildrys	Mandan	NPG-L		2.89
Elymus torceolotus suit. imceolotus	thickspiler wheetgrass:	Critana	NPG-E	7	2.33
Glyrynetics lepidons	American Scorica	CD Ecotype (or VSS)	NEE	85	8.33
Heliochus resulmitioni	Maximilian surflower.	CO Ecotype (or VNS)	NPC	1	0.45
Hordeum Jubatum	Apotal ineleg	CO Ecotype (or VNS)	NRG4	Y	0.57
Autoria medican sup. Attornels	wine make	CO Ecotype preferred	NPG-L	9	0.62
Nesselle viridule	green needlegrass	Circheras	NPG-L	7	3.59
Principle singetime	andstignass.	Backers	NPS-L	11	2.14
Posicipyrum smithii	western wheatgrass	Artika	NPG-L	12	4.33
Publishedia suttalliana	Wumai alkalaigrass	CO-Exertype (or VMS)	NPG-L		0.07
Sporadialus aireides	alkali sacatore	Saldado	NHG-L		0.55
Spenidolas araptimitros	nared divigored	CO Econole preferred	NPG4	30	10.00

#### TYPE D SEED MIX: EMERGENT/MESIC MEADOW SEED MIX

Emergent and N Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life	% Min	Pounds PLS Needed
Carey wellbe	secoli tedes	CD Footune for Wife	MMC-1	4	6.20
Glycesia chiasa	freed mannament.	CD isotron analyzed	MPG-L		0.17
Polloschocram maritimus	correspondent bulcush	GU Coolege for VMS).	NPW-L	3	19.92
Deocharic palustru	common spikerush	CO Ecotype for VNSI	MAGIL		0.24
Djenus improletso ogs. imprestatur	Thickspike wheatgrass	Citana	NPG-L	15	2.30
Helanthus nuttelli	Nutral's sunflower	CO Ecotype for VMSI	NOT	1	0.41
Meethe governir	said mint.	CD Ecotype (or VMS)	NOT	12	0.05
Muhlenbirola marrifolia	scrittifierass	CO Ecotyse for VNSI	NPG-L	7	0.30
Audiopins specima	shows milliward	CO Exotype preferred	NIM		0.29
Audepias incorruite	many millured	CO Ecotype preterred	NE	. 1	0.27
Solidago missauriensis	Missouri goldenrout	CO Ecotype (or VNS)	NPE		D.08
Spartina pectinata	priime contents	Red River	NPG-L	1	0.88
Symphysorichum novem angliser	fore England eiter	CO Econyole (or VWG)	MOVE		934
Triplichin maritima	seaside arrowgrass	CO Ecotype for VNSI	NOTE	10	01.84
Vertiene feistate	enime reflece	CO Ecotype for VNN	Batter	10	0.34

#### TYPE E SEED MIX: RAINGARDEN SEED MIX

Scientifia Name (USDA)	Common Name (USDA)	Cultivar or Everype	History	No.	Pounds PLS Rendes
Anahopopor perandi	big bluestern	Bertila	NPS-L		0.12
Andrepople Addit	sand Murston	Garden	NPG-L	3.5	0.17
Audignies spendone	Managerillaword.	CO Ecotype preterred	NW	0.5	6.04
Bromus cristure	Fringed to some	Christal CO	NPG I		0.10
Cutomovitle Implicate	prairie sandrend	Sinher	MMG/E	8	0.11
Cones prospositio	chattered field sedge	CO Exemple for VMS2	MPG-L	1	0.02
Distriction spiritte	inflature.	CD-Economics for VNNL	NPG A		0.07
Demog panedemok	Canadapolitys	Mandan	NPG-L		0.41
Zhenus tenonolistus son, tenonolistus	thickspile wheatgrans.	Editana	NPG-L	12	0.34
Olyegenhine Republike	American Scorner	CO Ecologe for VNII	MIN	0.5	0.05
Netherlas inpelnities	Maximilian sunfinuer	ED Ecotype for VNSI	5675	2	0.00
Horstown Johnson	fortal barry	CD Ecotype (or VMS)	MAG L	3	0.06
Jaminai meticae sap. Etteroffe	week meh	20 Longo preferred	NPG-L		8.00
Machinesethers tonocerifolis	terroried terroriter	CO Estable for VMSI.	688	2	0.00
Nesanta virabita	griesi neesbegries	Curbanas	NPG-L	21	0.22
Panicule Vigation	switchgreen	Rectored	NACH	12	0.30
Puccinette numellines	Humal albahagnass	CO Evenous los VAIS	NPG-1	3	661
Solidore minuturiemsis	Missouri goldenmad	CIO Econyon for VASI	NOTE:	3.	8.01
Sportsholus atradière	what sarpton	haldedo	NRG-L	4	16.60
Sporobelus regessinatus.	hand dropposed:	CO Ecotope preferred	MAG.E		6.00

HERBACEOUS PLANT LIST: TO BE PLANTED WITH THE QUANTITIES SPECIFIED WITHIN THE EMERGENT, MESIC MEADOW & FACULTATIVE SEED MIX AREAS

						Emily	pert	Mest Mestire		- Employee	
110000	25 YO LOG TO GO TO YES					Married.		Burn (m)	1.30	shirties.	E38
Herbace	eous Containers					Total Control	LEAD.		008	Same Same	-
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-					20000	- 10	1349	150	4655	144	9216

#### NATIVE SEED MIX NOTES:

- NATIVE SEED MIX NOTES:

  1. THE THE OF YEAR SEEDING IS TO OCCUR CHOLD BE OCTOBER THROUGH EARLY MAY.

  2. PREPARES SOL AS NECESSARY AND APPROPRIATE FOR NATIVE SEED THIS SPECIES THROUGH LOOSSING AND FOR THE SEEDING SOL AS NECESSARY AND APPROPRIATE FOR NATIVE SEED THIS SPECIES THROUGH LOOSSING AND FOR THE SEEDING SOL AS NECESSARY AND APPROPRIATE FOR NATIVE SEED ALL NECESTED APPROPRIATE AND APPROPRIAT

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POLESTAR GARDENS, INC POLESTAR GARDENS, INC PO BOX 271582 FORT COLLINS, CO 80521 (808) 443-9956

J-R ENGINEERING 309-740-9993 • Colorado 970-491-9888 • www.jrer



£ 5 € G DEVELOPMENT -AN

### STREET TREE NOTE

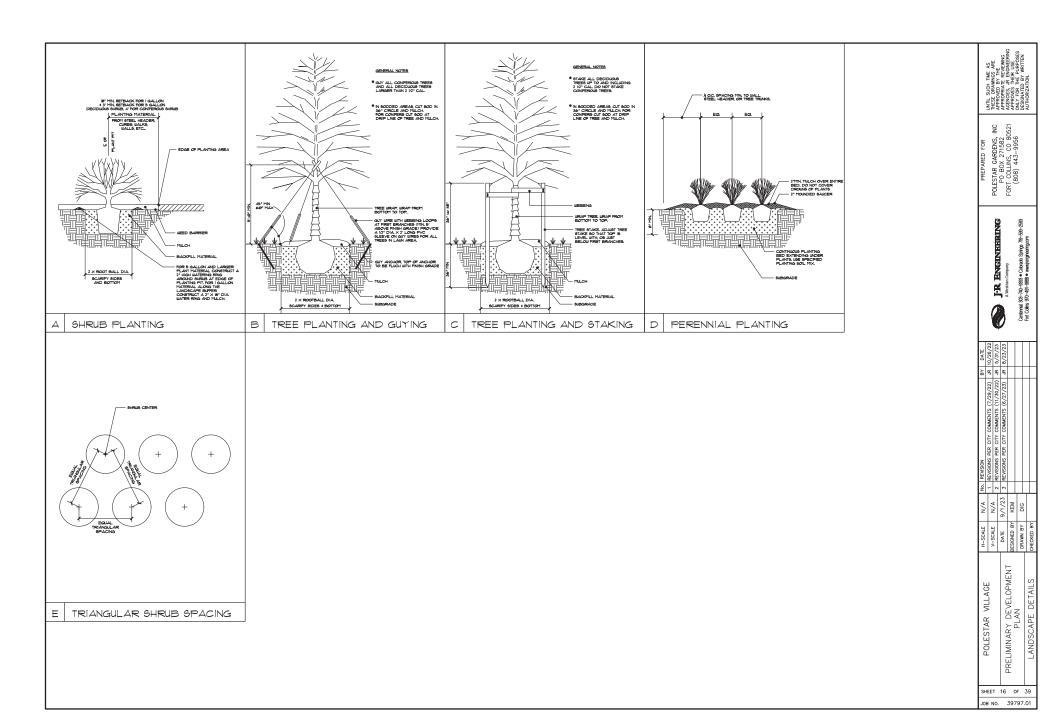
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LANDSCAPE NOTES PRELIMINARY C PL≠ SHEET 15 OF 39 JOB NO. 39797.01

VILLAGE

POLESTAR

PLANT LIST



MANIFACTURER: TERRABOUND SOLUTIONS INC. (OR APPROVED EQUAL) MODEL. PS. 6. LASS DE LASS CAPE ARCHITECT NAMER REQUIRED, 14 NAMER REQUIRED, 14



A PARK BENCH

B BIKE RACK



MANUFACTURER: TERRABOUND SOLUTIONS INC. (OR APPROVED EQUAL) MODEL: COLIBIKERACK INSTALLATION: INSTALL PER MANUFACTURER'S DESCOMMENDATIONS

INSTALLATION INSTALL PER MANUFACTURER'S RECOMMENDATIONS COLOR: TO BE DETERMINED BY LANDSCAPE ARCHITECT NUMBER REQUIRED; 8

MANUFACTURER: TERRABOUND SOLUTIONS INC. (OR APPROVED EQUIAL) MODEL: 61-LEXINGTONNECEPTACLE INSTALLATION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS COLOR: TO BE SELECTED BY LANDSCAPE ARCHITECT.

NUMBER REQUIRED: 19

Ε

MANUFACTURER, TERRABOUND SOLUTIONS INC. (OR APPROVED EQUAL) MODEL: 24-FIXIT INSTALLATION: INSTALL PER MANUFACTURER'S RECOMMENDATIONS COLOR: TO BE DETERMINED BY LANDSCAPE ARCHITECT NUMBER REQUIRED: I

63' R.O.W.

UNTIL SUCH TIME AS HHESE CRAMINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGROIGES, AR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION. PREPARED FOR
POLESTAR GARDENS, INC
PO BOX 271582
FORT COLLINS, CO 80521
(808) 443-9956

J-R ENGINEERING

(7/29/22) JR 11 (11/30/22) JR 5 (6/27/23) JR 8

# # #

9 - N M

Centernial Fort Colins

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61 MN. DEPTH ASSRESATE BASE COURSE (TYPE 5 ROAD BASE) COMPACT TO 45% 5 P.D.

CONNECTOR LOCAL STREET (ORCHARD & W. PLUM)

24' WIDE
- ALLEY PVMT.
(ACCESS, EMERGENCY
ACCESS, UTILITY &
DRAINAGE EASEMENT)

BIKE REPAIR STAND



MANUFACTURER: TERRABOUND SOLUTIONS INC. (OR APPROVED EQUAL) MODEL: 44-58/TIRY INSTALLATION: INSTALL PER MANUFACTURER'S RECOMMENDATIONS COLOR: TO BE DETERMINED BY LANDSCAPE ARCHITECT. NUMBER REQUIRED: 12

TRASH RECEPTACLE

MEDINED WITH A THE THE MENT

CAP DETAIL (OPTIONAL)

DESIGN O.D. PIPE SIZE LENGTH

TENON DETAIL (STANDARD)

2-PIECE FULL BASI COMEN

BOLT HOLES OF SLITT

POLE BASE DETAIL

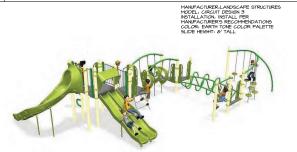
F DOG WASTE STATION





MANUFACTURER, TERRABOUND SOLUTIONS INC. MANIFACTURER: TERRABOUND SOLUTIONS INC. (OR APPROVIDE BOUAL) MODEL: MTC-SOUARPHONICTABLE INSTALLATION HISTALL PER MANIFACTURER'S RECOMPENDATIONS COLOR: TO BE DETERMINED BY LANDSCAPE ARCHITECT INVESTER REGUIRED: Ø STANDARD GRAY CONCRETE HEAD STANDARD GRAY CONCRETE, WITH AT RADUS TOOLED EDGES AND MEDIJM BROOM FINISH, PROVIDE CONTROL JOINTS AT 4" O.C. DINTS AT 4 DEEP MODO MLCH ON TOP OF MED BASSIES (2)-95 REBAR CONTINUOUS TOOP AND BOTTOM WITH PS REBAR HOOPS AT 6' O.C. EXISTING SOIL SUB GRADE, SLOPE TOP OF SUBGRADE 28 FROM CONC. HEADER TO ADS DRAIN SCANIFY AND RECOMPACT TOP 8" OF SOIL SUBGRADE TO 45% S.P.D.

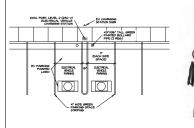
G SQUARE PICNIC TABLE



K TOT LOT PLAY AREA SURFACE SECTION

J 24' WIDE PRIVATE ALLEY SECTION

EDSE ADJACENT TO TOT LOT PLAY SURPACE





ELECTRIC CAR PARKING ONLY WHILE CHARGING	POLESTAR VILLAGE	Y DEVELOPMENT PLAN
PARTIES PARTIES	POLESTA	PRELIMINARY PL

SHEET 17 OF 39 JOB NO. 39797.01

L ELECTRICAL VEHICLE CHARGING STATION

- 4 - ANCHOR BOLTS WITH THREADED END GALVANIZED 12" MN, EACH BOLT FURNISHED WITH 2 HEX NUTS AND 2 FLATWASHERS

DS210 POLE DETAIL

3.000 in 176

MAX Diameter Pole OD | 2.375 in. [60 mm]

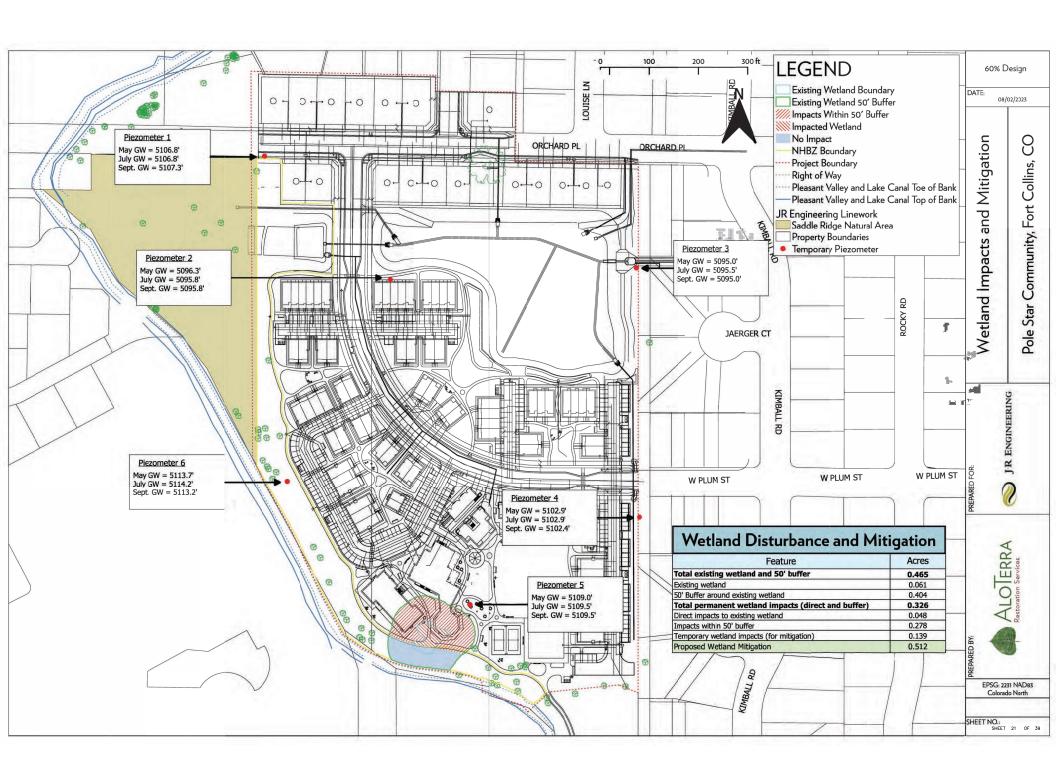
HEIGHT

10' HGT.

FIXTURE NAME: SALEM POST TOP BLACK LIMENS: 3000K OR EGIAL OPTICAL CODE: C5 FOR PLAY AREA. C3 FOR TRAIL MANIFACTIRER: GE INSTALLATION: INSTALL PER MANIFACTIRERS RECOMMENDATIONS COLOR: BLACK

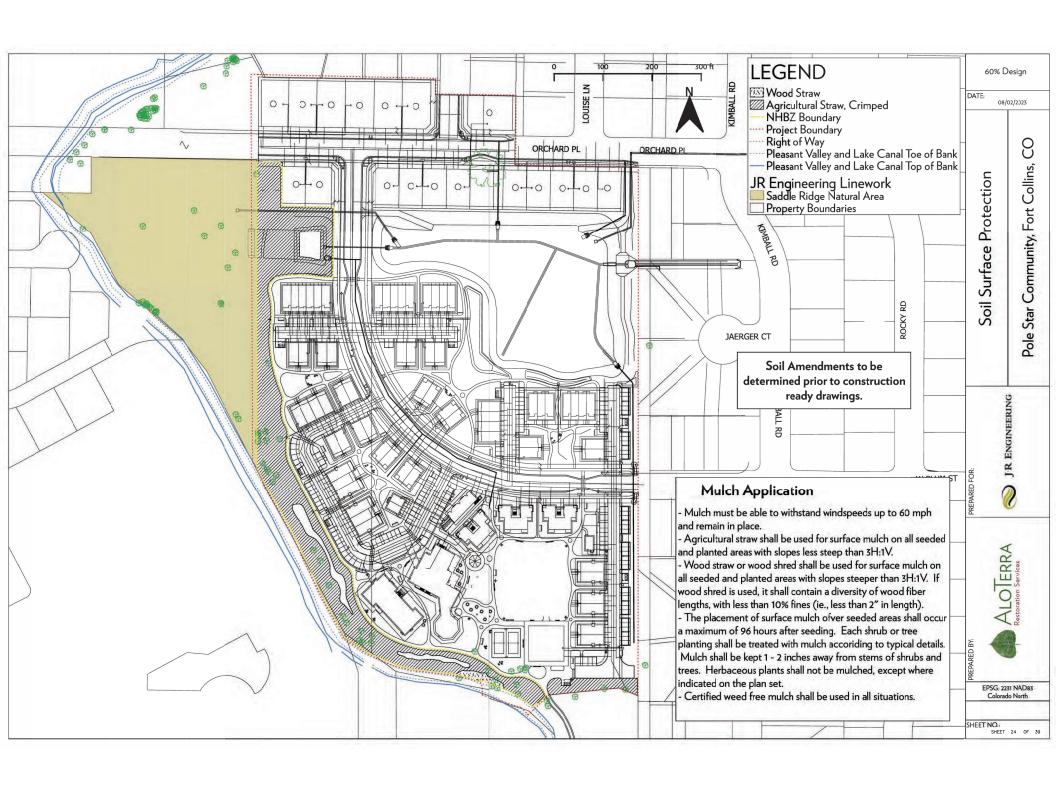
D LIGHT FIXTURE & POLE

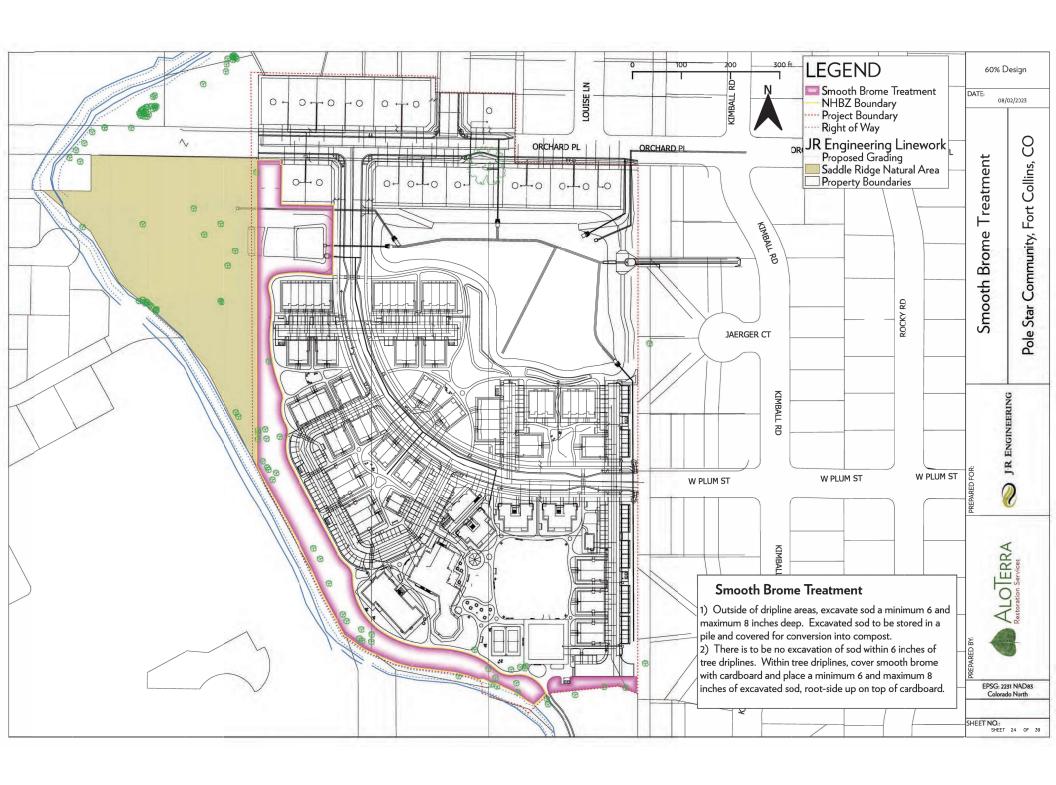
H PLAY AREA (AGES 5-12+)











Seeds Per Sq. Ft. (Broadcast): 90

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	% Mix	Pounds PLS Needed
Carex pellita	woolly sedge	CO Ecotype (or VNS)	NPG-L	3	0.20
Glyceria striata	fowl mannagrass	CO Ecotype preferred	NPG-L	3	0.37
Bolboschoenus maritimus	cosmopolitan bulrush	CO Ecotype (or VNS)	NPG-L	5	0.92
Eleocharis palustris	common spikerush	CO Ecotype (or VNS)	NPG-L	8	0.24
Elymus lan:eolatus ssp. lanceolatus	thickspike wheatgrass	Critana	NPG-L	15	2.30
Helianthus nuttallii	Nuttall's sunflower	CO Ecotype (or VNS)	NPF	3	0.41
Mentha arvensis	wild mint	CO Ecotype (or VNS)	NPF	12	0.05
Muhlenbergia asperifolia	scratchgrass	CO Ecotype (or VNS)	NPG-L	7	0.10
Asclepias speciosa	showy milkweed	CO Ecotype preferred	NPF	1	0.29
Asclepias incarnata	swamp milkweed	CO Ecotype preferred	NPF	2	0.27
Solidago missouriensis	Missouri goldenrod	CO Ecotype (or VNS)	NPF	8	0.08
Spartina pectinata	prairie cordgrass	Red River	NPG-L	5	0.88
Symphyotrichum novae-angliae	New England aster	CO Ecotype (or VNS)	NPF	8	0.14
Triglochin maritima	seaside arrowgrass	CO Ecotype (or VNS)	NPF	10	0.44
Verbena hastata	swamp verbena	CO Ecotype (or VNS)	NPF	10	0.14

Acres (facultative): 0.86 (w/10% ovg)

Facultative					
Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	% Mix	Pounds PLS Needed
Andropogon gerardii	big bluestem	Bonilla	NPG-L	4	1.10
Asclepias speciosa	showy milkweed	CO Ecotype preferred	NPF	0.5	0.29
Bromus ciliatus	fringed brome	Central CO	NPG-L	8	1.39
Carex praegracilis	clustered field sedge	CO Ecotype (or VNS)	NPG-L	2	0.12
Distichlis spicata	saltgrass	CO Ecotype (or VNS)	NPG-L	8	0.63
Elymus caradensis	Canada wildrye	Mandan	NPG-L	8	2.89
Elymus lanceolatus ssp. lanceolatus	thickspike wheatgrass	Critana	NPG-L	7	2.13
Glycyrrhiza lepidota	American licorice	CO Ecotype (or VNS)	NPF	0.5	0.33
Helianthus maximiliani	Maximilian sunflower	CO Ecotype (or VNS)	NPF	2	0.45
Hordeum jubatum	foxtail barley	CO Ecotype (or VNS)	NPG-L	3	0.57
Juncus arcticus ssp. littoralis	wire rush	CO Ecotype preferred	NPG-L	5	0.02
Nassella viridula	green needlegrass	Cucharas	NPG-L	7	1.59
Panicum virgatum	switchgrass	Blackwell	NPG-L	12	2.14
Pascopyrum smithii	western wheatgrass	Arriba	NPG-L	12	4.33
Puccinellia nuttalliana	Nuttal alkalaigrass	CO Ecotype (or VNS)	NPG-L	5	0.07
Sporobolus airoides	alkali sacaton	Saldado	NPG-L	6	0.15
Sporobolus cryptandrus	sand dropseed	CO Ecotype preferred	NPG-L	10	0.08
			Takala	100	10.20

Acres (upland shade-tolerant): 0.47 (w/10% ovg) Seeds Per Sq. Ft. (Broadcast): 110

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	% Mix	Pounds PLS Needed
Achillea lanulosa var. occidentalis	Western yarrow	Eagle or Yakima	NPF	3	0.02
Adenolinum lewisii	Lewis flax	Maple Grove or CO ecotype	NPF	6	0.46
Bromus ciliatus	fringed brome	Central CO	NPG-L	12	1.15
Bromus merginatus	mountain brome	Cold Springs Ecotype	NPG-L	12	3.24
Coreopsis tinctoria	plains coreopsis	CO Ecotype (or VNS)	NBF	2	0.03
Elymus caradensis	Canada wildrye	Mandan	NPG-L	10	1.99
Elymus lan:eolatus ssp. Lanceolatus	thickspike wheatgrass	Critana	NPG-L	12	2.01
Elymus trachycaulus	slender wheatgrass	Pryor	NPG-L	12	1.88
Gaillardia cristata	blanketflower	CO Ecotype (or VNS)	NPF	2	0.24
Monarda pectinata	bergamot	CO Ecotype preferred	NAF	4	0.07
Pascopyrum smithii	western wheatgrass	Arriba	NPG-L	8	1.59
Penstemor virgatus	Front Range beardtongue	CO Ecotype or Bluebuckle	NPF	4	0.17
Poa fendle iana	muttongrass	Ruin Cyn	NPG-L	6	0.15
Solidago missouriensis	Missouri goldenrod	CO Ecotype (or VNS)	NPF	5	0.06
Rudbeckia hirta	blackeyed Susan	CO Ecotype (or VNS)	NBF	2	0.03

Acres (raingarden): 0.12 (w/10% ovg) Seeds Per Sq. Ft. (Broad:ast): 110

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	% Mix	Pounds PLS Neede	
Andropogon gerardii	big bluestem	Bonilla	NPG-L	3	0.12	
Andropogon hallii	sand bluestem	Garden	NPG-L	3	0.17	
Asclepias speciosa	showy milkweed	CO Ecotype preferred	NPF	0.5	0.04	
Bromus ciliatus	fringed brome	Central CO	NPG-L	4	0.10	
Calamovilfa longifolia	prairie sandreed	Goshen	NPG-L	5	0.11	
Carex proegracilis	clustered field sedge	CO Ecotype (or VNS)	NPG-L	2	0.02	
Distichlis spicata	saltgrass	CO Ecotype (or VNS)	NPG-L	6	0.07	
Elymus conadensis	Canada wildrye	Mandan	NPG-L	8	0.41	
Elymus lanceolatus ssp. lanceolatus	thicksoike wheatgrass	Critana	NPG-L	12	0.52	
Glycyrrhiza lepidota	American licorice	CO Ecotype (or VNS)	NPF	0.5	0.05	
Helianthus maximiliani	Maximilian sunflower	CO Ecotype (or VNS)	NPF	2	0.06	
Hordeum jubatum	fcxtail barley	CO Ecotype (or VNS)	NPG-L	3	0.08	
Juneus arcticus ssp. littoralis	wire rush	CO Ecotype preferred	NPG-L	8	0.00	
Machaerenthera tanacetifolia	tansevleaf tansyaster	CO Ecotype (or VNS)	VBF	2	0.03	
Nassella viridula	green needlegrass	Cucharas	NPG-L	7	0.22	
Panicum virgatum	switchgrass	Blackwell	NPG-L	12	0.30	
Puccinellia nuttalliana	Nuttal alkalaigrass	CO Ecotype (or VNS)	NPG-L	5	0.01	
Solidago missouriensis	Missouri goldenrod	CO Ecotype (or VNS)	NPF	3	0.01	
Sporoboles uiroides	aliali sacaton	Saldado	NPG-L	5	0.02	
Sporobolus cryptandrus	sand dropseed	CO Ecotype preferred	NPG-L	9	0.01	

\* Final mix to be revised following final grading plan for raingarden (revise to be relative to groundwater depth)

Acres (upland): 1.1 (w/10% ovg) Seeds Per Sq. Ft. (Broad:ast): 110

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	% Mix	Pounds PLS Neede	
Achillea lanulosa var. occidentalis	Western yarrow	Eagle or Yakima	NPF	2	0.04	
Achnatherum hymenoides	Incian ricegrass	Paloma	NPG-L	6	2.22	
Adenolinum lewisii	Lewis flax	Maple Grove or CO ecotype	NPF	2	0.35	
Artemisia frigida	prairie sagewort	CO Ecotype preferred	NPF	2	0.02	
Boutelous curtipendula	sideoats grama	Niner	NPG-L	6	1.65	
Boutelous gracilis	blue grama	Fremont CO ecotype	NPG-L	10	0.71	
Buchloe dactyloides	buffalograss	Cody	NPG-L	9	8.39	
Cleome serrulata	Rocky Mountain beeplant	CO Ecotype (or VNS)	VAF	1	0.46	
Coreopsis tinctoria	plans coreopsis	CO Ecotype (or VNS)	VBF	2	0.07	
Dalea candida	white prairie clover	CO Ecotype preferred	NPF	1	0.14	
Elymus elymoides	squirreltail	Pueblo or Wapiti	NPG-L	8	2.17	
Elymus trachycaulus	slencer wheatgrass	Pryor	NPG-L	11	3.96	
Gaillardic aristata	blanketflower	CO Ecotype (or VNS)	NPF	2	0.56	
Grindelia squarrosa	curly cup gumweed	CO Ecotype (or VNS)	VBF	2	0.26	
Helianthus annuus	common sunflower	CO Ecotype (or VNS)	VAF	1.5	0.68	
Helianthus petiolaris	prairie sunflower	CO Ecotype (or VNS)	NAF	3	0.73	
Koeleria macrantha	pra rie Junegrass	Sims Mesa	NPG-L	5	0.11	
Liatris punctata	dotted blazing star	CO Ecotype (or VNS)	NPF	0.5	0.16	
Monarda pectinata	bergamot	CO Ecotype preferred	VAF	3	0.12	
Pascopyrum smithii	western wheatgrass	Arriba	NPG-L	8	3.67	
Penstemon virgatus	Front Range beardtongue	CO Ecotype or Bluebuckle	NPF	4	0.40	
Poa fendieriana	muttongrass	Ruin Cyn	NPG-L	6	0.35	
Ratibida columnifera	upright prairie coneflower	CO Ecotype (or VNS)	NPF	3	0.20	
Rudbeckia hirta	blackeyed Susan	CO Ecotype (or VNS)	VBF	2	0.07	

Acceptable Alternatives										
Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	Hydrosere						
Hordeum pusillum	little barley	CO Ecotype (or VNS)	NAG-L	raingarden/ Facultative						
Sorghastrum nutans	Indiangrass	Oto	NPG-L	raingarden/ Facultative						
Solidago canadensis	Canada goldenrod	CO Ecotype (or VNS)	NPF	raingarden/ Facultative						
Helianthus nuttallii	Nuttall's sunflower	CO Ecotype (or VNS)	NPF	raingarden/ Facultative						
Eragrostis trichodes	sand lovegrass	CO Ecotype (or VNS)	NPG-L	raingarden/ Facultative						
Echinacea angustifolia	blacksemson echinacea	CO Ecotype (or VNS)	NPF	upland						
Penstemon angustifolius	broadbeard beardtongue	CO Ecotype or San Juan Germ.	NPF	upland						
Dalea purpurea	purple prairie clover	Kaneb or Stephanie	NPF	upland						
Gutierrezia sarothrae	brocm snakeweed	CO Ecotype (or VNS)	<b>NSubS</b>	upland						
Penstemon secundiflorus	sidebells penstemon	CO Ecotype (or VNS)	NPF	upland						
Chrysothamnus viscidiflorus var. viscidiflorus	yellow rabbitbrush	CO Ecotype (or VNS)	NS	upland						
Schizachyrium scoparium var. scoparium	little bluestem	Camper	NPG-L	upland						
Hesperostipa comata	needle-n-thread	CO Ecotype (or VNS)	NPG-L	upland						
Quickguard	Quickguard	Quickguard	IAG-L	upland						

Final seed mixes, acreages, and percent mix to be provided with final plan set submittal.

Life History Codes						
N	native					
1	introducted					
A	annual					
В	biennial					
P	perennial					
F	forb					
G-L	grass-like (includes grasses, sedges, and rushes)					
S	shrub					
T	tree					
V	vine					

60% Design

DATE: 08/02/2023

Seed Mixes

Pole Star Community, Fort Collins, CO

JR ENGINEERING



SHEET NO.: SHEET 24 OF 39





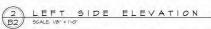
## B2 TWO FAMILY ATTACHED DWELLINGS W/GARAGES

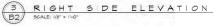














4 REAR ELEVATIONS
BCALS: 1/8" = 1'-0" 2-1-28

UNTIL SUCH TIME AS HERES DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING ASCHOLES, ARE REVIDERENIG APPROVES THEIR USE DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR
POLESTAR GARDENS, INC
PO BOX 271582
FORT COLLINS, CO 80521
(808) 443-9956

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970-491-5888 • wwwjerginseringsom



SHEET 29 OF 39
JOB NO. 39797.01

## B2T X4 SINGLE FAMILY ATTACHED DWELLINGS W/GARAGES

B2 | SCALE: 1/8" = 1'-0"













J.T. HEATER - ARCHITECT

14618 TYLER FOOTE RD. CO ARC.00407289
NEVADA CITY, CA PLOTE 520-559-6999
PLOTE 520-559-6999

UNTIL SUCH TIME AS HERSE DRAWNICS ARE APROPHED BY THE APROPHED TE REVEWING AGENCIES, AR ENGINEERING APROPES THEIR USE ONLY FOR THE PURPOSES SUGNATED BY WRITEN AUTHORIZATION.

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(808) 443–9956

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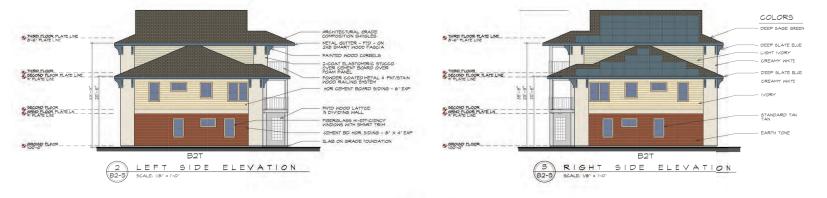
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SHEET 30 OF 39

JOB NO. 39797.01

B2T-B3T-B3T-B2T SINGLE FAMILY ATTACHED DWELLINGS W / GARAGES







4 REAR B2-3 SCALE, 1/8" = 1'-0

J.T. HEATER - ARCHITECT  UNTIL SUCH TIME AS HERSE DRAWNICS ARE APROPHED BY THE APROPHED TE REVEWING AGENCIES, AR ENGINEERING APROPES THEIR USE ONLY FOR THE PURPOSES SUGNATED BY WRITEN AUTHORIZATION.

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SHEET 31 OF 39 JOB NO. 39797.01



B2C-B3T-B2C B2C 2 STORY TWO FAMILY ATTACHED DWELLINGS W/ GARAGES & B3T 3 STORY SINGLE FAMILY ATTACHED DWELLING W/ GARAGE







4 REAR ELEVATIONS
24-25

J.T. HEATER - ARCHITECT

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UNTIL SUCH TIME AS HERES DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING ASCHOLES, ARE REVIDERENIG APPROVES THEIR USE DESIGNATED BY WRITTEN AUTHORIZATION.

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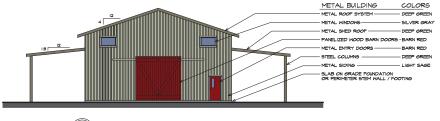
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SHEET 33 OF 39 JOB NO. 39797.01

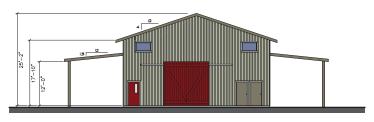
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## C2 TWO FAMILY ATTACHED DWELLINGS W/O GARAGES











J.T. HEATER - ARCHITECT

|46|8 TYLER FOOTE RD. | CO ARC.00407289 | NEVADA CITY, CA | 95559 | FIONE: 500-559-6599 |

UNTIL SUCH TIME AS HERSE DRAWMOS ARE APROPAGED BY THE APROPAGENE REVERNING AGENORES, AR ENGINEERING ARROVES THEIR USE ONLY FOR THE PURPOSES SUGNATION

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POLESTAR VILLAGE

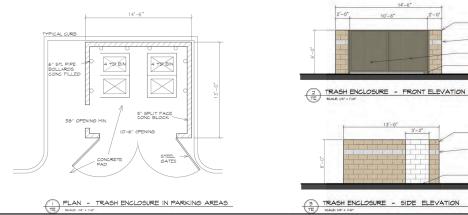
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SHEET 34 OF 39 JOB NO. 39797.01

#### TWO FAMILY ATTACHED DWELLINGS W/O GARAGES



## TRASH ENCLOSURE



J.T. HEATER - ARCHITECT 14618 TYLER FOOTE RD. NEVADA CITY, CA 95959

8' SPLIT FACE CONCRETE BLOCK TAN FIELD

8' SPLIT FACE CONCRETE BLOCK NATURAL ACCENT BAND (2) 5' SWINGING GATES - IO' MIN (LR DEEP SAGE GREEN

B' SPLIT FACE CONCRETE BLOCK TAN FIELD 8' SPLIT FACE CONCRETE BLOCK NATURAL ACCENT BAND

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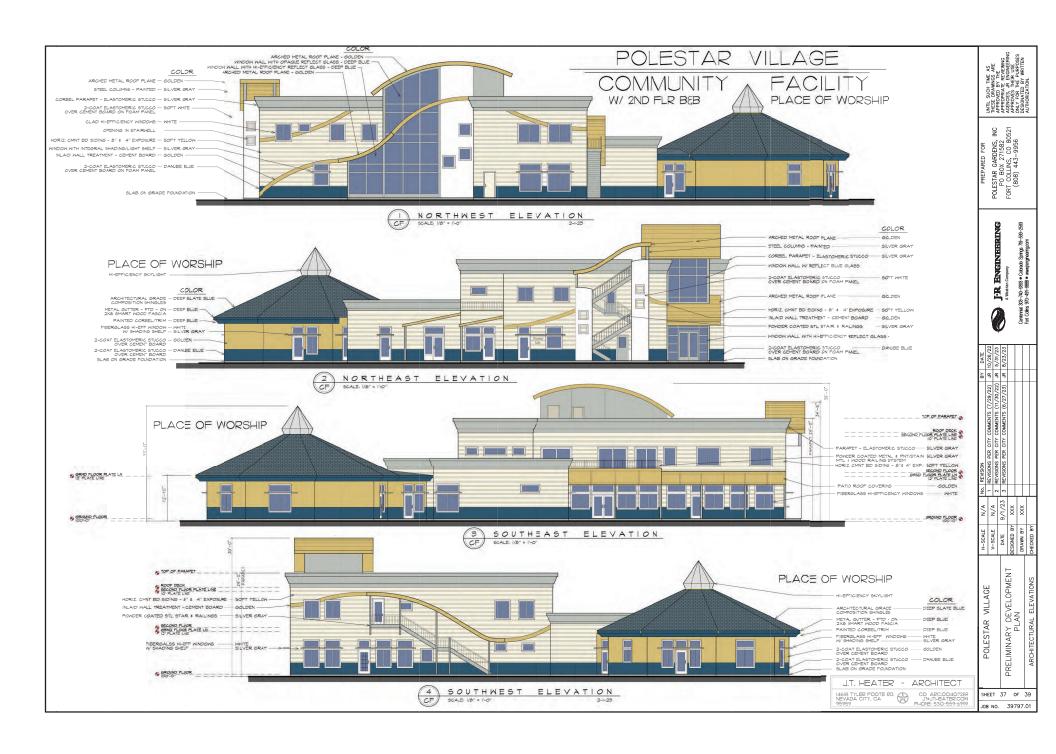
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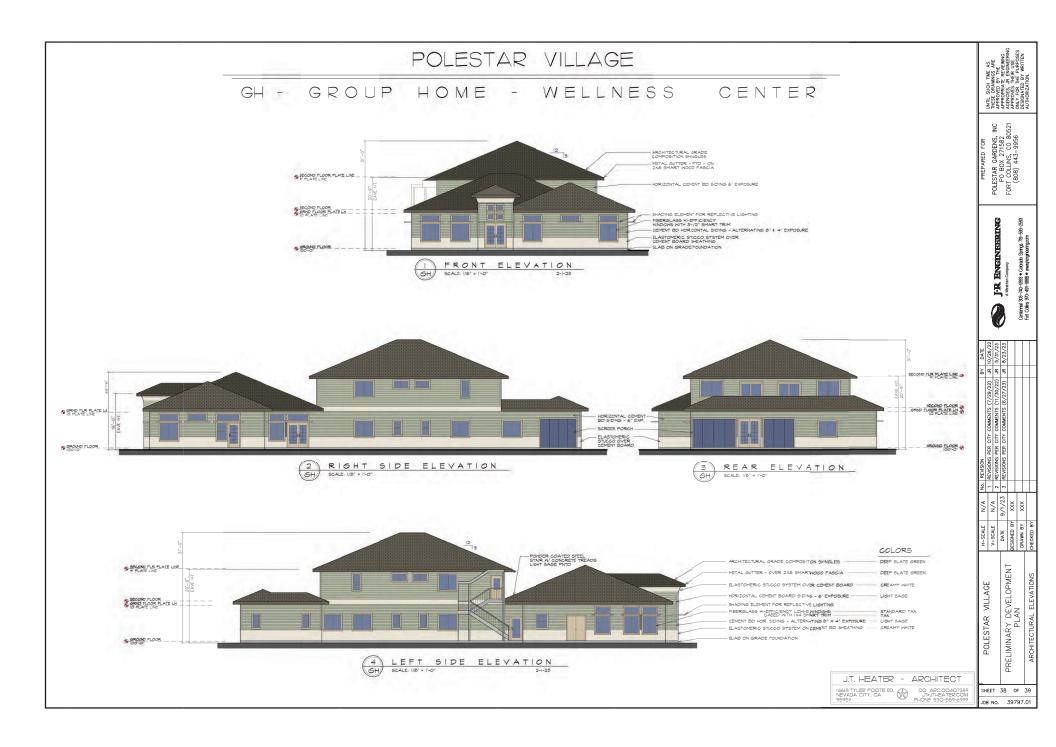


PRELIMINARY DEVELOPMENT PLAN POLESTAR VILLAGE SHEET 35 OF 39

JOB NO. 39797.01

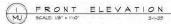


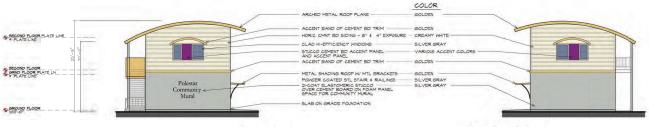




## MU MIXED USE BUILDING IST FLOOR RETAIL - 2ND FLOOR LIVING UNITS







LEFT SIDE ELEVATION RIGHT SIDE ELEVATION SCALE: 1/8" = 1'-0" SCALE 1/8" = 1'-0"



4 REAR ELEVATION
MU SCALE: 1/8" 8 1-0" 2-1-23

J.T. HEATER - ARCHITECT  UNTIL SUCH TIME AS HERSE DRAWNICS ARE APROPHED BY THE APROPHED TE REVEWING AGENCIES, AR ENGINEERING APROPES THEIR USE ONLY FOR THE PURPOSES SUGNATED BY WRITEN AUTHORIZATION.

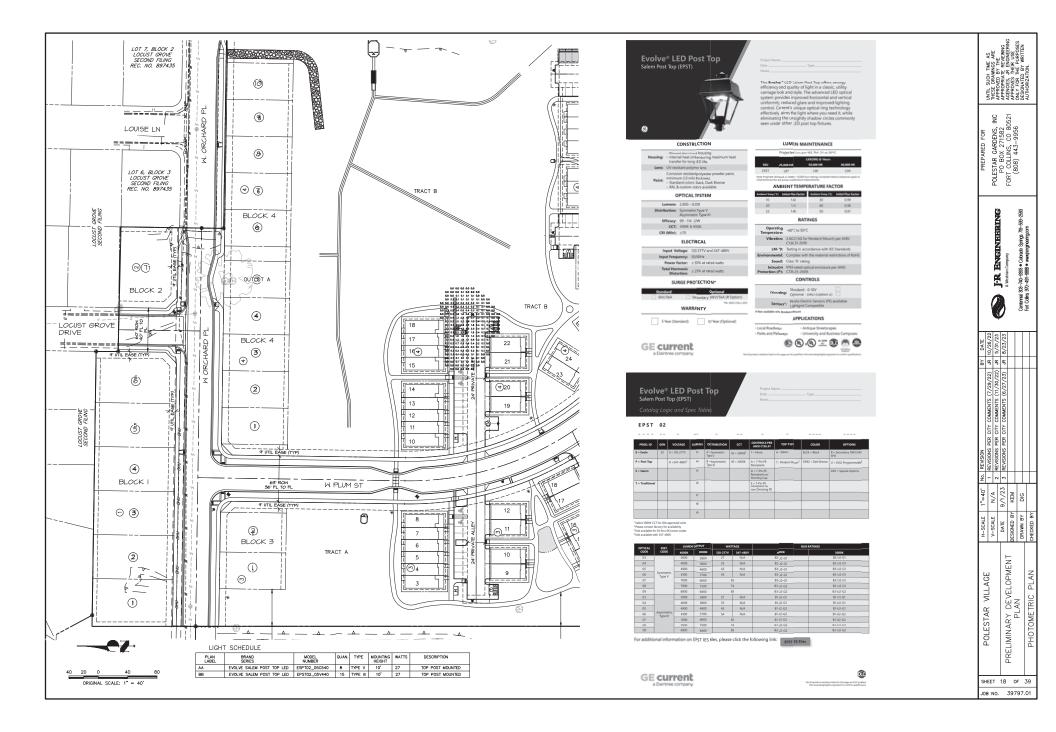
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(808) 443–9956

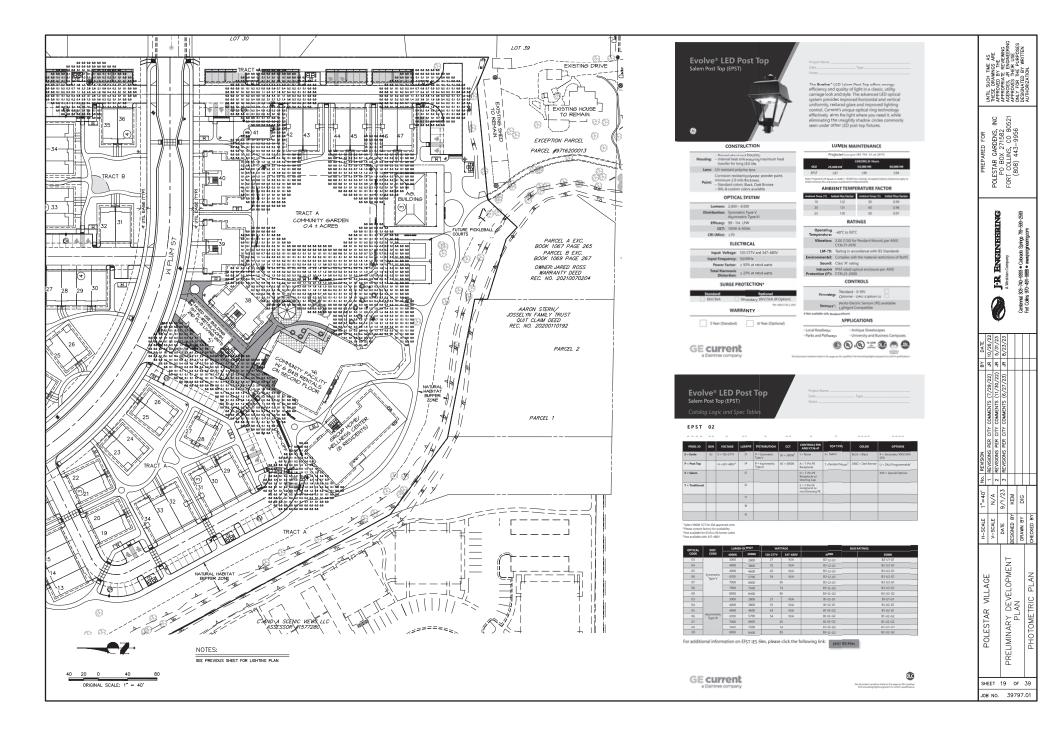
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R CITY COMMENTS (7/29/22) JR 11 R CITY COMMENTS (11/36/22) JR 5 R CITY COMMENTS (6/27/23) JR 6 PRELIMINARY DEVELOPMENT PLAN POLESTAR VILLAGE

SHEET 39 OF 39 JOB NO. 39797.01





# UTILITY PLANS FOR POLESTAR MIXED-USE DEVELOPMENT LOCATED IN THE NORTHWEST QUARTER OF SECTION 16, TOWNSHIP 7 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN PROPERTY OWNER CITY OF FORT COLLINS, COUNTY OF LARIMER, STATE OF COLORADO **AUGUST 2023** PLANNER/LANDSCAPE ARCHITECT SURVEYOR ATTN: JARROD ADAMS, PLS 7200 S ALTON WAY, SUITE C400 CENTENNIAL, CO 80112 P~303.740.9393 BASIS OF BEARINGS BASIS OF BEARINGS: THE WEST LINE OF 9 WEST OF THE 6TH PRINCIPAL MERICAP STAMPED "PLS 24307 2005" IN ALUMINUM CAP STAMPED "PLS 2023 COLORADO STATE PLANE NORTH ZONE SHEET NOEX 1 COMPS JEET COLLINS GENERAL NOTES 2 GENERAL NOTES 3 GENERAL HECRIO 4 OVERAL LEGENO 6-B HORIZONTAL CONTROL PLAN 1-14 FRANCE PLAN 10-14 PRANCE PLAN 10-14 PRANCE PLAN 10-15 PRANCE PLAN 10-16 PRANCE PLAN 10-17 PRANCE PLAN 10-18 PRANCE PLAN BENCHMARK FORT COLLINS BENCHMARK MONUMENT 22-97, ELEVATION 5141.86 (NAVD 88 UTILITY CONTACTS ENGINEER'S STATEMENT CARLE CONCAST 1201 UNIVERSITY AVENUE FORT COLLINS, CO 80521 PRELIMINARY NOT FOR CONSTRUCTION STORMWATER, WATER, WASTEWATER FORT COLLINS UTILITIES 700 WOOD STREET, FORT COLLINS, CO 80521 VICINITY MAP 63' R.O.W JOSEPH M. FRANK, P.E. COLORADO NO. 53399 FOR AND ON BEHALF OF JR ENGINEERING, LLC 6" VERTICAL CURB AND GUTTER (TYP) GARAGE City of Fort Collins, Colorado UTILITY PLAN APPROVA. \_ 2% MIN CONC. HEADER CONNECTOR LOCAL STREET (W. PLUM STREET) PRIVATE ALLEY 63' R.O.W. 36' FL - FL THESE FLANS HAVE BEEN REVENUE BY THE CITY OF FORT COLLINS FOR CONCEPT ONLY. SEE SEVEN DOES NOT MENT RESPONSIBLITY OF FORT COLLINS FOR ACCURACY, AND CORRECTIONS OF THE CALCULATIONS, FURTHERMORE, THE REVENUE DOES NOT MENT HAIT THE RECORDING TO THE CONCEPT ONLY BEEN SHALL NOT BE CONSTITUTED IN ANY FAMOUS ASSOCIATION OF THE COLLINS ACCURATED TO THE CONTROL OF THE CONT 36' EXCLUSIVE UTILITY EASEMENT-COVER SHEET POLESTAR VILLAGE JOB NO. 39797.01 05/31/23 SHEET 1 OF 31 45'-6" × 5'-6" > FR ENGINE PROPOSED WATER MAIN Centennial 303-740-9998 ● Colorado Springs 799-699-2598 Fort Collins 970-491-9898 ● www.jrengineering.com CONNECTOR LOCAL STREET W/ ROLLOVER C & G (W. ORCHARD PLACE) PRIVATE ALLEY

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THESE PUBLIC IMPROVEMENT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF THREE YEARS FROM THE DATE OF APPROVAL BY THE LOCAL ENTITY ENGNEER. USE OF THESE PLANS AFTER THE EXPIRATION DATE MILL REQUIRE A NEW REVIEW AND APPROVAL PROCESS OF THE SECOND PROPERTY OF ANY PROPER BY THE LOAD, DITTY FROM TO COMMISCRADE OF ANY TWO'S STORM IN THICK FAUNT.

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DEVELOPER SHALL COORDINATE AND COOPERATE WITH THE LOCAL ENTITY, AND ALL UTILITY COMPANIES INVOLVED, TO ASSURE THAT WORK IS ACCOMPUSHED IN A TIMELY FASHION AND WITH A MINIBUL DISRUPTION OF SERVICE. THE DEVELOPER SHALL BE RESPONSIBLE CONTACTING, IN ADVANCE, ALL PARTIES AFFICIED BY ANY DISRUPTION OF AUTULITY SOMEWICE AS WILL AS UTULITY COMPANIES.

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COURSE OF CONSTRUCTION.
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Y. C duplicate shall furnish all convonences and assistances to aid the eroson control inspectors of materials, Kwamiship, records, and self-inspections, etc. of the control measures involved in the construction activities.

THE DELICIPES SHALL REQUEST CLARIFICATION OF ALL APPLACENT SITE CONSTRUCTION ISSUES THAT MAY ARISE DUE TO INCONSISTENCES IN CONSISTENCES SET SET OF SITE CONSISTENCES THE RESISTENCE AND EXAMPLE OF A SECRETARY DESTRUCTION OF THE EROSON CONTROL INSPECTOR. THE EROSON CONTROL INSPECTOR SHALL PROSED OF OTHERS. FUNDMENTARY DATA PROVIDED BY OTHERS. CONTRICL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUAL. CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL CONTROL MEASURES AS SITE CONDITIONS WARRANT, TO THE EXTENT AUTHORIZED DECEVANT LEGAL JURHORITY.

MELEVANI LEWIS JUHNSTIT.

WITH ANY CONSTRUCTION STANDARDS, OCCASIONS MAY ARSE WHERE THE MINIMUM EROSION CONTROL STANDARDS ARE ETHER PROPRIETE OR CANNOT BE JUSTIFIED. IN THESE CASES, A VARIANCE TO THESE STANDARDS MAY BE APPLIED FOR PURSUANT TO THE MINIMUM. AND PROCEDURES OF THE MANUAL. INSPECTION. THE CONTRACTOR SHALL INSPECT SIT POLUTIANT SOURCES AND IMPLEMENT CONTROL MEASURES AT A MINIMAM OF ONCE EVERY TION MEDIS DURING CONSTRUCTION AND WITHIN 24 HOURS FOLLOWING A PRECIPITATION EVENT, DOCUMENTATION OF EACH INSPECTION SHALL BE RECORDED AND RETAINED BY THE CONTRACTOR.

ALL TEMPORARY CONTROL MEASURES SHALL BE CLEAKED, REPAIRED, OR RECONSTRUCTED AS NECESSARY IN ORDER TO ASSURE CONTINUAL PERFORMANCE OF THEIR INTENDED FUNCTION, ALL RETAINED SEDIMENTS, PARTICLARILY THOSE ON PAYED ROADWAY SURFACES, SHALL BE

REMOTE AND SOFTED OF IT A LANGE AND COCKING TO A KIND TO CAUSE THEM RELICES THE ANY PRIMARY ANY.

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22. ALL DOPOLE DOES ON DETAINED AND AND CONSECUED A PORTION POLITION TO SHALL HAVE CONTROL MEASURES INFLIENTED.

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ONLY BE SCHOOL MODIFIED BY ANY TO ANY TO ANY TO ANY TO STREET ANY TO STR

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AT ALL PORTIS WEIGH VERTILES DET OR LEAVE THE DIPOSED DRIT JAREA ON TO A HARDSCAPE OR SIDM HARDSCAPE (CONCRETE, ASPHALT
AND HARDSCAPE OR AND HARDSC IN ALL AREAS THAT THE STRUCTURAL TRACKING CONTROL MEASURES FAIL TO PREVENT VEHICLE TRACKING, COLLECTION AND PROPER DISPOSAL OF THAT MATERIAL IS REQUIRED. ALL INLETS LOCATED NEAR ACCESS POINTS AND AFFECTED BY TRACKING ACTIVITIES SHALL BE PREVENTED FROM THE INTROCUCTION OF SERBINGHI INTO THE DRAINAGE SYSTEM.

IF REPEATED DEPOST OF MATERIAL OCCURS ON A SITE, ADDITIONAL STRUCTURAL TRACKING CONTROLS MAY BE REQUIRED OF THE DEVLICERS BY THE CITY ENGIGN CONTROL INSPECTOR.

THE DEVELOPER SHALL APPLY CONTROL MEASURE TO LIMIT TRAFFIC (SITE MORNER OR PURSUE) IMPACTS AND PROACTIVELY LOCATE ANAMERICAL EXPLANCES TO SET IN CLOSE PROMISET TO THE MORN AREA OR HEAD ATTEMPORATED IN THE CONTROL TO LIMIT POPULATIONAL MEANURS TO DESTRUMENT AND AREA (SALE) ATTEMPORATIONAL MEANURS TO DESTRUMENT AND AREA (SALE) ATTEMPORATIONAL MEANURS TO DESTRUMENT AND AREA (SALE).

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REDUCE THE IMPACTS TO ADJACENT PROPERTIES AND COMMITTY HEALTH, ALL REQUIRED THE SHALL BE FOLCOMEDANCE WITH MANIOPAL RODGER, AND COMMITTY HEALTH ALL REQUIRED PRACTICES SHALL BE ADDITIONAL ONES SHALL BE FOLCOMED. THESE PRACTICES INCLUDE WATERING THE SITES AND DISCONTINUING CONSTITUTION. THE WINDOWN SUSPECES AS DETERMINED BY MAY CITY INSPECTIONS.

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SAW CUTTING MATERIAL SHALL BE IN ACCORDANCE WITH MUNICIPAL CODE \$12-150 FOR AIR EMISSIONS AND ALL WATER APPLICATIONS THE SAW CUTTING SHALL PREVENT MATERIAL FROM LEAVING THE MIMERIATE SITE AND COLLECTED. THESE CUTTING LOCATIONS, ONCE DRIE SHALL BE SERPET AND STANDED OF ALL MATERIAL AND SHALL HAVE PROPER AND LECAL DISPOSAL. MATERIALS STORAGE AND SANITARY FACILITIES

SANTANY FACILITIES SHALL BE PREVENTED FROM THEMSE THROUGH THE USE OF ANCHORING TO THE GOUNG OF LASHING TO A STABLUZ STRUCTURE. THESE FACILITIES SHALL ALSO SE LOCATED AS FAR AS FRANCIAL FROM AN INIT. CURB CUT, PRAINAGE SHARL OF DRAINAGE CONNEYANCES TO PREVENT MATERIAL TRANSPORT FROM LEAWING THE LOCAL AREA. THIS CONSISTS OF THE FACILITY BE LOCATED, WERE PRAITCRL, AT LEAST FIFTY (SO) FEET FROM ANY PERMANENT OR RITERS METANAGE WAYS. OTHER STEE CREATERS A

POINTING SYLL MAKES SHUTS THAT, AND LESS THAN THE STITTS REPORTING COUNTITY FOR SHULLS THAT RIBBS THE FRANTIS DESCRIPTION OF THE SHOP SHOULD SELECTION OF PLASTIC WEIGHTS FROSON CONTROL BLANKETS SHALL NOT BE USED IN AREAS THAT WILDLIFE, SUCH AS SNAKES, A LIVELY TO BE LOCATED AS THESE HAVE PROVEN TO CAUSE ENTRAPMENT ISSUES.

STABLIZATION AND PROJECT COMPATION
ANY STORMARTER PROJECT OF SAY THAPPOWARY CONTROL MEASURE WILL BE RESTORED AND STORM SERRE LIESS WILL BE CLEAN
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SET THE STABLISH PROJECT. OTHER PAINT MESTAGRESSE THE LOW LOVE HOME MEMTAGEMENT.

ALL THANK STREET/ARTHON SPECIFICATIONS SHALL BE DONE IN ACCORDANCE WITH THE MANUAL, CHAPTER 4: CONSTRUCTION CONTROL

ALL DISTURBED, MEAS DESORID TO BE VIOCETATED SHALL BE AMPORED, SEEDED & MALCHED, OR LANGSCAPED AS SPECIFIED IN T

ALL DISTURBED, MEAS DESORID TO BE VIOCETATED SHALL BE AMPORED, SEEDED & MALCHED, OR LANGSCAPED AS SPECIFIED IN T

ADMOCRAFE FLANS STREET SHITLE ASSESSMENT OF STREET, OR SPECIFIED IN T

SOL IN ALL VEGETATED (LANDSCAPED OR SEEDED) AREAS, INCLUDING PARKWAYS AND MEDIANS SHALL COMPLY WITH ALL REQUIREMENT SET FORTH IN SECTIONS 12-130 THROUGH 12-132 OF THE CITY MUNICIPAL CODE, AS WELL AS SECTION 3.8.21 FOR THE CITY LAND U

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POLESTAR GARDENS, IN PO BOX 271582 FORT COLLINS, CO 805 (808) 443-9956



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FREZ-WINEL IN THE MESENIE. UP AN INSPECTION.

LOVELAND ONLY, 2-INCH PVC CONDUIT (WITH 3 MIN. COVER) SHALL BE PROVIDED ALONG ARTERIAL ROADWAYS WITH PULL BOXES AT 500SPACING OR DEPLECTION POINTS FOR FUTURE TRAFFIC SIGNAL INTERCONNECT.

MAPTIC SERVICE PRESENT MEMORIS CONSTRUCTION WITES.

ALL SOURCE AND MEMORIS SERVICE TO THE COMPAN NOTES ON THE CONCER SHEET OF THESE PLANS, AS WILL AS THE TRAFFIC SOURCE AND MEMORIS CONSTRUCTION INTO LISTED HIRES.

ALL SHINGLAS ACCURATE MORISON, CHICA, CONSTRUCT, SERVICE SERVICE, STOLL SHULL, SERVICE PRESENTATION AND MEMORIS CHICA, CONSTRUCT, SERVICE SERVICE, STOLL SHULL SERVICE AND MEMORIS CHICAGO, CONTROL OF A CONTRIBUTION OF A CONTRIBUTIO

ALL LANE LINES SHALL BE LATEX PAINT.

PRIOR TO PERMANNYI INSTALLATION OF TRAFFIC STRIPING AND SYNBOLS, THE DEVELOPER SHALL PLACE TEMPORARY TABS OR TAPE
DEPICTING ALLGAMENT AND PLACIMENT OF THE SAME. THER PLACEMENT SHALL BE APPROVID BY THE LOCAL ENTITY ENGINEER PRIOR TO
PERMANNIN INSTALLATION OF STREPING AND SYNBOLD AND THE STREPHING AND THE

DEFICIENT ACCOUNTS AND PACKAGEN OF THE SAME, THERE PACKAGEN SHALL BE APPROVED BY THE LOOK, DITTY DEGISTER FROM TO 
PACK-FOODD THERE PACKAGE SHALL BE APPLIED AS SECRETED IN DOCUMENT ASSESSMENT OF THE PACKAGE SHALL BE APPLIED AS SECRETED IN COST STANDARD SHALL BE APPLIED AS SECRETED AS SECRE

ACCITIONAL DETAIL.

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NO RESET MONORS, POSTS, SINCE, AMOUND GUILARTONS WILL BE ACCIPTED.

NO RESET MONORS, POSTS, SINCE, AMOUND GUILARTONS WILL BE ACCIPTED.

ALL, AMONDONS, POSTS, SINCE, AMOUND REPRESENTING SHALL BE ACCIPTED.

S. STORM DRAMACE MOTES I. THE CITY OF FORT COLLING SHALL NOT BE RESPONDED FOR THE MAINTENANCE OF STORM DRAMAGE FACILITIES LOCATED ON PRIVATE PROPERTY, MAINTENANCE OF CHIEF DRAMACE FACILITIES SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS(S).

ALL RECOMMENDATIONS OF THE FINAL DRAINGER AND ENGOISM CONTROL, STOLY "THAL DRAINGER REPORT FOR POLISTAR VILLAGE", DATED AUGUST 2023, SP YE ROMERERISE OF BLUE EFFOLGERS AND REPLEISMENT CHEFT OF THE AUGUST AND AUGUST 2023, SP YE A REGISTRED DROINER AND SEMBRIDE TO THE AUGUSTAND OF GRADIES AND SEMBRIDE TO THE AUGUSTAND SEMBRIDE AUGUST AUGU

JR ENGINEERING GENERAL NOTES:

ALL MATIONAL FOR DEMONSTRATE SHALL BE A CONFIDENCE WITH THE LATES TREATED AND SECRETARIOS OF LANGES COUNTY.
OF OTHER COUNTY WITH DESTRICT, DESCRIPE SHALL BE REPORTED AND SECRETARIOS. ASSESSMENT SHALL BE REP

SPECENCIATION SMALL APPLY.

PRE CONTRACTOR SMALL DEFINA, AT MS OWN DIPPINE, ALL APPLICABLE CODES, LICENSES, STANDARD SPECIFICATIONS, PERMITS, BONDS, ETC., WHICH ARE MICKESSAMY TO PERFORM THE PROPOSED WORK, MICLIDING, BUT NOT LIMITED TO A LOCAL AND STATE GROUNDARDER OF STANDARD SMATCH CONCADERATE MICHIGAND AND CONCADED WITH A MICHIGAND CONCADE OF THE MICHIGAND AND CONCADE OF THE MICHING AND CONCADE OF THE MICHIGAND AND CONCADE OF THE MICHIGAND AND

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THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY CROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. OROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANURE WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS NOR RESOON ON A MANURE IN ORDER TO CONSTRUCT THE IMPROVINGENTS FORM ON THESE FLOODING.

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20. ALL SATISFACTORY SOLD SHALL BE COMPACIDE TO DOS OF THE MAXIMUM STANDARD PROCTOR DENSITY.

21. DESTING AND PROPOSED IMPORTED MATERIALS SHALL BE REVIEWED BY THE GEOTECHNOLAL ENGINEER TO VERIFY SATISFACTORY SOLD CLARACTERISTICS.

21. MARKITERISTICS.

STANDARDS.

22. REFERENCE THE STORM WATER MANAGEMENT PLAN (SMMP) FOR PLACEMENT AND DETAILS OF EROSON CONTROL MEASURES. WHICH SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR PRIOR TO CONSTRUCTION COMMENCEMENT. EROSON CONTROL MEASURES SHALL BE PLACED PRIOR TO CONSTRUCTION TO CONSTRUCT

THE CONTROL HOUSE SHALL BE ASSESSED SHALL BE ASSESSED.

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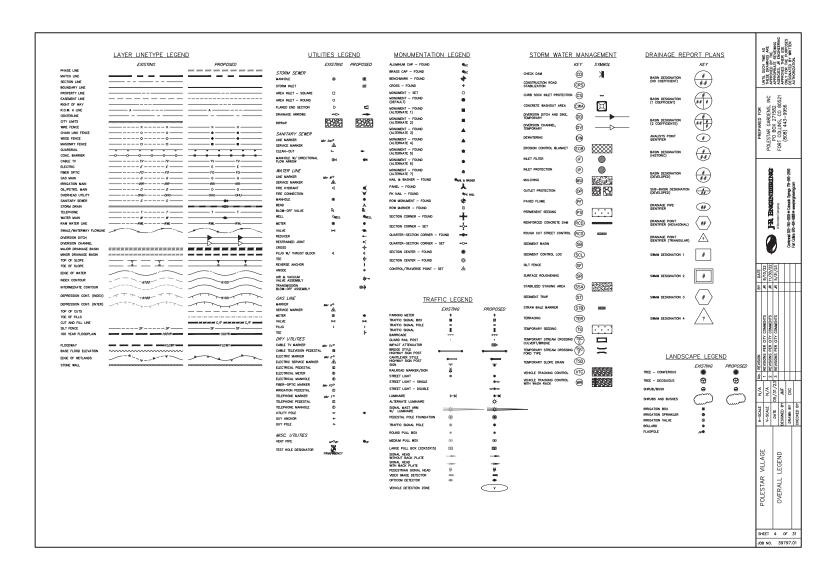
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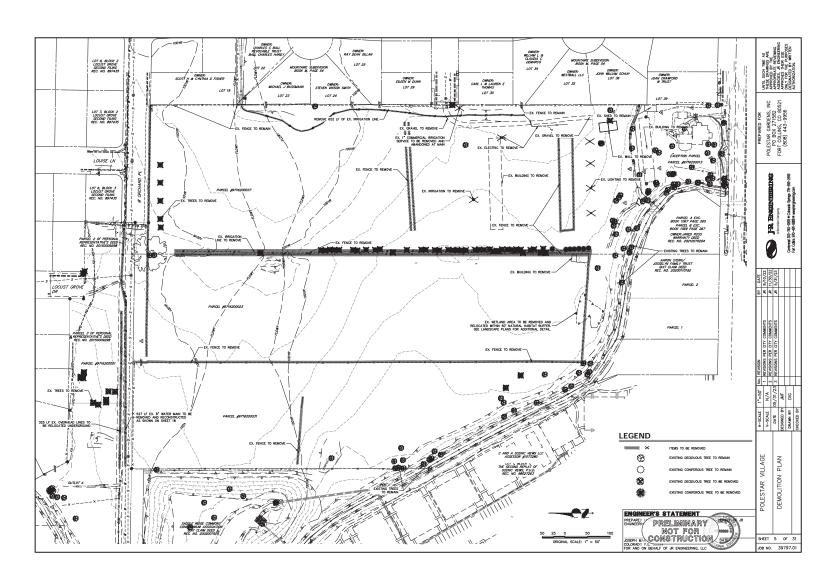
PREPARED FOR
POLESTAR GARDENS, INC
PO BOX 271582
FORT COLLINS, CO 80521
(808) 443–9956

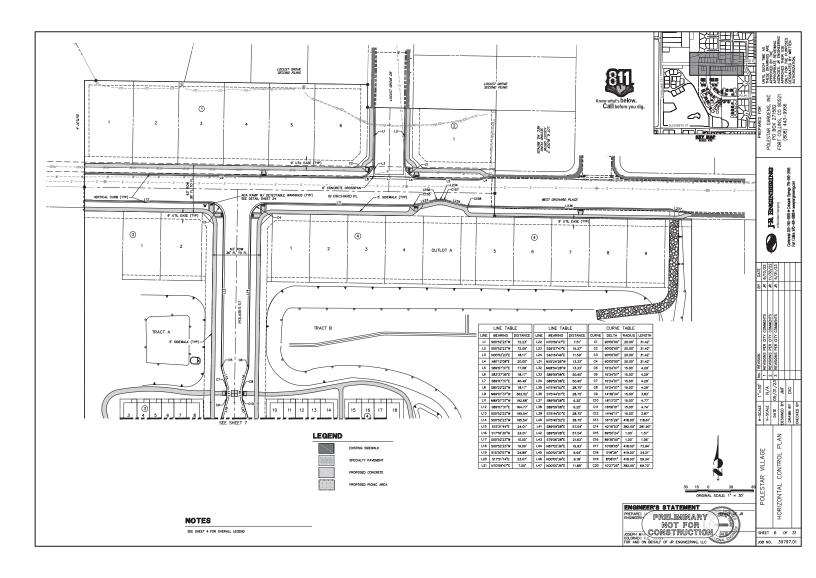
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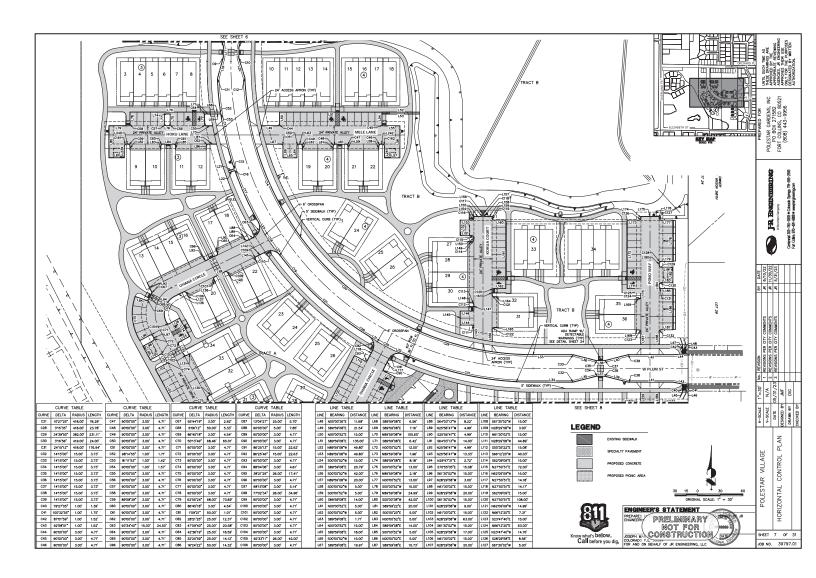


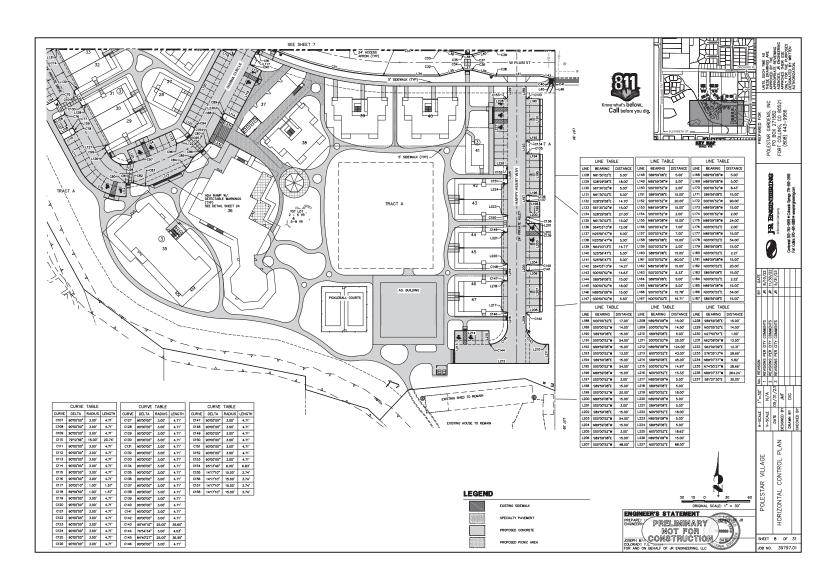
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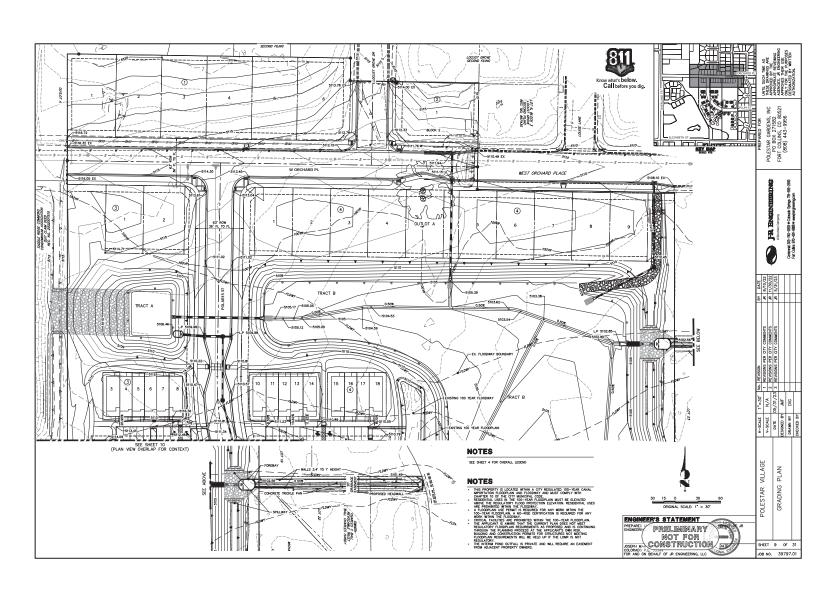


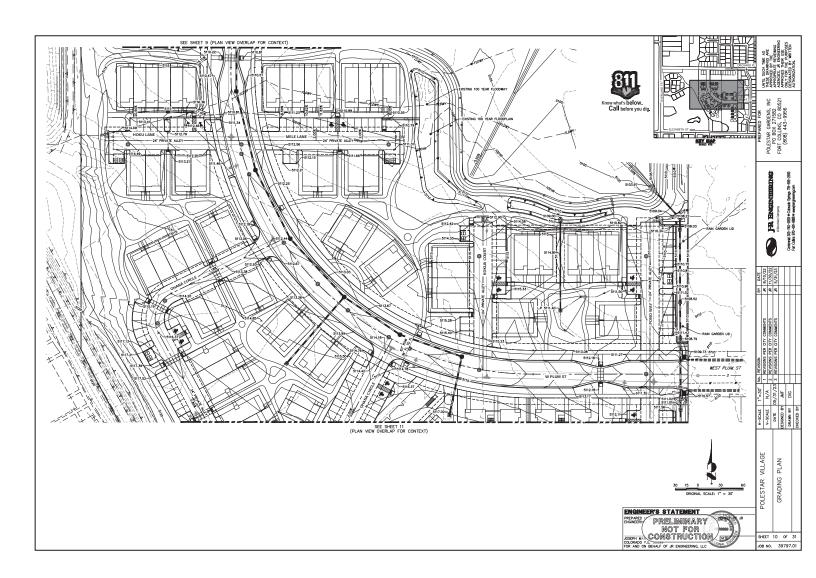


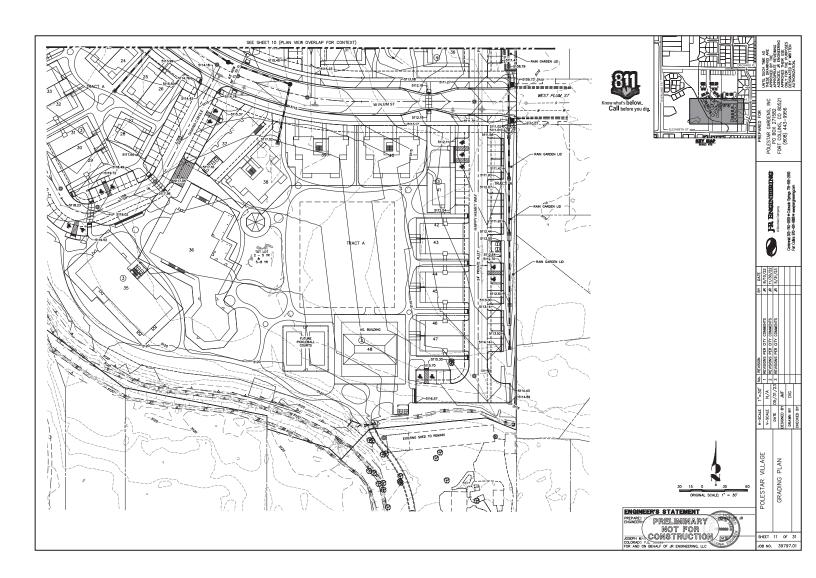


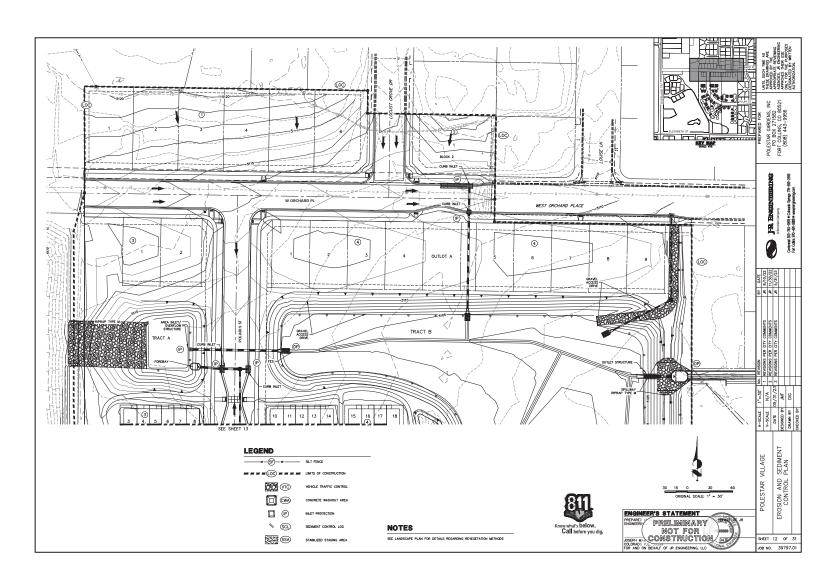


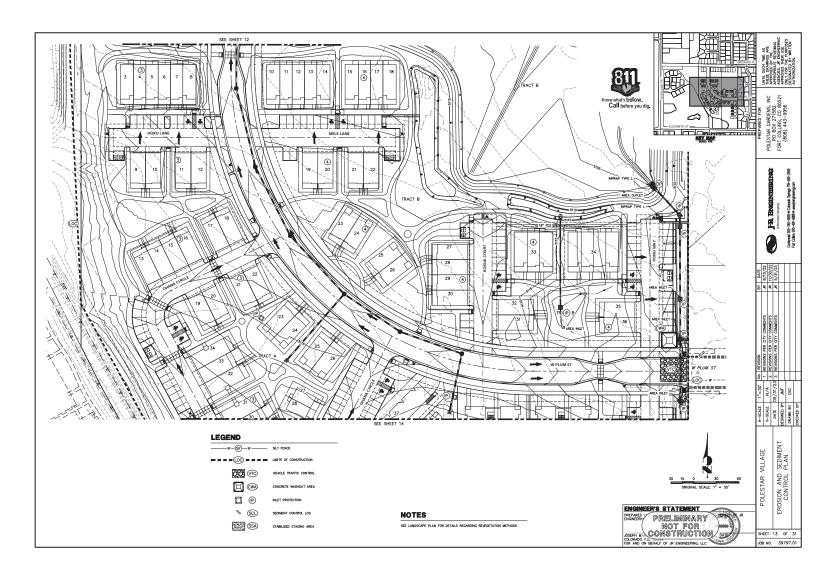


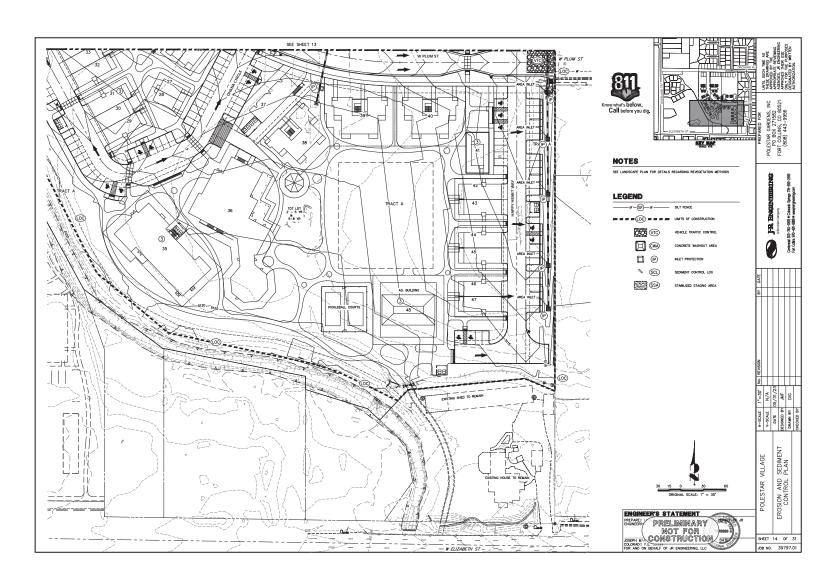


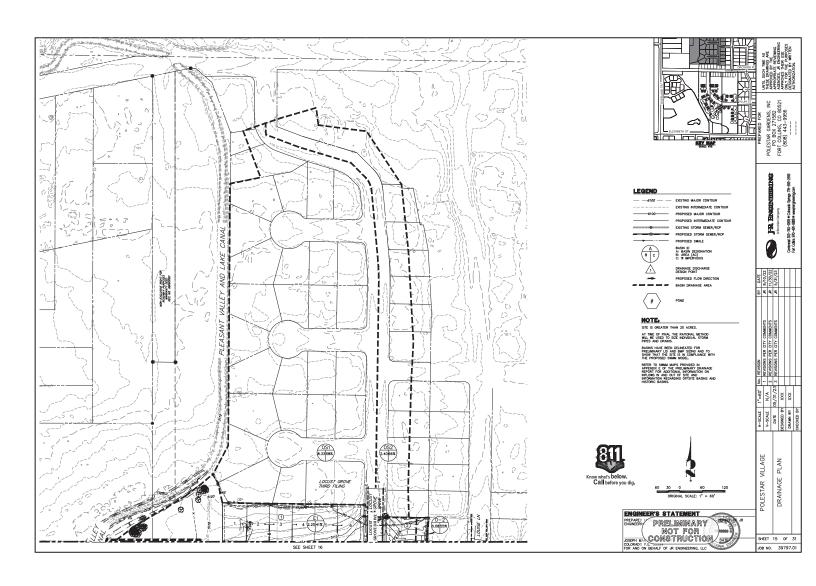


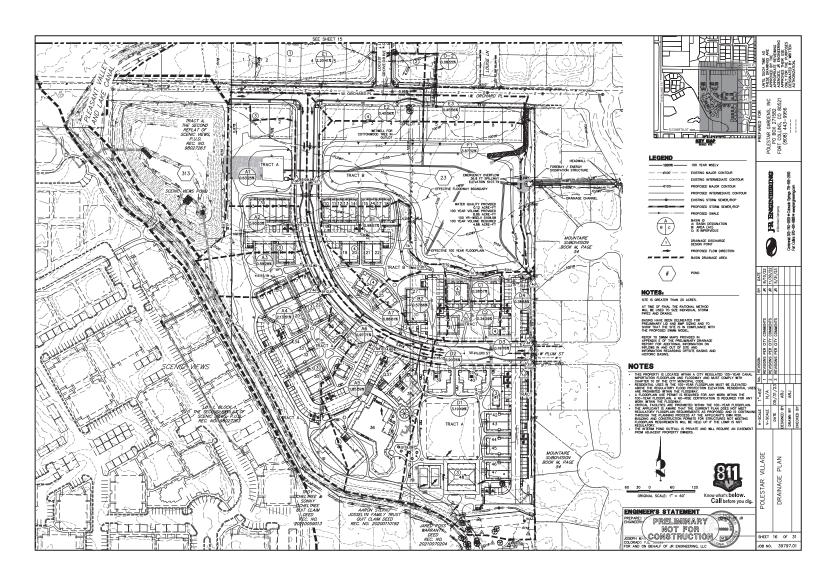


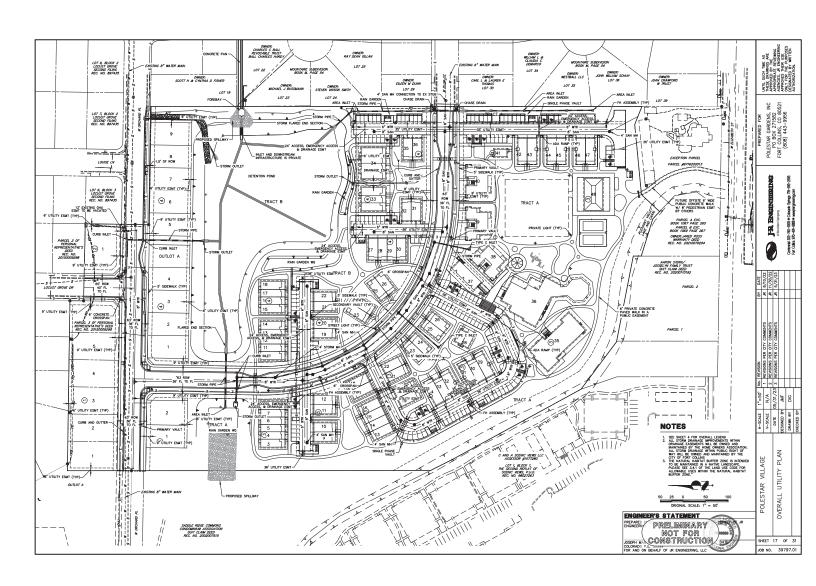


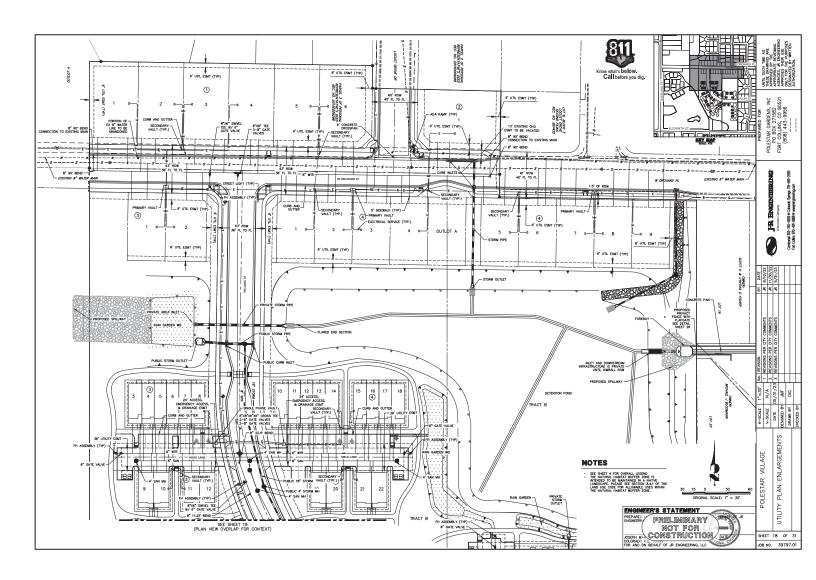


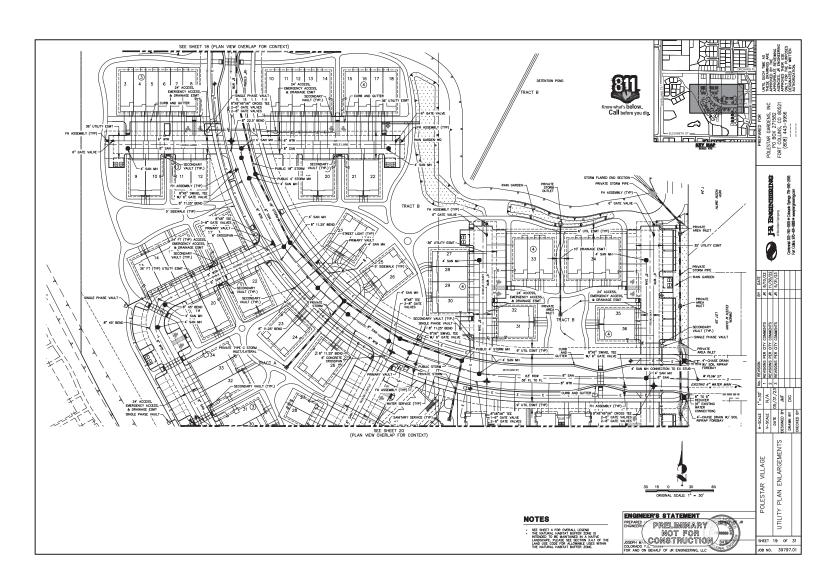


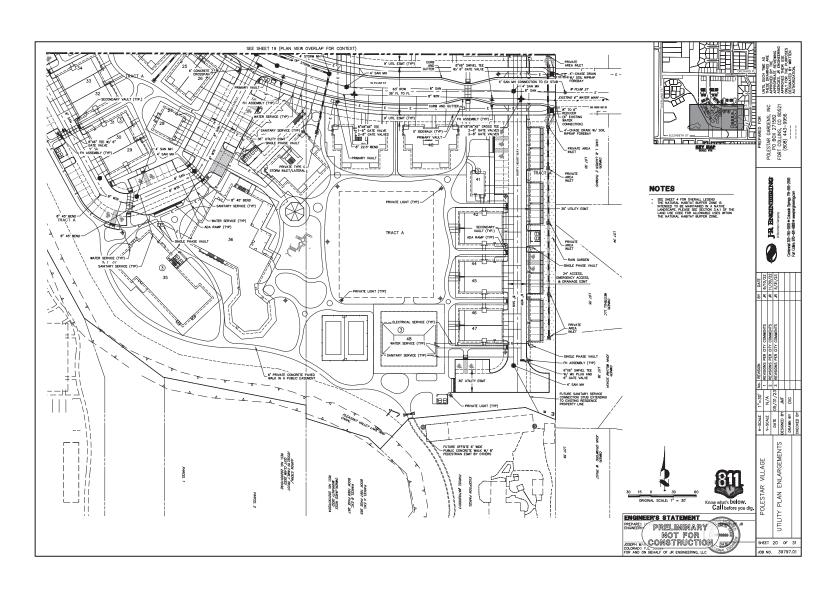


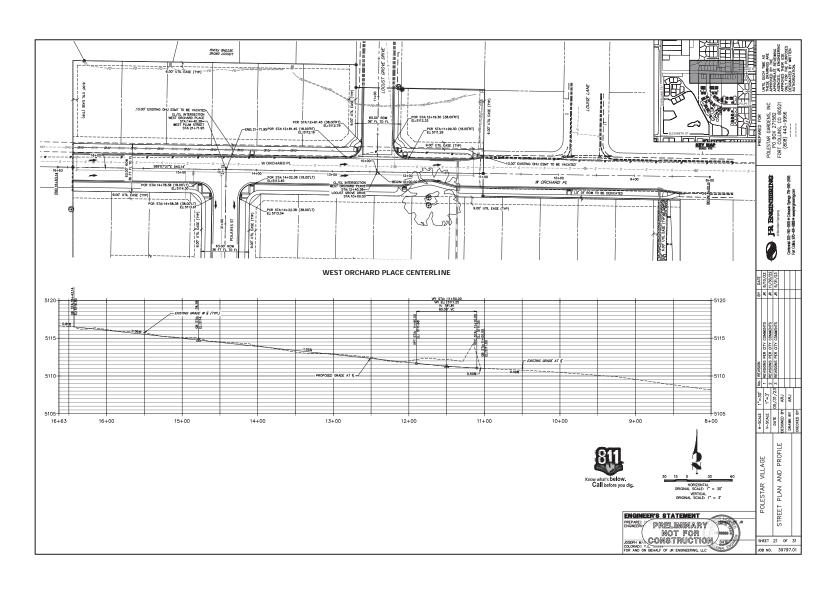


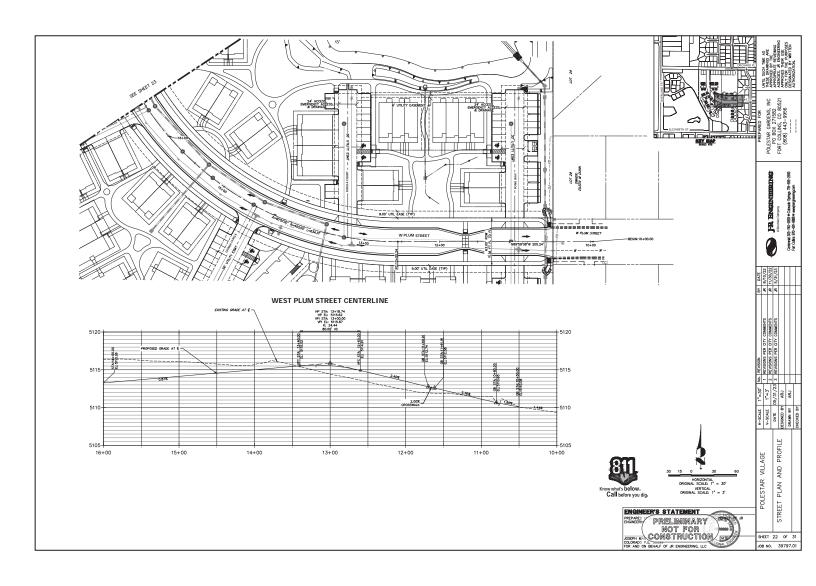


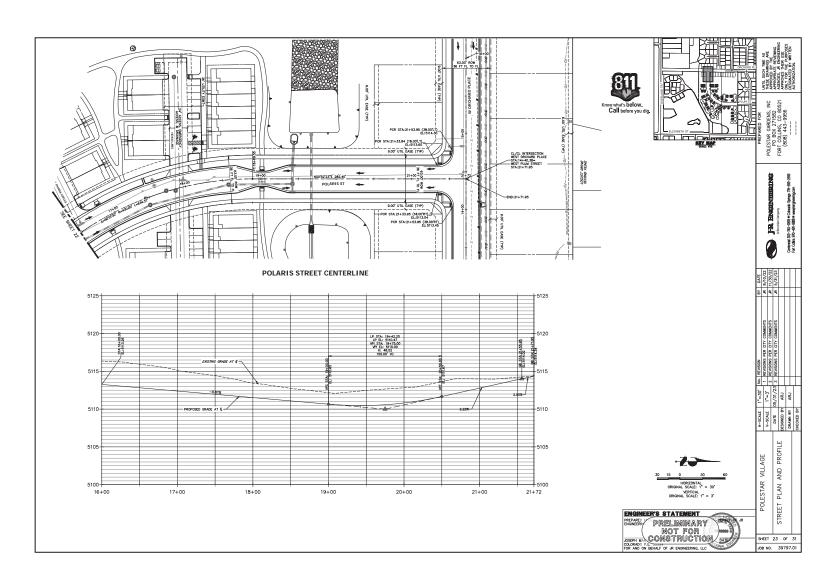


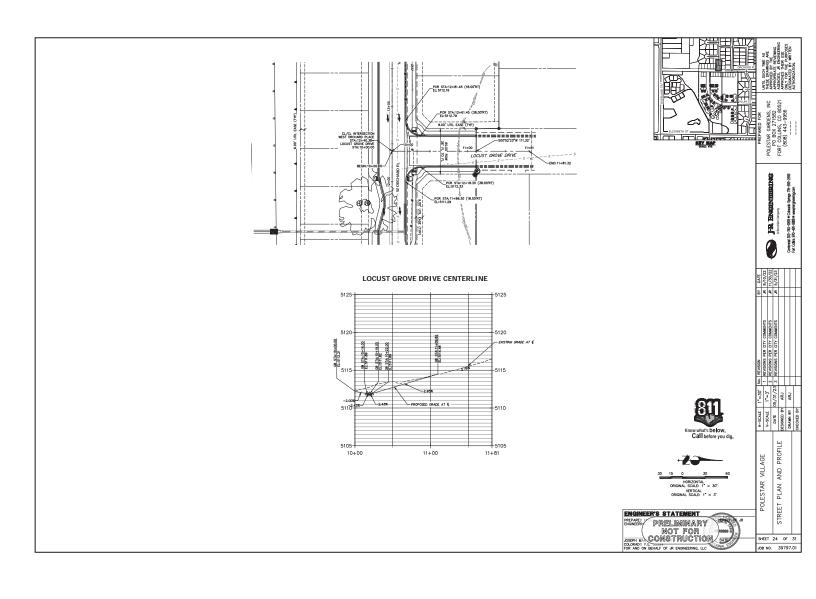


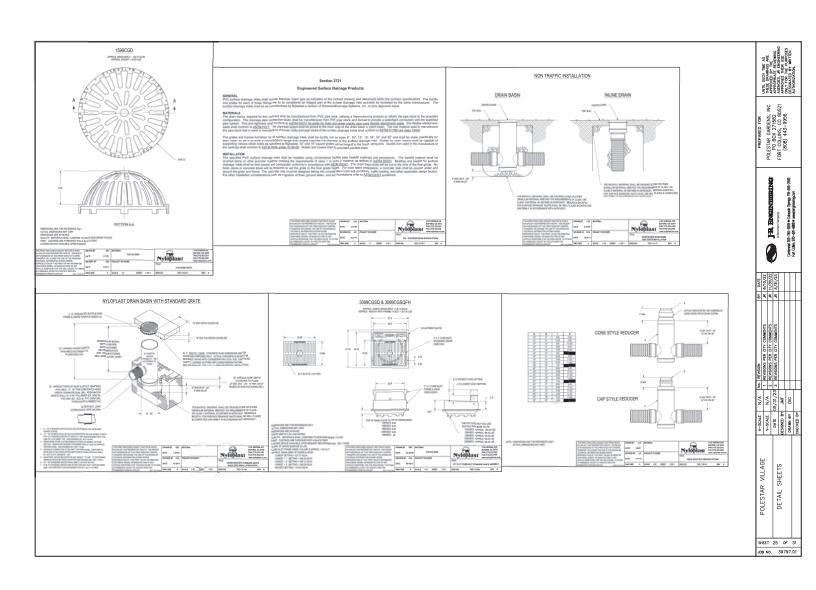


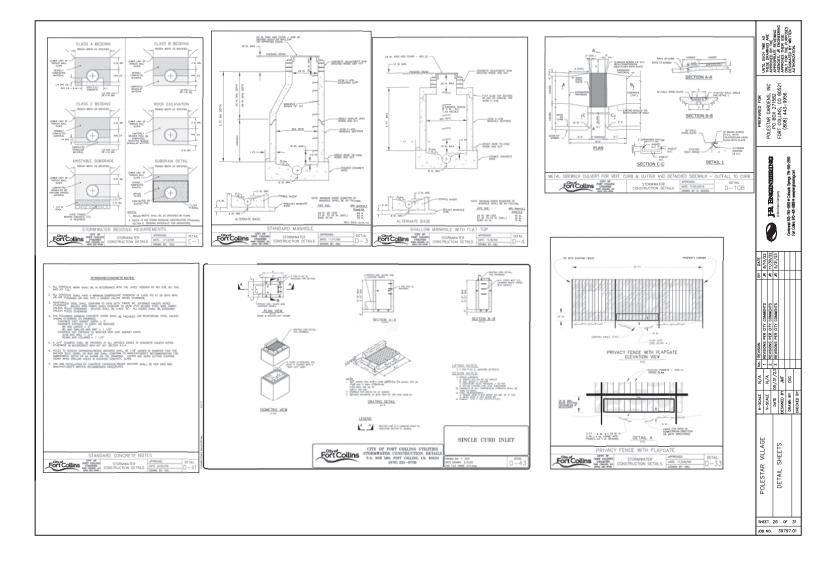


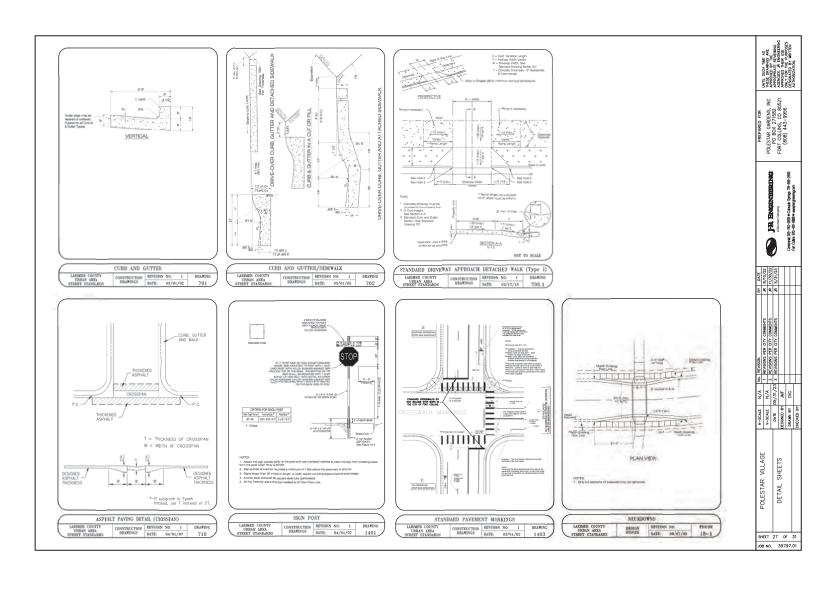


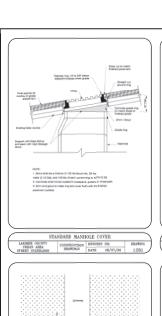


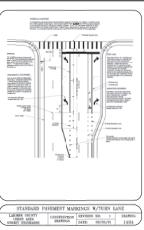
















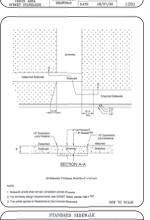


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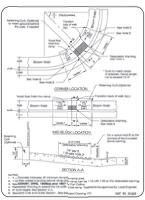
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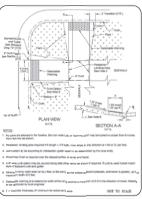
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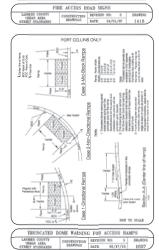




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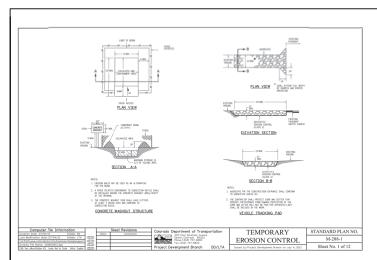
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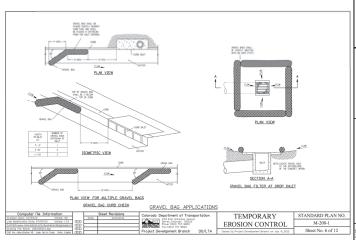


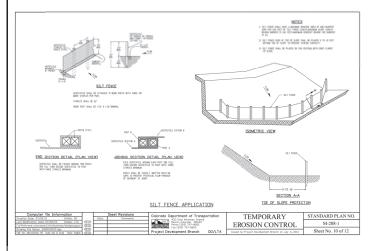
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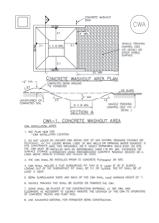
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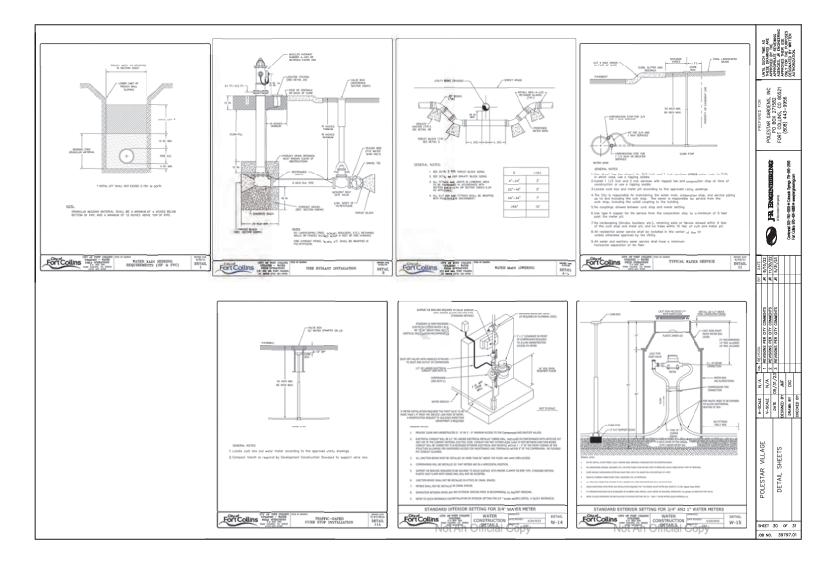


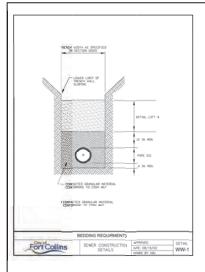


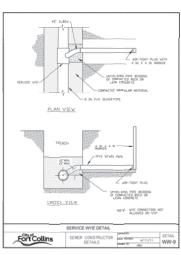
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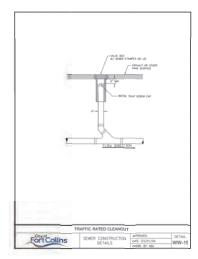
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# POLESTAR VILLAGE FILING NO. 1

A PARCEL OF LAND BEING A PORTION OF THE NORTHWEST QUARTER OF SECTION 16.

TOWNSHIP 7 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT COLLINS, COUNTY OF LARIMER, STATE OF COLORADO

### STATEMENT OF OWNERSHIP AND SUBDIVISION.

KNOW ALL PERSONS BY THESE PRESENTS, THAT THE UNDERSIGNED, BEING OWNER(S) OF THE FOLLOWING DESCRIBED LAND:

A PORTION OF THE NORTHWEST QUARTER OF SECTION 16, TOWNSHIP 7 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF FORT COLLINS, COUNTY OF LARIMER, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE WEST QUARTER CORNER OF SECTION 16, TOWNSHIP 7 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN-

THENCE ON THE SOUTH LINE OF THE NORTHWEST QUARTER OF SAID SECTION 16, S89'07'36"E A DISTANCE OF 1.584.31 FEET:

THENCE ON THE WESTERLY LINE OF MOUNTAIRE SUBDIVISION RECORDED IN BOOK 1770 AT PAGE 599 IN THE RECORDS OF THE LARIMER COUNTY CLERK, NO0700'52'E A DISTANCE OF 208.04 FEET, TO THE POINT OF BEGINNING:

THENCE DEPARTING SAID WESTERLY LINE THE FOIL OWING THREE (3) COLIRSES.

- 1 NGRIO'45"W A DISTANCE OF 42 86 FEET-
- 2. S84"28"14"W A DISTANCE OF 155.34 FEFT:
- 3. S43"1'24"W A DISTANCE OF 54.84 FEET, TO A POINT ON THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED IN BOOK 1069 AT PAGE 267; THENCE ON SAID NORTHERLY LINE, N46'48'36"W A DISTANCE OF 21.99 FEET;

THENCE CONTINUING ON SAID NORTHERLY LINE, N72'46'36"W A DISTANCE OF 85.97 FEET, TO A POINT ON THE EASTERLY LINE OF THAT PROPERTY DESCRIBED IN THE QUIT CLAIM DEED RECORDED UNDER REC. NO. 20200110192:

THENCE ON SAID EASTERLY LINE, NOO'00'19"E A DISTANCE OF 17.51 FEET;

THENCE ON THE NORTHERLY LINE OF PROPERTY DESCRIBED IN THE QUIT CLAIM DEED RECORDED UNDER REC. NO. 20200110192 AND THE NORTHERLY LINE OF THAT PROPERTY DESCRIBED IN THE QUIT CLAIM DEED RECORDED UNDER RECEPTION NO. 20210059013, N78'54'38"W A DISTANCE OF 192.76 FEET;

THENCE CONTINUING ON SAID NORTHERLY LINE, N5311'08"W A DISTANCE OF 130.42 FEET, TO A POINT ON THE EASTERLY LINE OF THE SECOND REPLAT OF SCENIC VIEWS, P.U.D. RECORDED UNDER RECEPTION NO. 98027263;

THENCE ON SAID EASTERLY LINE, N28\*39'08"W A DISTANCE OF 321,27 FEET:

THENCE CONTINUING ON SAID EASTERLY LINE, N26'43'08"W A DISTANCE OF 57.01 FEET:

THENCE CONTINUING ON SAID EASTERLY LINE AND IT'S EXTENSION, NOOTOO'28"W A DISTANCE OF 658,99 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 16;

THENCE N00'00'28"W A DISTANCE OF 141.23 FEET; THENCE SBYOU'S E A DISTANCE OF 15.21 FEET, TO A POINT ON THE SOUTHERLY LINE OF THE PLAT OF LOCUST GROVE THIRD FILING RECORDED UNDER RECEPTION NO. 19335:

THENCE ON SAID SOUTHERLY LINE THE FOLLOWING THREE (3) COURSES:

- 3. S88"40"58"E A DISTANCE OF 170.00 FEET, TO THE WESTERLY LINE OF THE PLAT OF LOCUST GROVE SECOND FILING RECORDED UNDER RECEPTION NO. 897435:

THENCE ON SAID WESTERLY LINE, S00'49'37"W A DISTANCE OF 110.00 FEET, TO A POINT ON THE NORTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 16:

THENCE CONTINUING ON SAID WESTERLY LINE, SOU"S1"45"W A DISTANCE OF 30.00 FEET, TO THE SOUTHERLY RIGHT-OF-WAY LINE OF ORCHARD PLACE AS SHOWN THE PLAT OF LOCUST GROVE SECOND FILING.

THENCE ON SAID SOUTHERLY RIGHT-OF-WAY LINE, S89'07'37"E A DISTANCE OF 261.10 FEET, TO THE WESTERLY LINE OF MOUNTAIRE SUBDIVISION RECORDED IN BOOK 1770 AT PAGE 599-

WHICH ABOVE DESCRIBED TRACT CONTAINS A CALCULATED AREA OF 893,493 SQUARE FEET OR 20.5118 ACRES, MORE OR LESS

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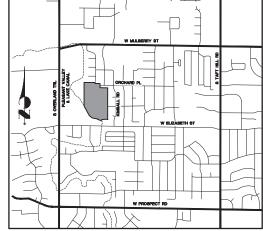
### OWNER.

POLESTAR VILLAGE HOLDINGS LLC

\_\_ DATE: \_\_\_ BY: (NAME) (TITLE) STATE OF COUNTY OF

OF POLESTAR VILLAGE HOLDINGS, LLC, THIS \_\_\_\_\_ DAY OF \_\_\_\_\_\_, 20\_\_\_

MOTARY DURING



VICINITY MAP

## MAINTENANCE GUARANTEE

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ALL PERSONS TAKE NOTICE THAT THE OWNER HAS EXECUTED CERTAIN DOCUMENTS PERTAINING TO THIS DEVELOPMENT WHICH CREATE CERTAIN RIGHTS AND OBLIGATIONS OF THE DEVELOPMENT, THE OWNER AND/OR SUBSEQUENT OWNERS OF ALL OR PORTIONS OF THE DEVELOPMENT SITE, MANY OF WHICH OBLIGATIONS CONSTITUTE PROMISES AND COVENISTAT THAT, EACH WITH THE OBLIGATIONS UNDER THIS PLAT, ROIN WITH THE LAUN. THE SAND DOCUMENTS MAY ALSO BE AMENDED:
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### ATTORNEY'S CERTIFICATION

LIFERRY CRITET THAT THIS SUBDIVISION PLAT HAS BEDLIGHTY DECORED AS REQUIRED PURSUANT TO SECTION 2.2.X(c)(3)(d) THROUGH (e) INCLUSIVE OF THE AREA OF A CORPORATION IN CONTROL THAT ARE DULY AUTHORIZED SHOUNDESS. DECLINES AND THAT ALL PRESSANT SHOWN THAT SUBDIVISION PLAT ON BEPLATE OF A CORPORATION IN CONTROL THAT ARE DULY AUTHORIZED SHOWN THE STATE OF COLORISON. THIS CRITETION IS SARSED UPON THE SECONISE OF THE STATE OF COLORISON. THIS CRITETION IS SARSED UPON THE SECONISE OF THE STATE OF COLORISON. THE STATE OF COLORISON IS SARSED UPON THE SECONISE OF THE STATE OF LABORISON OF THE PLAT AND OTHER INFORMATION DISCOVERED BY ME THROUGH REASONABLE WOUNTY AND IS LIMITED AS AUTHORIZED BY SECONION 2.2.X(c)(3)(d) THROUGH PLATE OF THE PLAT AND OTHER INFORMATION DISCOVERED BY ME THROUGH REASONABLE WOUNTY AND IS LIMITED AS AUTHORIZED BY SECONION 2.2.X(c)(3)(d) THROUGH PLATE OF THE PLATE OF

### ACCEPTANCE CERTIFICATE

SHEWEVOR'S STATEMENT.

PLEASANT VALLEY AND LAKE CANAL

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS \_\_\_\_ DAY OF \_\_\_\_

AS \_\_\_\_\_\_OF PLEASANT VALLEY AND LAKE CANAL.

DEREK LEE VAGIAS COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR #38578

### APPROVED AS TO FORM, CITY ENGINEER.

BY THE CITY ENGINEER OF THE CITY OF FORT COLLINS, COLORADO THIS \_\_\_ DAY OF \_\_\_\_\_

## PLANNING APPROVAL

CITY ENGINEER

BY THE DIRECTOR OF COMMUNITY DEVELOPMENT AND NEIGHBORHOOD SERVICES. THE CITY OF FORT COLLINS, COLORADO

THIS \_\_\_\_\_\_ DAY OF \_\_\_\_\_\_ A.D., 20\_\_\_\_

DIRECTOR OF COMMUNITY DEVELOPMENT AND NEIGHBORHOOD SERVICES

- PER C.R.S. 18-04-50B, ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR.
- 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."
- PER C.R.S. 13-80-105, 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 HEREOK
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- THERE SHALL BE NO PRIVATE CONDITIONS, COVENANTS OR RESTRICTIONS THAT PROHIBIT OR LIMIT THE INSTALLATION OF RESOURCE CONSERVING EQUIPMEN OR LANDSCAPING THAT ARE ALLOWED BY SECTIONS 12-120 12-122 OF THE CITY CODE.
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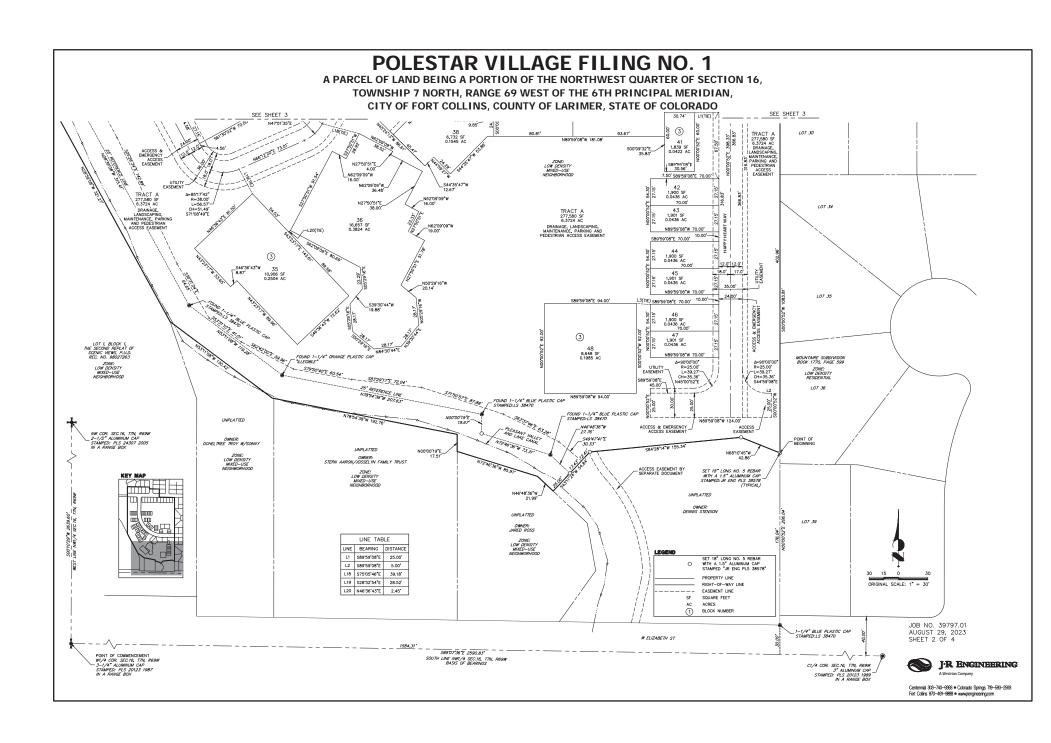
APPLICANT/OWNER POLESTAR GARDENS, INC ATTN: MICHAEL GORNIK PO BOX 271582 FORT COLLINS, CO 80521 P~808.443.9956

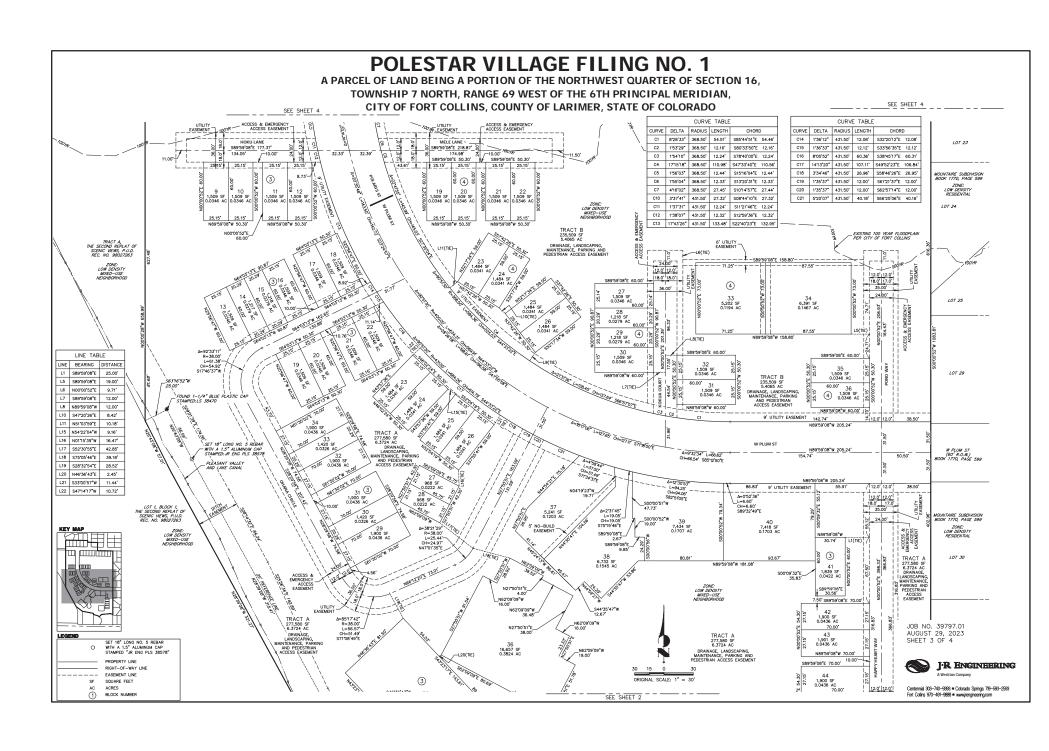
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ATIN: JOEY FRANK, PE
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FORT COLLINS, CO 80525
P~303.267.6232
JFRANK@JRENGINEERING.COM

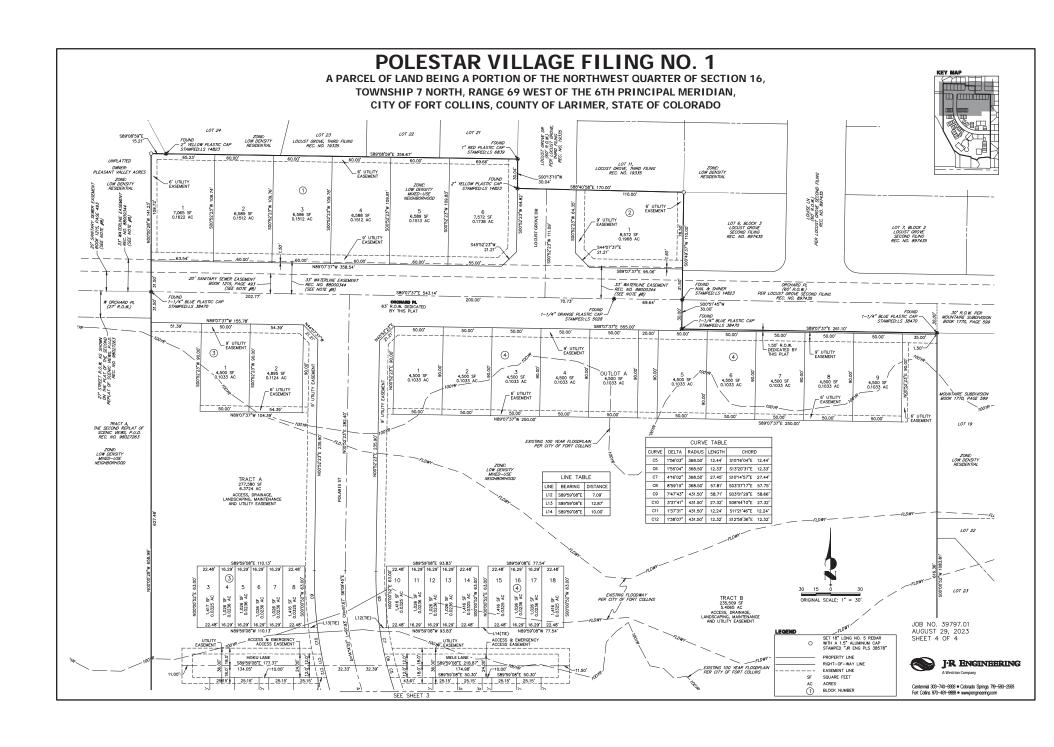
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ATTN: DEREK VAGIAS
7200 S. ALTON WAY, SUITE C400
CENTENNIAL, CO B0112
P~303.267.6218
DVAGIAS@URENGINEERING.COM JOB NO. 39797.01 AUGUST 29, 2023



Centennial 303-740-9993 . Colorado Sorinos 719-593-2593 Fort Collins 970-491-9888 ● www.jrengineering.com







# **Ecological Characterization Study**

Pole Star Community (JR Engineering, LLC)

City of Fort Collins Larimer County, CO

<u>Prepared For:</u> Ken Merritt

JR Engineering, LLC.

2900 S. College Avenue, Suite 3D Fort Collins, Colorado 80525

<u>Prepared By:</u> Sarah J. Smith & John Giordanengo

AloTerra Restoration Services 320 E. Vine Drive, Suite 213 Fort Collins, CO 80524

**Report Submitted by:** 

John H. Giordanengo Principal Restoration Ecologist

AloTerra Restoration Services

970-420-7346

john@aloterraservices.com

05/26/2023

Date



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**APPENDIX E: Approved JD** 

# Introduction

This report constitutes the Ecological Characterization Study (ECS) required for the proposed development of the Pole Star Community, within the General Commercial (CG) zone district and the TOD overlay district. This ECS report is provided in association with a draft 60% design (**Appendix D**) for the 50' Natural Habitat Buffer Zone (NHBZ) required for this development, wetland mitigation, and riparian forest mitigation. This ECS was completed by AloTerra Restoration Services to address requirements set forth in Article 3, section 3.4.1 of the City of Fort Collins Land Use Code.

# **Project Description**

The Pole Star Community project (the Project) includes the development of mixed-use residential properties that ranges from single family homes to studio apartments and live/work units (see JR Engineering Plan Set). This site is what was previously Happy Heart Farms and associated undeveloped areas. Due to the proximity of Saddle Ridge Natural Area and Pleasant Valley and Lake Canal, the City of Fort Collins Environmental Planning Department is requiring a Natural Habitat Buffer Zone to mitigate impacts to wildlife habitat. Currently, there is one wetland area on site, totaling 0.06 acres of wetland habitat, which will require a 50' buffer, as well as riparian forest habitat which will require a 50' buffer from the dripline (Figure 2). A majority of this wetland occurs within the NHBZ area. NHBZ designs, including wetland and riparian area enhancement, are included in the attached design plan. Several species of mature trees exist on site, including both native and introduced species, that provide corridor habitat for a variety of wildlife, which will also need to be included in mitigation efforts.

# **Property Location**

The approximate 21.5-acre property is located within the City of Fort Collins, on what was previously Happy Heart Farms. The northern edge of the property is bordered by the Locust Grove subdivision, and the easter edge is bordered by the Mountaire subdivision. The southern edge is bordered by private landowners, and the southwest border is shared with Scenic Views PUD. Saddle Ridge Natural Area lies to the west (**Figure 1**). The Pleasant Valley and Lake Canal also borders the west and southern boundaries of the property (**Figure 1**). The center of the property lies approximately at  $40^{\circ}34'37.20''$  N and  $105^{\circ}07'46.35''$  W.

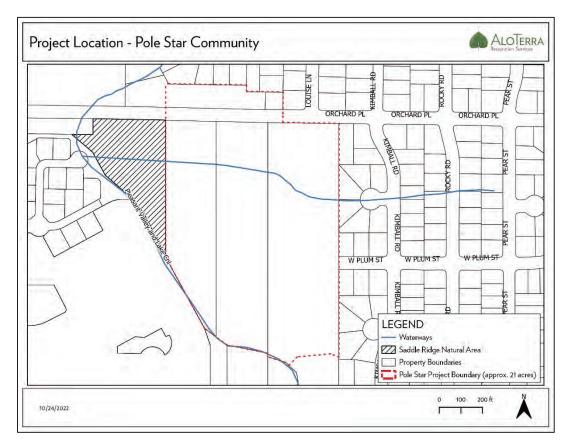


Figure 1. Project location.

# **Study Methods**

In fulfillment of the ECS requirements set forth in Article 3, section 3.4.1 of the City of Fort Collins Land Use Code, AloTerra staff acquired desktop data and conducted field surveys to characterize existing ecological and wildlife conditions, as well as other natural features occurring on the site.

<u>Ecological Field Assessments:</u> September 24, 2021, November 1, 2021, October 21, 2022 Wildlife Field Review: November 1, 2021

Desktop analysis included reviews and interpretations of aerial imagery, assessment of regional drainage patterns, IPAC database review (USFWS), groundwater conditions, and location of nearby natural areas. Field assessments included qualitative rapid assessments of native plant communities, weed populations, wetland and riparian areas, wildlife habitat conditions, and indicators of current wildlife occupation. In addition, a formal wetland delineation was performed (**Appendices A and B**). The rapid assessment of vegetation was performed to compile a list of dominant and co-dominant species, and species present in each community at a lower cover. For the purposes of this study, a plant was considered dominant or co-dominant if its relative cover is greater than 20%. There may be several species present on site that, due to their phenological stage, were not readily observable at the time of this survey. However, based on general disturbed site conditions, and the presence of above ground features of dominant species that are present, we are confident that this survey captured species that together represent at least 90% of the above ground biomass of the site.

### Results

The results of the field and desktop assessments are described below, with the associated natural features represented in **Figure 2**. Approximately 99% of the project site is characterized as historic agricultural and pasture fields. Less than

1% of the site is comprised of wetland and riparian communities, which are in a degraded state or dominated by understories of exotic plants.

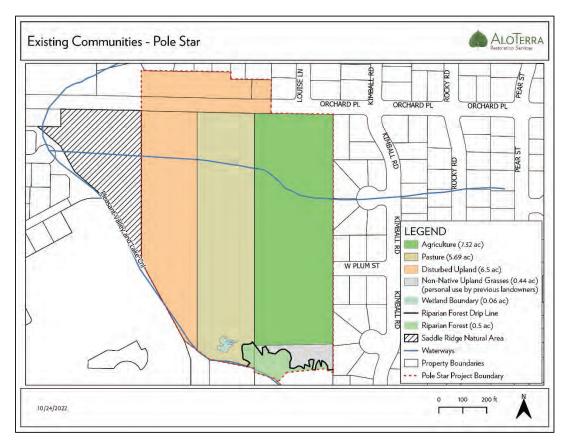


Figure 2. Mapped natural features within Project boundary.

### **Site Description**

From a historical perspective, prior to modern development, we believe the project site to have been dominated by short-grass prairie within the Northwestern Great Plains ecoregion (level III ecoregion). Given the proximity of the property to the Pleasant Valley and Lake Canal, a manmade water diversion, it is likely that the existing wetland and cottonwood trees are not historic. However, both of these habitats are important to wildlife habitat directly, and as part of larger corridors. Historic aerial imagery dating back to 1956 shows that this area has been in agriculture for a minimum of 65 years.

Currently, the upland areas are dominated by crops, non-native weeds, and soils that have been continually disturbed due to cultivation activities. The wetland and associated riparian areas are of low native species diversity, low community complexity, and low structural diversity. Several mature cottonwood trees exist on site, along with Russian olive and various conifer species that were planted as a windrow or grew in association with high moisture conditions along the canal. Soils are generally loam, clay loam, and clay (**Table 1**). The greatest habitat features include the wetland community and native cottonwoods that exist on site.

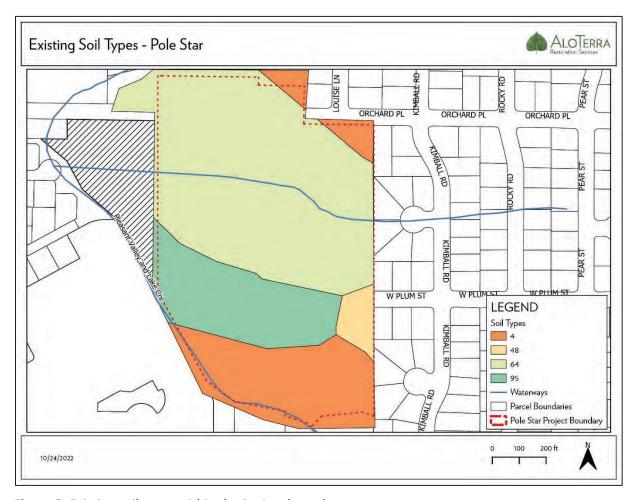


Figure 3. Existing soil types within the Project boundary.

Table 1. Soil type descriptions (data from USGS Web Soil Survey).

Soil Type/Composition	Map Symbol	Slope	Profile	Parent Material	Drainage Class	Depth to Water Table	Hydric Soil
Altvan-Satanta loam	4	3-9%	Altvan	Mixed	Well	More than 80"	No
55% Altvan, 35% Satanta, 10% minor components			H1 – 0 to 9": loam H2 – 9 to 16": clay loam H3 – 16 to 31": loam H4 – 31 to 60": gravelly sand	alluvium	drained	80"	
			Satanta H1 – 0 to 9": loam H2 – 9 to 14": loam H3 – 14 to 60": loam				
Heldt clay loam	48	0-3%	H1 – 0 to 4": clay loam H2 – 4 to 15: clay	Fine textured alluvium	Well drained	More than 80"	No
90% heldt, 10% minor components			H3 – 15 to 26": clay H4 – 26 to 35": clay H5 – 35 to 80": clay	derived from clayey shale	uranieu	80	
Loveland clay loam	64	0-1%	H1 – 0 to 15": clay loam H2 – 15 to 32": loam	Alluvium	Poorly drained	More than 80"	No
90% loveland, 10%			H3 – 32 to 60": very		aramea		
minor components			gravelly sand				

Soil Type/Composition	Map Symbol	Slope	Profile	Parent Material	Drainage Class	Depth to Water Table	Hydric Soil
Satanta loam	95	1-3%	H1 – 0 to 9": loam H2 – 9 to 18": clay loam	Eoilian sands	Well drained	More than 80"	No
90% Satanta, 10% minor components			H3 – 18 to 79": loam				

### **Site Conditions and Status**

The site is currently dominated by former and existing agricultural operations, a small wetland, and riparian vegetation associated with Pleasant Valley and Lake Canal. The greatest ecological functions provided by existing site include organic matter production by the non-native vegetation, which supports some wildlife species and also helps to minimize soil erosion. However, the low diversity of native upland vegetation minimizes the related diversity and biomass of native wildlife. The wetland and associated riparian habitat provide some minor wildlife benefits, though those benefits are limited due to its small size and low structural/functional diversity.

## **Existing Infrastructure**

Existing infrastructure includes a headgate and associated culverts that are connected to the Pleasant Valley and Lake Canal. A small lateral irrigation line also runs from west to east through the property for agricultural purposes. A berm on the east side of the Pleasant Valley and Lake Canal was likely constructed as an embankment during Canal excavation, with a secondary benefit of controlling flooding on Happy Valley Farms. Existing electrical, fiber, water infrastructure can be found on the JR Engineering PDP.

## **Topography**

The project site is generally flat (< 5% slope).

# **Natural Habitats and Features with Significant Ecological Value**

In this section we provide a checklist of required features as outlined in the ECS. No significant native plant communities were documented on the site apart from the emergent vegetation and mature cottonwood trees.

### Natural Communities or Habitats

Aquatic: no; Wetland and wet meadow: yes; Native grassland: no;

Riparian forest: yes; Urban plains forest: no; Riparian shrubland: no; Foothills forest: no;

Foothills shrubland: no

### Special Features (enter yes/no, indicate on map, and describe details below):

Significant remnants of native plant communities: no.

Based on field conditions and analysis of aerial imagery, it is apparent no significant remnant native plant communities exist on site. The existing riparian plant associates are likely a result of human-created topographic (e.g., stormwater drainages), hydrologic, and surface water alterations.

Areas of significant geological or paleontological interest: not likely.

A cultural and historical resources survey was not conducted as part of this assessment. However, based on the history of the site, it is unlikely the site harbors significant cultural or historical resources.

Any prominent views from or across the site? no.

No significant views can be seen, as much of the site is surrounded by housing developments.

The pattern, species and location of any significant native trees and other native site vegetation.

The only significant native vegetation occurring on the Project site includes a small patch of cattail (*Typha latifolia*) and baltic rush (*Juncus balticus*), and several mature cottonwood trees.

Pattern, species, and location of any significant non-native trees.

Russian olive (Eleaganus angustifolia) and Siberian elm (Ulmus pumila) trees can be found throughout the property.

### Special habitat features

The special habitat features on the project site include the wetland; however, the quality of this wetland is of moderate to poor condition and function.

### **Natural Habitats and Plant Communities**

The subsections below outline the conditions of native habitats existing on site: wetlands, agriculture, pasture, and disturbed uplands. Refer to **Figure 3** for locations of these features and **Figure 4/Table 2** for mitigation.

### Wetland Communities (non jurisdictional)

### Description

AloTerra performed a formal wetland delineation on site (Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region, Version 2.0, U.S. Army Corps of Engineers March 2010) and a review of other aquatic features such as ponds and streams. Because the vegetation and hydrology of the wetland, we consider it more typical of an herbaceous wetland community. No perennial or ephemeral streams exist within the survey areas, so we did not conduct an Ordinary High-Water Mark (OHWM) survey.

AloTerra submitted an approved jurisdictional determination to USACE (U.S. Army Corps of Engineers) in 2022. On Nov 1, 2022 USACE ruled that the wetland AloTerra identified in the project area is non-jurisdictional. USACE assigned the Corps File number as NWO-2022-01369-DEN (**Appendix E**).

### **Dominant & Co-Dominant Species**

Cattail (*Typha latifolia*), Baltic rush (*Juncus balticus*), reed canarygrass (*Phalaris arundinaceae*), Canada goldenrod (*Solidago canadensis*), Canada thistle (*Cirsium arvense*), Russian olive (*Eleaganus angustifolia*), and fringed willow herb (*Epilobium ciliatum*) were the dominant species at the time of sampling.

### **Riparian Forest**

### Description

AloTerra mapped the dripline of the riparian forest area (**Figure 1**). Mitigation for the riparian forest will be addressed through the tree mitigation plan, in coordination with the City of Fort Collins Forestry Dept.

### **Dominant & Co-Dominant Species**

Crack willow (*Salix x fragilis*), cottonwood (*Populus deltoides*), smooth brome (*Bromus inermis*), and Canada thistle (*Cirsium arvense*).

### **Agricultural Communities**

### Description

The project site is highly disturbed and predominately vegetated with non-native grasses. Due to the high cover of bare ground, high cover of non-native vegetation, and low diversity of structure, the wildlife value of this field is low.

### **Dominant & Co-Dominant Species**

Hairy evening primrose (*Oenothera villosa*), smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), showy milkweed (*Asclepias speciosa*), swamp milkweed (*Asclepias incarnata*), kochia (*Bassia scoparia*), leafy spurge (*Euphorbia esula*), tall fescue (*Festuca arundinaceae*), and three-square bulrush (*Schoenoplectus americanus*) were the dominant and subdominant species in this community, with about 30% bare ground present at time of sampling.

## **Pasture Communities**

#### Description

The project site is highly disturbed and predominately vegetated with non-native grasses. Due to the high cover of bare ground, high cover of non-native vegetation, and low diversity of structure, the wildlife value of this field is low.

### **Dominant & Co-Dominant Species**

Smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), and yellow sweetclover (*Melilotus officinalis*) were the dominant species in this community present at time of sampling.

### **Disturbed Upland Plant Communities**

### Description

Upland areas are highly disturbed and predominately vegetated by non-native flora. Due to the high cover non-native vegetation and low diversity or structure, the wildlife value of these areas is very low.

### Dominant & Co-Dominant Species

Smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), prickly lettuce (*Lactuca serriola*), yellow sweetclover (*Melilotus officinalis*), crested wheatgrass (*Agropyron cristatum*), mullein (*Verbascum thapsus*), musk thistle (*Carduus nutans*), and bindweed (*Convovulus arvensis*) were dominant across this community at time of sampling.

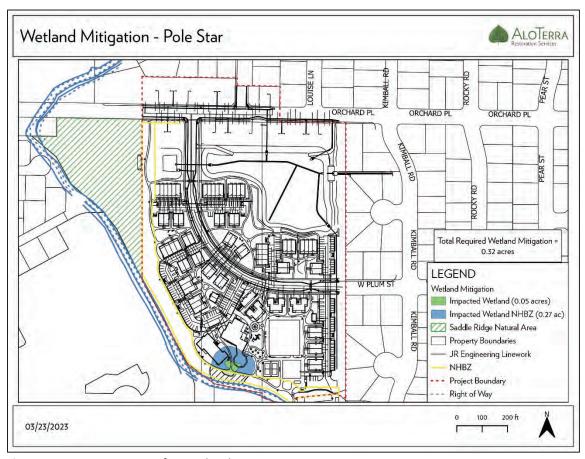


Figure 4. Mitigation areas for wetland.

### Mitigation Requirements

**Table 2** provides a breakdown of mitigation requirements for wetland impacts. Mitigation requirements are based on Land Use Code from City of Fort Collins. The 0.32 acres of wetland mitigation requirements was verified in a meeting with Kirk Longstein, Env. Planner with City of Fort Collins, on March 23, 2023. Riparian Forest mitigation is being met through the tree planting plan developed by the City of Fort Collin's Forestry Dept and JR Engineering.

**Table 2.** Mitigation Requirements for wetland impacts.

Mitigation Type	Acreage
Wetland Area Impacted by Development	0.05

Wetland NHBZ Impacted by Development	0.27 acres
Total 1:1 Mitigation Required:	0.32 acres

### **Proximity to Designated Natural Areas**

The Project property is directly adjacent to the eastern boundary of Saddle Ridge Natural Area (**Figure 1**), which is managed by the Saddle Ridge Commons Condominium Association.

# Wildlife

A full wildlife survey was conducted on November 1, 2021. A songbird survey will be conducted in the spring of 2022. The full wildlife report can be found in **Appendix C**.

An official species list was documented by U.S Fish and Wildlife Service's Information for Planning and Consultation IPAC was obtained using known ranges of federally listed species in the Project area. A list was also unofficially obtained from the 2016 Colorado Natural Heritage Program database by determining known sightings of sensitive species near Kingfisher Wetland project area. On November 1, 2021, an AloTerra Restoration Services field technician conducted a site visit in order to assess suitable habitat for known listed and sensitive animal species.

**Table 3** lists provides a record of the federally listed Federally listed species that could occur within the area of the proposed project (20 acres). The table includes (a) the common name of the species (b) the scientific name of the species (c) the status of the species in question (d) whether or not the species should be excluded and (e) the reasoning why the species should be excluded.

The reasoning of excluding species from the list of concerned species is given based off a variety of reasons including:

- 1) No suitable habitat was found during site visit, The range of the species in is such that the species is highly unlikely to not known near occur within the project site;
- 2) No suitable habitat was found during the site review; and/or
- 3) No records for the species exist within the project site.

**Table 3.** Federally listed terrestrial and aquatic species that may occur or be affected by the actions within the Project.

Common Name	Species	Status	Species Excluded	Notes, or Reason for Exclusion
Mammals		·		
Preble's meadow jumping mouse	Zapus hudsonius preblei	Threatened	No	Species and habitat are not present.
Canada lynx	Lynx canadensis	Threatened	Yes	Species and habitat are not present.
Birds				
Mexican spotted owl	Strix occidentalis lucida	Threatened	Yes	Critical habitat does not overlap with project site
Whooping crane	Grus americana	Endangered	Yes	Range does not overlap with project site
Least tern	Sterna antillarum	Endangered	Yes	Range does not overlap with project site
Piping plover	Charadrius melodus	Threatened	Yes	Range does not overlap with project site
Fish				
Pallid sturgeon	Scaphirhynchus albus	Endangered	Yes	Species and habitat are not present.
Greenback cutthroat trout	Oncorhynchus clarkii stomias	Threatened	Yes	Species and habitat are not present.
Plants				
Colorado butterfly plant	Gaura neomexicana var. coloradensis	Threatened	Yes	Species and habitat are not present.
Ute ladies-tresses	Spiranthes diluvialis	Threatened	Yes	Species and habitat are not present.
Western prairie fringed orchid	Plantanthera praeclara	Threatened	Yes	Species and habitat are not present.
North Park phacelia	Phacelia formosula	Endangered	Yes	Found in higher elevation range (8,000-8,300 ft)

Sourced from IPAC: <a href="http://ecos.fws.gov/ipac/">http://ecos.fws.gov/ipac/</a> website. Note- Some species may be affected downstream from water source. \*There are no federally designated critical habitats within the project area.

## Federally Threatened, Endangered, and Proposed Species

### Preble's Meadow Jumping Mouse (PMJM)

Since 1998, the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) has been federally listed as threatened by the U.S Fish and Wildlife Service. In Colorado, they are also listed as Species of Greatest Conservation Needs, considered sensitive by the US Forest Service, and critically imperiled according to the Colorado Natural Heritage Program. Declining PMJM populations are due to predation, habitat degradation, and fragmentation. In Colorado, the PMJM can be found up to elevations around 7,000 feet east of the Front Range, and west to the shortgrass prairie (USFWS, 2013).

Preble's meadow jumping mice are found in areas with natural hydrological processes that create a dense riparian area with biologically diverse herbaceous plants. PMJM have been found in environments with a variety of plant species, frequently in areas with a thick layer of grasses and forbs that create cover. Studies show that the specific species composition of herbaceous plants is not as important to supporting populations, but that suitable habitat needs to have a higher percentage of ground cover in the vicinity to open water. Most PMJM were found within areas with a higher density of the shrub layer consisting mostly of willows. The mice use adjacent grassy uplands as far as approximately 300 feet from the 100-year floodplain to "hibernate" during the colder months. These nests are called hibernacula and can be found under the cover of snowberry, chokecherry, cottonwoods, gooseberry, and other willow species.

Section 4 of the Endangered Species Act (1973) prevents any funded or authorized agency to take action that would negatively affect lands labeled as PMJM Critical habitat. Critical Habitat is defined by areas currently occupied by the species or potential areas in which the species could establish. In 2013, The Fish and Wildlife Service revised the critical habitat designation for the Preble's meadow jumping mouse (shapefiles found at: https://www.fws.gov/mountain-prairie/es/species/mammals/preble/CRITICAL%20HABITAT/CRITICALHABITATindex.htm). The approximate 50,000 acres designated for critical habitat occur adjacent to streams and rivers in the Colorado foothill and mountain regions. PMJM critical habitat is located in Boulder, Broomfield, Douglas, El Paso, Jefferson, Larimer and Teller Counties (USFWS, 2014). Currently there is no critical habitat designated in The Project area (USFWS, 2010). Although the Project area does not have optimal habitat due to lack of desired upland vegetation, presence of PMJM cannot be confirmed without a thorough survey of the area.

### Rare Plants

The rare plant survey resulted in no evidence of Ute ladies'-tresses (*Spiranthes diluvialis*) or Colorado butterfly plant (*Gaura neomexicana var. coloradenesis*) in the project area. Based on existing habitat quality, it is unlikely these plants would occupy the project area.

## **Sensitive Species**

The sensitive species list is derived from the U.S. Forest Service (https://www.fs.usda.gov) and Colorado Parks and Wildlife data on present sensitive species ranges and distributions (USFS, 2005). The Regional Forester's sensitive list is evaluated by examining viable risk of species; these species are categorized as R2 sensitive, not R2 sensitive, or, not a concern. Suitable habitat was also determined by a site visit conducted by AloTerra Restoration Services on November 01, 2021. Under the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act no activity that "takes, transports, barters, or exports the listed migratory birds or eagles is permissible unless it is sanctioned by the U.S. Fish and Wildlife Service. The sensitive species list includes migratory birds that could use The Project area as a breeding, over-wintering, or stopover site.

The species found in **Table 4** below are compiled from lists of at-risk species that have potential habitat or occurrence in the Project area, specifically in the vicinity of the documented wetland. The table is organized as followed: (a) The common name of the species, (b) The scientific name of the species, (c) The status of the species in question, (d) Whether or not the species should be excluded, and (e) The reasons why the species should be excluded.

**Table 4.** Sensitive species that could occur in the Saddle Ridge Natural Area.

Common name	Species	Status	Species Excluded	Reasons for exclusion
Mammals	•			
Fringed myotis	Myotis thysanodes	Forest Service Sensitive	Yes	Found in coniferous forest and mixed pine
Townsend's big-eared bat	Corynorhinus townsendii	Forest Service Sensitive	Yes	Habitat requirements are not in range
Black-tailed prairie dog	Cynomys ludovicianus	Forest Service Sensitive	Yes	No colonies were found in the project site
White-tailed prairie dog	(Ocynomys leucurus)	Forest Service Sensitive	Yes	No colonies were found in the project site
Kit fox	Vulpes macrotis	Forest Service Sensitive	Yes	Range does not overlap with project site
Swift fox	Vulpes velox	Forest Service Sensitive	No	
Birds	•			·
Bald eagle	Haliaeetus leucocephalus	Forest Service Sensitive	No	
Cassin's sparrow	Aimophila cassinii	Bird of Conservation Concern	Yes	Range does not overlap with project site
Lesser yellowlegs	Tringa flavipes	Bird of Conservation Concern	Yes	Range does not overlap with project site
Black Swift	Cypseloides niger	Forest Service Sensitive	Yes	Habitat requires cliffs limited in Colorado
Chestnut-collared longspur	Calcarius ornatus	Forest Service Sensitive	Yes	Site location does not overlap with species range
Sandhill Crane	Antigone canadensis	Forest Service Sensitive	Yes	Suitable habitat is not evident in project site
Northern harrier	Circus cyaneus	Forest Service Sensitive	No	
Swainson's Hawk	Buteo swainsoni	Federal Species of Concern	No	
Greater sage-grouse	Centrocercus urophasianus	Forest Service Sensitive	Yes	Found in sage brush habitat
Grasshopper sparrow	Ammodramus savannarum	Forest Service Sensitive	Yes	Native species range does not meet area requirements
Fish				
Plains Minnow	Hybognathus plactius	State Endangered	Yes	Suitable habitat is not evident in project site
Plains topminnow	Fundulus sciadicus	Forest Service Sensitive	Yes	Suitable habitat is not evident in project site
Flannelmouth Sucker	Catostomus latipinnis	Forest Service Sensitive	Yes	Suitable habitat is not evident in project site
Amphibians	•			·
Northern leopard frog	Lithobates pipiens	Forest Service Sensitive	No	
Plains leopard frog	Lithobates blairi	Forest Service Sensitive	Yes	Range does not overlap with project site

Species list was sourced from U.S. Forest Service <a href="https://www.fs.usda.gov">https://www.fs.usda.gov</a> Rocky Mountain Region and USFWS Migratory birds for the Mountain-Prairie Region updated 2017.

Migratory bird list was sourced from USFWS Birds of Conservation Concern

https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php.

### **Other Wildlife**

As previously discussed, the proposed Project would minimally impact (or have no impact) to Threatened, Endangered, Proposed Species, and Sensitive Species of Concern whose ranges potentially overlap with the Project area. In addition, due to low vegetation species diversity and poor riparian conditions, the Project area does not provide any critical habitat to federally listed or sensitive species. The mature cottonwoods provide some habitat for song birds and raptors in the spring and summer, including great horned owls, American kestrels, western tanagers, dark-eyed juncos, and variety of sparrows. No ground nests or raptor nests were found on the site during site visit of November 01, 2021. There were signs of raccoons (*Procyon lotor*), great blue herons (*Ardea herodias*) and coyote (*Canis latrans*). A young male mule deer was seen along the canal corridor and droppings were found throughout the Project. Many common animal species have been observed throughout the Project including garter snakes, Canadian geese, great horned owls, Eurasian doves, blue jays, Northern flickers, golden finches, and House sparrows. Ornate box turtles and Mallard ducks

have been sighted in the pond north of the Project. This wetland area and old growth trees could potentially be suitable habitat for songbird nesting/feeding and should therefore be protected during any future construction.

# Natural Habitat Buffer Zone (NHBZ) Design and Recommendations

AloTerra's concept design for the Natural Habitat Buffer Zone (see **Appendix D** for plan set) would result in significant ecological uplift of wetland, riparian, and upland areas, providing potential habitat for a great variety of wildlife, including those species listed in **Tables 3** and **4** of this report.

## **Forestry Mitigation**

A formal forestry survey has been completed for the site. All required tree mitigation will be met through the tree mitigation plan developed by the City of Fort Collins Forestry Dept. and JR Engineering.

### **Noxious Weeds**

A preliminary weed (non-native plants) list is provided in the wetland, riparian, and upland plant community sections above. Of the weeds present, those species of greatest management concern include smooth brome (*Bromus inermis*), Canada thistle (*Cirsium arvense*), and reed canary grass (*Phalaris arundinaceae*). These species are difficult to eradicate without intensive chemical treatment methods due to their perennial growth habits.

The landowners for this Project have requested the use of organic weed control and treatments, which align with their philosophies for the long-term health of the property. Because of the aggressive nature of the non-native species within the NHBZ, we recommend removing the top 8" of soil from the weed dominated areas, which will remove the aboveground biomass (i.e., seed source) and root mass (i.e., reproduction via rhizomes, tillers, and other root buds) for weed species. This will help to diminish weed populations without the use of herbicides. Canada thistle rhizomes can penetrate much deeper, so a formal weed management plan will be developed with certified organic treatment recommendations, as well as methods for spot treating any other weeds that may reestablish. A buffer of 10' from the top of ditch for the Pleasant Valley and Lake Canal should be maintained, so the stability of the berm is not jeopardized.

The weed excavated areas will be treated with new topsoil, or amended with organics such as compost and/or slow-release organic fertilizers. These treated areas will be restored with a diversity of native locally-adapted vegetation, per the Concept Design in **Appendix D**.

### Wetland, Riparian, and Upland Enhancement

The 50' wide NHBZ, with the western boundary being the existing top of bank of the Pleasant Valley and Lake Canal, will build upon the natural features of the existing property. Currently, three distinct communities exist; wetland/riparian, and upland. By treating this area as described above, the site will be appropriate for native seed and plant containers.

Native seed mixes will include wetland, riparian, and two upland mixes (see **Appendix D** for plant lists). To address the shade created by existing trees, we recommend a full sun mix and a shade-tolerant upland seed mix. Shade-tolerant seed mixes will be broadcast where trees will remain, with exact locations of these mixes to be refined in future design iterations, and once a formal tree inventory and mitigation plan is completed. All seed mixes will combine grass and grass-like species, shrubs, and flowering forbs to attract pollinators.

Native container plants throughout the three zones will also be installed to increase the amount of diversity throughout the NHBZ. Examples include bulrushes and sedges for the wetland and riparian areas, and fruiting shrubs and small trees for the upland areas.

To build upon the sustainability goals of AloTerra, the City of Fort Collins, and Pole Star, we encourage using as many onsite materials as possible, to minimize the fuel consumption, carbon emissions, and other impacts associated with materials import. This includes, but not limited to, using existing downed trees as features throughout the NHBZ, which can provide diverse habitat for wildlife throughout the corridor, and act as natural benches for visitors. Excavated soil in the NHBZ can be used as on-site fill for development purposes, to reduce the need to import fill to the site. Currently, the wetland boundary overlaps with the planned development (**Figure 1**). Depending on the wetland determination status by the US Army Corps of Engineers, and the City of Fort Collins mitigation requirements, AloTerra proposes a wetland design that increases diversity and ecological function. This would be achieved by excavating the wetland to achieve a greater variety of hydrologic conditions (e.g., shallow open water, submergent, emergent, etc.). Topography will also be designed to support mesic meadow and facultative wetland species, which will transition to riparian habitats where willows and mesoriparian/xeroriparian shrubs can be planted (**Figure 5**).

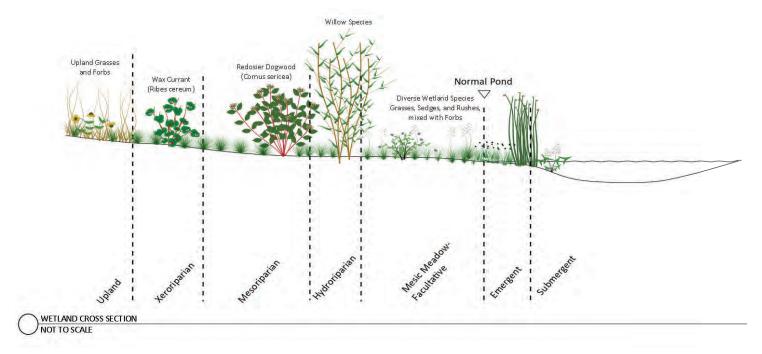


Figure 5. Example wetland cross section.

### **Development Activities**

The project is currently in the Preliminary Development Plan phase. JR Engineering estimates that construction will start in 2023. Construction should avoid impacting important suitable habitat for sensitive or endangered species. In order to minimally impact sensitive or migratory bird populations, it is important to avoid impacting any potential nesting sites (e.g., cottonwood trees, willow thickets, or areas of high herbaceous vegetation cover).

Issues regarding the timing of development-related activities stemming from the ecological character of the area. Because no active raptor nests currently exist on site, and the site does not provide significant migratory bird habitat, it is not likely that spring construction limitations would be imposed. However, we do recommend a site survey prior to construction to confirm that no raptor nests have been established on site since the initial wildlife review. No other issues regarding timing are known at this time.

Measures needed to mitigate projected adverse impacts of development on natural habitats and features. During construction there will be setbacks, silt fence, and erosion control to help mitigate any adverse impacts to existing wetland and riparian features, as well as to the Pleasant Valley and Lake Canal water quality.

# **Summary**

In summary, we believe that the proposed development would have minimal impact to sensitive or rare wildlife or plants, natural features, and other important ecological functions and conservation elements in the region. The proposed NHBZ would create overall ecological uplift of the site and enhance the quality of plant communities and connectivity of habitat for wildlife. Because the site is currently dominated by invasive species, the value to wildlife is not significant due to minimal structure and function.

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  Conservation Measures to Avoid and Minimize Impacts to the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*), the Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*), and the Colorado butterfly plant (*Guara neomexicana* ssp. *coloradensis*) from Emergency Flood Response Activities Along Streams, Rivers, or

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# **Appendix A: Wetland Delineation Field Forms**

### **DATA FORM - ROUTINE WETLAND DETERMINATION** - Great Plains

Project/Site: Pole Star City/County: Fort Collins, Larimer Co.

Applicant/Owner: AloTerra Restoration Services State: CO Sampling Date: 11/01/2021

Investigator (s): Sarah Smith

Section/Township/Range:

Landform (Hillslope, Terrace, etc.): NA

Local Relief: None

Slope (%): less than 1%

Subregion (LRR): Lat: Long: Datum: n/a
Soil Map Unit Name: NWI Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes

Are Vegetation, Yes Soil, Yes ; or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? -Are Vegetation, No Soil, No ; or Hydrology No naturally problematic? . -- (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Include a map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present: Yes

Is the sampled area within a wetland: Yes

**Hydric Soil Present:** Yes

Wetland Hydrology Present: Yes

R	۵	m	2	r	ks	
n	c		а	ш	72	

Area is a slight depression on the east side of a berm and man made ditch (Pleasant Valley and Lake Canal). Hydrology likely comes from ditch. Historic aerial imagery does not indicate a wetland present on the site prior to ditch establishment.

### **FORM NOTES**

<u>Stratum:</u> 1. Tree stratum – Consists of woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. 2. Sapling/shrub stratum – Consists of woody plants less than 3 in. DBH, regardless of height. 3. Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size. 4. Woody vines – Consists of all woody vines, regardless of height.

<u>FAC-neutral Test for determining Wetland Hydrology</u> (*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*. U.S. Army Corps of Engineers March 2010)

The FAC-neutral test is performed by compiling a list of dominant plant species across all strata in the community, and dropping from the list any species with a Facultative indicator status (i.e., FAC, FAC–, and FAC+). The FAC-neutral test is met if more than 50 percent of the remaining dominant species are rated FACW and/or OBL. This indicator may be used in communities that contain no FAC dominants. If there are an equal number of dominants that are OBL and FACW versus FACU and UPL, non-dominant species should be considered. This indicator is only applicable to wetland hydrology determinations.

# **VEGETATION (USE SCIENTIFIC NAMES)**

Sampling Point: SP1

Tree Stratum (Plot Size: 30 sq. m.)	Absolute	Dominant	Indicator
	% Cover	Species?	Status
1.			
2.			
3.			
4.			
5.			
	0 =	<b>Total Cover</b>	

-		Indicator Status
0 =	Total Cover	
	% Cover	)Absolute Dominant Species?

<b>Dominance Test Worksheet</b> Number of dominant species		
that are OBL, FACW, or FAC:	3	(A)
Total no. of dominant species across all strata:	3	_ (B)
Percent of Dominant spp. That are OBL, FACW, or FAC:	100	_ (A/B)

Prevalence Index Worksheet					
Total % Cover	of:	Multiply by:			
OBL spp:	10	x1 = 10			
FACW spp:	95	x2 = 190			
FAC spp:	1	x3 = 3			
FACU spp:	0	x4 = 0			
UPL spp:	2	x5 = 10			
Column totals:	(A) 108	(B) 213			
Prevalence Ind	ex (B/A) =	1.87			

Herb Stratum (Plot Size: 1 sq. m.)	Absolute % Cover	Dominant Species?	Indicator Status
1. Typha latifolia	10	Yes	OBL
2. Juncus balticus	85	Yes	FACW
3. Solidago canadensis	1		UPL
4. Cirsium arvense	1		UPL
5. Phalaris arundinaceae	10	Yes	FACW
6. Symphyotrichum laeve	1		FAC
7.			
8.			
9.			
10.			
11.			
	108 =	Total Cover	

Hydrophytic Vegetation Indicators:					
1. Rapid test for hydrophytic vegetation					
2. Dominance test is > 50%					
$\boxed{\times}$ 3. Prevalence index is $\leq$ 3.0 <sup>1</sup>					
4. Morphological adaptations <sup>1</sup> (provide					
Supporting data in remarks or attach)					
5. Wetland non-vascular plants <sup>1</sup>					
Problematic Hydrophytic Vegetation <sup>1</sup>					
(explain)					
<sup>1</sup> Indicators of hydric soil and wetland hydrology must					
be present, unless disturbed or problematic					
Hydronhytic Vegetation Present: Voc					

Woody Vine Stratum (Plot Size: 1 sq. m.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum: ()

# **REMARKS:**

Wetland area is dominated by baltic rush and canary reed grass with a small patch of cattails.

Soils								Sampling Point:	SP1
<b>Profile Des</b>	cription (describ	e to the d	epth needed to doc	ument tl	he indicato	r or con	firm the abse	ence of indicator	rs.)
Depth	Matri	X	Redo	x Featur	es				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	<u>Loc<sup>2</sup></u>	<u>Texture</u>	Remarks	<u>s</u>
0-10	10vr 2/1	98	7.5YR 5/6	2	С	M	Silty clay loam		

2 Silty clay loam 10-18 10yr 4/1 7.5yr 5/6 98 <sup>1</sup>Type: C = Concentration, D = Depletion, RM = Reduced Matric, CS = Covered or Coated Sand Grains. <sup>2</sup>Location: PL = Pore Lining, M = Matrix. Indicators for Problematic Hydric Soils<sup>3</sup> Hydric Soil Indicators (Applicable to all Land Resource Regions unless otherwise indicated) Histosol (A1) Sandy gleyed matrix (S4) 1 cm muck (A9) (LRR I, J) Histic epipedon (A2) Sandy redox (S5) Coast prairie redox (A16) (LRR F, G, H) 」Black Histic (A3) Stripped matrix (S6) Dark surface (S7) (LRR G) Loamy mucky mineral (F1) Hydrogen Sulfide (A4) ☐High plains depressions (F16) Loamy gleyed matrix (F2) (LRR H outside of MLRA 72 & 73) Depleted Below Dark Surface (A11) Depleted matrix (F3) Reduced Vertic (F18) Thick dark surface (A12) Red parent material (TF2) Redox dark surface (F6) ☐Sandy mucky mineral (S1) Depleted dark surface (F7)  $\rfloor 2.5$  cm Mucky peat or peat (S2) JRedox depressions (F8) 」Other (explain) ☐High Plains Depressions (F16) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. **Restrictive Layer (if present) Hydric Soil Present?** Yes Type: Depth (inches): Remarks: **HYDROLOGY Wetland Hydrology Indicators** Primary Indicators (Minimum of one required. Check all that apply) Secondary Indicators (2 or more required) Salt crust (B11) ☐ Surface water (A1) ☐ Soil surface cracks (B6) ★ High water table (A2) ☐ Aquatic invertebrates (B13) ☐ Sparsely vegetated concave surface (B8) Saturation (A3) Hydrogen sulfide odor (C1) Drainage patterns (B10) ☐ Water marks (B1) Dry-season water table (C2) Oxidized Rhizospheres on Living Roots (C3) Oxidized Rhizospheres on Living Roots (C3) ☐ Sediment deposits (B2) (where tilled) Drift deposits (B3) Crayfish burrows (C8) (where not tilled) ☐ Algal mat or crust (B4) Presence of reduced iron (C4) ☐ Saturation visible on aerial imagery (C9) ☐ Thick muck surface (C7) ☐ Iron deposits (B5) Geomorphic position (D2) ☐ Inundation visible on aerial imagery (B7) Other (explain in remarks) ☐ FAC-neutral test (D5) ☐ Water stained leaves (B9) Frost-heave hummocks (D7) (LRR F) **Field Observations:** Wetland Hydrology Present? Yes Surface water present: No Depth (inches): Water table present: Yes Depth (inches): soil pit filled at -18 inches (includes capillary fringe) Saturation present: Yes Depth (inches): at surface

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

### Soil Chroma and Value for Wetland Soils

### Per 2018 regional supplement:

The following combinations of value and chroma identify a depleted matrix for loamy and clayey material (and sandy material in areas of indicators A11 and A12):

- 1. Matrix value of 5 or more and chroma of 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- 2. Matrix value of 6 or more and chroma of 2 or 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- 3. Matrix value of 4 or 5 and chroma of 2, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or
- 4. Matrix value of 4 and chroma of 1, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings (USDA Natural Resources Conservation Service 2006b).

Common (2 to less than 20 percent) to many (20 percent or more) redox concentrations (USDA Natural Resources Conservation Service 2002) are required in soils with matrix colors of 4/1, 4/2, and 5/2 (Figure A1).

Redox concentrations include iron and manganese masses and pore linings (Vepraskas 1992). See "contrast" in this glossary for the definitions of "distinct" and "prominent."

**Gleyed matrix.** A gleyed matrix has one of the following combinations of hue, value, and chroma and the soil is not glauconitic (Figure A2):

- $\cdot$  10Y, 5GY, 10GY, 10G, 5BG, 10BG, 5B, 10B, or 5PB with value of 4 or more and chroma of 1; or
- · 5G with value of 4 or more and chroma of 1 or 2; or
- N with value of 4 or more (USDA Natural Resources Conservation Service 2006b).

### **Redoximorphic Definitions**

Concentration: Patches of oxidized iron which can form soft masses and along root channels and other pores.

**Depletion:** Gray or reddish gray colors of soil caused by the loss of iron through translocation.

**Reduced Matrix:** Soils that are saturated and contain ferrous iron at the time of sampling may change color upon exposure to the air, as ferrous iron oxidizes to ferric iron in the presence of oxygen.

### **DATA FORM - ROUTINE WETLAND DETERMINATION** - Great Plains

Project/Site: Pole Star	City/County: Fort Collins, Larimer Co.		Sampling Date: 11/01/2021
Applicant/Owner: AloTerra Restoration Services	State: CO		Sampling Point: SP2
Investigator (s): Sarah Smith	Section/Township/Range:		
Landform (Hillslope, Terrace, etc.): NA	Local Relief: N	one	Slope (%): less than 5%
Subregion (LRR):	Lat:	Long:	Datum: n/a
Soil Map Unit Name:			NWI Classification:
Are climatic / hydrologic conditions on the site t	ypical for this tim	e of year? Yes	
Are Vegetation, Yes Soil, Yes ; or Hydrology Y Are Vegetation, No Soil, No ; or Hydrology answers in Remarks.)		disturbed? Are "No problematic?	rmal Circumstances" present? No (If needed, explain any
SUMMARY OF FINDINGS – Include a map showing Hydrophytic Vegetation Present: Yes Hydric Soil Present: No Wetland Hydrology Present: No	ng sampling poin		ts, important features, etc. oled area within a wetland: No
Remarks:			
Upland boundary marker for SP1.			

### **FORM NOTES**

Stratum: 1. Tree stratum – Consists of woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. 2. Sapling/shrub stratum – Consists of woody plants less than 3 in. DBH, regardless of height. 3. Herb stratum – Consists of all herbaceous (non-woody) plants, including herbaceous vines, regardless of size. 4. Woody vines – Consists of all woody vines, regardless of height.

<u>FAC-neutral Test for determining Wetland Hydrology</u> (*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*. U.S. Army Corps of Engineers March 2010)

The FAC-neutral test is performed by compiling a list of dominant plant species across all strata in the community, and dropping from the list any species with a Facultative indicator status (i.e., FAC, FAC–, and FAC+). The FAC-neutral test is met if more than 50 percent of the remaining dominant species are rated FACW and/or OBL. This indicator may be used in communities that contain no FAC dominants. If there are an equal number of dominants that are OBL and FACW versus FACU and UPL, non-dominant species should be considered. This indicator is only applicable to wetland hydrology determinations.

# **VEGETATION (USE SCIENTIFIC NAMES)**

Sampling Point: SP2

Tree Stratum (Plot Size: 30 sq. m. )	Absolute	Dominant	Indicator
	% Cover	Species?	Status
1.			
2.			
3.			
4.			
5.			
	0 =	<b>Total Cover</b>	

Shrub Stratum (Plot Size: 30 sq. m.	)Absolute % Cover		Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 =	Total Cover	

Dominance Test Worksheet Number of dominant species		
that are OBL, FACW, or FAC:	1	(A)
Total no. of dominant species across all strata:	2	(B)
Percent of Dominant spp. That are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index Worksheet						
Total % Cover of	of:	Multiply by:				
OBL spp:	0	x1 = 0				
FACW spp:	85	x2 = 170				
FAC spp:	1	x3 = 3				
FACU spp:	0	x4 = 0				
UPL spp:	25	x5 = 125				
Column totals:	(A) 111	(B) 298				
Prevalence Index (B/A) = 1.64						

Herb Stratum (Plot Size: 1 sq. m.)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: 1. Rapid test for hydrophytic v
1. Bromus inermis	25	Yes	UPL	$\boxed{\times}$ 2. Dominance test is > 50%
2. Juncus balticus	5		FACW	$\times$ 3. Prevalence index is < 3.0 <sup>1</sup>
3. Phalaris arundinacea	80	Yes	FACW	4. Morphological adaptations
4. Symphuotruchum laeva	1		FAC	Supporting data in remarks or atta
5.				5. Wetland non-vascular plant
6.				Problematic Hydrophytic Vege
7.				(explain)
8.				<sup>1</sup> Indicators of hydric soil and wetland hydro
9.				be present, unless disturbed or problemation
IU.				
11.				Hydrophytic Vegetation Present: \
	111 =	<b>Total Cover</b>		, 5p, 1 3getation 1 10001111

	_ 1. Rapid test for hydrophytic vegetation
	_ 2. Dominance test is > 50%
	$2$ 3. Prevalence index is $\leq$ 3.0 $^{1}$
	$\boxed{4}$ . Morphological adaptations $^1$ (provide
E	Supporting data in remarks or attach)  5. Wetland non-vascular plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
<sup>1</sup> Ind	icators of hydric soil and wetland hydrology must
he n	resent, unless disturbed or problematic

Woody Vine Stratum (Plot Size: 1 sq. m.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum: ()

# **REMARKS:**

Area is dominated by canary reedgrass.

SOILS								pling Point: SP2
Profile Description (describe to the depth needed to document the indicator or confirm the absence of indicator Depth Matrix Redox Features							e of indicators.)	
Depth (inches)	Color (moist)	<u>%</u>	Color (moist)	<u> %</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	<u>Remarks</u>
0-12	10yr 5/1	100					Sandy clay loam	
12-16	10YR 4/2	100					sandy clay loam	
12 10	10111 1/2	100						
¹Type: C = Co	oncentration, D = De	pletion, RM :	= Reduced Matric, CS = Co	vered or (	Coated Sand	Grains. <sup>2</sup>	Location: PL = Pore Li	ning, M = Matrix.
								_
Histoso		abie to ali La	nd Resource Regions unle Sandy gleyed			, <u>i</u>	ndicators for Proble 1 cm muck (A9)	
_	pipedon (A2)		Sandy redox		ζ- /	Ī	<b>—</b>	dox (A16) (LRR F, G, H)
Black Hi	istic (A3)		Stripped mat	rix (S6)		<b>ַ</b>	Dark surface (S	• •
_ ` `	en Sulfide (A4)		Loamy mucky	•		Į	High plains dep	• •
1cm Mu	. ,	f / A 1 1	Loamy gleyed		(F2)	г	(LRR H outside of M	•
	ed Below Dark Su	-			E6)	Ĺ	Reduced Vertic	` '
_	☐ Thick dark surface (A12) ☐ Redox dark surface (F6) ☐ Red parent material (TF2) ☐ Sandy mucky mineral (S1) ☐ Depleted dark surface (F7) ☐ Very shallow dark surface (TF12)					• •		
_ ·	2.5 cm Mucky peat or peat (S2)  Redox depressions (F8)  Other (explain)					ink surface (11 12)		
	many poarts. p.	out (0=)	High Plains D			3	Indicators of hydroph	ytic vegetation and
							wetland hydrology mu	
				_		(	disturbed or problema	itic.
Restrictive	Layer (if presen	t)		Hydric Soil Present? NO				
Type:								
	Depth (inches):							
Remarks:								
Soils	are muc	h drie	r and sand	ier				
Hydrolo	GY							
	lydrology Indicat	tors						
			equired. Check all tha	at apply)	<u>)</u>	Secor	ndary Indicators (2	or more required)
Surface wa			Salt crust (B11)	(542)			il surface cracks (B6)	(20)
☐ High wate ☐ Saturation			Aquatic invertebrates  Hydrogen sulfide odo				arsely vegetated conca ainage patterns (B10)	ave surrace (B8)
☐ Water ma	rks (B1)		Dry-season water tab	le (C2)		□ох	idized Rhizospheres o	n Living Roots (C3)
Sediment Drift depo			Oxidized Rhizosphere (where not tilled)	s on Living	g Roots (C3)		here tilled) ayfish burrows (C8)	
Algal mat			Presence of reduced i	iron (C4)			turation visible on aeri	ial imagery (C9)
Iron depos	sits (B5)		Thick muck surface (C	27)		□Ge	omorphic position (D2	
	n visible on aerial im ined leaves (B9)	agery (B7)	Other (explain in rema	arks)			C-neutral test (D5) ost-heave hummocks (	(D7) (LRR F)
_					1			
<b>Field Obse</b>	rvations:					Wetla	and Hydrology Pre	sent? No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

(includes capillary fringe)

Remarks:

Surface water present: No Water table present: No

Saturation present: No

No standing water in soil pit, no staturation in soil strata

Depth (inches):

Depth (inches):

Depth (inches):

### Soil Chroma and Value for Wetland Soils

### Per 2018 regional supplement:

The following combinations of value and chroma identify a depleted matrix for loamy and clayey material (and sandy material in areas of indicators A11 and A12):

- 1. Matrix value of 5 or more and chroma of 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- 2. Matrix value of 6 or more and chroma of 2 or 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- 3. Matrix value of 4 or 5 and chroma of 2, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or
- 4. Matrix value of 4 and chroma of 1, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings (USDA Natural Resources Conservation Service 2006b).

Common (2 to less than 20 percent) to many (20 percent or more) redox concentrations (USDA Natural Resources Conservation Service 2002) are required in soils with matrix colors of 4/1, 4/2, and 5/2 (Figure A1).

Redox concentrations include iron and manganese masses and pore linings (Vepraskas 1992). See "contrast" in this glossary for the definitions of "distinct" and "prominent."

**Gleyed matrix.** A gleyed matrix has one of the following combinations of hue, value, and chroma and the soil is not glauconitic (Figure A2):

- · 10Y, 5GY, 10GY, 10G, 5BG, 10BG, 5B, 10B, or 5PB with value of 4 or more and chroma of 1; or
- · 5G with value of 4 or more and chroma of 1 or 2; or
- N with value of 4 or more (USDA Natural Resources Conservation Service 2006b).

### **Redoximorphic Definitions**

Concentration: Patches of oxidized iron which can form soft masses and along root channels and other pores.

**Depletion:** Gray or reddish gray colors of soil caused by the loss of iron through translocation.

**Reduced Matrix:** Soils that are saturated and contain ferrous iron at the time of sampling may change color upon exposure to the air, as ferrous iron oxidizes to ferric iron in the presence of oxygen.

# **Appendix B: Wetland Delineation Photos**





Figure 1. Overview of wetland boundary (pink flagging).



Figure 2. Sample Point 1 soil pit (LEFT), with standing water at the bottom and Sample Point 2 soil pit (RIGHT).

# Appendix C: Wildlife Review

# Pole Star Community Wildlife Review

Prepared by: AloTerra Restoration Services, LLC

320 E. Vine Drive Suit 314 Fort Collins, CO 80524

Prepared on: November 01, 2021

# **Background**

Pole Star Community, formerly Happy Heart Farms (hereafter referred to as the Project), is located in Fort Collins, Colorado in Larimer County (**Figure 1**). The property is situated to the north of West Elizabeth Street and to the west of South Overland Trail, and is surrounded by residential communities and natural areas. The Pleasant Valley and Lake Canal runs west of the Project site and is lined by Crack willow (*Salix fragilis*) and Russian Olive (*Elaegnus angustifolia*). Currently The Project is used for residential and agricultural purposes and is proposed to undergo development for the establishment of the Pole Star Community. In November of 2021, AloTerra Restoration Services (AloTerra) delineated 0.05 acres of wetland which occurs north of the Pleasant Valley and Lake Canal in the southwest corner of The Project. The surface and ground water associated with the farmland flows south towards West Elizabeth Street. Uplands within the Project contains several old growth cottonwood trees (*Populus deltoides*) and are dominated by smooth brome (*Bromus inermis*) and agricultural crops. Riparian areas are dominated by canary reedgrass (*Phalaris arundinaceae*) and baltic rush (*Juncus balticus*), with limited surface water.



Figure 1: Location of Happy Heart Farms in Fort Collins, Colorado.

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# **Purpose**

The purpose of this wildlife review is to assess the probable effects on federally listed species and sensitive species in the proposed Project site, per Section 7 of the 1973 Endangered Species Act. Under the actions, consultations, and recommendations of the USFWS, in cooperation with Colorado Parks and Wildlife. The authorized organization must ensure, with the best scientific data available, that there will be no negative change or destruction to critical habitats in the Project area (USFWS, 2013).

# Threatened, Endangered, Proposed, and Sensitive Species

On November 1, 2021 an official species list was documented by U.S Fish and Wildlife Service's Information for Planning and Consultation IPAC: http://ecos.fws.gov/ipac/ was obtained by using known ranges of federally listed species in The Project area. A list was also unofficially obtained from the 2016 Colorado Natural Heritage Program database by looking at known sightings of sensitive species near Kingfisher Wetland project area. On November 1, 2021 an AloTerra Restoration Services field technician conducted a site visit in order to assess suitable habitat for known listed and sensitive animal species.

**Table 1** Provides a record of the federally listed Federally listed species that could occur within the area of the proposed project (20 acres). The table includes (a) the common name of the species (b) the scientific name of the species (c) the status of the species in question (d) whether or not the species should be excluded and (e) the reasoning why the species should be excluded.

The reasoning of excluding species from the list of concerned species is given based off a variety of reasons including:

- 1) No suitable habitat was found during site visit, The range of the species in is such that the species is highly unlikely to not known near occur within the Project site;
- 2) No suitable habitat was found during the site review; and/or
- 3) No records for the species exist within the Project site.

**Table 1.** Federally listed terrestrial and aquatic species that may occur or be affected by actions within the Project.

Common Name	Species	ecies Status		Reason for Exclusion			
Mammals	Mammals						
Preble's meadow jumping mouse	Zapus hudsonius preblei	Threatened	No	Species and habitat are not present.			
Canada lynx	Lynx canadensis	Threatened	Yes	Species and habitat are not present.			
Birds	Birds						
Mexican spotted owl	Strix occidentalis lucida	Threatened	Yes	Critical habitat does not overlap with project site			
Whooping crane	Grus americana	Endangered	Yes	Range does not overlap with project site			
Least tern	Sterna antillarum	Endangered	Yes	Range does not overlap with project site			
Piping plover	Charadrius melodus	Threatened	Yes	Range does not overlap with project site			
Fish							

Pole Star Wildlife Review 2 | Page

Pallid sturgeon	Scaphirhynchus albus	Endangered	Yes	Species and habitat are not	
				present.	
Greenback	Oncorhynchus clarkii	Threatened	Yes	Species and habitat are not	
cutthroat trout	stomias			present.	
Plants					
Colorado butterfly	Gaura neomexicana var.	Threatened	Yes	Species and habitat are not	
plant	coloradensis			present.	
Ute ladies-tresses	Spiranthes diluvialis	Threatened	Yes	Species and habitat are not	
				present.	
Western prairie	Plantanthera praeclara	Threatened	Yes	Species and habitat are not	
fringed orchid				present.	
North Park phacelia	Phacelia formosula	Endangered	Yes	Found in higher elevation	
				range (8,000-8,300 ft)	
Sourced from IPAC :http://ecos.fws.gov/inac/website_Note-Some species may be affected downstream from					

Sourced from **IPAC** : <a href="http://ecos.fws.gov/ipac/">http://ecos.fws.gov/ipac/</a> website. Note- Some species may be affected downstream from water source.

# **Federally Listed Species**

## Preble's Meadow Jumping Mouse (PMJM)

Since 1998, the Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*) has been federally listed as threatened by the U.S Fish and Wildlife Service. In Colorado, they are also listed as Species of Greatest Conservation Needs, considered sensitive by the US Forest Service, and critically imperiled according to the Colorado Natural Heritage Program. Declining PMJM populations are due to predation, habitat degradation, and fragmentation. In Colorado, the PMJM can be found up to elevations around 7,000 feet east of the Front Range, and west to the shortgrass prairie. (USFWS, 2013)

Preble's meadow jumping mice are found in areas with natural hydrological processes that create a dense riparian area with biologically diverse herbaceous plants. PMJM have been found in environments with a variety of plant species, frequently in areas with a thick layer of grasses and forbs that create cover. Studies show that the specific species composition of herbaceous plants is not as important to supporting populations, but that suitable habitat needs to have a higher percentage of ground cover in the vicinity to open water. Most PMJM were found within areas with a higher density of the shrub layer consisting mostly of willows. The mice use adjacent grassy uplands as far as approximately 300 feet from the 100-year floodplain to "hibernate" during the colder months. These nests are called hibernacula and can be found under the cover of snowberry, chokecherry, cottonwoods, gooseberry, and other willow species.

Section 4 of the Endangered Species Act (1973) prevents any funded or authorized agency to take action that would negatively affect lands labeled as PMJM Critical habitat. Critical Habitat is defined by areas currently occupied by the species or potential areas in which the species could establish. In 2013, The Fish and Wildlife Service revised the critical habitat designation for the Preble's meadow jumping mouse (shapefiles found at: https://www.fws.gov/mountain-

prairie/es/species/mammals/preble/CRITICAL%20HABITAT/CRITICALHABITATindex.htm.). The approximate 50,000 acres designated for critical habitat occur adjacent to streams and rivers in the Colorado foothill and mountain regions. PMJM critical habitat is located in Boulder, Broomfield, Douglas, El Paso, Jefferson, Larimer and Teller Counties (USFWS, 2014). Currently there is no critical habitat designated in the Project area (USFWS, 2010). Although the Project area does not have optimal habitat

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<sup>\*</sup>There are no federally designated critical habitats within the Project area.

due to lack of desired upland vegetation, presence of PMJM cannot be confirmed without a thorough survey of the area.

### Rare Plants

The rare plant survey resulted in no evidence of *Spiranthes diluvialis* (Ute ladies'-tresses) or *Gaura neomexicana var. coloradenesis* (Colorado Butterfly Plant) in the Project area.

## **Sensitive Species**

The sensitive species list is derived from the U.S. Forest Service (https://www.fs.usda.gov) and Colorado Parks and Wildlife data on present sensitive species ranges and distributions (USFS, 2005). The Regional Forester's sensitive list is evaluated by examining viable risk of species; these species are categorized as R2 sensitive, not R2 sensitive, or, not a concern. Suitable habitat was also determined by a site visit conducted by AloTerra Restoration Services on November 01, 2021. Under the Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act no activity that "takes, transports, barters, or exports the listed migratory birds or eagles is permissible unless it is sanctioned by the U.S. Fish and Wildlife Service. The sensitive species list includes migratory birds that could use The Project area as a breeding, over-wintering, or stopover site.

The species found in **Table 2** below are compiled from lists of at-risk species that have potential habitat or occurrence in the Project area, specifically in the vicinity of the documented wetland. The table is organized as followed: (a) The common name of the species, (b) The scientific name of the species, (c) The status of the species in question, (d) Whether or not the species should be excluded, and (e) The reasons why the species should be excluded.

**Table 2.** Federally listed terrestrial and aquatic species that may occur or be affected by the actions within the Project.

Common name	Species	Status Species Excluded		Reasons for exclusion		
Mammals						
Fringed myotis	Myotis thysanodes	Forest Service Sensitive	Yes	Found in coniferous forest and mixed pine		
Townsend's big- eared bat	Corynorhinus townsendii	Forest Service Sensitive	Yes	Habitat requirements are not in range		
Black-tailed prairie dog	Cynomys Iudovicianus	Forest Service Sensitive	Yes	No colonies were found in the Project site		
White-tailed prairie dog	(Ocynomys leucurus)	Forest Service Sensitive	Yes	No colonies were found in the Project site		
Kit fox	Vulpes macrotis	Forest Service Sensitive	Yes	Range does not overlap with project site		
Swift fox	Vulpes velox	Forest Service Sensitive	No			
Birds						
Bald eagle	Haliaeetus leucocephalus	Forest Service Sensitive	No			
Cassin's sparrow	Aimophila cassinii	Bird of Conservation Concern	Yes	Range does not overlap with project site		

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Lesser yellowlegs		Bird of	Yes	Range does not overlap with
	Tringa flavipes	Conservation		project site
		Concern		
Black Swift	6 1:1 :	Forest Service	Yes	Habitat requires cliffs limited
	Cypseloides niger	Sensitive		in Colorado
Chestnut-collared	Calcarius ornatus	Forest Service	Yes	Site location does not
longspur		Sensitive		overlap with species range
Sandhill Crane	Antigone canadensis	Forest Service	Yes	Suitable habitat is not
		Sensitive		evident in project site
Northern harrier	Circus cyaneus	Forest Service	No	
		Sensitive		
Swainson's Hawk	Buteo swainsoni	Federal Species of	No	
		Concern		
Greater sage-	Centrocercus	Forest Service	Yes	Found in sage brush habitat
grouse	urophasianus	Sensitive		
Grasshopper	Ammodramus	Forest Service	Yes	Native species range does
sparrow	savannarum	Sensitive		not meet area requirements
Fish				
Plains Minnow	Hybognathus	State Endangered	Yes	Suitable habitat is not
	plactius			evident in project site
Plains topminnow	Fundulus sciadicus	Forest Service	Yes	Suitable habitat is not
		Sensitive		evident in project site
Flannelmouth	Catostomus	Forest Service	Yes	Suitable habitat is not
Sucker	latipinnis	Sensitive		evident in project site
Amphibians				
Northern leopard	Lithobates pipiens	Forest Service	No	
frog		Sensitive		
Plains leopard frog	Lithobates blairi	Forest Service	Yes	Range does not overlap with
Tidilis leopard ITOg		Sensitive		project site

Species list was sourced from U.S. Forest Service <a href="https://www.fs.usda.gov">https://www.fs.usda.gov</a> Rocky Mountain Region and USFWS Migratory birds for the Mountain-Prairie Region updated 2017.

Migratory bird list was sourced from USFWS Birds of Conservation Concern

https://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php.

# **Sensitive Species Details**

## **Mammals**

### Swift Fox

Historically Swift fox (*Vulpes velox*) populations declined due to habitat fragmentation and loss, competition, trapping, and collateral damage when trying to kill wolves. In Colorado they are listed as Special Concern and classified as a sensitive species by USFS Region 2. They range throughout western United States but are found in higher abundances in Colorado than Montana, Nebraska, and South Dakota, where they still have not reached historical population levels. The fox appears to not be affected by heavily grazed ecosystems and can be found in a variety of habitat types that include short-grass and mid-grass prairies, including a variety of agricultural land types. In these areas, vegetation is typically dominated by blue grama, buffalograss, western wheatgrass, and sagebrush. Fox dens have been found in areas with low vegetation on slight slopes in well-drained sites, with soil types that include silty loam or loam. The species are not directly reliant on riparian areas and can be found up to 3

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miles away from any source of water. (Marks et al., 2005). No dens were sighted in the Project area. Due to the size of the proposed Project area, there should be minimal impacts to swift fox populations.

### <u>Birds</u>

### Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is found only in North America (CPW, n.d.). Populations declined in the early-mid 20<sup>th</sup> century due to impacts from pesticides (mainly DDT), disturbance and loss of trees for nesting habitat. The eagle was consequently placed on the Endangered Species List. However, with the ban on the pesticide DDT and protection of nesting habitat, the eagles have substantially recovered, with Endangered status reduced to Threatened in 1995 and with further recovery was de-listed nationally. The bald eagle was removed from the Colorado list of threatened and endangered species in 2009. Bald eagles can be found throughout much of Colorado during both summer and winter and can be observed near reservoirs and major rivers such as the South Platte. Eagles will roost and nest in large cottonwood trees, roosting communally in the winter for warmth. Bald eagles have a varied diet, with nests often found near water in tall trees, building nests that can be 7 to 8 feet across. No nests or signs of bald eagles were seen during site visit on November 01, 2021. Any bald eagles that may be using the area should not be negatively affected by the Project, especially if large trees can be protected from construction activities.

### Northern Harrier

The Northern harrier (*Circus cyaneus*) is a Tier 2 Species of Greatest Conservation Need in Colorado and a Forest Service Sensitive Species in Region 2. These raptors reside in a variety of habitats year-around, including grasslands and marshes. They reside throughout Colorado, with higher densities on the eastern plains, short-grass prairies and western valleys. In the eastern plains these birds breed in a variety of ecosystems, preferring large wetlands (>250 acres) with dense vegetation (7-10 inches in height). Nests are found either on the ground or on a platform usually near open water. More specifically, nests are commonly found hidden in wetland vegetation, where cover is taller than 60 cm. (Slater, 2005) During the site visit on November 01, 2021 no northern harrier was sighted, and no nests were found. The Project development is unlikely to negatively impact the species due to the species range and scope of the Project.

### Swainson's Hawk

The Swainson's Hawk (Buteo swainsoni) is found throughout Colorado in open areas, usually native short and tall grass prairies, and agricultural lands. Since the 1980s, Swainson Hawk populations declined in many parts of its range due to removal of riparian habitat, and lack of nest site availability (Bechard, 2010). The raptors' home range varies between about 170 to 21,550 acres depending on the amount of forage and water available. Nests will frequently be found in a lone tree or post in these grasslands, but they can also be found along riparian areas among a cluster of trees within their home range. The nests are found in a variety tree species including cottonwood (Populus sp.), willows (Salix sp.), sycamores (Platanus sp.), and walnut (Juglans sp.) These hawks are a migratory bird species, listed on the Migratory Bird Treaty Act, traveling from North America to breed in the summer to South America for wintering. (Woodbridge, 1998) This raptor has a high tolerance for human disturbance and can be found in areas with high human activity, although there can be nest abandonment if there is high-intensity disturbance or construction near a nesting tree. When nests occur, they are usually found 15-30 feet above ground. AloTerra Restoration Service's wildlife technician conducted a field assessment on November 01, 2021 and found no nests in the proposed construction area. The Swainson's Hawk should not be negatively affected by the Project due to the extensive size of their home range and minimal effect to potential nesting sites from construction activities.

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## **Amphibians**

### Northern Leopard Frog

Northern leopard frogs (*Lithobates blairi*) are found statewide in Colorado and are currently listed as a Tier 1 Species of Greatest Conservation Need. Population declines are due to climate change, invasive diseases, habitat loss, pollution, and predation. The frogs can be found in the western United States in elevations up to 11,000 feet. This species can inhabit a variety of riparian areas including stream channels, sloughs, reservoirs, gravel pits, and oxbows. For breeding and foraging purposes, the frogs prefer dense vegetation with heights around 6 to 12 inches and more than 30 percent cover. Northern leopard frog breeding sites commonly occur in semi-permanent ponds or wetlands with water depths to 25 to 40 inches. Water quality is an important factor for most amphibians, needing unpolluted sites with water that is well oxygenated and pH balanced (6.1-7) (CPW, 2005). Through the winter, leopard frogs hibernate on the bottom of ponds located beneath 1-1.5 feet of rock where water depths were at least 2 feet. Construction associated with The Project may impact individuals that were not identified during the general survey, but due to the size and location of the construction project it is not likely to result in a decline in population toward federal listing.

### Other Wildlife

As previously discussed in the sections on Threatened, Endangered, and Proposed Species and Sensitive Species of Concern, the proposed restoration project should minimally impact populations of species that have ranges that do or may potentially overlap with the Project area. Due to low vegetation species diversity and poor riparian conditions the Project area does not provide any critical habitat to federally listed or sensitive species. The mature cottonwoods provide some habitat for song birds and raptors in the spring and summer including; great horned owls, American kestrels, western tanagers, dark-eyed juncos, and variety of sparrows. No ground nests or raptor nests were found on the site during site visit of November 01, 2021. There were signs of raccoons (*Procyon lotor*), great blue herons (*Ardea Herodias*) and coyote (*Canis latrans*). A young male mule deer was seen along the canal corridor and droppings were found throughout the Project. Many common animal species have been observed throughout the Project including garter snakes, Canadian geese, great horned owls, Eurasian doves, blue jays, Northern flickers, golden finches, and House sparrows. Ornate box turtles and Mallard ducks have been sighted in the pond north of the Project. This wetland area and old growth trees could potentially be suitable habitat for songbird nesting/feeding and should therefore be protected during any future construction.

# **Mitigation Measures**

Construction should avoid impacting important suitable habitat for sensitive or endangered species. In order to minimally impact sensitive or migratory bird populations, it is important to avoid impacting any potential nesting sites (cottonwood trees or thick vegetation on the surface).

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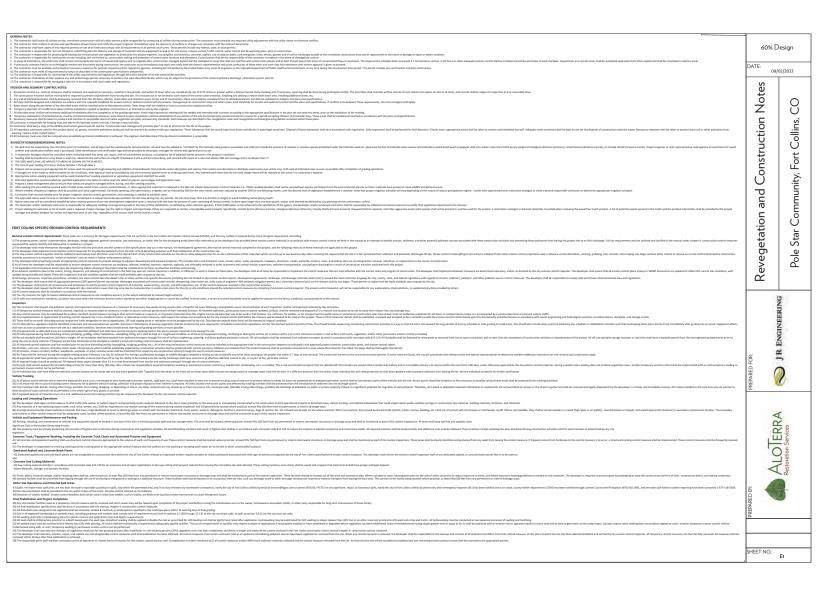
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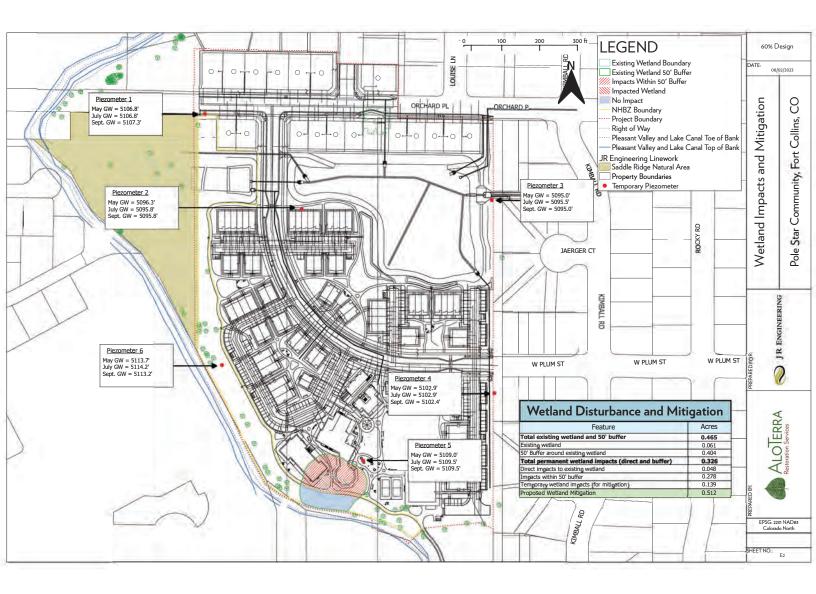
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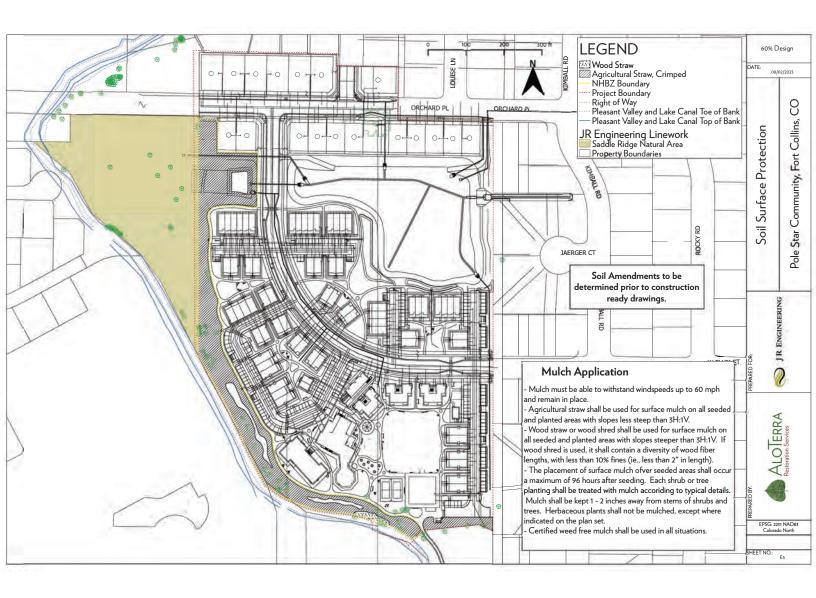
# Appendix D: Draft 60% Design













Emergent and Mesic Wetland Mix								
Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Ufe History	% Mix	Pounds PLS Needed			
Corney pellifia	woodly sedge	CO Ecotype for VNS)	NPG-L	1	0.20			
Discerio striata	food marmagrass	CO Ecotype preferred	NPG-L	3	0.37			
Bolboschoenus maritimus	cosmopolitan bulnush	CD Ecotype (or VNS)	NPG-L	3	0.92			
Eleochanis poliustris	common spikerush	CO Ecotype (or VNS)	NPG-L		0.24			
Elymus innecolatus sap. Innocolatus	thickspike wheatgrass	Ditane	NPG-I	15	2.30			
Heliorithus runtalii	Huttal's surflower	CD Ecotype (or VNS)	MPF	1	0.41			
Mentile proposis	wild mire	CO Ecotype (or VNS)	1405	12	0.05			
Atubienbergin asperitolis	scratchgrass:	CD Ecotype (or VNS)	NPG-L	7	0.10			
Asclepins speciesa	showy milloweed	CO Ecotype preferred	NIFE	1	0.29			
Asclepius incorneta	Swamp millowed	CO Ecotype preferred	5079	2	0.27			
Solidogo missouriensis	Missouri goldenrod	CD Ecotype (or VNS)	SUPP		0.08			
Sportino pertinata	prairile contignass	Red River	NPG-L	5	88.0			
Symphystrichum novee-anglise	Menir England older	CO Econor for VNSI	:Nerr	8	0.14			
Triglischis meritima	seaside arrowgrass	CD Ecotype (or VNS)	NET	10	0.44			
Verbesc history	swamp verbena	CO Ecotype for VNSI	1485	10	0.14			

Facultative					
Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Ufe History	N Mix	Pounds PLS Needed
Andropogos ptrendii	big bluestom	Boolla	NPG L	4	1.10
Asclepias speciosa	showy milloweed	CO. Ecotype preferred	607	0.5	0.29
Bromus ciliatus	fringed browne	Central CO	NPG-L	. 8	1.39
Cores proegracilis	climbered field sedge.	CO Ecotype for VNS)	NPG-L	3	0.12
Distintilia spirate	Saltgrass	ED Ecotype (or VNS)	NPG A		0.63
Elymus committeels	Canada wildnye	Manden	NPG-L	8	2.89
Elymus lanceplatus sep. lanceplatus	thickspike wheatgrass	Ditana	NFG-L	7	2.13
Glycperhize lepidotes	American Soprice	CO/Ecotype (or VMS)	5484	0.5	0.83
Helionthus moximilians	Maximilian sunflower	CO Ecotype for VNSI	1694	2	0.45
Hondeum Jubotum	fostall burley	CO Ecotype for VNSI	NPG-L	. 1	0.57
Juncus ercticus ssp. Etterellis	wire nash	CO Ecotype preferred	NPG-L	5	0.02
Name la piridula	green needlegrass	Cischaras .	NPG-L	7	139
Panicum wirpotum	Switcheress	Blackwell	NPG-1	12	2.14
Passagyrum smithii	Western wheatgrass	Arriba	NPG-L	12	4.33
Puccinellia nuttalliana	Nurtal alkalaigrass	CO Ecohole for VNSI	NPG-L	3	0.07
Sporobolus eirokles	alkali secators	Saldado	NPG-L	6	0.15
Sporobolus cryptondrus	sand dropseed	CO Ecolype preferred	NPG-L	10	0.08
			Totals:	100	18.30

Acres (upland shade-tolerant): 0.47 (economics Seeds Per Sq. Ft. (Broadcast): 110

Scientific Name (USDA)	Common Name (USDA) Cultivar or Ecotyp		Ufe History	N Mx	PLS Needed
Achilles itruitos yar, accidentalis	Western parrow	Eagle or Valoria	Ner		0.02
Adenolinum lewisii	Lowin San	Maple Grove or CO ecotype	Net		0.46
Bromus ciliatus	fringed brome	Central CO	NPG-L	12.	1.15
Bromus marginatus	mountain brome	Cold Springs Ecotype	NPG-L	12	3.24
Conyequis sinctoria	stains coreopsis.	60 Ecotype (or VNS)	NOT:	7	0.01
Dymus conodensis	Canada wildrye	Mandan	NPG-L	10	1.99
Elymus tercepolative sop. Librariolistus	mirasphe wheatgrass	Ditate	NPG-L	12.	2.01
Elymin trachycosiles	stender wheatgrass	Pryor	NPG-L	12	1.88
Dollardio aristata	<b>ManketRower</b>	CD Ecotype (or VNS)	MIT	2	0.24
Monarda pertinata	bergarnot	CO Ecotype preferred	NAF	4	0.07
Pascopyrum smithil	western wheatgrass	Arriba	NPG-L		1.59
Personmon virgiotas	Front Kange beardtongue	CO Ecotype or Bluebuckle	MPF	.4	0.17
Poo fenderians	multiongrass	Suite Cyré	NPG-A.	- 6	0:15
Solidopa missouriemsis	Missouri goldenroid	CO Econyam (or VNS)	NPF	5	0.06
fluidbeckle fritte	blackeyed Susan	CO Ecotype for VNSI	NBF	2	0.03

Acres (raingarden): 0.12 (w/30% mg): Seeds Per So. Ft. (Broadcast): 110

Raingarden (bottom of raingarden, including riparian edge)*								
Scientific Name (USCA)	Common Name (USDA)	Cultivar or Ecotype	Ufe History	% Mix	Pounds PLS Needer			
Andropopen perandi	big blumines	Bonille	MITGL	1	0.12			
Andhojogon halfii	sant Muestern	SA/Sen	MIG-L		0.17			
Assignes approprie	showy millowed	CID Ecotype preferred	5019	0.5	0.04			
Bromus piliotus	fringed bronser	Easteral CO	NRG-L	4	0.10			
Colomeville longifolis	prairie sandreed	Contren	NPG-L	5	0.11			
Coren proviprositis	clustered field sedge	60 Ecotype in VNSI	MRG-L	3	0.03			
Districtulis apicana	saltgrass	CO Ecotype for VNSI	MPG-L		0.07			
Dymus conodensis	Comado wildrye	Mandan	MPG-L		0.41			
Openus Innovational sup-Innovational	thirkspile wheelgren-	Drilland	MMG-L	12	0.52			
Olygyrchian legislates	American Sportoe	CO Ecotype for VMSI	NPF	65	0.05			
AMSorethus requirelland	Maximilian tunflower	CO Exceype (or VIVS)	3497	4	0.06			
HonBrum Jubotum	fostall barity	CO Scotype for VWSI	NPG-L	3.	80.0			
Aircus arcticus sop. Returniti	wire rush:	- CO Econyae preferred	NRG-C		0.00			
Machineranthing tenant/Salia	tamepleal tamepaster	CO 600type (or VNS)	NBP	2	0.08			
Nosento viriduto	green needlegrass	Eucharas	NRG-L	7	0.22			
Panicum virgotum	switchgram	Blackwell	MIND-L	12	0.30			
Purcinella nuttalliana	Microl Alkalaigrass	CO Econysie litr VWSI	MRG-L	4	0.01			
Solidago missauriensis	Missouri goldenrod	CO Ecotype for VNS	NITT		0.01			
Sporobolus piroides	pikeli secaton	Saldado	NPG-L	. 5	0.02			
Sporobolus cryptandrus	send dropseyd	CO Ecotype preferred	NPG-L	9	0.01			
			Waterlea		4.44			

Acres (upland): 1.1 (acrossing) Seeds Per Sq. Ft. (Broadcast): 110

Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	History	% Mix	Pounds PLS Needed
Achilles lámulasa var. occidentalia	Western yerrays	Engle or Yakima	NPP	2.	9.04
Actiontherum lymenoides	Indian riongrass	Palgrea	NPG-L		7.22
Adjessilnum (ewisi)	Lewis flax	Magle Grove or CO ecotype	NOS	- 2	0.35
Artemisia frigido	praide sagewort	CD Ecotype preferred	MPE	2	0.02
Soutelous curtisendula	videosts grama	Niner	NPG-L	8	1.65
Soutetime precifis	Mur grama	Fremont CO ecotype	NPG-1	20	0.71
Buchlor dertyldides	Suffalograss-	Cody	MRG-L		8.39
Cleame serrulate	Rocky Mountain berglant:	CO Ecotype ior VNSI	NAF.	1	0.46
Coveopoli sinetaria	plains correspois	CO Exotype (or VNS)	Nat	4	0.07
Dales cavdida	white proini clover	CID Ecotype preferred	N29	1	0.14
Elymus elymoides	squiredtail	Purblis or Wasti	NPG-C		2.17
Elymus tractoropolics	slender schingtgrass	Prijer	MPG-L	12	2.94
Golfardia arlenota	ManketSower	CO Ecotype (or VMS)	NPC	2	0.56
Grindelia aquerriava	carly our gurnissed	CO Lootype (or VMS)	NOT	7	0.26
AND CONTRACT DATES	common sunflower	CO Ecotype (or VMS)	NAF	1.5	0.68
NeFanchus pecialaris	prairie sufficier	CO Ecotype for VIVSI	NAF		0.73
Recipro mocronthe	grainle zunegrass-	Sims Mess	NPG-L	5	0.11
Liatria punctata	domed blazing star	CO Ecotype for VNSI	5497	-0.5	0.16
Monerale pertinents	tergamer	CO Econyw preferred	NAP	3	0.12
Passaggrum smithil	sonders of statgram	Arriba	MAG-L		3.67
Acroitemen virgetus	Front Range boardtongue	CD Ecotype or Bluebuckle	MN	4	0.40
Pou ferallesiana	multiregrani	Bain Eye	NRG-L	A	0.85
Retibide columnifera	. signight prairie coveflower:	CO Ecotype (or VNS)	NITE	A	10.20
Rudbeckie Nete	blackeyed Susan	CO Ecotype (or VMS)	Nes	2.	0.07

Acceptable Alterna	tives			
Scientific Name (USDA)	Common Name (USDA)	Cultivar or Ecotype	Life History	Hydrosere
Abrillium pusillium	linte balley	CO Ecotype Iar VMSI	NAG-L	Integrated Facultative
Sorphastrum nutans	Indiangrate	Oto	NPG-L	teingarden/ Tacultative
Solidingo comodensis	Canada golderrod	CO Ecotype (or VWS)	8459	talegarder/ facultative
Nationthus mutterill	Number's surfaceor	CO Econype for VMSI	1995	rainganter/ familiative
Erograstis trichodes	sand lovegrass	CO Ecotype In VWS	NING-L	rainguistery/Facultation
Echinocea angustifolia	blacksamoon echinacea	CO Ecotype for VNS)	SAPE	upleed
Pendemon impurit/folios	browllieard lear thorque	CO Ecotype or San lean Berm.	MPF	opland
Dales purpures	purple prisine thouse	Kanas or Staphalia	NIFE	MARKET
Gutierrenia savathrad	Septembers and a september of the septem	CO Ecotype (iir VNS)	SSAN .	upland
Penishman secundifions	Aidebells penterson-	CO Ecotype for VWSI	NP	Liphand .
Chrysothammus viscial/forus von. viscial/forus	(militar rabbilitary))	CO Econyse (in VNS)	NS	spland
Schlaschyrium scapprilim var: scapprilim	Strip Stummers	Complex	MPGL	upland
Nesperastipò comata	needle-n-thread	CO Econype (or W/S)	MPG-L	spland

# Final seed mixes, acreages, and percent mix to be provided with final plan set submittal.

	Life History Codes
N	native
1	introducted
A	annual
В	biennial
P	perennial
F	forb
G-L	grass-like (includes grasses, sedges, and rushes)
s	shrub
T	tree
v	nino

60% Design

08/02/2023

Pole Star Community, Fort Collins, CO

Seed Mixes

JR ENGINEERING



SHEET NO.: E7

						Emer	gent	Mesic N	leadow	Facult	tative
						Area (at)	0.11	Area (ac)	0.37	Area (ac)	0.78
Herbaceous Containers						Feet on Center	3,0:	Feet on Center	2,0	Fort on Center	3.0
						Plants/ac	12574	Plants/ac	12574	Plants/ac	558
Туре	Scientific Name	Common Name	Life History	Shade Tolderance	Qty All Reaches	% in palette	Qty	%in palette	Опу	% in palette	On
1 gal or similar	Andropogon gerardii	big bluestern	NPG-L	Sun, Part Shade	654	0	0	0	0	15	654
4" or similar	Asclepias incarnata	swamp milkweed	NPF	Sun, Part Shade	233.	0	.0	. 5	233	0	0
4" or similar	Asclepias speciosa	showy milkweed	NPP	Sun	233	0	0	5	233	0	.0
10ci	Bolboschoenus maritimus	cosmopolitan bulrush	NPG-L	Sun, Part Shade	465	0	0	10	465	0	10
10c or similar	Carex nebrascensis	Nebraska sedge	NPG-L	Sun, Part Shade	465	0	.0	10	465	0	0
10ci or similar	Carex praegracilis	clustered field sedge	NPG-L	Sun, Part Shade	872	0	0	0	0	20	87
10ci or similar	Eleocheria pallustria	common spikerush	NPG-L	Sun, Part Shade	465	0	0	10	465	0	0
10ci or similar	Glyceria striata	fowl mannagrass	NPG-L	Sun, Part Shade, Shade	465	0	.0	10	465	0	0
4" or similar	Hellanthus nutfolliil	Nuttall's sunflower	NPP.	Sun, Part Shade	233	0	0	8.	233	0	0
10ci or similar	Auncus arcticus ssp. litteralis	arctic rush	NPG-L		654	0	a	0	0	15	65
ides or similar	Juncus confusus	Colorado rush	NPG-L	Sun, Part Shade	326	0	.0	7	125.	0	.0
10ci or similar	Auncus torreyi	Torrey's rush	NPG-L	Sun, Part Shade	326	0	0	7	326	0	10
10ci or similar	Panicum virgatum	switchgrass	NPG-L	Sun, Part Shade	1197	0	0	7	326	20	87
10c or similar	Puccinellia nuttalliana	Nuttall's alkaligrass	NPG-L	Sun, Part Shade	326	0	.0	7	225.	0	0
1 gal or similar	Schlzachyrium scaparium vor. scaparium	little bluestern	NPG-L		654	0	0.	0	0	45.	45
10ci or similar	Schoenoplectus pungens	common threesquare	NPG-L	Sun, Part Shade	456	33	456	0	0	0	0
10ci or similar	Schoenoplectus tabernaemontoni	softstem bulrush	NPG-L	Sun, Part Shade	456	11	456	0	0	0	0
10ci or similar	Scirpus pollidus	cloaked bulrush	NPG-L	Sun, Part Shade	233	0	0	6	233	0	0
1 gal or similar	Sorghastrum nutans	Indiangrass	NPG-L	Sun	654	0	0	0	0	15	65
10ci or similar	Sporgonium eurycorpum	broadfruit bur-reed	NPF	Sun, Part Shade	458	33	456	0	0	0	.0
10ci or similar	Sportina pectinata	prairie condgrass	NPG-L	Sun, Part Shade	326	0	0	7	326	0	.0
4" or similar	Verbena hostota	swamp verbena	MPF	Sun, Part Shade	233	0	a	5	233	0	10
					10380	69	1369	100	4652	100	415

						Upland	Shade	
Woody	Containers (Upland S	hade Tolerant	1			Arms (ac)	0.47	j
vicouy	containers (opiana s	made rolerani	,			Feet on Center	7	
						Flants/ac	1026	
Туре	Scientific Name	Common Name	Life	Shade Tolderance	Qty All Reaches	% in palette	Qty	
D60 or similar	Prunus virginiana var. mrionocarpa	black chokecherry	NS.		121	25	121	i
D60 or similar	Ribes gureum	golden current	NS.	Sun, Part Shade	121	25	121	
1 gál or similár	Rosa woodsii	Wood's rose	NS:	Part Shade	0	0	0	
1 gal or similar	Sympharicorpas accidentalis	western snowberry	NSUBS	Part Shade	0	0	ò	
7.7					241	50	241	ĭ

Plenting biosetion Note: (hyphocounter is "12" into rangerates from upland edge. Mesonparter is "E from upland edge. Recorporater is "E from upland edge. Woodly container note: carenot plant woodly containers in areas of rangerates where they regist interfere with infrastructure / utilities.

					Riparian (raingarden edge					)
					Hydrori	parlan	Mesori	padan	Xerori	parian
	Carlo Military	2.5			Area (at)	0.03	Area (ac)	0.03	Area (ac)	0.00
W	Woody Containers				Tencon Circler		Part on Center	36	Tentor:	39
					Plants/ic		Plants/sc	1502	Plants/ac	:502
Type*	Scientific Name	Common Name	Life History	Total City	% in palette	City	% in palette	COTY	% in palette	City
D60	Amounts fronting	false indigo bush	NS:	30			26	30		
060	Редина воронита нас. технология	black chickecherry	NS:	20			40	20		
000	Proper amendance	American plum	NS	30					-40	20
040 040 040	Albert australit and, morney	golden currant	NS	30			46	30		
060	Allerandeli	Wood's rese	NS	30					-60	30
* If D60	is not available, source D40, iff	Dad not available. I gall my	ry be used.	100			100	50	100	50

					Riparian (raingarden edge)					:)
					Hydrori	parian	Mesori	parlan	Xeron	parlán
					Area (acf	101	Area (ac)	201	Area (ac)	2.01
Woody Cuttings				Féet ini. Centier	15	Feet (m. Center	20.	Freton Center		
	SALES CONTRACTOR				Plants/ac	333	Plants/ac	108	Plants/ac	
Type	Scientific Name	Common Name	Die History	Total	%in' palette	Ory	Nin palette	OBy.	%in palette	Ćity.
cutting.	Salenopphilide	peachleaf willow	NS.	15	50	10.	50	15.		
Paole.	Reading Sections and Association	plains cottonwood	NT	3			60	5		
S'cutting	Soft exigen	narrowical willow	745	4	20	4				
2 coming	Sale Encode	bluestern willow	365		80	6				

Life History Codes
native
introducted
annual
biennial
perennial
forb
grass-like (includes grasses, sedges, and rushes)
shrub
tree

PREMEDIOR.

PREMEDIOR.

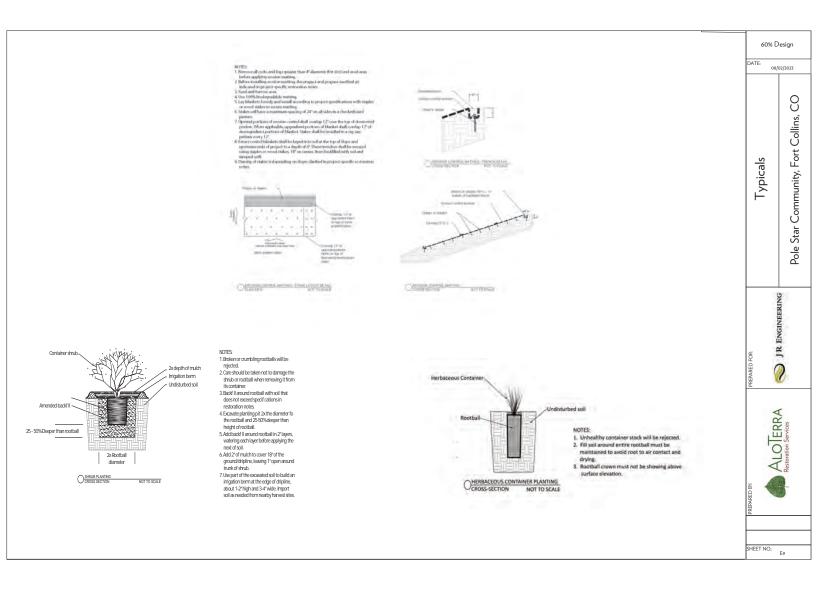
PREMEDIOR.

PROBLEMENTO

Pole Star Community, Fort Collins, CO



SHEET NO.:



# **Appendix E: USACE Jurisdictional Determination Letter**



#### **DEPARTMENT OF THE ARMY**

CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD
LITTLETON. COLORADO 80128-6901

November 1, 2022

RE: Approved Jurisdictional Determination, Pole Star Community, Corps File No. NWO-2022-01369-DEN

Mrs. Sarah Smith AloTerra Restoration Services 320 East Vine Drive Ste. 314 Fort Collins. CO 80524

Dear Mrs. Smith:

This letter is in reference to the property located at approximately 40.577°N, -105.129°W, in Larimer County, Colorado. The submittal dated September 21, 2022, on behalf of Pole Star, consists of a request for an Approved Jurisdictional Determination for the above project.

The project area has been reviewed in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activity associated with a dredge and fill project in waters of the United States. Based on a review of available documentation and an October 26, 2022, site visit, we have determined that the project site does not contain waters of the United States. A Department of the Army (DA) permit is not required for the discharge of dredged or fill material, and any excavation activity associated with a dredge and fill project into this resource under Section 404 of the Clean Water Act.

The JD is attached to this letter. If you are not in agreement with the JD decision, you may request an administrative appeal under regulation 33 CFR 331, by using the attached Appeal Form and Administrative Appeal Process form. The request for appeal must be received within 60 days from the date of this letter. It is not necessary to submit a Request for Appeal if you do not object to the JD.

This JD is valid for a period of five years from the date of this letter, unless new information warrants revisions of the JDs before the expiration date, or unless the Corps has identified, after a possible public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

If there are any questions, please feel free to contact David Liccione at (720) 922-3841 or by e-mail at David.J.Liccione@usace.army.mil and reference **Corps File No. NWO-2022-01369-DEN**.

Sincerely,

Kiel Downing

Chief, Denver Regulatory Office

#### Enclosures:

Approved Jurisdictional Determination Form (November 1, 2022) Notice of Administrative Appeal Options

# Traffic Impact Study

To: Michael Gornik

From: Eli Farney, PE, PTOE

Date: June 27, 2022

# **Polestar Mixed-Use Development**

Fort Collins, Colorado

#### **Prepared By:**





Eli Farney, PE, PTOE

efarney@jrengineering.com

JR Engineering 7200 South Alton Way, Suite C400 Centennial, CO 80112

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## **Executive Summary**

JR Engineering (JR) has completed a review of the traffic impacts resulting from the proposed Polestar Mixed-Use Development (Project) in Fort Collins, Colorado (City).

The objectives of this Traffic Impact Study (TIS) are:

- Estimate site-generated traffic and route trips onto adjacent streets.
- Perform traffic operations analysis for 2024 Opening Day and 2045 Future Year scenarios.
- Make recommendations for roadway improvements to accommodate new traffic.

The methodology, content, and findings of this TIS are consistent with the following documents:

Larimer County Urban Area Street Standards (LCUASS) – Chapter 4 – Transportation Impact Study

The base assumptions form according to LCUASS is included in Appendix E.

#### **Key Findings of this TIS**

- Levels of Service
  - o No operational concerns related to levels of service were identified as part of this TIS.
- Queue Lengths
  - No operational concerns related to queuing were identified as part of this TIS.
- Pedestrian and Bicycle Facilities
  - Pedestrian facilities are mostly adequate in the area surrounding the Project site, which is primarily residential. Bicycle lanes are present along nearby major streets. Sidewalks and crosswalks are proposed as part of the Project.

## Introduction

JR has completed a review of the existing and forecasted traffic operations in the vicinity of the planned Polestar Mixed-Use Development. A vicinity map is included in **Figure 1**.



Figure 1: Vicinity Map

#### **Land Uses**

The Polestar development is anticipated to contain the following land uses:

- Residential (136 dwelling units)
  - o Single Family Detached (19 dwelling units)
  - Townhome (56 dwelling units)
  - o Multi-Family (61 dwelling units)
- 3 Acres of Urban Agriculture
- Community Center
- Group Home for Elder Care
- Place of Worship

## **Study Intersections**

Five intersections were analyzed as part of this TIS. Four of them are external to the site, and one is internal. The study intersections, along with a site plan, are shown in Figure 2.

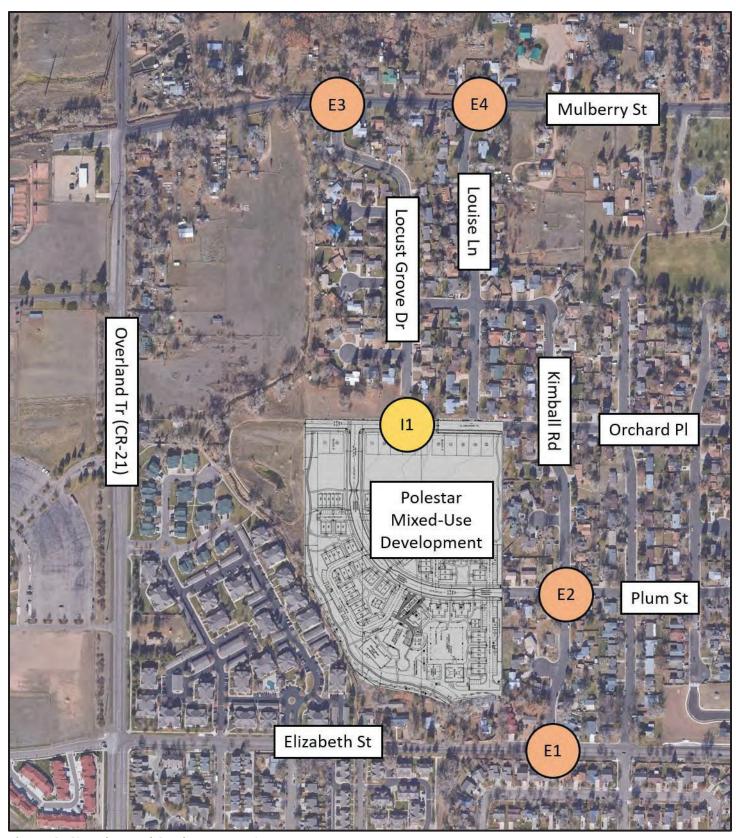


Figure 2: Site Plan and Study Intersections

#### Traffic Volumes and Distribution

#### **Existing Traffic Volumes**

Existing traffic volumes were obtained on Wednesday, April 27, 2022 by All Traffic Data Services for external intersections E1, E2, and E3. The E4 intersection was added to the study later and was counted by All Traffic Data Services on Thursday, June 16, 2022. Traffic counts are included in **Appendix B**. Existing volumes are shown in **Figure 4**.

#### **Background Traffic Growth Rate**

JR applied a 1.5% growth rate to the existing traffic volumes to account for future development. Discussions with the City indicated that a growth rate of 1-2% would be reasonable. The North Front Range Metropolitan Planning Organization (NFRMPO) anticipates 1.5% annual growth in population in the Fort Collins Growth Management Area through 2045.

Future background traffic volumes are shown in Figure 6 (2024) and Figure 8 (2045).

Background traffic was added to the internal study intersection at Orchard & Locust Grove. Although this intersection is not existing, it is anticipated that background traffic will use this intersection in the future. Background traffic volumes at this intersection were determined by extrapolating from the external study intersections.

#### **Site-Generated Traffic Volumes**

Site-generated traffic volumes were estimated using ITE Trip Generation Manual, 10<sup>th</sup> Edition. The Polestar development is expected to produce the following trips:

Average Daily Trips: 1,351
AM Peak Entering Site: 29
AM Peak Exiting Site: 59
PM Peak Entering Site: 65
PM Peak Exiting Site: 44

A trip generation report is included in Appendix C. Site-generated traffic volumes are shown in Figure 5.

#### **Distribution of Site-Generated Traffic**

Site-generated traffic was routed onto adjacent streets according to the distribution in Figure 3.

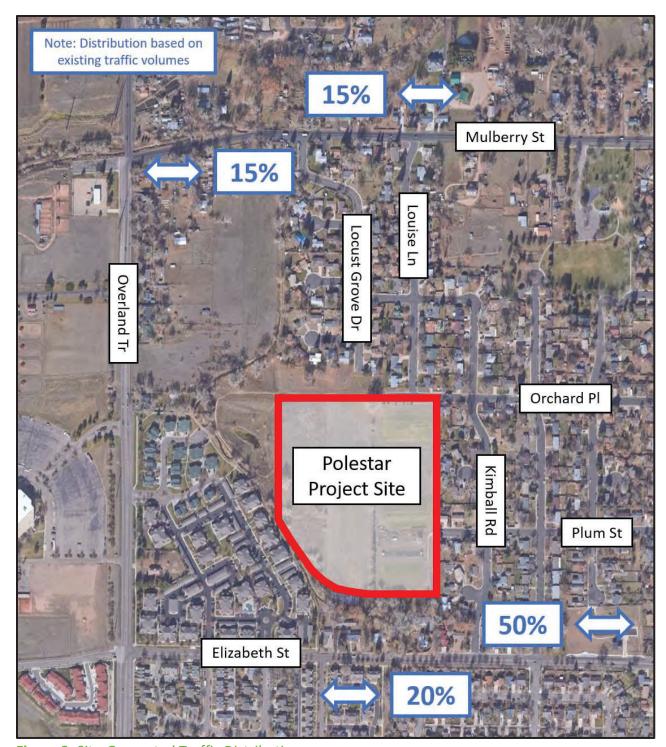


Figure 3: Site-Generated Traffic Distribution

#### **Total Traffic**

Total traffic is the sum of background and site-generated traffic. JR forecasted total traffic volumes at the study intersections in the years 2024 (Opening Day) and 2045 (Future Year). Total traffic volumes are shown in Figure 7 (2024) and Figure 9 (2045).



#### **Existing (2022) Traffic Volumes**

Existing traffic volumes at the external study intersections are included in Figure 4. Existing lane geometry is shown.

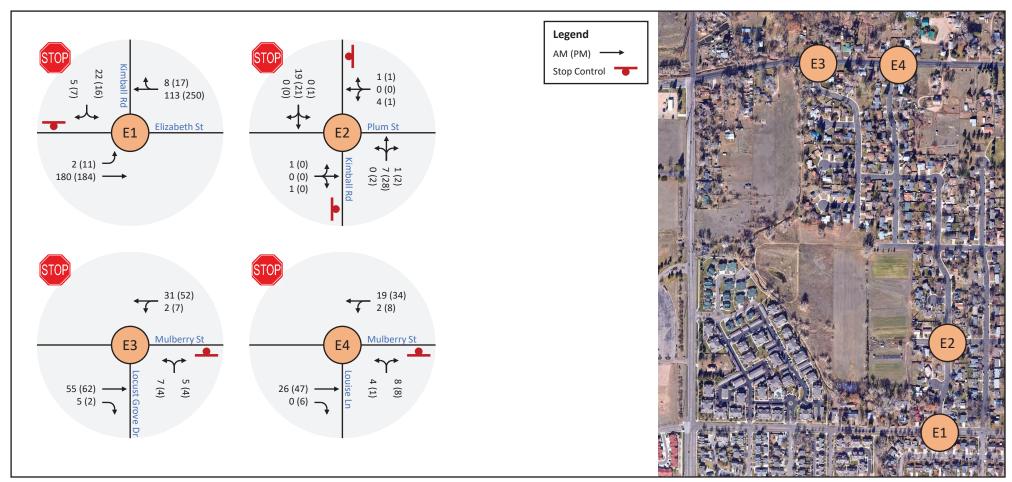


Figure 4: Existing (2022) Traffic Volumes

Note: Intersections E3 and E4 were counted on different days. Therefore, volumes at these two adjacent intersections are significantly different.



#### **Site-Generated Traffic Volumes**

Site-generated traffic volumes at the study intersections are included in Figure 5.

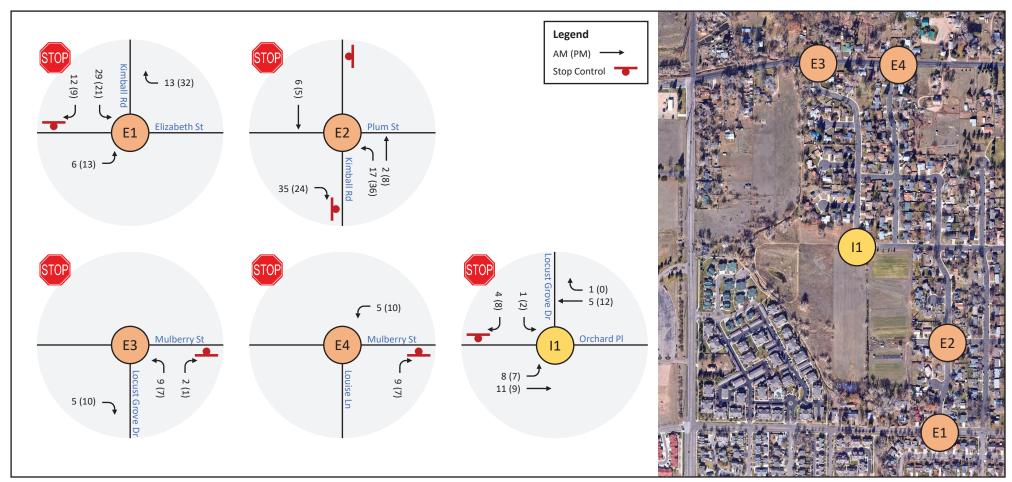


Figure 5: Site-Generated Traffic Volumes



#### **Opening Day (2024) Background Traffic Volumes**

2024 background traffic volumes at the study intersections are included in Figure 6. Existing lane geometry is shown.

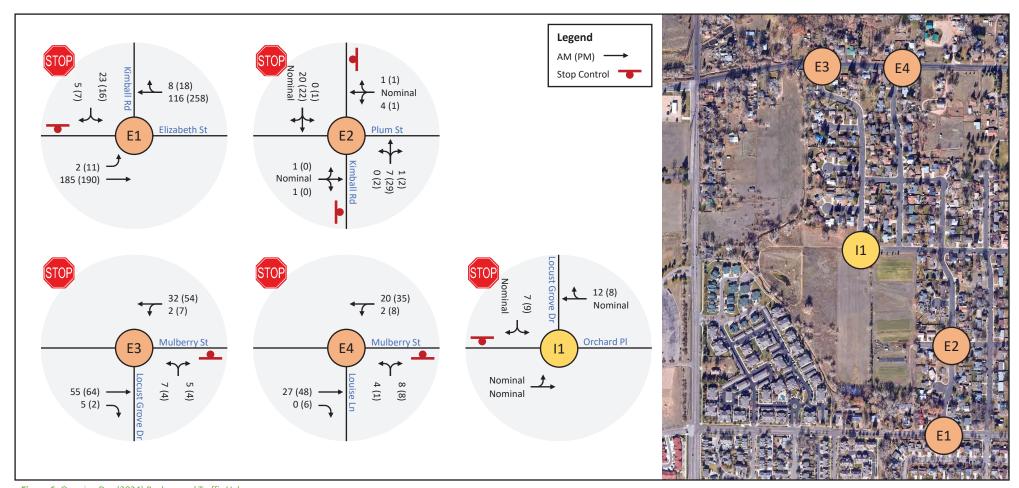


Figure 6: Opening Day (2024) Background Traffic Volumes



#### **Opening Day (2024) Total Traffic Volumes**

2024 total traffic volumes at the study intersections are included in Figure 7. Existing lane geometry is shown.

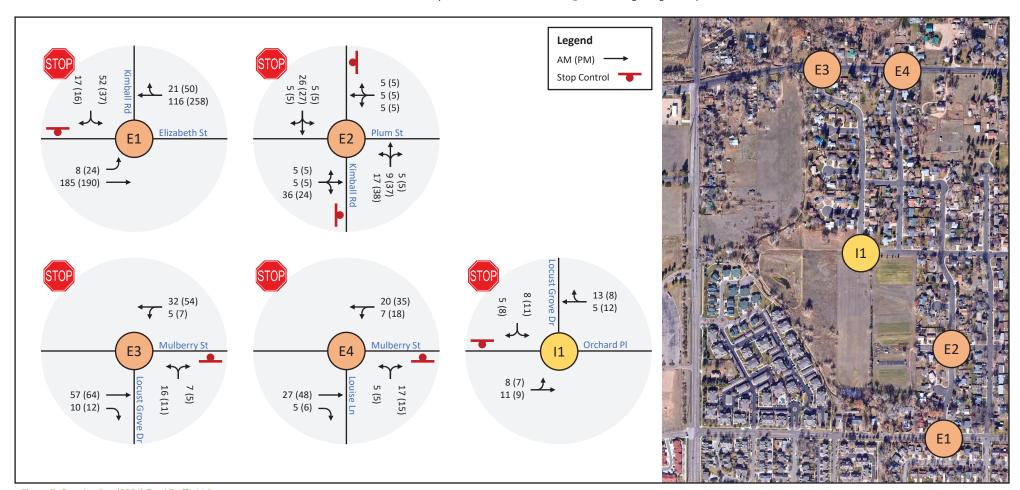


Figure 7: Opening Day (2024) Total Traffic Volumes



#### **Future (2045) Background Traffic Volumes**

2045 background traffic volumes at the study intersections are included in Figure 8. Existing lane geometry is shown.

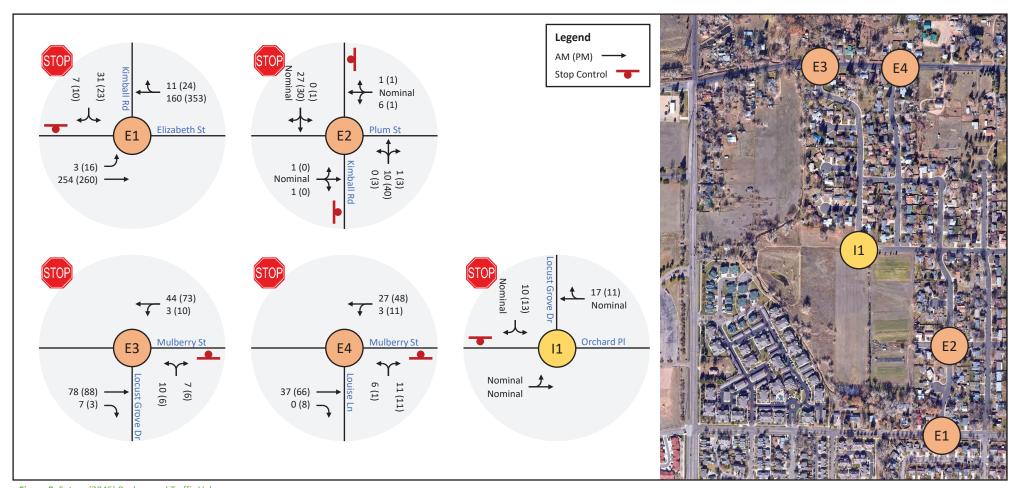


Figure 8: Future (2045) Background Traffic Volumes



#### **Future (2045) Total Traffic Volumes**

2045 total traffic volumes at the study intersections are included in Figure 9. Existing lane geometry is shown.

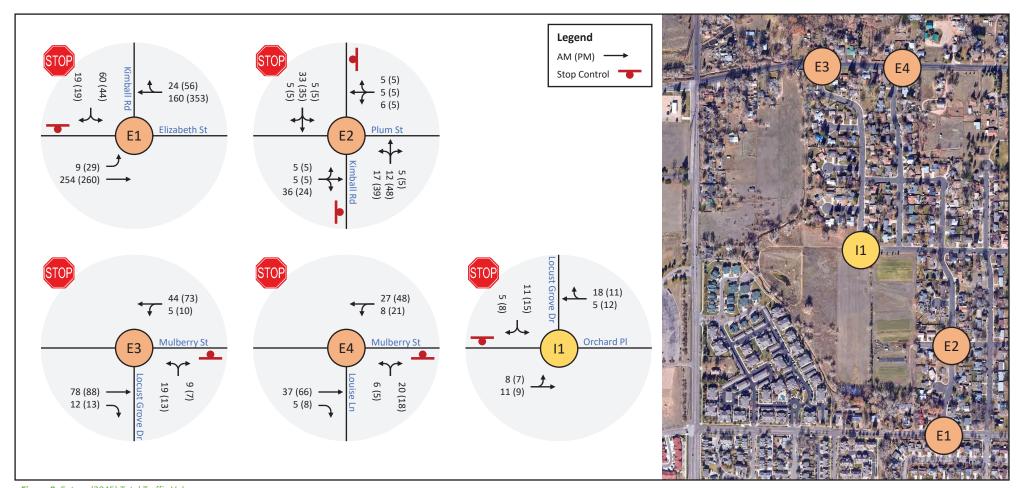


Figure 9: Future (2045) Total Traffic Volumes

# **Traffic Operations Analysis**

Traffic operations were analyzed using HCM 6<sup>th</sup> Edition methodology. Synchro reports are included in **Appendix D**.

#### **Levels of Service**

JR analyzed each of the study intersections for peak hour level of service (LOS). **Table 1** includes the LOS for each movement in the existing condition (2022). **Table 2** includes the forecasted LOS for background traffic and total traffic in the year 2024. **Table 3** includes the forecasted LOS for background traffic and total traffic in the year 2045.

**Table 1:** 2022 Existing Levels of Service

	Intersection	Movement/Approach	AM Peak LOS	PM Peak LOS
CTOP	E1 – Elizabeth & Kimball	EB Left	А	А
STOP	E1 – Elizabetii & Kiilibali	SB Approach	В	В
	E2 – Plum & Kimball	EB Approach	Α	Α
CTOR		WB Approach	А	А
STOP		NB Approach	Α	Α
		SB Approach	Α	Α
CTOP	E3 – Mulberry & Locust	WB Approach	Α	Α
STOP	Grove	NB Approach	Α	Α
STOP	E4 Mulbown Q Louise	WB Approach	А	А
	E4 – Mulberry & Louise	NB Approach	Α	Α

**Table 2:** 2024 Opening Day Levels of Service

		Movement/	AM Peak	Hour LOS	PM Peak Hour LOS	
	Intersection	Approach	Background Traffic	Total Traffic	Background Traffic	Total Traffic
CTOP	E1 – Elizabeth &	EB Left	А	Α	А	Α
STOP	Kimball	SB Approach	В	В	В	В
		EB Approach	А	Α	А	Α
STOP	E2 – Plum & Kimball	WB Approach	А	Α	А	А
		NB Approach	А	Α	А	А
		SB Approach	А	Α	А	А
STOP	E3 – Mulberry &	WB Approach	А	Α	А	А
STOP	Locust Grove	NB Approach	А	Α	А	А
STOP	E4 – Mulberry &	WB Approach	А	Α	А	А
	Louise	NB Approach	А	Α	А	Α
STOP	I1 – Orchard &	EB Approach	А	Α	А	А
STOP	Locust Grove	SB Approach	А	Α	А	А

**Table 3:** 2045 Future Year Levels of Service

		Movement/	AM Peak I	Hour LOS	PM Peak Hour LOS	
	Intersection	Approach	Background Traffic	Total Traffic	Background Traffic	Total Traffic
STOP	E1 – Elizabeth &	EB Left	А	Α	А	А
STOP	Kimball	SB Approach	В	В	В	С
		EB Approach	А	Α	А	Α
STOP	E2 – Plum & Kimball	WB Approach	А	Α	Α	Α
		NB Approach	А	Α	А	Α
		SB Approach	А	Α	А	А
STOP	E3 – Mulberry &	WB Approach	А	Α	А	А
STOP	Locust Grove	NB Approach	А	Α	А	А
STOP	E4 – Mulberry &	WB Approach	А	Α	А	Α
STOP	Louise	NB Approach	А	Α	А	Α
STOP	I1 – Orchard &	EB Approach	А	Α	А	А
STOP	Locust Grove	SB Approach	А	Α	А	А

#### **Discussion on Levels of Service**

Levels of service are expected to be satisfactory at all study intersections through 2045. The southbound approach at the Elizabeth & Kimball intersection is expected to operate at LOS B in most scenarios. In the PM peak hour of 2045, this approach is anticipated to operate at LOS C, which is still satisfactory. All other approaches/movements are expected to operate at LOS A through 2045.

## **Queue Lengths**

JR analyzed each of the study intersections for 95<sup>th</sup> percentile queue lengths using HCM 6<sup>th</sup> Edition methodology. Table 4 includes the queue lengths for the year 2022 with existing traffic. Table 5 includes the queue lengths for the year 2024 with total traffic. Table 6 includes the queue lengths for the year 2045 with total traffic.

**Table 4:** 2022 Existing 95<sup>th</sup> Percentile Queue Lengths

	Intersection	Movement/Approach	AM Peak Queue (ft)	PM Peak Queue (ft)
STOP	E1 – Elizabeth & Kimball	EB Left	<25	<25
STOP	E1 – Elizabeth & Kimbali	SB Approach	<25	<25
	E2 – Plum & Kimball	EB Approach	<25	<25
STOP		WB Approach	<25	<25
		NB Approach	<25	<25
		SB Approach	<25	<25
STOP	E3 – Mulberry & Locust	WB Approach	<25	<25
STOP	Grove	NB Approach	<25	<25
STOP	E4 – Mulberry & Louise	WB Approach	<25	<25
STOP	E4 – Mulberry & Louise	NB Approach	<25	<25

**Table 5:** 2024 Opening Day 95<sup>th</sup> Percentile Queue Lengths

	Intersection	Movement/Approach	AM Peak Queue (ft)	PM Peak Queue (ft)
STOP	E1 – Elizabeth & Kimball	EB Left	<25	<25
STOP	E1 – Elizabetii & Kiiiibali	SB Approach	<25	<25
		EB Approach	<25	<25
STOP	E2 – Plum & Kimball	WB Approach	<25	<25
	EZ – Piulii & Killibali	NB Approach	<25	<25
		SB Approach	<25	<25
STOP	E3 – Mulberry & Locust	WB Approach	<25	<25
3101	Grove	NB Approach	<25	<25
STOP	E4 – Mulberry & Louise	WB Approach	<25	<25
STOP	E4 – Mulberry & Louise	NB Approach	<25	<25
STOP	I1 – Orchard & Locust	EB Approach	<25	<25
STOP	Grove	SB Approach	<25	<25

**Table 6:** 2045 Future 95<sup>th</sup> Percentile Queue Lengths

	Intersection	Movement/Approach	AM Peak Queue (ft)	PM Peak Queue (ft)
CTOP	E1 – Elizabeth & Kimball	EB Left	<25	<25
STOP	E1 – Elizabeth & Kimbali	SB Approach	<25	<25
		EB Approach	<25	<25
STOP	E2 – Plum & Kimball	WB Approach	<25	<25
		NB Approach	<25	<25
		SB Approach	<25	<25
STOP	E3 – Mulberry & Locust	WB Approach	<25	<25
STOP	Grove	NB Approach	<25	<25
STOP	E4 – Mulberry & Louise	WB Approach	<25	<25
STOP	E4 – Mulberry & Louise	NB Approach	<25	<25
STOP	I1 – Orchard & Locust	EB Approach	<25	<25
STOP	Grove	SB Approach	<25	<25

# **Discussion on Queue Lengths**

Queues are expected to be nominal at all study intersections through 2045. No operational concerns are anticipated as a result of queuing.

## Pedestrian and Bicycle Analysis

#### **Existing Pedestrian Facilities**

Existing sidewalks are located along the local streets in the surrounding residential area. Along Elizabeth Street, continuous sidewalks exist on the south side, while disconnected sidewalk segments exist on the north side. Along Mulberry Street, a few disconnected segments of sidewalk exist. An existing concrete path is located on the west side of the Project site parallel to the Pleasant Valley and Lake Canal.

#### **Existing Bicycle Facilities**

Bicycle lanes exist on both sides of Elizabeth Street and Mulberry Street near the study intersections. For the local streets in the residential area surrounding the Project site, lanes are not marked.

#### **Links to Neighboring Land Uses**

JR analyzed pedestrian links to other land uses within 1,320 feet of the Project site. **Figure 10** shows the approximate area analyzed. Additionally, schools within 1.5 miles of the site were considered. The pedestrian analysis worksheet according to LCUASS is included in **Appendix A**.

#### **Proposed Improvements**

The following improvements are proposed as part of the Project:

- Local streets within the Project site will have sidewalks on both sides.
- Crosswalks will be installed at neck-downs in the street to promote safe pedestrian crossings.
- Sidewalks along Orchard Place will connect to the existing path along the canal west of the site.

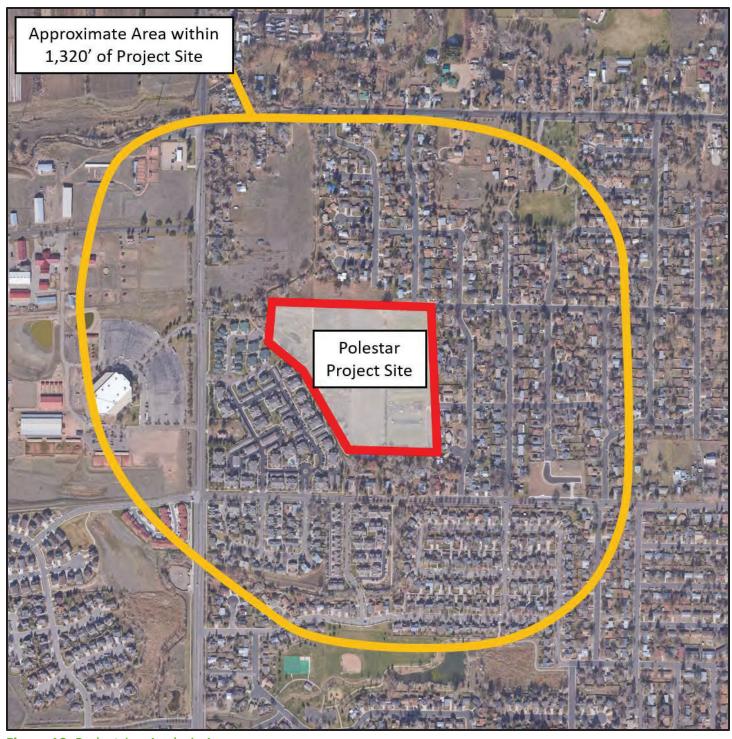


Figure 10: Pedestrian Analysis Area

## Conclusion

Below is a summary of conclusions and findings of this TIS.

#### **Levels of Service**

No operational concerns related to levels of service were identified as part of this TIS.

#### **Queue Lengths**

No operational concerns related to queuing were identified as part of this TIS.

#### **Pedestrian and Bicycle Facilities**

Pedestrian facilities are mostly adequate in the vicinity of the Project site. The surrounding area has a residential character with sidewalks along most streets.

Bicycle lanes are present along Elizabeth Street and Mulberry Street.

Proposed improvements as part of the Project include sidewalks, crosswalks, and a connection to the existing trail west of the site.

# Appendix A Pedestrian Worksheet

# Pedestrian Analysis Worksheet

Project Classification: Residential

	Description of Destination	Destination Classification	Level of Service	Security	Directness	Continuity	Street Crossings (signalized)	Street Crossings (unsignalized)	Visual Appeal & Amenities	Surface Condition
	Residential		Existing	А	А	В	N/A	В	С	Α
1	area around site	Residential	Proposed	Α	А	В	N/A	В	С	А
	CSU		Existing	Α	В	С	N/A	С	С	Α
2	laboratories west of site	Residential	Proposed	А	В	С	N/A	С	С	А
	Bauder 3 Elementary Residential School	Existing	А	А	С	А	С	С	Α	
3		·	Residential	Proposed	А	А	С	А	С	С
4	Irish Elementary Residential School	Posidontial	Existing	А	С	С	В	С	С	А
4		Proposed	А	С	С	В	С	С	А	
_	Blevins Middle School Residential	Existing	А	В	С	А	С	С	Α	
5		Residential	Proposed	А	В	С	А	С	С	А
6	Poudre High School Comme	Commoroial	Existing	А	В	С	А	С	С	А
6		Commercial	Proposed	А	В	С	А	С	С	А

# Appendix B Traffic Counts

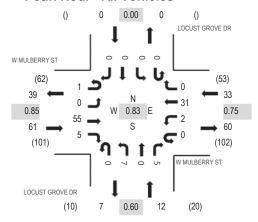


Location: 1 LOCUST GROVE DR & W MULBERRY ST AM

**Date:** Wednesday, April 27, 2022 **Peak Hour:** 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:45 AM - 09:00 AM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	W		ERRY	ST			RRY ST	Γ	LOC	UST G		DR			ROVE	DR						
Interval		Eastb	ound			Westb	ound			Northb	ound			South	bound			Rolling	Ped	lestriar	n Crossir	ngs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
7:00 AM	0	0	6	1	0	0	2	0	0	3	0	1	0	0	0	0	13	68	0	0	0	0
7:15 AM	0	0	6	0	0	0	9	0	0	0	0	1	0	0	0	0	16	77	0	0	0	0
7:30 AM	0	0	11	0	1	0	1	0	0	1	0	1	0	0	0	0	15	84	0	0	0	0
7:45 AM	0	0	15	1	0	1	6	0	0	1	0	0	0	0	0	0	24	98	0	0	0	0
8:00 AM	0	0	14	1	0	1	5	0	0	1	0	0	0	0	0	0	22	106	0	0	0	0
8:15 AM	0	0	10	2	0	1	8	0	0	0	0	2	0	0	0	0	23		0	0	0	0
8:30 AM	0	0	18	0	0	0	7	0	0	3	0	1	0	0	0	0	29		0	0	2	0
8:45 AM	1	0	13	2	0	0	11	0	0	3	0	2	0	0	0	0	32		0	0	0	0
Count Total	1	0	93	7	1	3	49	0	0	12	0	8	0	0	0	(	) 174		0	0	2	0
Peak Hour	1	0	55	5	0	2	31	0	0	7	0	5	0		)	0	0 106	3	0	C	2	0

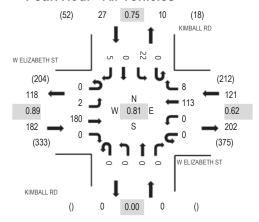


Location: 2 KIMBALL RD & W ELIZABETH ST AM

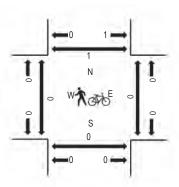
**Date:** Wednesday, April 27, 2022 **Peak Hour:** 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:45 AM - 09:00 AM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	WI	ELIZAE	BETH S	ST	W E	ELIZAB	ETH S	Τ		KIMBAI	LL RD			KIMBA	LL RD							
Interval		Eastbo	ound			Westb	ound			Northb	ound			South	oound			Rolling	Ped	estrian	Crossin	igs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	Vorth
7:00 AM	0	0	22	0	0	0	10	0	0	0	0	0	0	3	0	0	35	267	0	0	0	0
7:15 AM	0	0	40	0	0	0	14	1	0	0	0	0	0	7	0	0	62	303	0	0	0	0
7:30 AM	0	2	40	0	0	0	26	1	0	0	0	0	0	10	0	0	79	316	0	0	0	0
7:45 AM	0	1	46	0	0	0	36	3	0	0	0	0	0	5	0	0	91	319	0	0	0	0
8:00 AM	0	0	43	0	0	0	25	1	0	0	0	0	0	2	0	0	71	330	0	0	0	0
8:15 AM	0	0	43	0	0	0	24	0	0	0	0	0	0	7	0	1	75		0	0	0	0
8:30 AM	0	1	51	0	0	0	22	0	0	0	0	0	0	4	0	4	82		0	0	0	0
8:45 AM	0	1	43	0	0	0	42	7	0	0	0	0	0	9	0	0	102		0	0	0	1
Count Total	0	5	328	0	0	0	199	13	0	0	0	0	0	47	0	5	597	,	0	0	0	1
Peak Hour	0	2	180	0	0	0	113	8	0	0	C	) (	0	22	2 (	)	5 330	)	0	0	0	1

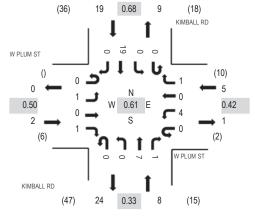


Location: 3 KIMBALL RD & W PLUM ST AM

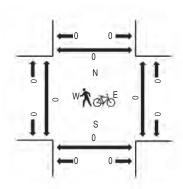
**Date:** Wednesday, April 27, 2022 **Peak Hour:** 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:45 AM - 09:00 AM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

ranno ocanico																						
		W PLU	JM ST		\	V PLU	M ST			KIMBAI	L RD			KIMBA	LL RD							
Interval		Eastb	ound			Westb	ound			Northb	ound			South	bound			Rolling	Ped	destriar	n Crossin	ngs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
7:00 AM	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	4	33	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	7	32	0	0	0	0
7:30 AM	0	0	0	2	0	2	0	0	0	0	3	0	0	0	6	0	13	33	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	2	1	0	0	5	0	9	29	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	34	0	0	0	0
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	7	0	8		0	0	0	0
8:30 AM	0	0	0	0	0	1	0	1	0	0	1	0	0	0	6	0	9		0	0	0	0
8:45 AM	0	0	0	0	0	3	0	0	0	0	5	1	0	0	5	0	14		0	0	0	0
Count Total	0	2	0	4	0	7	(	0 3	0	0	13	2	0	0	36	(	) 67	7	0	0	0	0
Peak Hour	0	1	0	1	0	4	(	) 1	0	0	7	7 1	0	(	) 1	9	0 3	4	0	C	0	0

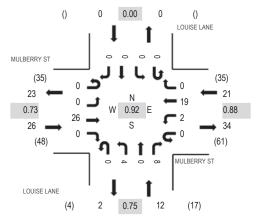


Location: 1 LOUISE LANE & MULBERRY ST AM

**Date:** Thursday, June 16, 2022 **Peak Hour:** 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Interval	M	ULBEF Eastbo		Γ		JLBER Westb			L	OUISE. Northb			l	OUISE Southl	LANE bound			Rolling	Ped	estrian	n Crossir	ngs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
7:00 AM	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	7	49	0	0	0	0
7:15 AM	0	0	10	0	0	0	4	0	0	0	0	1	0	0	0	0	15	58	0	0	0	0
7:30 AM	0	0	2	0	0	0	5	0	0	2	0	2	0	0	0	0	11	59	0	0	0	0
7:45 AM	0	0	9	0	0	0	5	0	0	1	0	1	0	0	0	0	16	57	0	0	0	0
8:00 AM	0	0	8	0	0	0	5	0	0	1	0	2	0	0	0	0	16	51	0	0	0	0
8:15 AM	0	0	7	0	0	2	4	0	0	0	0	3	0	0	0	0	16		0	0	0	0
8:30 AM	0	0	5	0	0	2	1	0	0	0	0	1	0	0	0	0	9		0	0	0	0
8:45 AM	0	0	3	0	0	0	4	0	0	0	0	3	0	0	0	0	10		0	0	0	0
Count Total	0	0	48	0	0	4	31	0	0	4	0	13	0	0	0	C	100		0	0	0	0
Peak Hour	0	0	26	0	0	2	19	0	0	4	0	8	0	(	) (	)	0 5	59	0	0	0	0

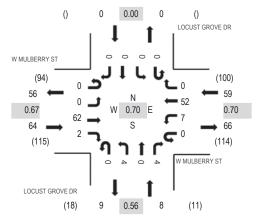


Location: 1 LOCUST GROVE DR & W MULBERRY ST PM

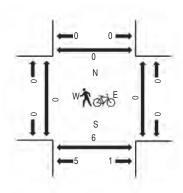
**Date:** Wednesday, April 27, 2022 **Peak Hour:** 04:00 PM - 05:00 PM

**Peak 15-Minutes:** 04:00 PM - 04:15 PM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Interval	WI	MULBE Eastb	ERRY :	ST	W	MULBE Westb	RRY ST ound		LOC	UST GI Northb		DR	LOC	UST G	ROVE bound	DR		Rolling	Ped	estriar	n Crossir	ıgs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru F	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South I	North
4:00 PM	0	0	23	1	0	1	20	0	0	0	0	2	0	0	0	0	47	131	0	0	0	0
4:15 PM	0	0	9	0	0	2	11	0	0	0	0	0	0	0	0	0	22	110	0	0	2	0
4:30 PM	0	0	21	0	0	4	9	0	0	1	0	1	0	0	0	0	36	118	0	0	0	0
4:45 PM	0	0	9	1	0	0	12	0	0	3	0	1	0	0	0	0	26	106	0	0	4	0
5:00 PM	0	0	14	1	0	1	8	0	0	1	0	1	0	0	0	0	26	95	0	0	0	0
5:15 PM	0	0	12	2	0	3	12	0	0	1	0	0	0	0	0	0	30		0	0	0	0
5:30 PM	0	0	16	0	0	0	8	0	0	0	0	0	0	0	0	0	24		0	0	2	0
5:45 PM	0	0	5	1	0	1	8	0	0	0	0	0	0	0	0	0	15		0	0	0	0
Count Total	0	0	109	6	0	12	88	0	0	6	0	5	0	0	0	0	226		0	0	8	0
Peak Hour	0	0	62	2	0	7	52	0	0	4	0	4	0	(	) (	)	0 131	1	0	0	6	0

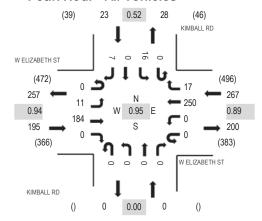


Location: 2 KIMBALL RD & W ELIZABETH ST PM

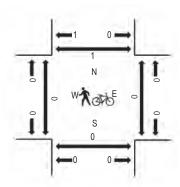
**Date:** Wednesday, April 27, 2022 **Peak Hour:** 04:45 PM - 05:45 PM

**Peak 15-Minutes:** 05:15 PM - 05:30 PM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	W	ELIZAE	BETH S	ST	WE	LIZAB	ETH S	T		KIMBAL	L RD			KIMBA	LL RD							
Interval		Eastb	ound		,	Westb	ound			Northb	ound			South	oound			Rolling	Ped	estrian	Crossin	gs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South N	√orth
4:00 PM	0	0	39	0	0	0	59	3	0	0	0	0	0	1	0	1	103	443	0	0	0	0
4:15 PM	0	1	46	0	0	0	49	4	0	0	0	0	0	2	0	0	102	450	0	0	0	1
4:30 PM	0	0	39	0	0	0	58	6	0	0	0	0	0	8	0	0	111	476	0	0	0	0
4:45 PM	0	1	51	0	0	0	65	6	0	0	0	0	0	2	0	2	127	485	0	0	0	0
5:00 PM	0	2	47	0	0	0	58	1	0	0	0	0	0	2	0	0	110	458	0	0	0	1
5:15 PM	0	5	41	0	0	0	69	7	0	0	0	0	0	4	0	2	128		0	0	0	0
5:30 PM	0	3	45	0	0	0	58	3	0	0	0	0	0	8	0	3	120		0	0	0	0
5:45 PM	1	1	44	0	0	0	47	3	0	0	0	0	0	4	0	0	100		0	0	0	0
Count Total	1	13	352	0	0	0	463	33	0	0	0	0	0	31	0	8	901		0	0	0	2
Peak Hour	0	11	184	0	0	0	250	) 17	0	0	C	) (	0	16	6 (	)	7 485	5	0	0	0	1

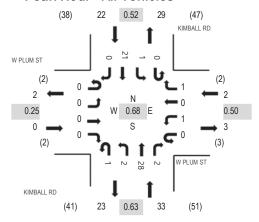


Location: 3 KIMBALL RD & W PLUM ST PM

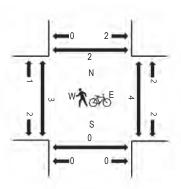
**Date:** Wednesday, April 27, 2022 **Peak Hour:** 04:45 PM - 05:45 PM

**Peak 15-Minutes:** 05:30 PM - 05:45 PM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

raino oounce	,																					
		W PLU	JM ST		1	N PLU	M ST			KIMBAI	LL RD			KIMBA	LL RD							
Interval		Eastb	ound			Westb	ound			Northb	ound			South	bound			Rolling	Ped	lestria	n Crossin	ıgs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South 1	North
 4:00 PM	0	0	0	1	0	0	0	0	0	0	3	0	0	0	2	0	6	38	0	1	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	7	37	1	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	8	0	14	50	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	7	0	0	0	3	0	11	57	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	1	0	5	55	1	2	0	2
5:15 PM	0	0	0	0	0	0	0	1	0	1	12	0	0	0	6	0	20		0	1	0	0
5:30 PM	0	0	0	0	0	0	0	0	1	1	6	2	0	0	11	0	21		2	1	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	4	0	9		0	0	0	0
Count Total	0	0	0	2	0	1		0 1	1	2	46	5 2	0	1	37	C	93	}	4	5	0	2
Peak Hour	0	0	0	0	0	1	(	) 1	1	2	28	3 2	2 0		1 2	1	0 57	7	3	4	1 0	2

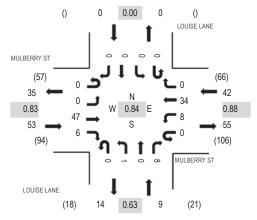


Location: 1 LOUISE LANE & MULBERRY ST PM

**Date:** Thursday, June 16, 2022 **Peak Hour:** 05:00 PM - 06:00 PM

Peak 15-Minutes: 05:00 PM - 05:15 PM

#### Peak Hour - All Vehicles



#### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

	M	IULBEI	RRY S	Τ	M	JLBER	RRY ST	Γ	L	.OUISE	LANE		L	OUISE	LANE							
Interval		Eastb	ound			Westb	ound			Northb	ound			South	bound			Rolling	Ped	lestriar	Crossin	igs
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour	West	East	South 1	Vorth
4:00 PM	0	0	8	0	0	0	4	0	0	0	0	0	0	0	0	0	12	77	0	0	0	0
4:15 PM	0	0	12	0	0	1	4	0	1	0	0	3	0	0	0	0	21	96	0	0	0	0
4:30 PM	0	0	11	0	0	1	6	0	0	1	0	5	0	0	0	0	24	101	0	0	0	0
4:45 PM	0	0	10	0	0	1	7	0	0	0	0	2	0	0	0	0	20	103	0	0	0	0
5:00 PM	0	0	14	2	0	2	10	0	0	0	0	3	0	0	0	0	31	104	0	0	0	0
5:15 PM	0	0	13	2	0	1	8	0	0	1	0	1	0	0	0	0	26		0	0	0	0
5:30 PM	0	0	12	0	0	5	7	0	0	0	0	2	0	0	0	0	26		0	0	0	0
5:45 PM	0	0	8	2	0	0	9	0	0	0	0	2	0	0	0	0	21		0	0	0	0
Count Total	0	0	88	6	0	11	5	5 0	1	2	0	18	0	0	0	C	181		0	0	0	0
Peak Hour	0	0	47	6	0	8	34	1 0	0	1	0	8	0	(	) (	)	0 10	)4	0	0	0	0

# Appendix C Trip Generation

#### **Trip Generation Summary**

Alternative: Alternative 1

Phase: Open Date: 4/20/2022

Project: Polestar Analysis Date: 4/20/2022

		W	eekday Av	verage Dai	ly Trips	\	Weekday <i>A</i> Adjacent	AM Peak H Street Tra		,	Weekday F Adjacen	PM Peak F t Street Tra	
ITE	Land Use	*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
210	SFHOUSE		90	89	179		4	10	14		12	7	19
	19 Dwelling Units												
220	LOW-RISE 2		224	223	447		6	22	28		21	13	34
	61 Dwelling Units												
220	LOW-RISE 1		205	205	410		6	20	26		20	11	31
	56 Dwelling Units												
254	ASSISTLIVE		11	10	21		1	1	2		1	1	2
	8 Beds												
495	RECCENTER		130	129	259		11	5	16		10	11	21
	9 1000 Sq. Ft. GFA												
560	CHURCH		18	17	35		1	1	2		1	1	2
	5 1000 Sq. Ft. GFA												
Unad	justed Volume		678	673	1351		29	59	88		65	44	109
Intern	al Capture Trips		0	0	0		0	0	0		0	0	0
Pass-	By Trips		0	0	0		0	0	0		0	0	0
Volun	ne Added to Adjacent Streets		678	673	1351		29	59	88		65	44	109

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

<sup>\* -</sup> Custom rate used for selected time period.

## For 19 Dwelling Units of SFHOUSE (210) Single-Family Detached Housing

Open Date: 4/20/2022 Analysis Date: 4/20/2022

Project: Polestar Analy

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	179	0	9.44	4.81	19.39	2.1	264	50	50	False	Ln(T) = 0.92 Ln(X) + 2.71	0.95
Weekday AM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	14	0	0.74	0.33	2.27	0.27	219	25	75	False	T = 0.71(X) + 4.8	0.89
Weekday PM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	19	0	0.99	0.44	2.98	0.31	242	63	37	False	Ln(T) = 0.96 Ln(X) + 0.2	0.92

For 56 Dwelling Units of LOW-RISE 1 ( 220 ) Multifamily Housing (Low-Rise)

Project: Polestar Analysis Date: 4/20/2022

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	410	0	7.32	4.45	10.97	1.31	168	50	50	False	T = 7.56(X) - 40.86	0.96
Weekday AM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	26	0	0.46	0.18	0.74	0.12	199	23	77	False	Ln(T) = 0.95 Ln(X) - 0.51	0.9
Weekday PM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	31	0	0.56	0.18	1.25	0.16	187	63	37	False	Ln(T) = 0.89 Ln(X) - 0.02	0.86

Open Date: 4/20/2022

For 61 Dwelling Units of LOW-RISE 2 ( 220 ) Multifamily Housing (Low-Rise)

Project: Polestar Analysis Date: 4/20/2022

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	447	0	7.32	4.45	10.97	1.31	168	50	50	False	T = 7.56(X) - 40.86	0.96
Weekday AM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	28	0	0.46	0.18	0.74	0.12	199	23	77	False	Ln(T) = 0.95 Ln(X) - 0.51	0.9
Weekday PM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	34	0	0.56	0.18	1.25	0.16	187	63	37	False	Ln(T) = 0.89 Ln(X) - 0.02	0.86

Open Date: 4/20/2022

## For 8 Beds of ASSISTLIVE (254) Assisted Living

Project: Polestar

Open Date: 4/20/2022 Analysis Date: 4/20/2022

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	<u>R2</u>
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	21	0	2.6	1.86	4.14		135	50	50	False		
Weekday AM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	2	0	0.19	0.08	0.43	0.12	123	63	37	False		
Weekday PM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	2	0	0.26	0.11	0.53	0.13	123	38	62	False		

## For 9 1000 Sq. Ft. GFA of RECCENTER (495) Recreational Community Center

Open Date: 4/20/2022 Analysis Date: 4/20/2022

Project: Polestar Ana

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	259	0	28.82	21.49	36.71	8.56	78	50	50	False	Ln(T) = 0.98 Ln(X) + 3.42	0.74
Weekday AM Peak Hour of Adjacent Street Traffic  Source: Trip Generation Manual 10th Edition	16	0	1.76	1.08	3.18	0.74	113	66	34	False	Ln(T) = 0.54 Ln(X) + 2.73	0.59
Weekday PM Peak Hour of Adjacent Street Traffic  Source: Trip Generation Manual 10th Edition	21	0	2.31	1.05	5.37	1.14	132	47	53	False	Ln(T) = 0.76 Ln(X) + 2.0	0.64

For 5 1000 Sq. Ft. GFA of CHURCH (560) Church

Project: Polestar Analysis Date: 4/20/2022

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	
Weekday Average Daily Trips  Source: Trip Generation Manual 10th Edition	35	0	6.95	3.01	13.14	2.98	21	50	50	False	T = 6.14(X) + 17.09	0.67
Weekday AM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	2	0	0.33	0.08	0.94	0.24	34	60	40	False	T = 0.36(X) - 0.74	0.79
Weekday PM Peak Hour of Adjacent Street Traffic Source: Trip Generation Manual 10th Edition	2	0	0.49	0.14	2.1	0.4	32	45	55	False	T = 0.37(X) + 3.9	0.65

Open Date: 4/20/2022

# Appendix D Synchro Reports

	•	<b>→</b>	<b>←</b>	4	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b>1</b>	ĵ.		W	
Traffic Volume (vph)	2	180	113	8	22	5
Future Volume (vph)	2	180	113	8	22	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.977	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1770	1863	1846	0	1747	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1770	1863	1846	0	1747	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	196	123	9	24	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	196	132	0	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12	•	12	•
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	O ti ioi					
Intersection Capacity Utiliza	ation 19.5%			IC	CU Level o	of Service
Analysis Period (min) 15				·		

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	T T	<u></u>	₩ <u>₽</u>	WOIN	₩.	אופט
Traffic Vol, veh/h	2	<b>T</b> 180	113	8	<b>1</b> 22	5
Future Vol, veh/h	2	180	113	8	22	5
Conflicting Peds, #/hr	0	0	0	0	0	0
		Free	Free			
Sign Control	Free	None		Free None	Stop	Stop
RT Channelized	100		-		-	
Storage Length	100	-	-	-	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	2	196	123	9	24	5
Major/Minor	Major1	N	Major2		Minor2	
Conflicting Flow All	132	0	- viajoiz	0	328	128
Stage 1	102	-	_	-	128	120
Stage 2		_	_	_	200	_
Critical Hdwy	4.12		_	-	6.42	6.22
Critical Hdwy Stg 1	4.12	-	-	_	5.42	0.22
		-	-	-	5.42	-
Critical Hdwy Stg 2	2 240	-	-	-		
Follow-up Hdwy	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1453	-	-	-	666	922
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	834	-
Platoon blocked, %	4.4=0	-	-	-	00-	000
Mov Cap-1 Maneuver	1453	-	-	-	665	922
Mov Cap-2 Maneuver	-	-	-	-	665	-
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	834	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		10.4	
HCM LOS					В	
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1453	_	_		701
HCM Lane V/C Ratio		0.001	_	_		0.042
HCM Control Delay (s)		7.5	_	_		10.4
HCM Lane LOS		Α.5	_	_	_	В
HCM 95th %tile Q(veh	\	0	_			0.1
HOW JOHN JOHN WINE WIVELL		U		-	_	0.1

	۶	-	$\rightarrow$	•	<b>←</b>	•	4	<b>†</b>	1	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			44			4			4	
Traffic Volume (vph)	1	0	1	4	0	1	0	7	1	0	19	0
Future Volume (vph)	1	0	1	4	0	1	0	7	1	0	19	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.932			0.973			0.985				
Flt Protected		0.976			0.962							
Satd. Flow (prot)	0	1694	0	0	1744	0	0	1835	0	0	1863	0
Flt Permitted		0.976			0.962							
Satd. Flow (perm)	0	1694	0	0	1744	0	0	1835	0	0	1863	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	1	4	0	1	0	8	1	0	21	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	5	0	0	9	0	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	1	0	1	4	0	1	0	7	1	0	19	0
Future Vol, veh/h	1	0	1	4	0	1	0	7	1	0	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	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	1	0	1	4	0	1	0	8	1	0	21	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	30	30	21	31	30	9	21	0	0	9	0	0
Stage 1	21	21	-	9	9	-	-	-	-	-	-	_
Stage 2	9	9	-	22	21	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518		3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	979	863	1056	977	863	1073	1595	-	-	1611	_	-
Stage 1	998	878	-	1012	888	-	-	-	-	-	-	-
Stage 2	1012	888	-	996	878	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	978	863	1056	976	863	1073	1595	-	-	1611	-	-
Mov Cap-2 Maneuver	978	863	-	976	863	-	-	-	-	-	-	-
Stage 1	998	878	-	1012	888	-	-	-	-	-	-	-
Stage 2	1011	888	-	995	878	-	-	-	-	-	-	-
Ü.												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.6			8.6			0			0		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1595	-	-	1016	994	1611	-	-			
HCM Lane V/C Ratio		-	-	-	0.002	0.005	-	-	-			
HCM Control Delay (s)		0	-	-	8.6	8.6	0	-	-			
HCM Lane LOS		Α	-	-	Α	Α	Α	-	-			
HCM 95th %tile Q(veh	)	0	-	-	0	0	0	-	-			
,												

raffic Volume (vph)		-	$\rightarrow$	•	<b>←</b>	1	-
raffic Volume (vph) 55 5 5 2 31 7 5 tuture Volume (vph) 55 5 5 2 31 7 5 teleal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 190	Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
raffic Volume (vph)	Lane Configurations	<b>†</b>	7		र्स	14	
deal Flow (vphpl)         1900         100         0	Traffic Volume (vph)	55	5	2	31	7	5
torage Length (ft) 100 0 0 0 0 0 torage Lanes 1 0 1 0 1 0 aper Length (ft) 25 25 ane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Future Volume (vph)	55	5			7	5
torage Lanes	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
aper Length (ft)	Storage Length (ft)		100	0		0	0
ane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 rt 0.850 0.948  It Protected 0.997 0.970 atd. Flow (prot) 1863 1583 0 1857 1713 0 It Permitted 0.997 0.970 atd. Flow (perm) 1863 1583 0 1857 1713 0 Ink Speed (mph) 35 35 25 Ink Distance (ft) 482 264 977 Invavel Time (s) 9.4 5.1 26.6  eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Indicting Flow (vph) 60 5 2 34 8 5 Interest English English English English Interest English English Interest English English Interest Eng	Storage Lanes		1	0		1	0
Text	Taper Length (ft)			25		25	
It Protected	Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
atd. Flow (prot) 1863 1583 0 1857 1713 0  It Permitted 0.997 0.970  atd. Flow (perm) 1863 1583 0 1857 1713 0  ink Speed (mph) 35 35 25  ink Distance (ft) 482 264 977  ravel Time (s) 9.4 5.1 26.6  eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92  dj. Flow (vph) 60 5 2 34 8 5  hared Lane Traffic (%)  ane Group Flow (vph) 60 5 0 36 13 0  nter Blocked Intersection No No No No No No ane Alignment Left Right Left Left Left Right  ledian Width(ft) 0 0 12  ink Offset(ft) 0 0 0 0  rosswalk Width(ft) 16 16 16  wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00  urning Speed (mph) 9 15 15 9  intersection Summary  rea Type: Other  control Type: Unsignalized  thersection Capacity Utilization 13.3%  ICU Level of Service  ICU Level of Service  ICU Level of Service	Frt		0.850			0.948	
It Permitted   0.997   0.970   atd. Flow (perm)   1863   1583   0   1857   1713   0   ink Speed (mph)   35   35   25   ink Distance (ft)   482   264   977   ravel Time (s)   9.4   5.1   26.6   eak Hour Factor   0.92	Flt Protected				0.997	0.970	
atd. Flow (perm) 1863 1583 0 1857 1713 0 ink Speed (mph) 35 35 25 ink Distance (ft) 482 264 977 ravel Time (s) 9.4 5.1 26.6 eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	1863	1583	0	1857	1713	0
ink Speed (mph) 35 35 25 ink Distance (ft) 482 264 977 ravel Time (s) 9.4 5.1 26.6 eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 dj. Flow (vph) 60 5 2 34 8 5 hared Lane Traffic (%) ane Group Flow (vph) 60 5 0 36 13 0 nter Blocked Intersection No No No No No No No ane Alignment Left Right Left Left Right ledian Width(ft) 0 12 ink Offset(ft) 0 0 0 irrosswalk Width(ft) 16 16 16 wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00 urning Speed (mph) 9 15 15 9 ign Control Free Free Stop  ICU Level of Service intersection Capacity Utilization 13.3%  ICU Level of Service in the store of th	Flt Permitted				0.997	0.970	
ink Distance (ft)       482       264       977         ravel Time (s)       9.4       5.1       26.6         eak Hour Factor       0.92       0.92       0.92       0.92       0.92       0.92         dj. Flow (vph)       60       5       2       34       8       5         hared Lane Traffic (%)       hare Group Flow (vph)       60       5       0       36       13       0         nter Blocked Intersection       No	Satd. Flow (perm)	1863	1583	0	1857	1713	0
ravel Time (s) 9.4 5.1 26.6 eak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 dj. Flow (vph) 60 5 2 34 8 5 hared Lane Traffic (%) ane Group Flow (vph) 60 5 0 36 13 0 nter Blocked Intersection No No No No No No No ane Alignment Left Right Left Left Left Right ledian Width(ft) 0 0 12 ink Offset(ft) 0 0 0 12 irosswalk Width(ft) 16 16 16 wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00 urning Speed (mph) 9 15 15 9 ign Control Free Free Stop  Intersection Summary  Intersection Capacity Utilization 13.3%  ICU Level of Service 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Link Speed (mph)	35			35	25	
eak Hour Factor         0.92	Link Distance (ft)	482			264	977	
dj. Flow (vph)       60       5       2       34       8       5         hared Lane Traffic (%)       ane Group Flow (vph)       60       5       0       36       13       0         anter Blocked Intersection       No	Travel Time (s)	9.4			5.1	26.6	
hared Lane Traffic (%) ane Group Flow (vph) 60 5 0 36 13 0 nter Blocked Intersection No No No No No No ane Alignment Left Right Left Left Left Right ledian Width(ft) 0 0 12 ink Offset(ft) 0 0 0 trosswalk Width(ft) 16 16 16 wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00 urning Speed (mph) 9 15 15 9 ign Control Free Free Stop  Intersection Summary  Intersection Capacity Utilization 13.3% ICU Level of Service  ICU Level of Service	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
ane Group Flow (vph) 60 5 0 36 13 0  nter Blocked Intersection No ane Alignment Left Right Left Left Left Right ledian Width(ft) 0 0 12  ink Offset(ft) 0 0 0 0  irrosswalk Width(ft) 16 16 16 16  wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Adj. Flow (vph)	60	5	2	34	8	5
No	Shared Lane Traffic (%)						
Anne Alignment	Lane Group Flow (vph)	60	5	0	36	13	0
Idedian Width(ft)	Enter Blocked Intersection	No	No	No	No	No	No
ink Offset(ft) 0 0 0  trosswalk Width(ft) 16 16 16  wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00  urning Speed (mph) 9 15 15 9  ign Control Free Free Stop  Intersection Summary  rea Type: Other control Type: Unsignalized intersection Capacity Utilization 13.3%  ICU Level of Service	Lane Alignment	Left	Right	Left	Left	Left	Right
Trosswalk Width(ft)   16	Median Width(ft)	0			0	12	
wo way Left Turn Lane leadway Factor 1.00 1.00 1.00 1.00 1.00 1.00 lurning Speed (mph) 9 15 15 9 lign Control Free Free Stop  Intersection Summary  Irea Type: Other Intersection Capacity Utilization 13.3%  ICU Level of Service	Link Offset(ft)	0			0	0	
leadway Factor	Crosswalk Width(ft)	16			16	16	
urning Speed (mph)  ign Control  Free  Free  Stop  Intersection Summary  Irea Type:  Control Type: Unsignalized  Intersection Capacity Utilization 13.3%  ICU Level of Service	Two way Left Turn Lane						
ign Control Free Free Stop  Intersection Summary Irea Type: Other Isontrol Type: Unsignalized Intersection Capacity Utilization 13.3%  ICU Level of Service	Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
ntersection Summary rea Type: Other control Type: Unsignalized ntersection Capacity Utilization 13.3% ICU Level of Service	Turning Speed (mph)		9	15		15	9
rea Type: Other control Type: Unsignalized intersection Capacity Utilization 13.3% ICU Level of Service	Sign Control	Free			Free	Stop	
control Type: Unsignalized ICU Level of Service	Intersection Summary						
ontrol Type: Unsignalized ntersection Capacity Utilization 13.3%  ICU Level of Service	Area Type:	Other					
ntersection Capacity Utilization 13.3% ICU Level of Service	Control Type: Unsignalized						
		tion 13.3%			IC	CU Level o	of Service
	Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> </u>	7	1100	4	¥	HOIL
Traffic Vol, veh/h	55	5	2	31	7	5
Future Vol, veh/h	55	5	2	31	7	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	riee -	None	riee -	None		None
	-	100	-		0	None -
Storage Length		100		0	0	-
Veh in Median Storage			-			
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	5	2	34	8	5
Major/Minor I	Major1	N	Major2	N	Minor1	
Conflicting Flow All	0	0	65	0	98	60
Stage 1	-	-	-	-	60	-
Stage 2	_	_	_	_	38	_
Critical Hdwy	_	_	4.12	_	6.42	6.22
Critical Hdwy Stg 1	_	_	- 1.12	_	5.42	- 0.22
Critical Hdwy Stg 2	_		_		5.42	_
Follow-up Hdwy	_	_	2.218	_	3.518	
Pot Cap-1 Maneuver		-	1537		901	1005
·	-	-	1557	-	963	
Stage 1	-	-	-	-		-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-	4505	-	000	400=
Mov Cap-1 Maneuver	-	-	1537	-	900	1005
Mov Cap-2 Maneuver	-	-	-	-	900	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	983	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.4		8.9	
HCM LOS					Α	
Minor Lane/Major Mvm	t 1	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		941	_		1537	-
HCM Lane V/C Ratio		0.014	_		0.001	_
HCM Control Delay (s)		8.9	_	_		0
HCM Lane LOS		Α	_	_	Α.5	A
HCM 95th %tile Q(veh)		0	-	-	0	- -
TOM John John W(Vell)		U	_	_	U	_

	-	•	•	←	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>1</b>	7		4	W	
Traffic Volume (vph)	26	0	2	19	4	8
Future Volume (vph)	26	0	2	19	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected				0.996	0.985	
Satd. Flow (prot)	1863	1863	0	1855	1664	0
FIt Permitted				0.996	0.985	
Satd. Flow (perm)	1863	1863	0	1855	1664	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	5.1			8.3	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	0	2	21	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	0	23	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0	- U		0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
	Other					
	Other					
Control Type: Unsignalized	·: 40 00/			10	NIIII	
Intersection Capacity Utiliza	tion 13.3%			IC	CU Level of	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2					
				==		
	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		7		4	W	
Traffic Vol, veh/h	26	0	2	19	4	8
Future Vol, veh/h	26	0	2	19	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage,	<del>#</del> 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	28	0	2	21	4	9
				_		
	ajor1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	53	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	25	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	_	-	2.218	_	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	955	1047
Stage 1	-	-	-	-	995	-
Stage 2	_	-	-	_	998	_
Platoon blocked, %	_	_		_	000	
Mov Cap-1 Maneuver	_	_	1585	_	954	1047
Mov Cap-1 Maneuver	_		1000	_	954	1047
Stage 1		<u>-</u>	-	-	995	
	-	-		-		
Stage 2	-	-	-	-	997	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		8.6	
HCM LOS	0		0.1		Α	
TIOWI LOO						
Minor Lane/Major Mvmt	1	VBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		1014	-	-	1585	-
HCM Lane V/C Ratio		0.013	-	-	0.001	-
HCM Control Delay (s)		8.6	-	-	7.3	0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(veh)		0	-	-	0	-
		_				

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b></b>	<b>^</b>		W	
Traffic Volume (vph)	11	184	250	17	16	7
Future Volume (vph)	11	184	250	17	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.957	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1770	1863	1848	0	1724	0
Flt Permitted	0.950				0.967	
Satd. Flow (perm)	1770	1863	1848	0	1724	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	200	272	18	17	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	200	290	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	5.1101					
Intersection Capacity Utiliza	tion 24.2%			IC	CU Level o	of Service
Analysis Period (min) 15					2 20.51	
, maryoto i onou (illiii) io						

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<u> </u>	<b>1</b>		₩	
Traffic Vol, veh/h	11	184	250	17	16	7
Future Vol, veh/h	11	184	250	17	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	100	-	_	-	0	-
Veh in Median Storage		0	0	_	0	_
Grade, %		0	0	_	0	_
Peak Hour Factor	92	92	92	92	92	92
	2	2	2	2	2	2
Heavy Vehicles, %	12		272	18	17	
Mvmt Flow	12	200	212	18	17	8
Major/Minor I	Major1	N	Major2	ľ	Minor2	
Conflicting Flow All	290	0		0	505	281
Stage 1	-	-	_	-	281	-
Stage 2	_	_	_	_	224	_
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	
. ,	1272	-	-		527	758
Pot Cap-1 Maneuver				-	767	
Stage 1	-	-	-	-		-
Stage 2	-	-	-	-	813	-
Platoon blocked, %	4070	-	-	-	F00	750
Mov Cap-1 Maneuver	1272	-	-	-	522	758
Mov Cap-2 Maneuver	-	-	-	-	522	-
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	813	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		11.5	
HCM LOS	0.4		U		В	
I IOW LOS					Ь	
Minor Lane/Major Mvm	ıt	EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1272	-	-	-	577
HCM Lane V/C Ratio		0.009	-	-	-	0.043
HCM Control Delay (s)		7.9	-	-	-	11.5
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			4			4	
Traffic Volume (vph)	0	0	0	1	0	1	2	28	2	1	21	0
Future Volume (vph)	0	0	0	1	0	1	2	28	2	1	21	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt					0.932			0.992				
Flt Protected					0.976			0.997			0.998	
Satd. Flow (prot)	0	1863	0	0	1694	0	0	1842	0	0	1859	0
Flt Permitted					0.976			0.997			0.998	
Satd. Flow (perm)	0	1863	0	0	1694	0	0	1842	0	0	1859	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1	0	1	2	30	2	1	23	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	2	0	0	34	0	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% Analysis Period (min) 15

ICU Level of Service A

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	0	0	0	1	0	1	2	28	2	1	21	0
Future Vol, veh/h	0	0	0	1	0	1	2	28	2	1	21	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e, # -	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	0	0	0	1	0	1	2	30	2	1	23	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	61	61	23	60	60	31	23	0	0	32	0	0
Stage 1	25	25	-	35	35	-	-	-	-	-	-	-
Stage 2	36	36	-	25	25	_	_	_	_	_	-	_
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	934	830	1054	936	831	1043	1592	-	-	1580	-	-
Stage 1	993	874	-	981	866	-	-	-	-	-	-	-
Stage 2	980	865	-	993	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	931	828	1054	934	829	1043	1592	-	-	1580	-	-
Mov Cap-2 Maneuver	931	828	-	934	829	-	-	-	-	-	-	-
Stage 1	992	873	-	980	865	-	-	-	-	-	-	-
Stage 2	978	864	-	992	873	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			8.7			0.5			0.3		
HCM LOS	A			Α								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1\	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1592	-	_	_	985	1580	_	-			
HCM Lane V/C Ratio		0.001	-	_	_	0.002		_	_			
HCM Control Delay (s)		7.3	0	-	0	8.7	7.3	0	-			
HCM Lane LOS		A	A	-	A	A	A	A	-			
HCM 95th %tile Q(veh	)	0	-	-	-	0	0	-	-			
	,											

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		4	W	
Traffic Volume (vph)	62	2	7	52	4	4
Future Volume (vph)	62	2	7	52	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.932	
Flt Protected				0.994	0.976	
Satd. Flow (prot)	1863	1583	0	1852	1694	0
Flt Permitted				0.994	0.976	
Satd. Flow (perm)	1863	1583	0	1852	1694	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	11.0			6.0	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	2	8	57	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	2	0	65	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0	•		0	12	•
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary					·	
	Other					
Control Type: Unsignalized	Julei					
,,	ion 19 60/			10	III ovol s	of Service
Intersection Capacity Utilizati	10.0%			IC	o Level (	o service i
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		4	W	
Traffic Vol, veh/h	62	2	7	52	4	4
Future Vol, veh/h	62	2	7	52	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	_	100	_	-	0	-
Veh in Median Storag		-	_	0	0	-
Grade, %	0	_	_	0	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	67	2	8	57	4	4
IVIVIIIL FIOW	07		0	31	4	4
Major/Minor	Major1	<u> </u>	Major2	1	Minor1	
Conflicting Flow All	0	0	69	0	140	67
Stage 1	-	-	-	-	67	-
Stage 2	-	-	-	-	73	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	_	_	-	-	5.42	-
Critical Hdwy Stg 2	_	-	_	-	5.42	-
Follow-up Hdwy	_	_	2.218		3.518	
Pot Cap-1 Maneuver	_	_	1532	-	853	997
Stage 1	_	_	-	_	956	-
Stage 2	_	-	-		950	
Platoon blocked, %	_	-	-		300	-
	-	-	1532	-	0.40	997
Mov Cap-1 Maneuver		-		-	849	
Mov Cap-2 Maneuver		-	-	-	849	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	945	-
Approach	EB		WB		NB	
HCM Control Delay, s			0.9		9	
HCM LOS	0		0.0		A	
TIOWI LOO					٨	
Minor Lane/Major Mvr	nt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		917	-	-	1532	-
HCM Lane V/C Ratio		0.009	-	-	0.005	-
HCM Control Delay (s	)	9	-	-	7.4	0
HCM Lane LOS	,	A	-	-	Α	A
HCM 95th %tile Q(veh	1)	0	-	-	0	-
	,					

	-	•	•	<b>←</b>		1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	W	
Traffic Volume (vph)	47	6	8	34	1	8
Future Volume (vph)	47	6	8	34	1	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.878	
Flt Protected				0.990	0.995	
Satd. Flow (prot)	1863	1583	0	1844	1627	0
Flt Permitted				0.990	0.995	
Satd. Flow (perm)	1863	1583	0	1844	1627	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	6.0			9.7	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	7	9	37	1	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	7	0	46	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0	•		0	12	· ·
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary					•	
	Other					
	Julei					
Control Type: Unsignalized	ion 10 70/			10		of Comiles
Intersection Capacity Utilizati	1011 18.7%			IC	o Level (	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> </u>	7		4	¥	
Traffic Vol, veh/h	47	6	8	34	1	8
Future Vol, veh/h	47	6	8	34	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	100	_	-	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	51	7	9	37	1	9
IVIVIII(I IOVV	O I	ı	J	01		3
Major/Minor N	Major1	N	Major2	N	Minor1	
Conflicting Flow All	0	0	58	0	106	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	55	-
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	-	-	1546	-	892	1017
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	_	_	1546	_	887	1017
Mov Cap-2 Maneuver	_	-	-	_	887	-
Stage 1	_	_	_	_	971	_
Stage 2	_	_	_	_	962	_
Olago 2					002	
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		8.6	
HCM LOS					Α	
Minor Lane/Major Mvm	ıt N	NBLn1	EBT	EBR	WBL	WBT
	ıt I		LDT	LDN		VVDT
Capacity (veh/h) HCM Lane V/C Ratio		1001	-	-	1546	-
		0.01	-		0.006	-
HCM Long LOS		8.6	-	-	7.3	0
HCM Lane LOS		A	-	-	A	Α
HCM 95th %tile Q(veh)		0	-	-	0	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<b>↑</b>	<b>1</b>		₩	
Traffic Vol, veh/h	2	185	116	8	23	5
Future Vol, veh/h	2	185	116	8	23	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	100	-	_	-	0	-
Veh in Median Storage		0	0	_	0	_
Grade, %	, <i>''</i> -	0	0	_	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	2	201	126	9	25	5
IVIVIIIL FIOW	2	201	120	9	20	5
Major/Minor N	//ajor1	N	Major2	١	Minor2	
Conflicting Flow All	135	0	-	0	336	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	205	-
Critical Hdwy	4.12	-	-	_	6.42	6.22
Critical Hdwy Stg 1	_	-	_	-	5.42	-
Critical Hdwy Stg 2	_	-	-	_	5.42	_
	2.218	-	-	_	3.518	3.318
Pot Cap-1 Maneuver	1449	_	_	_	659	919
Stage 1	-	_	-	_	895	-
Stage 2	_	_	_	-	829	_
Platoon blocked, %		_	_	_	020	
Mov Cap-1 Maneuver	1449	_	_	-	658	919
Mov Cap-1 Maneuver	-	_	_	_	658	-
Stage 1	_		_	_	894	_
_			-	_	829	
Stage 2	-	-	-	-	029	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		10.4	
HCM LOS					В	
Minor Long /Maior M	1	EDI	EDT	MOT	MDD	ODL 4
Minor Lane/Major Mvm	ι	EBL	EBT	WBT	WBR :	
0 11 / 1 / 1		1449	-	-	-	693
Capacity (veh/h)						11 (1/1/1
HCM Lane V/C Ratio		0.002	-	-		0.044
HCM Lane V/C Ratio HCM Control Delay (s)		0.002 7.5	-	-	-	10.4
HCM Lane V/C Ratio		0.002				

	۶	-	$\rightarrow$	•	<b>←</b>	*	$\blacktriangleleft$	<b>†</b>	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	1	0	1	4	0	1	0	7	1	0	20	0
Future Volume (vph)	1	0	1	4	0	1	0	7	1	0	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.932			0.973			0.985				
Flt Protected		0.976			0.962							
Satd. Flow (prot)	0	1694	0	0	1744	0	0	1835	0	0	1863	0
Flt Permitted		0.976			0.962							
Satd. Flow (perm)	0	1694	0	0	1744	0	0	1835	0	0	1863	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	1	4	0	1	0	8	1	0	22	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	5	0	0	9	0	0	22	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
latana atian Ourana												

Area Type:

Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDI	TYDL	4	71011	HUL	4	HUIT	ODL	4	ODIN
Traffic Vol, veh/h	1	0	1	4	0	1	0	7	1	0	20	0
Future Vol, veh/h	1	0	1	4	0	1	0	7	1	0	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	1	0	1	4	0	1	0	8	1	0	22	0
Major/Minor I	Minor2			Minor1		I	Major1		ı	Major2		
Conflicting Flow All	31	31	22	32	31	9	22	0	0	9	0	0
Stage 1	22	22	-	9	9	-	-	-	-	-	-	-
Stage 2	9	9	-	23	22	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	977	862	1055	976	862	1073	1593	-	-	1611	-	-
Stage 1	996	877	-	1012	888	-	-	-	-	-	-	-
Stage 2	1012	888	-	995	877	-	-	-	-	-	-	-
Platoon blocked, %	070	000	40==	675	000	4070	4500	-	-	1011	-	-
Mov Cap-1 Maneuver	976	862	1055	975	862	1073	1593	-	-	1611	-	-
Mov Cap-2 Maneuver	976	862	-	975	862	-	-	-	-	-	-	-
Stage 1	996	877	-	1012	888	-	-	-	-	-	-	-
Stage 2	1011	888	-	994	877	-	<u>-</u>	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.6			8.6			0			0		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	ıt	NBL	NBT		EBLn1V		SBL	SBT	SBR			
Capacity (veh/h)		1593	-		1014	993	1611	-	-			
HCM Lane V/C Ratio		-	-	-	0.002		-	-	-			
HCM Control Delay (s)		0	-	-	8.6	8.6	0	-	-			
HCM Lane LOS		Α	-	-	A	Α	A	-	-			
HCM 95th %tile Q(veh)		0	-	-	0	0	0	-	-			

	<b>→</b>	-	-	•	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્ન	ĵ.		W	
Traffic Volume (vph)	0	0	0	12	7	0
Future Volume (vph)	0	0	0	12	7	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
FIt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	13	8	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	13	0	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection						
Int Delay, s/veh	3.2					
		CDT	MOT	MDD	ODI	ODD
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	^	र्स्	î•	40	¥	^
Traffic Vol, veh/h	0	0	0	12	7	0
Future Vol, veh/h	0	0	0	12	7	0
Conflicting Peds, #/hr	_ 0	_ 0	_ 0	_ 0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage	, # -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	8	0
Major/Minor I	Major1	N	Major2		Minor2	
						7
Conflicting Flow All	13	0	-	0	7	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1606	-	-	-	1014	1075
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1606	-	-	-	1014	1075
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	_	-
A	ED		\A/D		OD	
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					Α	
Minor Lane/Major Mvm	ıt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	_	1606		-	_	1014
HCM Lane V/C Ratio		-	_	_		0.008
HCM Control Delay (s)		0	_	_	_	8.6
HCM Lane LOS		A	_	-	-	Α
HCM 95th %tile Q(veh)		0	_	_	_	0
Holvi Jour Joule W(Vell)		U				U

	$\rightarrow$	•	•	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		4	W	
Traffic Volume (vph)	57	5	2	32	7	5
Future Volume (vph)	57	5	2	32	7	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.948	
Flt Protected				0.997	0.970	
Satd. Flow (prot)	1863	1583	0	1857	1713	0
FIt Permitted				0.997	0.970	
Satd. Flow (perm)	1863	1583	0	1857	1713	0
Link Speed (mph)	35		-	35	25	-
Link Distance (ft)	482			264	977	
Travel Time (s)	9.4			5.1	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	5	2	35	8	5
Shared Lane Traffic (%)	<b>V</b> -		_			
Lane Group Flow (vph)	62	5	0	37	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0	rugiit	2010	0	12	rugiit
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	10			10		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	1.00	9	15	1.00	15	9
Sign Control	Free	J	10	Free	Stop	<b>J</b>
	1100			1100	Огор	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 13.3%			IC	CU Level of	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.1					
		EDD	\\/DI	WDT	NDI	NDD
	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>↑</b>	7	0	4	7	F
Traffic Vol, veh/h	57	5	2	32	7	5
Future Vol, veh/h	57	5	2	32	7	5
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage,		-	-	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	62	5	2	35	8	5
Major/Minor Ma	ajor1	N	Major2		Minor1	
Conflicting Flow All	0	0	67	0	101	62
Stage 1	-	-	-	-	62	- 02
Stage 2	-			_	39	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
	-	-	4.12	-	5.42	0.22
Critical Hdwy Stg 1		-	-		5.42	-
Critical Hdwy Stg 2	-	-	2 240	-		
Follow-up Hdwy	-	-	2.218	-	3.518	
Pot Cap-1 Maneuver	-	-	1535	-	898	1003
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		1000
Mov Cap-1 Maneuver	-	-	1535	-	897	1003
Mov Cap-2 Maneuver	-	-	-	-	897	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	982	-
Annroach	EB		WB		NB	
Approach						
HCM Control Delay, s	0		0.4		8.9	
HCM LOS					Α	
Minor Lane/Major Mvmt	1	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		938	-		1535	-
HCM Lane V/C Ratio		0.014	_		0.001	_
HCM Control Delay (s)		8.9	_	_	7.3	0
HCM Lane LOS		Α	_	_	Α.	A
HCM 95th %tile Q(veh)		0	_	_	0	-
How both folile Q(vell)		U	-	-	U	-

	-	$\rightarrow$	1	<b>—</b>	1	-
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	7		4	W	
Traffic Volume (vph)	27	0	2	20	4	8
Future Volume (vph)	27	0	2	20	4	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.907	
Flt Protected				0.996	0.985	
Satd. Flow (prot)	1863	1863	0	1855	1664	0
Flt Permitted				0.996	0.985	
Satd. Flow (perm)	1863	1863	0	1855	1664	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	5.1			8.3	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	2	22	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	0	24	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary					•	
	Other					
	Julei					
Control Type: Unsignalized	ion 12 20/			10	III ovol s	of Service
Intersection Capacity Utilizat	1011 13.3%			IC	o Level (	oeivice
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>↑</b>	7		4	W	
Traffic Vol, veh/h	27	0	2	20	4	8
Future Vol, veh/h	27	0	2	20	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	29	0	2	22	4	9
Major/Minor M	lajor1	N	Major2		Minor1	
						20
Conflicting Flow All	0	0	29	0	55	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	1.40	-	26	6 22
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	2.040	-	5.42	2 240
Follow-up Hdwy	-	-	2.218	-	3.518	
Pot Cap-1 Maneuver	-	-	1584	-	953	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %	-	-	4504	-	050	10.10
Mov Cap-1 Maneuver	-	-	1584	-	952	1046
Mov Cap-2 Maneuver	-	-	-	-	952	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	996	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		8.6	
HCM LOS	0		VII		Α	
					, ,	
NA: 1 (NA:		VIDI .	E5-	E55	14/5	14/5-
Minor Lane/Major Mvmt	1	VBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		1013	-		1584	-
HCM Lane V/C Ratio		0.013	-		0.001	-
HCM Control Delay (s)		8.6	-	-	7.3	0
HCM Lane LOS		Α	_	_	Α	Α
HCM 95th %tile Q(veh)		0	_	_	0	-

	•	-	+	4	1	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<b>1</b>	<b>f</b>		N/	
Traffic Volume (vph)	11	190	258	18	16	7
Future Volume (vph)	11	190	258	18	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.957	
Flt Protected	0.950				0.967	
Satd. Flow (prot)	1770	1863	1846	0	1724	0
Flt Permitted	0.950				0.967	
Satd. Flow (perm)	1770	1863	1846	0	1724	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	207	280	20	17	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	207	300	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12	3	12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	,		9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 24.7%			IC	U Level	of Service

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.7					
		EDT	WDT	WDD	CDI	CDD
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	<b>\</b>	100	<b>\$</b>	40	<b>**</b> **	7
Traffic Vol, veh/h	11	190	258	18	16	7
Future Vol, veh/h	11	190	258	18	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	100	-	-	-	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	12	207	280	20	17	8
Major/Minor	Major1	N	Major2	-	Minor2	
Conflicting Flow All	300	0	-	0	521	290
Stage 1	-	-	-	-	290	-
Stage 2	1.40	-	-	-	231	-
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	
Pot Cap-1 Maneuver	1261	-	-	-	516	749
Stage 1	-	-	-	-	759	-
Stage 2	-	-	-	-	807	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1261	-	-	-	511	749
Mov Cap-2 Maneuver	-	-	-	-	511	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	807	-
A	ED		WD		CD.	
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		11.7	
HCM LOS					В	
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		1261		-	-	
HCM Lane V/C Ratio		0.009		_		0.044
HCM Control Delay (s)		7.9	-			11.7
HCM Lane LOS			-			11.7 B
	\	A	-	-	-	
HCM 95th %tile Q(veh)	)	0	-	-	-	0.1

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	0	0	0	1	0	1	2	29	2	1	22	0
Future Volume (vph)	0	0	0	1	0	1	2	29	2	1	22	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt					0.932			0.992				
Flt Protected					0.976			0.997			0.998	
Satd. Flow (prot)	0	1863	0	0	1694	0	0	1842	0	0	1859	0
Flt Permitted					0.976			0.997			0.998	
Satd. Flow (perm)	0	1863	0	0	1694	0	0	1842	0	0	1859	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1	0	1	2	32	2	1	24	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	2	0	0	36	0	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type:

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

Other

ICU Level of Service A

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			44	02.1
Traffic Vol, veh/h	0	0	0	1	0	1	2	29	2	1	22	0
Future Vol, veh/h	0	0	0	1	0	1	2	29	2	1	22	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	0	1	0	1	2	32	2	1	24	0
Major/Minor I	Minor2			Minor1			Major1		ı	Major2		
Conflicting Flow All	64	64	24	63	63	33	24	0	0	34	0	0
Stage 1	26	26	-	37	37	-	-	-	-	-	-	-
Stage 2	38	38	-	26	26	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	930	827	1052	932	828	1041	1591	-	-	1578	-	-
Stage 1	992	874	-	978	864	-	-	-	-	-	-	-
Stage 2	977	863	-	992	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	927	825	1052	930	826	1041	1591	-	-	1578	-	-
Mov Cap-2 Maneuver	927	825	-	930	826	-	-	-	-	-	-	-
Stage 1	991	873	-	977	863	-	-	-	-	-	-	-
Stage 2	975	862	-	991	873	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			8.7			0.4			0.3		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1591	-	-	-		1578					
HCM Lane V/C Ratio		0.001	_	_		0.002		_	_			
HCM Control Delay (s)		7.3	0	-	0	8.7	7.3	0	-			
HCM Lane LOS		Α	A	_	A	A	A	A	_			
HCM 95th %tile Q(veh)	)	0	-	-	-	0	0	-	_			

	<i>&gt;</i>	$\rightarrow$	<b>—</b>	*	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	f)		W	
Traffic Volume (vph)	0	0	0	8	9	0
Future Volume (vph)	0	0	0	8	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
FIt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	9	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	9	0	10	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection						
Int Delay, s/veh	4.6					
			14/5=	14/5-	07:	055
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ની	f)		¥	
Traffic Vol, veh/h	0	0	0	8	9	0
Future Vol, veh/h	0	0	0	8	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage	е,# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	0	0	9	10	0
	-	U	U	0	10	U
Major/Minor	Major1	N	Major2	ŀ	Minor2	
Conflicting Flow All	9	0	-	0	5	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	_	0	-
Critical Hdwy	4.12			_	6.42	6.22
Critical Hdwy Stg 1	7.12	-	_	-	5.42	- 0.22
Critical Hdwy Stg 2		-	_	-	5.42	-
Follow-up Hdwy	2.218		-		3.518	
	1611	-	-	-	1017	1078
Pot Cap-1 Maneuver		-	-	-		1078
Stage 1	-	-	-	_	1018	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1611	-	-	-	1017	1078
Mov Cap-2 Maneuver	-		-		1017	
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	-	-
, in the second second						
Annread	ED		MD		OD	
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					Α	
Minor Lang/Maior M	nt	EBL	EDT	\\/DT	WBR S	2DI n4
Minor Lane/Major Mvn	IL		EBT	WBT		
Capacity (veh/h)		1611	-	-		1017
HCM Lane V/C Ratio		-	-	-	-	0.01
HCM Control Delay (s)	)	0	-	-	-	8.6
HCM Lane LOS		Α	_	_	-	Α
HCM 95th %tile Q(veh	,	0				0

	-	•	•	<b>←</b>	1	~
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>1</b>	7		ની	W	
Traffic Volume (vph)	64	2	7	54	4	4
Future Volume (vph)	64	2	7	54	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.932	
Flt Protected				0.994	0.976	
Satd. Flow (prot)	1863	1583	0	1852	1694	0
FIt Permitted				0.994	0.976	
Satd. Flow (perm)	1863	1583	0	1852	1694	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	11.0			6.0	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	2	8	59	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	2	0	67	8	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 18.7%			IC	CU Level o	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	T T	VVDL	₩ <u>₽</u>	NDL NDL	TIDIT
Traffic Vol, veh/h	<b>T</b> 64	2	7	<b>54</b>	<b>'T</b> '	4
Future Vol, veh/h	64	2	7	54	4	4
Conflicting Peds, #/hr		0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	riee -	None	riee -	None	Stop -	
Storage Length	-	100	-	None -	0	None -
Veh in Median Storag		100	-	0	0	
	e, # 0			0	0	
Grade, %		92	- 02			92
Peak Hour Factor	92		92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	2	8	59	4	4
Major/Minor	Major1	1	Major2		Minor1	
Conflicting Flow All	0	0	72	0	145	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	75	-
Critical Hdwy	-	-	4.12	_	6.42	6.22
Critical Hdwy Stg 1	-	_	-	_	5.42	-
Critical Hdwy Stg 2	_	-	-	_	5.42	-
Follow-up Hdwy	_	_	2.218	_	3.518	3.318
Pot Cap-1 Maneuver	_	_	1528	_	847	993
Stage 1	_	_	-	_	953	-
Stage 2				_	948	_
Platoon blocked, %				_	J <del>-1</del> U	
Mov Cap-1 Maneuver		-	1528	-	843	993
Mov Cap-1 Maneuver		-	1320		843	993
		-	-	-		
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB		NB	
HCM Control Delay, s			0.8		9	
HCM LOS			3.0		A	
					, \	
Minor Lane/Major Mvr	nt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		912	-		1528	-
HCM Lane V/C Ratio		0.01	-	-	0.005	-
HCM Control Delay (s	s)	9	-	-	7.4	0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(vel	ר)	0	-	-	0	-

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	<b></b>	7		ની	N/		
Traffic Volume (vph)	48	6	8	35	1	8	
Future Volume (vph)	48	6	8	35	1	8	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.878		
Flt Protected				0.991	0.995		
Satd. Flow (prot)	1863	1583	0	1846	1627	0	
FIt Permitted				0.991	0.995		
Satd. Flow (perm)	1863	1583	0	1846	1627	0	
Link Speed (mph)	30			30	25		
Link Distance (ft)	264			426	978		
Travel Time (s)	6.0			9.7	26.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	52	7	9	38	1	9	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	52	7	0	47	10	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12	- 0	
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		60	60		60	60	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
11	Other						
Control Type: Unsignalized	tion 10 70/			10	III ovol s	of Service	۸
Intersection Capacity Utiliza	11011 10.1%			IC	o Level (	JI SELVICE	А
Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> </u>	7		4	¥	
Traffic Vol, veh/h	48	6	8	35	1	8
Future Vol, veh/h	48	6	8	35	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	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	52	7	9	38	1	9
Major/Minor I	Major1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	108	52
Stage 1	-	-	-	-	52	-
Stage 2	_	_	_	_	56	_
Critical Hdwy	_	_	4.12	_	6.42	6.22
Critical Hdwy Stg 1	<u>-</u>	_	- 1.12	_	5.42	-
Critical Hdwy Stg 2	_	_	_	_	5.42	_
Follow-up Hdwy	_	_	2.218	_	3.518	
Pot Cap-1 Maneuver	_	-	1545	_	889	1016
Stage 1	_	_	-	-	970	-
Stage 2	_	-	_	-	967	-
Platoon blocked, %	_	_		_		
Mov Cap-1 Maneuver	-	-	1545	-	884	1016
Mov Cap-2 Maneuver	-	-	-	-	884	-
Stage 1	_	-	_	-	970	-
Stage 2	_	_	_	_	961	-
- 1 <b>3</b>						
Annroach	EB		WB		NB	
Approach						
HCM LOS	0		1.4		8.6	
HCM LOS					А	
Minor Lane/Major Mvm	it N	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		999	-	-	1545	-
HCM Lane V/C Ratio		0.01	-	-	0.006	-
HCM Control Delay (s)		8.6	-	-	7.3	0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(veh)		0	-	-	0	-

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b>†</b>	<b>1</b>		W	
Traffic Volume (vph)	8	185	116	21	52	17
Future Volume (vph)	8	185	116	21	52	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.979		0.968	
Flt Protected	0.950				0.963	
Satd. Flow (prot)	1770	1863	1824	0	1736	0
Flt Permitted	0.950				0.963	
Satd. Flow (perm)	1770	1863	1824	0	1736	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	201	126	23	57	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	201	149	0	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	0 0 101					
Intersection Capacity Utiliza	tion 20 3%			IC	CU Level o	of Service
Analysis Period (min) 15				10	, 5 E0 VOI (	COI VIOC
Allalysis i Gliou (Illill) 15						

Intersection						
Int Delay, s/veh	2					
		EDT	MOT	WDD	CDI	CDD
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	105	<b>^</b>	0.4	<b>Y</b>	47
Traffic Vol, veh/h	8	185	116	21	52	17
Future Vol, veh/h	8	185	116	21	52	17
Conflicting Peds, #/hr	0	_ 0	_ 0	_ 0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	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	9	201	126	23	57	18
Major/Minor N	1ajor1	N	Major2		Minor2	
						420
Conflicting Flow All	149	0	-	0	357	138
Stage 1	-	-	-	-	138	-
Stage 2	- 4.40	-	-	-	219	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1432	-	-	-	641	910
Stage 1	-	-	-	-	889	-
Stage 2	-	-	-	-	817	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1432	-	-	-	637	910
Mov Cap-2 Maneuver	-	-	-	-	637	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	817	-
Ü						
A	ED		WD		CD.	
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		10.9	
HCM LOS					В	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1432		-	-	
HCM Lane V/C Ratio		0.006		_		0.109
HCM Control Delay (s)		7.5			_	
HCM Lane LOS		7.5 A	_	_	_	В
HCM 95th %tile Q(veh)		0			_	0.4
HOW JOHN JOHN Q(VEII)		U	_	_	_	0.4

	۶	-	$\rightarrow$	•	<b>←</b>	•	$\blacktriangleleft$	<b>†</b>	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	5	5	36	5	5	5	17	9	5	5	26	5
Future Volume (vph)	5	5	36	5	5	5	17	9	5	5	26	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.893			0.955			0.980			0.982	
Flt Protected		0.995			0.984			0.973			0.993	
Satd. Flow (prot)	0	1655	0	0	1750	0	0	1776	0	0	1816	0
Flt Permitted		0.995			0.984			0.973			0.993	
Satd. Flow (perm)	0	1655	0	0	1750	0	0	1776	0	0	1816	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	39	5	5	5	18	10	5	5	28	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	15	0	0	33	0	0	38	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type:

Control Type: Unsignalized

Intersection Capacity Utilization 15.0%

Other

ICU Level of Service A

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	5	5	36	5	5	5	17	9	5	5	26	5
Future Vol, veh/h	5	5	36	5	5	5	17	9	5	5	26	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	5	39	5	5	5	18	10	5	5	28	5
Major/Minor I	Minor2			Minor1			Major1		I	Major2		
Conflicting Flow All	95	92	31	112	92	13	33	0	0	15	0	0
Stage 1	41	41	-	49	49	-	-	-	-	-	-	-
Stage 2	54	51	-	63	43	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	888	798	1043	866	798	1067	1579	-	-	1603	-	-
Stage 1	974	861	-	964	854	-	-	-	-	-	-	-
Stage 2	958	852	-	948	859	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	868	786	1043	819	786	1067	1579	-	-	1603	-	-
Mov Cap-2 Maneuver	868	786	-	819	786	-	-	-	-	-	-	-
Stage 1	962	858	-	952	844	-	-	-	-	-	-	-
Stage 2	936	842	-	904	856	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.8			9.2			4			1		
HCM LOS	A			A						•		
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1579		-	986	875	1603					
HCM Lane V/C Ratio		0.012	-	_	0.051			_	_			
HCM Control Delay (s)		7.3	0	_	8.8	9.2	7.3	0	_			
HCM Lane LOS		Α.	A	-	Α	Α.2	Α.	A	-			
HCM 95th %tile Q(veh)	)	0	-	_	0.2	0.1	0	-	_			
		- 0			0.2	0.1						

	<b>→</b>	$\rightarrow$	<b>—</b>	*	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્ન	f)		W	
Traffic Volume (vph)	8	11	5	13	8	5
Future Volume (vph)	8	11	5	13	8	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.901		0.952	
Flt Protected		0.979			0.969	
Satd. Flow (prot)	0	1824	1678	0	1718	0
Flt Permitted		0.979			0.969	
Satd. Flow (perm)	0	1824	1678	0	1718	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	12	5	14	9	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	19	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.7% Analysis Period (min) 15

ICU Level of Service A

Intersection						
Int Delay, s/veh	3.4					
		ERT	MOT	MDD	ODI	ODB
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	^	4	ĵ.	40	À	-
Traffic Vol, veh/h	8	11	5	13	8	5
Future Vol, veh/h	8	11	5	13	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0
9	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage,	# -	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	12	5	14	9	5
Majar/Minar M	lajor1	N	Asia nO	,	Minaro	
			Major2		Minor2	4.0
Conflicting Flow All	19	0	-	0	42	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	30	-
,	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
. ,	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1597	-	-	-	969	1069
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1597	-	-	-	963	1069
Mov Cap-2 Maneuver	-	-	-	-	963	-
Stage 1	_	-	-	_	1005	_
Stage 2	_	_	-	_	993	_
orago 2					000	
Approach	EB		WB		SB	
HCM Control Delay, s	3.1		0		8.6	
HCM LOS					Α	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WRR	SBLn1
			LDI	וטייי	VVDIX	
Capacity (veh/h)		1597	-	-	-	1001 0.014
HCM Control Doloy (a)		0.005	-	-		
HCM Control Delay (s)		7.3	0	-	-	8.6
HCM Lane LOS		A	Α	-	-	A
HCM 95th %tile Q(veh)		0	-	-	-	0

	-	•	1	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	**	
Traffic Volume (vph)	57	10	5	32	16	7
Future Volume (vph)	57	10	5	32	16	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.957	
Flt Protected				0.994	0.967	
Satd. Flow (prot)	1863	1583	0	1852	1724	0
Flt Permitted				0.994	0.967	
Satd. Flow (perm)	1863	1583	0	1852	1724	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	9.4			5.1	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	11	5	35	17	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	11	0	40	25	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
					•	
Intersection Summary	20					
	Other					
Control Type: Unsignalized	45.00					
Intersection Capacity Utilizati	ion 15.9%			IC	CU Level of	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> </u>	7	VVDL	4	¥	NDIX
Traffic Vol, veh/h	57	10	5	32	16	7
Future Vol, veh/h	57	10	5	32	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	_	100	_	-	0	-
Veh in Median Storage		-	_	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	62	11	5	35	17	8
IVIVIIIL FIOW	02	- 11	5	აე	17	0
Major/Minor	Major1	1	Major2	ľ	Minor1	
Conflicting Flow All	0	0	73	0	107	62
Stage 1	-	-	_	-	62	-
Stage 2	_	-	_	_	45	_
Critical Hdwy	-	_	4.12	_	6.42	6.22
Critical Hdwy Stg 1	_	_	-	_	5.42	-
Critical Hdwy Stg 2	_	_	-	_	5.42	_
Follow-up Hdwy	_	_	2.218	_	3.518	3 318
Pot Cap-1 Maneuver	_	_	1527	_	891	1003
Stage 1	_	_	-	_	961	-
Stage 2	_	_	_	_	977	_
Platoon blocked, %	_	_		_	311	
Mov Cap-1 Maneuver		_	1527		888	1003
Mov Cap-1 Maneuver		-	1321	-	888	1003
	-		-		961	-
Stage 1	-	-	-	-		-
Stage 2	-	-	-	-	974	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1		9	
HCM LOS			•		A	
110M 200						
Minor Lane/Major Mvr	nt I	VBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		920	-	-	1527	-
HCM Lane V/C Ratio		0.027	-	-	0.004	-
HCM Control Delay (s	)	9	-	-	7.4	0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(veh	1)	0.1	-	-	0	-
-						

	-	•	•	<b>←</b>	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		ર્ન	W	
Traffic Volume (vph)	27	5	7	20	5	17
Future Volume (vph)	27	5	7	20	5	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.894	
Flt Protected				0.987	0.989	
Satd. Flow (prot)	1863	1583	0	1839	1647	0
FIt Permitted				0.987	0.989	
Satd. Flow (perm)	1863	1583	0	1839	1647	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	5.1			8.3	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	5	8	22	5	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	5	0	30	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	on 17.2%			IC	CU Level o	of Service A
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		7		र्स	Y	
Traffic Vol, veh/h	27	5	7	20	5	17
Future Vol, veh/h	27	5	7	20	5	17
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	100	_	-	0	-
Veh in Median Storage, #		-	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	29	5	8	22	5	18
IVIVIIIL FIOW	29	5	Ŏ	22	5	Ιō
Major/Minor Ma	ajor1	N	Major2		Minor1	
Conflicting Flow All	0	0	34	0	67	29
Stage 1	-	-	-	-	29	-
Stage 2	_	_	_	_	38	_
Critical Hdwy	-	-	4.12	-	6.42	6.22
		-			5.42	0.22
Critical Hdwy Stg 1	-	-	-	-		
Critical Hdwy Stg 2	-	-	- 040	-	5.42	2 240
Follow-up Hdwy	-	-	2.218		3.518	
Pot Cap-1 Maneuver	-	-	1578	-	938	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1578	-	933	1046
Mov Cap-2 Maneuver	-	-	-	-	933	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	979	-
			10.00			
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.9		8.6	
HCM LOS					Α	
Minor Long/Major Muset	N	JDI -1	EDT	EDD	WDI	WDT
Minor Lane/Major Mvmt	ľ	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		1018	-	-	1578	-
		11 (17)7	-	_	0.005	-
HCM Lane V/C Ratio		0.023				
HCM Control Delay (s)		8.6	-	-	7.3	0
						0 A

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<b></b>	<b>f</b>		W	
Traffic Volume (vph)	24	190	258	50	37	16
Future Volume (vph)	24	190	258	50	37	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.978		0.960	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	1863	1822	0	1727	0
Flt Permitted	0.950				0.966	
Satd. Flow (perm)	1770	1863	1822	0	1727	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	207	280	54	40	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	207	334	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12	· ·	12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	Olliei					
Intersection Capacity Utiliza	ation 20 0%			IC	CU Level o	of Sorvice
Analysis Period (min) 15	111011 23.3 /0			IC	O Level (	JI SELVICE
Analysis Period (IIIIII) 15						

Intersection						
Int Delay, s/veh	1.5					
		EDT	WDT	WDD	CDI	CDD
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	74	100	<b>}</b>	EΩ	77	10
Traffic Vol, veh/h	24	190	258	50	37	16
Future Vol, veh/h	24	190	258	50	37	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	100	-	-	-	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	26	207	280	54	40	17
Major/Minor I	Major1	N	Major2		Minor2	
Conflicting Flow All	334	0	-	0	566	307
Stage 1	-	-	_	-	307	-
Stage 2	_	_	_	_	259	_
Critical Hdwy	4.12		_		6.42	6.22
Critical Hdwy Stg 1	4.12	-	-	-	5.42	0.22
	_	-	-			
Critical Hdwy Stg 2	- 0.40	-	-	-	5.42	2 240
Follow-up Hdwy	2.218	-	-	-	0.0.0	
Pot Cap-1 Maneuver	1225	-	-	-	486	733
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	784	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1225	-	-	-	476	733
Mov Cap-2 Maneuver	-	-	-	-	476	-
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	784	-
Approach	EB		WB		SB	
	0.9		0		12.6	
HCM Control Delay, s HCM LOS	0.9		U		12.0 B	
HOW LOS					D	
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1225	-	-	-	532
HCM Lane V/C Ratio		0.021	-	-	-	0.108
HCM Control Delay (s)		8	-	-	-	12.6
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh)		0.1	-	-	-	0.4
212 2 2 (100)						

	۶	-	$\rightarrow$	•	<b>←</b>	*	4	<b>†</b>	1	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			4			4	
Traffic Volume (vph)	5	5	24	5	5	5	38	37	5	5	27	5
Future Volume (vph)	5	5	24	5	5	5	38	37	5	5	27	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.902			0.955			0.992			0.983	
Flt Protected		0.993			0.984			0.977			0.994	
Satd. Flow (prot)	0	1668	0	0	1750	0	0	1805	0	0	1820	0
Flt Permitted		0.993			0.984			0.977			0.994	
Satd. Flow (perm)	0	1668	0	0	1750	0	0	1805	0	0	1820	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	26	5	5	5	41	40	5	5	29	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	15	0	0	86	0	0	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.0%

ICU Level of Service A

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	5	5	24	5	5	5	38	37	5	5	27	5
Future Vol, veh/h	5	5	24	5	5	5	38	37	5	5	27	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	<u> </u>	None	-	-		-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	,# -	0	-	-	0	-	-	0	-	-	0	-
Grade, %	_	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	5	26	5	5	5	41	40	5	5	29	5
Major/Minor I	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	172	169	32	182	169	43	34	0	0	45	0	0
Stage 1	42	42	-	125	125	-	-	-	-	-	-	-
Stage 2	130	127	-	57	44	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	791	724	1042	779	724	1027	1578	-	-	1563	-	-
Stage 1	972	860	-	879	792	-	-	-	-	-	-	-
Stage 2	874	791	-	955	858	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	764	702	1042	738	702	1027	1578	-	-	1563	-	-
Mov Cap-2 Maneuver	764	702	-	738	702	-	-	-	-	-	-	-
Stage 1	946	857	-	855	771	-	-	-	-	-	-	-
Stage 2	840	770	-	922	855	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9			9.6			3.5			1		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1578	-	-	926	799	1563	-	-			
HCM Lane V/C Ratio		0.026	-	-	0.04	0.02	0.003	-	-			
HCM Control Delay (s)		7.3	0	-	9	9.6	7.3	0	-			
HCM Lane LOS		Α	Α	-	Α	Α	Α	Α	-			
HCM 95th %tile Q(veh)	)	0.1	-	-	0.1	0.1	0	-	-			

	<b>→</b>	-	-	*	1	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્ન	f.		W	
Traffic Volume (vph)	7	9	12	8	11	8
Future Volume (vph)	7	9	12	8	11	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.945		0.942	
FIt Protected		0.978			0.972	
Satd. Flow (prot)	0	1822	1760	0	1706	0
Flt Permitted		0.978			0.972	
Satd. Flow (perm)	0	1822	1760	0	1706	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	10	13	9	12	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	18	22	0	21	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.7%

ICU Level of Service A

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
	EDL			WDK		SDK
Lane Configurations	7	<b>€</b>	<b>}</b>	0	11	0
Traffic Vol, veh/h	7	9	12 12	8	11	8
Future Vol, veh/h	7	9		8	11	8
Conflicting Peds, #/hr	0	0	0		0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	-	-	-	-	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	8	10	13	9	12	9
Major/Minor N	Major1	N	Major2		Minor2	
Conflicting Flow All	22	0	_	0	44	18
Stage 1	-	-	_	-	18	-
Stage 2	_	_	_	_	26	_
Critical Hdwy	4.12	_	_	_	6.42	6.22
Critical Hdwy Stg 1	4.12		_	_	5.42	0.22
	_		-		5.42	
Critical Hdwy Stg 2	-	-	-	-		
Follow-up Hdwy	2.218	-	-	-		3.318
Pot Cap-1 Maneuver	1593	-	-	-	967	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	962	1061
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	997	-
Approach	EB		WB		SB	
	3.2		0		8.7	
HCM Control Delay, s HCM LOS	3.2		U		Α	
HOW LOS					A	
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		1593	-	-	-	1001
HCM Lane V/C Ratio		0.005	-	-		0.021
HCM Control Delay (s)		7.3	0	-	-	8.7
HCM Lane LOS		Α	Α	-	-	Α
HCM 95th %tile Q(veh)		0	-	-	-	0.1

	$\rightarrow$	•	•	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	7		4	W	
Traffic Volume (vph)	64	12	7	54	11	5
Future Volume (vph)	64	12	7	54	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.960	
Flt Protected				0.994	0.966	
Satd. Flow (prot)	1863	1583	0	1852	1727	0
Flt Permitted				0.994	0.966	
Satd. Flow (perm)	1863	1583	0	1852	1727	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	11.0			6.0	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	13	8	59	12	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	13	0	67	17	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	J (1 1 C)					
Intersection Capacity Utilizati	ion 18 7%			IC	III evel o	of Service
Analysis Period (min) 15	10.7 /0			10	JO LOVGI C	JI OCI VICE I

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b></b>	7		स	W	
Traffic Vol, veh/h	64	12	7	54	11	5
Future Vol, veh/h	64	12	7	54	11	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	100	_	-	0	-
Veh in Median Storage		-	_	0	0	_
Grade, %	0	_	_	0	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	13	8	59	12	5
IVIVIIIL FIUW	70	13	0	บช	12	Ü
Major/Minor	Major1	<u> </u>	Major2	<u> </u>	Minor1	
Conflicting Flow All	0	0	83	0	145	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	75	-
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	
Pot Cap-1 Maneuver	_	_	1514	_	847	993
Stage 1	_		-	_	953	-
Stage 2			_	_	948	
Platoon blocked, %	_	_		-	340	
	-		1514		843	993
Mov Cap-1 Maneuver		-		-		
Mov Cap-2 Maneuver	-	-	-	-	843	-
Stage 1	-	-	-	-	953	-
Stage 2	-	-	-	-	943	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.8		9.1	
HCM LOS	U		0.0		9.1 A	
I IOIVI LOS					А	
Minor Lane/Major Mvr	nt I	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		885	_	-	1514	-
HCM Lane V/C Ratio		0.02	_		0.005	-
HCM Control Delay (s	)	9.1	_	_	7.4	0
HCM Lane LOS		A	_	_	A	A
HCM 95th %tile Q(veh	)	0.1			0	-
HOW OUT /OUIC Q(VEI	1	U. I			- 0	

	$\rightarrow$	•	•	←	1	-	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	<b>†</b>	7	_	ર્ન	W		
Traffic Volume (vph)	48	6	18	35	5	15	
Future Volume (vph)	48	6	18	35	5	15	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)		100	0		0	0	
Storage Lanes		1	0		1	0	
Taper Length (ft)			25		25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.850			0.897		
Flt Protected				0.983	0.988		
Satd. Flow (prot)	1863	1583	0	1831	1651	0	
FIt Permitted				0.983	0.988		
Satd. Flow (perm)	1863	1583	0	1831	1651	0	
Link Speed (mph)	30			30	25		
Link Distance (ft)	264			426	978		
Travel Time (s)	6.0			9.7	26.7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	52	7	20	38	5	16	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	52	7	0	58	21	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	12		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			16	16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)		60	60		60	60	
Sign Control	Free			Free	Stop		
Intersection Summary							
	Other						
Area Type:	Other						
Control Type: Unsignalized	tion 10 E9/			10	III ovel e	of Convice	٨
Intersection Capacity Utiliza	111011 19.5%			IC	Level (	of Service	Α
Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	2.4					
		ED.	14/51	\A/DT	ND	NDD
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>↑</b>	7	4.0	ની	¥	
Traffic Vol, veh/h	48	6	18	35	5	15
Future Vol, veh/h	48	6	18	35	5	15
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage,	# 0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	7	20	38	5	16
	ajor1		Major2		Minor1	
Conflicting Flow All	0	0	59	0	130	52
Stage 1	-	-	-	-	52	-
Stage 2	-	-	-	-	78	-
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	-	-	1545	-	864	1016
Stage 1	-	-	-	-	970	-
Stage 2	_	-	-	-	945	-
Platoon blocked, %	_	_		_		
Mov Cap-1 Maneuver	_	_	1545	_	853	1016
Mov Cap-2 Maneuver	_	_	-	_	853	-
Stage 1					970	_
Stage 2	-	_			933	-
Slaye Z	-	_	-	-	300	<u>-</u>
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.5		8.8	
HCM LOS					Α	
		IDI 4	E0.T		14/5	14/5-
Minor Lane/Major Mvmt	1	VBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		970	-		1545	-
HCM Lane V/C Ratio		0.022	-	-	0.013	-
HCM Control Delay (s)		8.8	-	-		0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(veh)		0.1	-	-	0	-

	<b>*</b>	-	<b>←</b>	*	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b></b>	<b>^</b>		W	
Traffic Volume (vph)	3	254	160	11	31	7
Future Volume (vph)	3	254	160	11	31	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.974	
Flt Protected	0.950				0.961	
Satd. Flow (prot)	1770	1863	1846	0	1744	0
FIt Permitted	0.950				0.961	
Satd. Flow (perm)	1770	1863	1846	0	1744	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	276	174	12	34	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	276	186	0	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type: C	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization	on 23.4%			IC	CU Level o	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	7	<u> </u>	<b>1</b>	TIDIC	<b>Y</b>	אופט
Traffic Vol, veh/h	3	254	160	11	31	7
Future Vol, veh/h	3	254	160	11	31	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		Stop -	None
Storage Length	100	NOHE	-	-	0	None -
		0	0		0	
Veh in Median Storage				-		
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	276	174	12	34	8
Major/Minor I	Major1	N	Major2		Minor2	
Conflicting Flow All	186	0	- viajoiz	0	462	180
Stage 1	-	-	_	-	180	-
Stage 2	_	_	_	_	282	_
Critical Hdwy	4.12	-	-		6.42	6.22
		-	-	-		0.22
Critical Hdwy Stg 1	-	-			5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	
Pot Cap-1 Maneuver	1388	-	-	-	558	863
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1388	-	-	-	557	863
Mov Cap-2 Maneuver	-	-	_	-	557	-
Stage 1	_	_	_	_	849	_
Stage 2	_	_	_	_	766	_
otago 2						
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		11.5	
HCM LOS					В	
Minor Long/Major My	1	EDI	EDT	WDT	WDD	ODL 1
Minor Lane/Major Mvm	I	EBL	EBT	WBT	WBR :	
Capacity (veh/h)		1388	-	-	-	
HCM Lane V/C Ratio		0.002	-	-		0.069
HCM Control Delay (s)		7.6	-	-	-	11.5
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.2
HCM 95th %tile Q(veh)		0	-	-	-	0.2

	۶	<b>→</b>	•	•	<b>←</b>	*	4	<b>†</b>	-	-	<b>↓</b>	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	1	0	1	6	0	1	0	10	1	0	27	0
Future Volume (vph)	1	0	1	6	0	1	0	10	1	0	27	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.932			0.983			0.989				
Flt Protected		0.976			0.958							
Satd. Flow (prot)	0	1694	0	0	1754	0	0	1842	0	0	1863	0
Flt Permitted		0.976			0.958							
Satd. Flow (perm)	0	1694	0	0	1754	0	0	1842	0	0	1863	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	0	1	7	0	1	0	11	1	0	29	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	8	0	0	12	0	0	29	0
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection												
Int Delay, s/veh	1.7											
	EDI	EDT	EDD	WDI	WDT	WDD	NDI	NDT	NDD	CDI	CDT	CDD
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	4	•	4	4	0	4		0	4	•
Traffic Vol, veh/h	1	0	1	6	0	1	0	10	1	0	27	0
Future Vol, veh/h	1	0	1	6	0	1	0	10	1	0	27	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e,# -	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	1	0	1	7	0	1	0	11	1	0	29	0
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	41	41	29	42	41	12	29	0	0	12	0	0
Stage 1	29	29	29	12	12	12	29	-	U	12	-	
Stage 2	12	12	-	30	29	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12		-
•	6.12	5.52	0.22	6.12	5.52	0.22	4.12	-		4.12	-	-
Critical Hdwy Stg 1	6.12	5.52		6.12	5.52	-	-	-	-	-		-
Critical Hdwy Stg 2			2 210			2 240	2.218	-	-	2.218	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318		-	-			-
Pot Cap-1 Maneuver	963	851	1046	961	851	1069	1584	-	-	1607	-	-
Stage 1	988	871	-	1009	886	-	-	-	-	-	-	-
Stage 2	1009	886	-	987	871	-	-	-	-	-	-	-
Platoon blocked, %	000	054	1010	000	054	4000	4504	-	-	1007	-	-
Mov Cap-1 Maneuver	962	851	1046	960	851	1069	1584	-	-	1607	-	-
Mov Cap-2 Maneuver	962	851	-	960	851	-	-	-	-	-	-	-
Stage 1	988	871	-	1009	886	-	-	-	-	-	-	-
Stage 2	1008	886	-	986	871	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.6			8.7			0			0		
HCM LOS	Α			A								
				,,								
Minor Lane/Major Mvm	nt	NBL	NBT	NRR	EBLn1V	VRI n1	SBL	SBT	SBR			
Capacity (veh/h)	ic .	1584	NUT		1002	974	1607	ODI	ODIN			
, , ,			-		0.002			-	-			
HCM Central Delay (a)		-	-				-	-	-			
HCM Control Delay (s)		0	-	-	8.6	8.7	0	-	-			
HCM Lane LOS	١	A	-	-	A	A	A	-	-			
HCM 95th %tile Q(veh	)	0	-	-	0	0	0	-	-			

	<b>→</b>	-	•	*	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		ર્ન	ĥ		W	
Traffic Volume (vph)	0	0	0	17	10	0
Future Volume (vph)	0	0	0	17	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
FIt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	18	11	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	18	0	11	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection						
Int Delay, s/veh	3.2					
		EST	14/57	14/55	051	000
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		र्	<b>₽</b>		¥	
Traffic Vol, veh/h	0	0	0	17	10	0
Future Vol, veh/h	0	0	0	17	10	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	0	18	11	0
Major/Minor	Mairad		Ania TO		MinerO	
	Major1		Major2		Minor2	
Conflicting Flow All	18	0	-	0	9	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1599	-	-	-	1011	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1599	-	_	_	1011	1073
Mov Cap-2 Maneuver	-	_	_	_	1011	-
Stage 1	_	_	_	_	1014	_
Stage 2					1017	_
Olaye Z	_		-	_	_	_
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		8.6	
HCM LOS					Α	
Minor Lane/Major Mvm	4	EBL	EBT	WDT	WDD	SBLn1
IVIII TOI Land/IVIAJOI IVIVII	ı.	1599	LDI	WBT	WDR	
		Thuu	-	-	-	1011
Capacity (veh/h)						0.044
Capacity (veh/h) HCM Lane V/C Ratio		-	-	-		0.011
Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)		- 0	-	-	-	8.6
Capacity (veh/h) HCM Lane V/C Ratio		-	- - -			

	-	•	•	<b>—</b>	1	-
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	**	
Traffic Volume (vph)	78	7	3	44	10	7
Future Volume (vph)	78	7	3	44	10	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.943	
Flt Protected				0.997	0.972	
Satd. Flow (prot)	1863	1583	0	1857	1707	0
Flt Permitted				0.997	0.972	
Satd. Flow (perm)	1863	1583	0	1857	1707	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	9.4			5.1	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	8	3	48	11	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	8	0	51	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 14.8%			IC	CU Level o	of Service
Analysis Period (min) 15						

Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	7		4	W	
Traffic Vol, veh/h	78	7	3	44	10	7
Future Vol, veh/h	78	7	3	44	10	7
Conflicting Peds, #/hr			0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	_			-	0	-
Veh in Median Storag			_	0	0	_
Grade, %	je, π 0 0	_	_	0	0	_
Peak Hour Factor	92		92	92	92	92
Heavy Vehicles, %	2		2	2	2	2
Mvmt Flow	85	8	3	48	11	8
Major/Minor	Major1	1	Major2	N	Minor1	
Conflicting Flow All	0		93	0	139	85
Stage 1	-		-	_	85	-
Stage 2	_	_	_	_	54	_
Critical Hdwy	_	_	4.12	_	6.42	6.22
Critical Hdwy Stg 1	_	_	7.12	_	5.42	0.22
Critical Hdwy Stg 2			_		5.42	_
Follow-up Hdwy	-	-	2.218		3.518	
Pot Cap-1 Maneuver			1501	-	854	974
	_		1501	-	938	974
Stage 1		_			969	
Stage 2	-	-	-	-	909	-
Platoon blocked, %	-		4504	-	050	074
Mov Cap-1 Maneuve			1501	-	852	974
Mov Cap-2 Maneuve			-	-	852	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	967	-
Approach	EB		WB		NB	
			0.5		9.1	
HCM Control Delay,	s 0		0.5			
HCM LOS					Α	
Minor Lane/Major Mv	mt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		898	-	-	1501	
HCM Lane V/C Ratio		0.021	_		0.002	_
HCM Control Delay (		9.1	-		7.4	0
HCM Lane LOS	5)		-			
HCM 95th %tile Q(ve	h)	0.1	-	-	A	Α
	111	U. I	-	-	0	-

	-	$\rightarrow$	•	<b>←</b>		-
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	W	
Traffic Volume (vph)	37	0	3	27	6	11
Future Volume (vph)	37	0	3	27	6	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.915	
Flt Protected				0.995	0.982	
Satd. Flow (prot)	1863	1863	0	1853	1674	0
FIt Permitted				0.995	0.982	
Satd. Flow (perm)	1863	1863	0	1853	1674	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	5.1			8.3	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	0	3	29	7	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	32	19	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	1.00	9	15	1.00	15	9
Sign Control	Free		10	Free	Stop	
					Стор	
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 13.9%			IC	CU Level of	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	7		4	W	
Traffic Vol, veh/h	37	0	3	27	6	11
Future Vol, veh/h	37	0	3	27	6	11
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	-	100	-	-	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
Mymt Flow	40	0	3	29	7	12
m.merion	10	- 0	- 0	20	- 1	12
	ajor1		Major2		Minor1	
Conflicting Flow All	0	0	40	0	75	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	35	-
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	-	-	1570	-	928	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	987	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	_	1570	_	926	1031
Mov Cap-2 Maneuver	_	_	-	_	926	-
Stage 1	_	_	_	_	982	_
Stage 2			_	_	985	_
Olaye Z			_	_	900	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.7		8.7	
HCM LOS					Α	
Minor Long/Major My and	,	JDI ~1	EDT	EDD	WDI	WDT
Minor Lane/Major Mvmt	ľ	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		991	-	-	1570	-
HCM Lane V/C Ratio		0.019	-		0.002	-
HCM Control Delay (s)		8.7	-	-	7.3	0
			-	-		
HCM 95th %tile Q(veh)		0.1	-	-	0	-
HCM Lane LOS HCM 95th %tile Q(veh)		A 0.1	-	-	A 0	Α

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b>1</b>	<b>^</b>		W	
Traffic Volume (vph)	16	260	353	24	23	10
Future Volume (vph)	16	260	353	24	23	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.959	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	1863	1846	0	1726	0
Flt Permitted	0.950				0.966	
Satd. Flow (perm)	1770	1863	1846	0	1726	0
Link Speed (mph)		30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	283	384	26	25	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	283	410	0	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary					1	
	O41					
	Other					
Control Type: Unsignalized	00 . 00/			10		
Intersection Capacity Utilizat	ion 30.0%			IC	U Level	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<b></b>	1→		¥	
Traffic Vol, veh/h	16	260	353	24	23	10
Future Vol, veh/h	16	260	353	24	23	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage		0	0	_	0	_
Grade, %	, <i>''</i>	0	0	_	0	_
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	283	384	26	25	11
IVIVIIIL I IOW	17	200	304	20	20	- 11
Major/Minor N	Major1	N	Major2	١	Minor2	
Conflicting Flow All	410	0	-	0	714	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	317	-
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	1149	-	-	_	398	652
Stage 1	-	_	_	_	679	-
Stage 2	_	_	_	_	738	_
Platoon blocked, %		_	_	_	100	
Mov Cap-1 Maneuver	1149	_	_	-	392	652
Mov Cap-2 Maneuver	-	_	_	_	392	-
Stage 1	_	_		_	669	_
Stage 2	_			_	738	_
Staye 2		-			730	
Approach	EB		WB		SB	
HCM Control Delay, s	0.5		0		13.8	
HCM LOS					В	
			EDT	WBT	MDD	2DL 4
Minor Long/Maior M	1			WWEI	VVBR	SBLn1
Minor Lane/Major Mvm	t	EBL	EBT	VVDI		4.40
Capacity (veh/h)	t	1149	-	-	-	446
Capacity (veh/h) HCM Lane V/C Ratio	t	1149 0.015	-	-	-	0.08
Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	t	1149 0.015 8.2	- - -	- - -	- - -	0.08 13.8
Capacity (veh/h) HCM Lane V/C Ratio		1149 0.015	-	-	-	0.08

	۶	-	$\rightarrow$	•	<b>←</b>	*	$\blacktriangleleft$	<b>†</b>	1	-	ļ	1
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			44	
Traffic Volume (vph)	0	0	0	1	0	1	3	40	3	1	30	0
Future Volume (vph)	0	0	0	1	0	1	3	40	3	1	30	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt					0.932			0.992				
Flt Protected					0.976			0.997			0.999	
Satd. Flow (prot)	0	1863	0	0	1694	0	0	1842	0	0	1861	0
Flt Permitted					0.976			0.997			0.999	
Satd. Flow (perm)	0	1863	0	0	1694	0	0	1842	0	0	1861	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1	0	1	3	43	3	1	33	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	2	0	0	49	0	0	34	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	
latana atian Ourana												

Area Type:

Control Type: Unsignalized

Intersection Capacity Utilization 13.6%

Other

ICU Level of Service A

Int Delay, s/veh	Intersection												
Lane Configurations		0.6											
Lane Configurations		FRI	FRT	FRR	W/RI	WRT	WRR	NRI	NRT	NRR	SRI	SRT	SRR
Traffic Vol, veh/h		LDL		LDI	VVDL		WDI	NDL		NON	ODL		ODIN
Future Vol, veh/h  O  O  O  O  O  O  O  O  O  O  O  O  O		٥		Λ	1		1	3		3	1		٥
Conflicting Peds, #/hr			-		-	-	-				-		
Sign Control   Stop   Stop													
RT Channelized							•			•			
Storage Length													
Veh in Median Storage, # - 0		-	-		-	-	-	-	-		-	-	-
Grade, %         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         -         0         -         0         -         0         -         0         0         -         0         -         0         0         -         0         0         -         0         0         0         -         0         0         0         -         0<		,# -	0	-	-	0	-	-	0	-	-	0	-
Heavy Vehicles, %   2   2   2   2   2   2   2   2   2			0	-	-	0	-	-	0	-	-	0	-
Mynt Flow         0         0         0         1         0         1         3         43         3         1         33         0           Major/Minor         Minor2         Minor1         Major1         Major2         Major2           Conflicting Flow All         86         87         33         86         86         45         33         0         0         46         0         0           Stage 1         35         35         -         51         51         -	Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Major/Minor   Minor2   Minor1   Major1   Major2	Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Conflicting Flow All   86	Mvmt Flow	0	0	0	1	0	1	3	43	3	1	33	0
Conflicting Flow All   86													
Conflicting Flow All   86	Major/Minor	Minor2			Minor1			Major1			Major2		
Stage 1         35         35         -         51         51         - <th< td=""><td></td><td></td><td>87</td><td></td><td></td><td>86</td><td></td><td></td><td>0</td><td></td><td></td><td>0</td><td>0</td></th<>			87			86			0			0	0
Stage 2         51         52         -         35         35         - <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>													
Critical Hdwy         7.12         6.52         6.22         7.12         6.52         6.22         4.12         -         4.12         -         -         -         -         4.12         -	· ·			-			-	-	-	-	-	-	-
Critical Hdwy Stg 2         6.12         5.52         -         6.12         5.52         - <t< td=""><td></td><td>7.12</td><td>6.52</td><td>6.22</td><td>7.12</td><td>6.52</td><td>6.22</td><td>4.12</td><td>-</td><td>-</td><td>4.12</td><td>-</td><td>-</td></t<>		7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 2         6.12         5.52         -         6.12         5.52         - <t< td=""><td>Critical Hdwy Stg 1</td><td></td><td>5.52</td><td>-</td><td>6.12</td><td>5.52</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></t<>	Critical Hdwy Stg 1		5.52	-	6.12	5.52	-	-	-	-	-	-	-
Pot Cap-1 Maneuver   900   803   1041   900   804   1025   1579     1562     Stage 1   981   866   - 962   852         -			5.52				-	-	-	-	-	-	-
Stage 1         981         866         -         962         852         -									-	-		-	-
Stage 2         962         852         -         981         866         -				1041			1025	1579	-	-	1562	-	-
Platoon blocked, %				-			-	-	-	-	-	-	-
Mov Cap-1 Maneuver         897         801         1041         898         802         1025         1579         -         -         1562         -         -           Mov Cap-2 Maneuver         897         801         -         898         802         - <td></td> <td>962</td> <td>852</td> <td>-</td> <td>981</td> <td>866</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>		962	852	-	981	866	-	-	-	-	-	-	-
Mov Cap-2 Maneuver         897         801         -         898         802         - </td <td></td> <td></td> <td></td> <td>10:1</td> <td></td> <td></td> <td>10.55</td> <td>4===</td> <td>-</td> <td>-</td> <td>1=</td> <td>-</td> <td>-</td>				10:1			10.55	4===	-	-	1=	-	-
Stage 1         979         865         -         960         850         -							1025	1579	-	-	1562	-	-
Stage 2         959         850         -         980         865         -							-	-	-	-	-	-	-
Approach         EB         WB         NB         SB           HCM Control Delay, s         0         8.8         0.5         0.2           HCM LOS         A         A         A             Minor Lane/Major Mvmt         NBL         NBT         NBR EBLn1WBLn1         SBL         SBT         SBR           Capacity (veh/h)         1579         -         -         957         1562         -         -           HCM Lane V/C Ratio         0.002         -         -         -         0.002         0.001         -         -           HCM Control Delay (s)         7.3         0         -         0         8.8         7.3         0         -           HCM Lane LOS         A         A         -         A         A         A         A         -	<u> </u>						-	-	-	-	-	-	-
HCM Control Delay, s         0         8.8         0.5         0.2           HCM LOS         A         A         A         A           Minor Lane/Major Mvmt         NBL         NBT         NBR EBLn1WBLn1         SBL         SBT         SBR           Capacity (veh/h)         1579         -         -         957         1562         -         -           HCM Lane V/C Ratio         0.002         -         -         -         0.002         0.001         -         -           HCM Control Delay (s)         7.3         0         -         0         8.8         7.3         0         -           HCM Lane LOS         A         A         -         A         A         A         A         -	Stage 2	959	850	-	980	865	-	-	-	-	-	-	-
HCM Control Delay, s         0         8.8         0.5         0.2           HCM LOS         A         A         A         A           Minor Lane/Major Mvmt         NBL         NBT         NBR EBLn1WBLn1         SBL         SBT         SBR           Capacity (veh/h)         1579         -         -         957         1562         -         -           HCM Lane V/C Ratio         0.002         -         -         -         0.002         0.001         -         -           HCM Control Delay (s)         7.3         0         -         0         8.8         7.3         0         -           HCM Lane LOS         A         A         -         A         A         A         A         -													
Minor Lane/Major Mvmt         NBL         NBT         NBR EBLn1WBLn1         SBL         SBT         SBR           Capacity (veh/h)         1579         -         -         -         957         1562         -         -           HCM Lane V/C Ratio         0.002         -         -         -         0.002         0.001         -         -           HCM Control Delay (s)         7.3         0         -         0         8.8         7.3         0         -           HCM Lane LOS         A         A         -         A         A         A         A         -	Approach	EB						NB					
Minor Lane/Major Mvmt         NBL         NBT         NBR EBLn1WBLn1         SBL         SBT         SBR           Capacity (veh/h)         1579         -         -         957         1562         -         -           HCM Lane V/C Ratio         0.002         -         -         -         0.002         0.001         -           HCM Control Delay (s)         7.3         0         -         0         8.8         7.3         0         -           HCM Lane LOS         A         A         -         A         A         A         A         -					8.8			0.5			0.2		
Capacity (veh/h) 1579 957 1562 HCM Lane V/C Ratio 0.002 0.002 0.001 HCM Control Delay (s) 7.3 0 - 0 8.8 7.3 0 - HCM Lane LOS A A - A A A A - A A A - A A A - A A A A - A A A A A - A A A A A - A A A A A A - A	HCM LOS	Α			Α								
Capacity (veh/h) 1579 957 1562 HCM Lane V/C Ratio 0.002 0.002 0.001 HCM Control Delay (s) 7.3 0 - 0 8.8 7.3 0 - HCM Lane LOS A A - A A A A - A A A - A A A - A A A A - A A A A A - A A A A A - A A A A A A - A													
HCM Lane V/C Ratio       0.002       -       -       -       0.002       0.001       -       -         HCM Control Delay (s)       7.3       0       -       0       8.8       7.3       0       -         HCM Lane LOS       A       A       -       A       A       A       A       -	Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	WBLn1	SBL	SBT	SBR			
HCM Lane V/C Ratio       0.002       -       -       0.002       0.001       -       -         HCM Control Delay (s)       7.3       0       -       0       8.8       7.3       0       -         HCM Lane LOS       A       A       -       A       A       A       A       -	Capacity (veh/h)		1579	-	-	-	957	1562	-	-			
HCM Lane LOS A A - A A A -			0.002	-	-	-	0.002	0.001	-	-			
			7.3	0	-	0	8.8	7.3	0	-			
HCM 95th %tile Q(veh) 0 0 0				Α	-	Α			Α	-			
	HCM 95th %tile Q(veh)	)	0	-	-	-	0	0	-	-			

	•	<b>→</b>	<b>←</b>	*	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	<b>^</b>		W	
Traffic Volume (vph)	0	0	0	11	13	0
Future Volume (vph)	0	0	0	11	13	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865			
Flt Protected					0.950	
Satd. Flow (prot)	0	1863	1611	0	1770	0
FIt Permitted					0.950	
Satd. Flow (perm)	0	1863	1611	0	1770	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	12	14	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	12	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
	245					

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Intersection						
Int Delay, s/veh	4.7					
	EBL	EDT	WDT	WDD	CDI	SBR
Movement Configurations	EBL	EBT	WBT	WBR	SBL	SBK
Lane Configurations	0	<u>ન</u>	<b>ન</b>	11	<b>\</b>	٥
Traffic Vol, veh/h	0	0	0	11	13	0
Future Vol, veh/h	0	0	0	11	13	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	- 	-	-	-	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	0	12	14	0
Major/Minor I	Major1	N	Major2	ı	Minor2	
Conflicting Flow All	12	0	-	0	6	6
Stage 1	-	-	_	-	6	-
Stage 2	_	_	_	_	0	_
Critical Hdwy	4.12	_	_	_	6.42	6.22
Critical Hdwy Stg 1	7.12		_	_	5.42	0.22
Critical Hdwy Stg 2				_	5.42	
Follow-up Hdwy	2.218	_	_			3.318
Pot Cap-1 Maneuver	1607		-	-	1015	1077
•	1007	-	-	-	1013	1077
Stage 1 Stage 2	-		-	-		
	-		-	-	-	-
Platoon blocked, %	1007	-	-	-	1015	4077
Mov Cap-1 Maneuver	1607	-	-	-	1015	1077
Mov Cap-2 Maneuver	-	-	-	-	1015	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		8.6	
HCM LOS	Ū				A	
					, \	
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR :	
Capacity (veh/h)		1607	-	-		1015
HCM Lane V/C Ratio		-	-	-	-	0.014
HCM Control Delay (s)		0	-	-	-	8.6
HCM Lane LOS		Α	-	-	-	Α
HCM 95th %tile Q(veh)	)	0	-	-	-	0

	-	•	•	<b>←</b>	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	W	
Traffic Volume (vph)	88	3	10	73	6	6
Future Volume (vph)	88	3	10	73	6	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.932	
Flt Protected				0.994	0.976	
Satd. Flow (prot)	1863	1583	0	1852	1694	0
Flt Permitted				0.994	0.976	
Satd. Flow (perm)	1863	1583	0	1852	1694	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	11.0			6.0	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	3	11	79	7	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	96	3	0	90	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0	•		0	12	· ·
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary						
	Other					
Control Type: Unsignalized	Julei					
Intersection Capacity Utilizati	ion 21 10/			10		of Service
	011 2 1.170			IC	O LEVEL	JI SEI VICE
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>1</b>	7		4	¥	
Traffic Vol, veh/h	88	3	10	73	6	6
Future Vol, veh/h	88	3	10	73	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	_	100	_	-	0	-
Veh in Median Storage		-	_	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	96	3	11	79	7	7
IVIVIIIL FIOW	90	3	П	19	1	1
Major/Minor N	//ajor1	N	Major2	1	Minor1	
Conflicting Flow All	0	0	99	0	197	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	101	-
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	
Pot Cap-1 Maneuver	_	_	1494	-	792	960
Stage 1	<u>-</u>	_	-	_	928	-
Stage 2			_	_	923	_
Platoon blocked, %	-	_		_	323	_
Mov Cap-1 Maneuver		-	1494	-	786	960
Mov Cap-1 Maneuver		-			786	
	-	-	-	-		-
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	916	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		9.2	
HCM LOS			3.0		A	
					, \	
Minor Lane/Major Mvm	t I	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		864	-	-	1494	-
HCM Lane V/C Ratio		0.015	-	-	0.007	-
HCM Control Delay (s)		9.2	-	-	7.4	0
HCM Lane LOS		Α	-	-	Α	Α
HCM 95th %tile Q(veh)		0	-	-	0	-
,						

	-	•	•	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		4	W	
Traffic Volume (vph)	66	8	11	48	1	11
Future Volume (vph)	66	8	11	48	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.875	
Flt Protected				0.991	0.996	
Satd. Flow (prot)	1863	1583	0	1846	1623	0
FIt Permitted				0.991	0.996	
Satd. Flow (perm)	1863	1583	0	1846	1623	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	6.0			9.7	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	12	52	1	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	9	0	64	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	tion 19.8%			IC	CU Level o	of Service /
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.3					
		EDD	WDI	WDT	NDI	NDD
	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>↑</b>		4.4	<del>વ</del>	¥	4.4
Traffic Vol, veh/h	66	8	11	48	1	11
Future Vol, veh/h	66	8	11	48	1	11
Conflicting Peds, #/hr	0	_ 0	0	_ 0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #		-	-	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	72	9	12	52	1	12
Major/Minor Ma	ajor1	N	Major2		Minor1	
						70
Conflicting Flow All	0	0	81	0	148	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	76	-
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	
Pot Cap-1 Maneuver	-	-	1517	-	844	990
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1517	-	837	990
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	951	-
Stage 2	_	_	-	_	939	-
					300	
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		8.7	
HCM LOS					Α	
Minor Lane/Major Mvmt	N	NBLn1	EBT	EBR	WBL	WBT
			LDI		1517	AADI
Capacity (veh/h) HCM Lane V/C Ratio		975	-	-	0.008	-
		0.013	-			-
HCM Long LOS		8.7	-	-	7.4	0
HCM Lane LOS HCM 95th %tile Q(veh)		A 0	-	-	A 0	Α
					- 11	-

Lanes, Volumes, Ti 1: Elizabeth St & Ki	_	ld					JR Engineering 06/24/2022
	۶	-	•	*	-	4	
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	7	<b></b>	ĵ»		W		
Traffic Volume (vph)	9	254	160	24	60	19	
Future Volume (vph)	9	254	160	24	60	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	100			0	0	0	
Storage Lanes	1			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.982		0.967		
Flt Protected	0.950				0.964		
Satd. Flow (prot)	1770	1863	1829	0	1736	0	
FIt Permitted	0.950				0.964		
Satd. Flow (perm)	1770	1863	1829	0	1736	0	
Link Speed (mph)		30	30		25		
Link Distance (ft)		1045	782		542		
Travel Time (s)		23.8	17.8		14.8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	10	276	174	26	65	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	10	276	200	0	86	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(ft)		12	12	- 0	12	•	
Link Offset(ft)		0	0		0		
Crosswalk Width(ft)		16	16		16		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15			9	15	9	
Sign Control		Free	Free		Stop		
Intersection Summary							
Area Type:	Other						
Control Type: Unsignalized							
Intersection Capacity Utilizati	on 24.5%			IC	U Level o	of Service A	1
Analysis Period (min) 15							

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	T T	<u></u>	₩ <u>₽</u>	וטוז	₩.	ODIN
Traffic Vol, veh/h	9	<b>T</b> 254	160	24	60	19
Future Vol, veh/h	9	254	160	24	60	19
Conflicting Peds, #/hr	0	0	0	0	00	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	Stop -	
Storage Length	100	NONE -	-	NOHE -	0	NONE -
Veh in Median Storage		0	0		0	-
Grade, %	3, # - -	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
	2	2	2	2	2	2
Heavy Vehicles, %	10	276	174	26	65	21
Mvmt Flow	10	2/6	174	20	05	21
Major/Minor	Major1	N	Major2	<u> </u>	Minor2	
Conflicting Flow All	200	0	-	0	483	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	296	-
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	1372	-	-	_	542	855
Stage 1	- 1312	_	_	_	845	-
Stage 2	_	_	_	_	755	_
Platoon blocked, %	_			_	100	
Mov Cap-1 Maneuver	1372	-	-	-	538	855
Mov Cap-1 Maneuver	1372		_	-	538	- 000
Stage 1		-	-		839	
	-	-	-	-		-
Stage 2	-	-	-	-	755	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		12.1	
HCM LOS					В	
				10/5-	14/5-	0.01.
Minor Lane/Major Mvn	nt	EBL	EBT	WBT	WBR :	
Capacity (veh/h)		1372	-	-	-	591
HCM Lane V/C Ratio		0.007	-	-		0.145
HCM Control Delay (s	)	7.6	-	-	-	12.1
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh	1)	0	-	-	-	0.5

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	5	5	36	6	5	5	17	12	5	5	33	5
Future Volume (vph)	5	5	36	6	5	5	17	12	5	5	33	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.893			0.960			0.981			0.985	
Flt Protected		0.995			0.980			0.976			0.995	
Satd. Flow (prot)	0	1655	0	0	1752	0	0	1783	0	0	1826	0
Flt Permitted		0.995			0.980			0.976			0.995	
Satd. Flow (perm)	0	1655	0	0	1752	0	0	1783	0	0	1826	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	39	7	5	5	18	13	5	5	36	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	17	0	0	36	0	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 15.6%

ICU Level of Service A

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			4			4	
Traffic Vol, veh/h	5	5	36	6	5	5	17	12	5	5	33	5
Future Vol, veh/h	5	5	36	6	5	5	17	12	5	5	33	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	<u>-</u>	·-	None	·-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage	e, # -	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	5	39	7	5	5	18	13	5	5	36	5
Major/Minor	Minor2			Minor1			Major1		<u> </u>	Major2		
Conflicting Flow All	106	103	39	123	103	16	41	0	0	18	0	0
Stage 1	49	49	-	52	52	-	-	-	-	-	-	-
Stage 2	57	54	-	71	51	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	873	787	1033	852	787	1063	1568	-	-	1599	-	-
Stage 1	964	854	-	961	852	-	-	-	-	-	-	-
Stage 2	955	850	-	939	852	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	854	775	1033	806	775	1063	1568	-	-	1599	-	-
Mov Cap-2 Maneuver	854	775	-	806	775	-	-	-	-	-	-	-
Stage 1	952	851	-	949	842	-	-	-	-	-	-	-
Stage 2	933	840	-	895	849	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	8.9			9.3			3.7			0.8		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	nt	NBL	NBT	NBR	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1568	-	-	975	860	1599	-	-			
HCM Lane V/C Ratio		0.012	-	-	0.051	0.02	0.003	-	-			
HCM Control Delay (s)		7.3	0	-	8.9	9.3	7.3	0	-			
HCM Lane LOS		Α	Α	-	Α	Α	Α	Α	-			
HCM 95th %tile Q(veh	)	0	-	-	0.2	0.1	0	-	-			

	•	-	<b>←</b>	*	-	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	f)		W	
Traffic Volume (vph)	8	11	5	18	11	5
Future Volume (vph)	8	11	5	18	11	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.892		0.960	
Flt Protected		0.979			0.966	
Satd. Flow (prot)	0	1824	1662	0	1727	0
Flt Permitted		0.979			0.966	
Satd. Flow (perm)	0	1824	1662	0	1727	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	12	5	20	12	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	21	25	0	17	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					

ICU Level of Service A

Intersection Capacity Utilization 17.7% Analysis Period (min) 15

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	3.4					
		EDT	WDT	WDD	CDI	CDD
Movement Configurations	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<del>ન</del>	<b>₽</b>	10	<b>\</b>	F
Traffic Vol, veh/h	8	11	5	18	11	5
Future Vol, veh/h	8	11	5	18	11	5
Conflicting Peds, #/hr		0		0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-		-	None
Storage Length	-	-	-	-	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	9	12	5	20	12	5
Major/Minor I	Major1	N	Major2		Minor2	
Conflicting Flow All	25	0		0	45	15
Stage 1	-	-	_	-	15	-
Stage 2	_	_	_	_	30	_
Critical Hdwy	4.12	_	_	_	6.42	6.22
Critical Hdwy Stg 1	7.12	_	_	_	5.42	-
Critical Hdwy Stg 2	_	_	_	_	5.42	_
Follow-up Hdwy	2.218	_				3.318
Pot Cap-1 Maneuver	1589			_	965	1065
Stage 1	1000	_	_	_	1008	-
Stage 2			_	_	993	_
Platoon blocked, %	_		_	_	333	-
Mov Cap-1 Maneuver	1589		-		959	1065
		-	-	-	959	
Mov Cap-2 Maneuver	-		-	-		-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	993	-
Approach	EB		WB		SB	
HCM Control Delay, s	3.1		0		8.7	
HCM LOS					Α	
					, ,	
NA1 1 /NA 1 1		ED!	FRT	\A/DT	14/55	ODL 4
Minor Lane/Major Mvm	IT .	EBL	EBT	WBT	WBR:	
Capacity (veh/h)		1589	-	-	-	
HCM Lane V/C Ratio		0.005	-	-	-	0.018
HCM Control Delay (s)		7.3	0	-	-	8.7
HCM Lane LOS		Α	Α	-	-	Α
HCM 95th %tile Q(veh)		0	-	-	-	0.1

	-	•	1	<b>←</b>	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7		ર્ન	W	
Traffic Volume (vph)	78	12	5	44	19	9
Future Volume (vph)	78	12	5	44	19	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.956	
Flt Protected				0.995	0.967	
Satd. Flow (prot)	1863	1583	0	1853	1722	0
FIt Permitted				0.995	0.967	
Satd. Flow (perm)	1863	1583	0	1853	1722	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	9.4			5.1	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	13	5	48	21	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	13	0	53	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	on 16.5%			IC	CU Level o	of Service A
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b></b>	7		सी	W	
Traffic Vol, veh/h	78	12	5	44	19	9
Future Vol, veh/h	78	12	5	44	19	9
Conflicting Peds, #/hr	0	0	0	0	0	0
	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage,		-	-	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	85	13	5	48	21	10
N. 4. 1. (N. 4)			4 : -		A:	
	lajor1		Major2		Minor1	
Conflicting Flow All	0	0	98	0	143	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	58	-
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	
Pot Cap-1 Maneuver	-	-	1495	-	850	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1495	-	847	974
Mov Cap-2 Maneuver	-	_	-	-	847	-
Stage 1	-	_	_	-	938	-
Stage 2	_	_	_	_	962	_
Jugo L					302	
Approach	EB		WB		NB	
HCM Control Delay, s	0		8.0		9.2	
HCM LOS					Α	
Minor Lane/Major Mvmt	N	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)		884	-	-	1495	-
HCM Central Delay (a)		0.034	-		0.004	-
HCM Long LOS		9.2	-	-	7.4	0
HCM Lane LOS HCM 95th %tile Q(veh)		0.1	-	-	A 0	Α
			_	-	- / 1	_

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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>1</b>	7		4	W	
Traffic Volume (vph)	37	5	8	27	6	20
Future Volume (vph)	37	5	8	27	6	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.898	
Flt Protected				0.988	0.988	
Satd. Flow (prot)	1863	1583	0	1840	1653	0
Flt Permitted				0.988	0.988	
Satd. Flow (perm)	1863	1583	0	1840	1653	0
Link Speed (mph)	35			35	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	5.1			8.3	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	5	9	29	7	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	5	0	38	29	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type: (	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 18.4%			IC	CU Level o	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	T T	VVDL	₩ <u>Ы</u>	₩.	אטוז
Traffic Vol, veh/h	<b>T</b> 37	<b>5</b>	8	<b>4</b> 27	<b>T</b>	20
Future Vol, veh/h	37	5	8	27	6	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	100	_	-	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	40	5	9	29	7	22
Major/Minor N	Major1	N	/lajor2		Minor1	
Conflicting Flow All	0	0	45	0	87	40
Stage 1	-	-	45	-	40	40
	-	-	-	_	47	-
Stage 2 Critical Hdwy	_	-	4.12		6.42	6.22
	-	-	4.12	-	5.42	0.22
Critical Hdwy Stg 1		-	-		5.42	-
Critical Hdwy Stg 2 Follow-up Hdwy	-	-	2.218	-	3.518	
Pot Cap-1 Maneuver		-	1563		914	1031
•	-	-	1503	-	982	1031
Stage 1 Stage 2	-	-	-	-	975	
Platoon blocked, %	-	-	-	-	313	-
Mov Cap-1 Maneuver		-	1563		909	1031
Mov Cap-1 Maneuver	- -	-	1503	-	909	1031
Stage 1	-	-	-		982	
9	-	-	-	-	969	-
Stage 2	-	-	_	-	909	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.7		8.7	
HCM LOS					Α	
Minor Lane/Major Mvm	t 1	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	, 1	1000	-		1563	-
HCM Lane V/C Ratio		0.028	-		0.006	_
HCM Control Delay (s)		8.7	_		7.3	0
HCM Lane LOS		Α	_	_	Α.	A
HCM 95th %tile Q(veh)		0.1	_	_	0	-
riom our runo a(von)		0.1				

	•	-	<b>←</b>	*	<b>\</b>	4
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	ሻ	<b></b>	f.		W	
Traffic Volume (vph)	29	260	353	56	44	19
Future Volume (vph)	29	260	353	56	44	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.981		0.959	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	1863	1827	0	1726	0
FIt Permitted	0.950				0.966	
Satd. Flow (perm)	1770	1863	1827	0	1726	0
Link Speed (mph)	-	30	30		25	
Link Distance (ft)		1045	782		542	
Travel Time (s)		23.8	17.8		14.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	283	384	61	48	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	283	445	0	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			-		-	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	,		9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary	2/1					
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 34.4%			IC	CU Level	of Service
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	*	<b></b>	<b>1</b>		¥	
Traffic Vol, veh/h	29	260	353	56	44	19
Future Vol, veh/h	29	260	353	56	44	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		- -	None
Storage Length	100	-	_	-	0	-
Veh in Median Storage		0	0	_	0	_
Grade, %	, π -	0	0	_	0	_
Peak Hour Factor	92	92	92	92	92	92
		2	2	2		2
Heavy Vehicles, %	2				2	
Mvmt Flow	32	283	384	61	48	21
Major/Minor N	Major1	N	Major2		Minor2	
Conflicting Flow All	445	0	-	0	762	415
Stage 1	-	_	_	_	415	_
Stage 2	-	_	_	_	347	_
Critical Hdwy	4.12	_	_	_	6.42	6.22
Critical Hdwy Stg 1	-	_	_	_	5.42	0.22
Critical Hdwy Stg 2	_			_	5.42	_
Follow-up Hdwy	2.218	_	_		3.518	
	1115	-			373	637
Pot Cap-1 Maneuver		-	-	-		
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1115	-	-	-	362	637
Mov Cap-2 Maneuver	-	-	-	-	362	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	716	-
Approach	EB		WB		SB	
HCM Control Delay, s	8.0		0		15.4	
HCM LOS					С	
Minor Lane/Major Mvm	t	EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1115	-	-	-	416
HCM Lane V/C Ratio		0.028	_	_		0.165
HCM Control Delay (s)		8.3	_	_	-	15.4
HCM Lane LOS		Α	_	_	_	C
HCM 95th %tile Q(veh)		0.1	_	_	_	0.6
HUIVI YATA VATILE UIVVANI						

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	5	5	24	5	5	5	39	48	5	5	35	5
Future Volume (vph)	5	5	24	5	5	5	39	48	5	5	35	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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
Frt		0.902			0.955			0.993			0.986	
Flt Protected		0.993			0.984			0.979			0.995	
Satd. Flow (prot)	0	1668	0	0	1750	0	0	1811	0	0	1827	0
Flt Permitted		0.993			0.984			0.979			0.995	
Satd. Flow (perm)	0	1668	0	0	1750	0	0	1811	0	0	1827	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		422			418			542			684	
Travel Time (s)		11.5			11.4			14.8			18.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	5	26	5	5	5	42	52	5	5	38	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	15	0	0	99	0	0	48	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway 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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free			Free	

Area Type:

Other

Control Type: Unsignalized

Intersection Capacity Utilization 21.7% Analysis Period (min) 15

ICU Level of Service A

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	LDL	4	LDI	VVDL	4	WDI	NDL	4	TIDIN	ODL	4	ODIN
Traffic Vol, veh/h	5	5	24	5	5	5	39	48	5	5	35	5
Future Vol, veh/h	5	5	24	5	5	5	39	48	5	5	35	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	_	-	-	-	-	-
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	5	26	5	5	5	42	52	5	5	38	5
Major/Minor I	Minor2			Minor1			Major1		ı	Major2		
Conflicting Flow All	195	192	41	205	192	55	43	0	0	57	0	0
Stage 1	51	51	-	139	139	-	-	-	-	-	-	-
Stage 2	144	141	-	66	53	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	764	703	1030	753	703	1012	1566	-	-	1547	-	-
Stage 1	962	852	-	864	782	-	-	-	-	-	-	-
Stage 2	859	780	-	945	851	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	737	681	1030	712	681	1012	1566	-	-	1547	-	-
Mov Cap-2 Maneuver	737	681	-	712	681	-	-	-	-	-	-	-
Stage 1	935	849	-	840	760	-	-	-	-	-	-	-
Stage 2	825	758	-	912	848	-	-	_	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.1			9.7			3.1			0.8		
HCM LOS	Α			Α								
Minor Lane/Major Mvm	t	NBL	NBT	NBR	EBLn1V	VBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1566		-	908	777	1547	-	_			
HCM Lane V/C Ratio		0.027	_		0.041		0.004	_	_			
HCM Control Delay (s)		7.4	0	-	9.1	9.7	7.3	0	_			
HCM Lane LOS		Α	A	-	A	A	A	A	_			
HCM 95th %tile Q(veh)		0.1	-	-	0.1	0.1	0	-	-			

	*	<b>→</b>	←	*	-	1
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	<b>f</b>		W	
Traffic Volume (vph)	7	9	12	11	15	8
Future Volume (vph)	7	9	12	11	15	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.935		0.951	
Flt Protected		0.978			0.969	
Satd. Flow (prot)	0	1822	1742	0	1717	0
Flt Permitted		0.978			0.969	
Satd. Flow (perm)	0	1822	1742	0	1717	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		226	271		977	
Travel Time (s)		6.2	7.4		26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	8	10	13	12	16	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	18	25	0	25	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					

ICU Level of Service A

Intersection Capacity Utilization 16.7% Analysis Period (min) 15

Control Type: Unsignalized

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
	EDL			WDK		SDK
Lane Configurations	7	<b>ન</b>	<b>}</b>	11	15	0
Traffic Vol, veh/h	7	9	12	11	15	8
Future Vol, veh/h	7	9	12	11	15	8
Conflicting Peds, #/hr	0 Eroo		0 Eroo	0 Eroo	O Ctop	O Ctop
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	-	-	-	-	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	8	10	13	12	16	9
Major/Minor I	Major1	N	Major2		Minor2	
Conflicting Flow All	25	0	-	0	45	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	26	-
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	1589	-	-	-	965	1059
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %		_	_	_		
Mov Cap-1 Maneuver	1589	-	_	-	960	1059
Mov Cap-2 Maneuver	-	_	_	_	960	-
Stage 1	-	_	_	-	999	_
Stage 2	_	_	_	_	997	_
Olago Z					551	
Approach	EB		WB		SB	
HCM Control Delay, s	3.2		0		8.7	
HCM LOS					Α	
Minor Lane/Major Mvm	nt	EBL	EBT	WBT	WBR :	SBLn1
Capacity (veh/h)		1589		-	-	
HCM Lane V/C Ratio		0.005	_	_		0.025
HCM Control Delay (s)		7.3	0	_	_	8.7
HCM Lane LOS		Α.	A	_	_	A
HCM 95th %tile Q(veh)	)	0	-	_	_	0.1
TOW JOHN JUNE Q(VOII)		0				0.1

	-	•	•	<b>←</b>	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>†</b>	7	_	ર્ન	W	
Traffic Volume (vph)	88	13	10	73	13	7
Future Volume (vph)	88	13	10	73	13	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.951	
Flt Protected				0.994	0.969	
Satd. Flow (prot)	1863	1583	0	1852	1717	0
FIt Permitted				0.994	0.969	
Satd. Flow (perm)	1863	1583	0	1852	1717	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	482			264	977	
Travel Time (s)	11.0			6.0	26.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	14	11	79	14	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	96	14	0	90	22	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 21.1%			IC	CU Level of	of Service A
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u> </u>	7		4	W	
Traffic Vol, veh/h	88	13	10	73	13	7
Future Vol, veh/h	88	13	10	73	13	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-		-	None	-	None
Storage Length	_	100	_	-	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	96	14	11	79	14	8
WWW. TOW	30	17		10	17	0
		-		-		
	Major1		Major2		Minor1	
Conflicting Flow All	0	0	110	0	197	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	101	-
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	-	-	1480	-	792	960
Stage 1	-	-	-	-	928	-
Stage 2	-	-	-	-	923	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1480	-	786	960
Mov Cap-2 Maneuver	-	-	-	-	786	-
Stage 1	-	-	_	-	928	-
Stage 2	_	-	_	-	916	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		9.4	
HCM LOS					Α	
Minor Lane/Major Mvm	t 1	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	. 1	839	LD1	LDIX	1480	1101
HCM Lane V/C Ratio		0.026	-	-	0.007	-
HCM Control Delay (s)		9.4	<u>-</u>	-	7.5	0
HCM Lane LOS		9.4 A	-	-	7.5 A	A
HCM 95th %tile Q(veh)		0.1	_	-	0	-
HOW JOHN /OHIE Q(VEH)		0.1	_	-	U	_

	-	•	•	-		1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<b>*</b>	7		4	W	
Traffic Volume (vph)	66	8	21	48	5	18
Future Volume (vph)	66	8	21	48	5	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.892	
Flt Protected				0.985	0.990	
Satd. Flow (prot)	1863	1583	0	1835	1645	0
Flt Permitted				0.985	0.990	
Satd. Flow (perm)	1863	1583	0	1835	1645	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	264			426	978	
Travel Time (s)	6.0			9.7	26.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	9	23	52	5	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	72	9	0	75	25	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		60	60		60	60
Sign Control	Free			Free	Stop	
Intersection Summary					•	
	Other					
Control Type: Unsignalized	- 1101					
Intersection Capacity Utilizat	ion 20 4%			IC	:     evel d	of Service
Analysis Period (min) 15	1011 20.770			10	, o Lovoi c	7. OOI VIOO 7

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	<u></u>	7	1,02	<del>પાક્ર</del>	¥	TIDIT
Traffic Vol, veh/h	66	8	21	48	5	18
Future Vol, veh/h	66	8	21	48	5	18
Conflicting Peds, #/hr	0	0	0	0	0	0
•	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-		-	None
Storage Length	_	100	_	-	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
Mymt Flow	72	9	23	52	5	20
WWITE TOW	12	<u> </u>	20	02	J	20
Major/Minor Ma	ajor1	N	Major2		Minor1	
Conflicting Flow All	0	0	81	0	170	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	98	-
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	_	_	1517	_	820	990
Stage 1	_	_	_	_	951	-
Stage 2	_			_	926	_
		- '	-			
Platoon blocked %	_	-	-			
Platoon blocked, %	-	-	1517	-	807	990
Mov Cap-1 Maneuver	-	-	1517	-	807	990
Mov Cap-1 Maneuver Mov Cap-2 Maneuver	-	- - -	-	- - -	807	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1	- - -	- - -	-	- - -	807 951	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver	-	-	-	- - -	807	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1	- - -	- - -	-	- - -	807 951	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2	- - -	- - -	-	- - -	807 951	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach	- - -	- - -	- - -	- - -	807 951 911	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2	- - - -	- - -	- - - WB	- - -	807 951 911 NB 8.9	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s	- - - -	- - -	- - - WB	- - -	807 951 911 NB	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS	- - - - EB	-	- - - WB	-	807 951 911 NB 8.9 A	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt	- - - - EB	- - - - NBLn1	- - - WB 2.3	- - - - -	807 951 911 NB 8.9 A	- - - WBT
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h)	- - - - - - 0	- - - - - NBLn1	- - - WB	- - - - - -	807 951 911 NB 8.9 A WBL 1517	-
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	- - - - - - 0	- - - - - NBLn1 943 0.027	- - - WB 2.3	- - - - - EBR	807 951 911 NB 8.9 A WBL 1517 0.015	- - - WBT
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	- - - - - - 0	- - - - - - - - 943 0.027 8.9	WB 2.3 EBT -	EBR -	807 951 911 NB 8.9 A WBL 1517 0.015 7.4	- - - - WBT - - 0
Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2  Approach HCM Control Delay, s HCM LOS  Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	- - - - - - 0	- - - - - NBLn1 943 0.027	- - - WB 2.3	- - - - - EBR	807 951 911 NB 8.9 A WBL 1517 0.015	- - - WBT

# Appendix E Base Assumptions Form

# Attachment A Transportation Impact Study Base Assumptions

Project Name Polestar LMN Mixed	d-Use Development					
Project Location Northeast of Eliz	abeth St & Overland Tr, For	t Collin	S			
TIS Assumptions						
Type of Study	Full: X	Inter	mediate:			
	MTIS:	Men	no:			
Study Area Boundaries	North: Mulberry St	Sout	h: Elizabeth St			
	East: Kimball Rd	Wes	t: Overland Tr			
Study Years	Short Range: 2024	Long	g Range: 2045			
Future Traffic Growth Rate	1.5%	ı				
Study Intersections	1. All access drives	5. M	5. Mulberry & Louise			
(See Attached Site Plan	2.Mulberry & Locust Gro	ve 6.	6.			
with Study Intersections)	3.Orchard & Locust Grov	re 7.	7.			
	4.Elizabeth & Kimball	8.				
Time Period for Study	AM: 7:00-9:00 PM: 4:0	0-6:00	6:00 Sat Noon:			
Trip Generation Rates	See Attached ITE Repor	t				
Trip Adjustment Factors	Passby: 0%	Passby: 0% Captive Market				
Overall Trip Distribution	SEE ATTA	CHED S	KETCH			
Mode Split Assumptions						
Design Vehicle Information						
Committed Roadway Improvements						
Other Traffic Studies						
Areas Requiring Special Study						

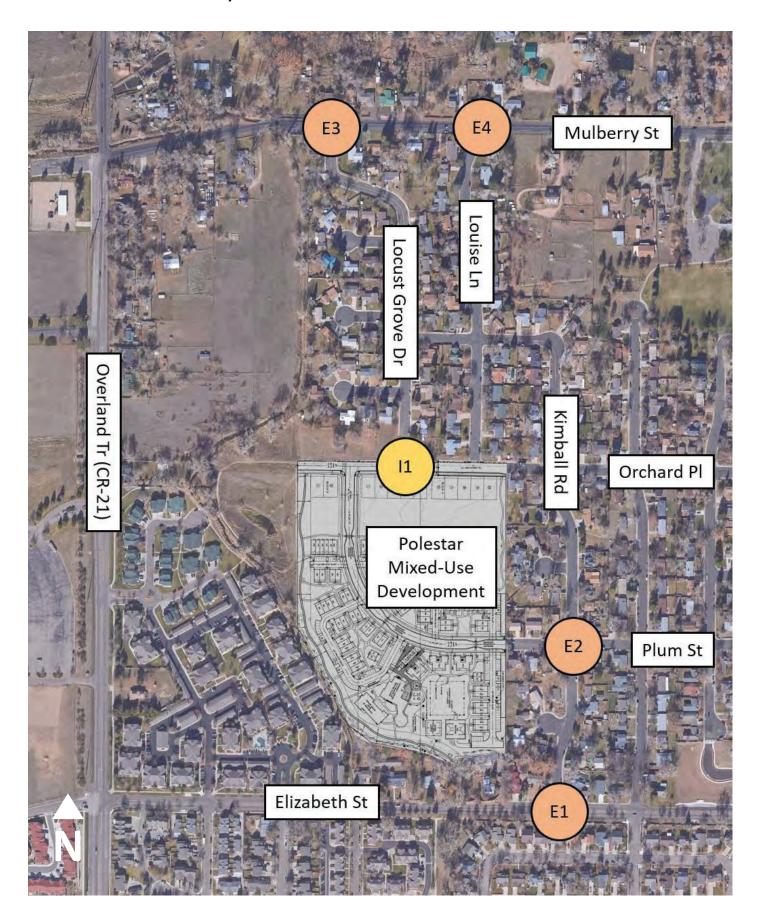
Date: 4/25/2022

Traffic Engineer: Eli Farney

Local Entity Engineer: Spencer M. Smith

### Polestar LMN Mixed-Use Development Site Plan and Study Intersections





#### **Trip Generation Summary**

Alternative: Alternative 1

Phase: Open Date: 4/20/2022

Project: Polestar Analysis Date: 4/20/2022

		W	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic			
ITE	Land Use	*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
210	SFHOUSE		90	89	179		4	10	14		12	7	19
	19 Dwelling Units												
220	LOW-RISE 2		224	223	447		6	22	28		21	13	34
	61 Dwelling Units												
220	LOW-RISE 1		205	205	410		6	20	26		20	11	31
	56 Dwelling Units												
254	ASSISTLIVE		11	10	21		1	1	2		1	1	2
	8 Beds												
495	RECCENTER		130	129	259		11	5	16		10	11	21
	9 1000 Sq. Ft. GFA												
560	CHURCH		18	17	35		1	1	2		1	1	2
	5 1000 Sq. Ft. GFA												
Unad	justed Volume		678	673	1351		29	59	88		65	44	109
Intern	al Capture Trips		0	0	0		0	0	0		0	0	0
Pass-	By Trips		0	0	0		0	0	0		0	0	0
Volun	ne Added to Adjacent Streets		678	673	1351		29	59	88		65	44	109

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

<sup>\* -</sup> Custom rate used for selected time period.

# Polestar LMN Mixed-Use Development Site-Generated Trip Distribution





## **POLESTAR VILLAGE - Modification of Standard for the Neighborhood Center Non-Residential** Uses

The site plan cover sheet shows an attempt to assign standard parking requirements to the unique, intimate-scale grouping of buildings which form a neighborhood center for Polestar residents and guests. Assigning the requirements needed a degree of interpretation and the applicants were conservative in their interpretation.

The site plan indicates a requirement of 38 spaces, with 28 spaces provided as being assigned to these uses.

This apparent shortfall based on assumptions is not detrimental to the public good, is equal or better than a plan with a parking lot for 10 more spaces, and is nominal and inconsequential from the perspective of the whole development plan, for the following reasons.

1. The code standards apply citywide to uses that cater to the public, whereas these uses are small specialty neighborhood uses specially intended primarily for neighbors. Together they form an campus-like grouping integrated into the neighborhood. The applicant team acknowledges the possibility of drawing people from outside of the neighborhood, but expect that they would be guests and like-minded people respectful of the special nature of the place and willing to park and walk a short distance if it ever proves necessary to park on Plum or Orchard within the development.

Even if all of the required residential parking were ever full, both off-street and on-street, there would still be about 14 extra spaces on Plum, and 42 on Orchard, within the development, in addition to the 28 spaces assumed for the neighborhood center uses. In short, the overall plan has plenty of parking.

2. The applicants expect that the residential parking numbers include a de facto "cushion" of about 20 spaces if they are considered in light of the recently approved code update which would reduce required parking for 1- and 2-bedroom units if it takes effect.

We understand that the new standards do not apply to Polestar, however, this PDP includes truly unique housing types, many of which include small 1-bedroom micro units. These range in size from 450 SF to 700 SF in the form of for-sale townhomes, condominiums, and rental apartments, and range in size from 450 SF to 700 SF.

If any development will ever be able to function with less excess asphalt per capita than past suburban subdivision developments, Polestar will likely be an example.

3. Polestar Village will provide up to 10 Electric Share Vehicles and 24 Electric Share Bikes outfitted with smart technology for residents to use. Polestar Village is not located within the City's Transit Overlay District, however, the City's Land Use Code does provide for a parking reduction of up to 5 spaces per Car Share Vehicle provided. Although this parking reduction does not specifically apply to Polestar Village, the developer intends for this to add to the cushion of parking provided and reduce any need for more asphalt and less building space.

- 4. One of Polestar's Core Values and Development Goals as well as the intentions of many of Polestar's potential residents is to de-emphasize the use, and possibly ownership, of combustion engine vehicles. To this end, Polestar Village has been intentionally designed to ensure that the site functions as a pedestrian-focused community. Residents will be invited to live their daily life using generous choices provided for foot, bike or electric share vehicle access to augment private vehicle access. The plan includes nearly 2 miles of walkways and trails, for easy and enticing pedestrian connectivity among the homes and the neighborhood center.
- 5. Polestar Village has worked closely for the past several years with the original owners of the Happy Heart Farm and still reside in the existing home located adjacent to West Elizabeth Avenue. The Owners of the Happy Heart Homestead have dedicated a pedestrian easement over and across their Property in order to provide Polestar residents and others future access to the proposed West Elizabeth Multi-Model Transit Corridor that is proposed to be constructed by the City. Easy Pedestrian and Bike access to this future Transit Corridor will provide the residents of Polestar Village with both Bike and Bus Transit to nearby Goods and Services along the Elizabeth Avenue Corridor thus further reducing the need for On-Site Parking for both Residential and Non-Residential Uses.

In conclusion although the proposed Polestar Village Development appears to fall short of City parking requirements by about 26 Parking Spaces depending on classification of the activities in the buildings, the plan is better as designed than it would be with more parking lot space and less building uses.



Community Development and Neighborhood Services

#### **Planning Services**

281 North College Ave. P.O. Box 580 Fort Collins, CO 80522 970.221.6750 970.224.6134 - fax fcgov.com/developmentreview

# Polestar Village - PDP Neighborhood Meeting Summary (5-12-22)

#### **Overview**

#### City Staff:

JC Ward, Senior Neighborhood Services Planner Pete Wray, Senior City Planner and Project Planner Sharlene Manno, Customer Support & Host Spencer Smith, Civil Engineer II Scott Benton, City Planner Tim Dinger, Civil Engineer II Tayla Copeland, Intern

#### **Owner/Applicant Team:**

Ken Merritt, JR Engineering, Principal Michael Gornik, Polestar Gardens, Inc (Owner and Developer) Daiva Glazzard, Polestar Gardens

Neighborhood Meeting Date: Thursday May 12, 2022

#### **Proposed Project Review Process**

- Purpose of meeting is to share conceptual plans at an early stage in process and gather feedback from neighbors for inclusion in record.
- A formal application of the project has not been submitted to the City.
- A project development plan submittal will start a formal review by staff.
- Staff will determine when the project is ready for hearing.
- Type 2 review and hearing, with Planning and Zoning Commission as decision maker.
- Residents who receive this meeting notice will also receive a letter for the Planning and Planning Commission Hearing.
- The proposed project is within the Residential Low Density (RL) and Low-Density Mixed-Use Neighborhood (LMN).
- The proposed project is for development of a neighborhood center, single family detach housing, single-family attached, multi-family housing, place of worship and community farm.

#### **Applicant Presentation**

- Proposed mixed-use on approx. 20 acres.
- Northern portion of parcel sold to Polestar from Happy Heart Farm.
- Proposed 136 units: 19 Single Family Detached Homes with front access garages, 20
   Townhome with alley access garages, 36 Townhome with surface parking, 25
   Condominium/Apartment Homes with garages and surface parking, 36 Multi-Family Apartment Homes with surface parking and a 5000 Sq. Ft. 2 story Elderly Group Home for up to 8
   Residents and a Caretaker. Also included are several Polestar HOA Community Buildings which

include an 8000 Sq. Ft. - 2 story Community Center with 6 B&B Guest Rooms, 2 Agricultural Support Buildings and a 3000 Sq. Ft. Temple - Place of Worship.

Primary access taken from Orchard Place and Plum Street.

#### **Primary Issues**

- Traffic/Street connection Impacts
- Land Use/Other
- Housing
- Trail Connectivity
- Open Space & Natural Areas, Environmental

#### **Questions/Comments and Answers**

#### General

Traffic/Streets

**Question:** Car access concerns; going through from Orchard to Oak Hill. Will traffic increase greatly west of Plum and Orchard Place?

Answer:

**Question:** Concerns of project affecting existing pedestrian walkways and access along the pond area west of the development using Orchard Place easement.

**Answer:** Spencer – the existing sidewalks are narrower and more attached in this area. New streets and sidewalks will be wider and detached sidewalks along Orchard. This is a public street so vehicular and pedestrian access is not limited on this street or sidewalks to areas between development and neighborhood.

**Question:** In general, worries of increased traffic in the neighborhood.

Answer: Spencer. As far as vehicular access – there is not a direct Elizbeth connection; traffic engineering identified areas within this community, along Kimball and Elizabeth. Engineering will be analyzing access north of Locust, Plum, and Kimball – traffic study (Transportation Impact Analysis) will look at the traffic patterns along each of these streets. Local streets are functioning properly – these studies have been shown so far. Collector streets for Orchard to Overland Trail still need analysis. Circulation – east of Orchard is built to a lesser standard then Kimbell and Elizabeth. Orchard will meet today's standards (36' cross section width). Overall, pedestrians and vehicles will be separated with no interaction in-between both.

**Question:** Does the developer have any responsibility for extending Orchard to Overland Trail? What is the approximate timeline that Orchard PI will be extended out to Overland?

**Answer:** The developer does not have any responsibility for extending Orchard Place beyond the west property boundary of the proposed development. We have no information regarding future developments within this area that would require Orchard Place to be extended to Overland Trail.

**Question:** Five years ago, Three Seed Development went through a similar process. Traffic is a concern since the traffic increased with that development.

**Answer:** This project is required to submit a traffic impact study to assess the impacts of the proposed development and mitigation improvements needed based on the project traffic numbers.

**Question:** Why is there not a street connection to Elizabeth Street? Should the zoning be changed to allow this street connection?

**Answer:** The existing Happy Heart Farm residence is not part of this project, so a street connection is not feasible. A street connection to Elizabeth Street would not meet the Traffic and Engineering standards for intersection spacing for safety concerns. However, a pedestrian path is planned between the project and W Elizabeth Street in lieu of a street. This project is required to connect proposed public streets to existing public street stub outs of Plum Street and Orchard Place. Zoning requirements include land use and development standards, not street network requirements.

**Question:** What percentage of the development will be paved, specifically pervious surfacing? **Answer:** The street right-of-way and parking areas will be paved. A portion of this paved areas may include special pervious surfacing.

**Question:** Will overflow parking be on existing streets outside polestar? Since the plan minimizing parking for cars.

**Answer:** The project is required to provide all its parking within the development, either located offstreet in garages or parking lot areas, or on-street. This code requirement is to avoid the need for any overflow parking extending into the adjacent neighborhoods.

Land Use/Other

**Question:** How do the short-term rentals and bed/breakfast work within the zoning? **Answer:** LMN – allows bed and breakfast to have up to 6 units. The Wellness Center will have 8 residential rooms used for elderly who are being cared for within the Polestar Community. The LMN zoning allows short-term primary rentals (owner occupied). Where and how many short-term rental properties are designated within the proposed development? The short-term rentals will be located on the second floor of the community center which have (6) bed and breakfast units for short term stay only (short term rental).

**Question:** Zoning – will there be a change of zoning of the area?

**Answer:** There will be no zoning changes with this project. The development will be working within the designated zoning including LMN and RL residential uses.

**Question:** Since there currently are no commercial spaces within the neighborhood how would this working within the existing neighborhood?

**Answer:** The proposed development is with the LMN Zoning – the proposed commercial uses need to be a part of a neighborhood center that includes a combination of non-residential uses that serve the neighborhood. This neighborhood center will have direct street and pedestrian access from the neighborhood area. The traffic study will look at all existing streets and paths for this development including the commercial center.

**Question:** The neighborhood uses the Orchard easement quite often. If this proposed development is built it will take away the sense of community that is there now. This doesn't seem in line with Polestar's ethic. How do the single-family homes conform with Polestar ethics?

**Answer:** Right-of-way already exists. Orchard's road easement will be extended; this is driven by the City's Master Street Plan. The single-family homes along Orchard buffer the low-density residential zoning which allows for a transition of density to the single-family homes. Density becomes greater in the south of the property. Density is higher in the center and lessens the more you go out – in a ring form. Existing neighbors using Orchard Place for waling to nearby open space can continue since this is a public street.

**Question:** Does Polestar plan on staffing these commercial areas – yoga area and community center? Who will be running the community center?

**Answer:** Yes, the retail center will all be staffed; the community center will have staffing for the common kitchen and dining area. The wellness center will be completely staffed. Some of the staff with be residents of the neighborhood.

**Question:** Will the 136 units be affordable units? Is there any deed restriction?

**Answer:** There are specific requirements to meet affordable housing standards. The project is not planning to designate these units as affordable housing.

**Question:** Will there be an application process to live there?

**Answer:** No application requirements it will be a completely open community development.

Question: Will the yoga area/place of worship be only for use by residents, or will it be open to the

public? How many visitors are expected daily?

**Answer:** It is intended for use by Polestar Residents and their Guests.

**Question:** How is this development being funded? This is a non-profit: how can you accept investors? **Answer:** Investors are making loans to the Polestar Gardens Non-Profit that are then converted to an investment in either a Lot or Building Unit once they are available.

**Question:** Is there a wildland fire evacuation plan for this development and neighborhood? **Answer:** PFA-Sarah Carter. The short answer is that PFA would not preemptively develop a neighborhood evacuation plan on behalf of the neighborhood. At this time, neither the city nor PFA has adopted the International Wildland Urban Interface Code (WUI), and the wildland-urban interface area has not been defined. We would not have the authority to require or enforce such planning. Additionally, we do not have existing individual plans for each neighborhood in our district. There are a significant number of factors that influence firefighting and evacuation strategy, and our crews are training in evaluating each emergency scenario and managing response and resources for the best possible outcome.

If a subdivision wanted to develop a plan, I'm sure that is something we could provide some guidance on. We would first direct them to the provisions of the WUI to consider implementing the requirements for developments under this code, including access, water supply, building construction, vegetation management, and fire protection plan provisions. The WUI is available for free online at codes.iccsafe.org. This would be the best place to start and implementing some of these provisions during the subdivision planning process would certainly be of benefit should a wildland fire occur nearby.

**Question:** Will the neighborhood surrounding the proposed development be allowed to use the trails and space within the community Polestar?

**Answer:** Common open space will be maintained.

Open Space, Natural Areas, Storm Drainage

**Question:** There is a recreational space within this neighborhood. The concern is that the development will box in the small recreational open space area. Is there any likelihood to expand that space or are there more open spaces proposed for this development?

**Answer:** The recreational space is Saddle Ridge retention area and trail. There will be a 6-foot-wide soft path that wines its way through the natural area, this will be within a public easement which will make its way out to Overland trail and crossing over Elizabeth St. The proposed development will have 10.4 acres of open space; private open space.

**Question:** Saddle Ridge open space shouldn't be boxed in. Replace the retention pond more on the west of the open space. There currently is a cottonwood tree in this area mentioned that shall stand and have development built around it.

**Answer:** No reply since the question was a statement.

**Question:** Will the cottonwood tree on Orchard be removed for the proposed development? **Answer:** There are 122 existing trees. One requirement is to have an existing tree analysis. A preliminary analysis has been done. Yes, that tree will be removed due to root problems. The City's analysis with the Forester still needs to occur. There may be some re-location of trees as well as removal. The timeframe/scheduling for moving any trees will have to happen around this October or in April of next year. A maintenance of already fallen trees will still need to be done before the proposed development can be built. Overall, there will be native low water landscaping throughout the proposed development.

**Question:** In regard to the fire season last year. If there are 136 units that equates to approx. 300 vehicles that would have to evacuate if a fire was to occur. The city needs an evacuation plan and timeline for evacuation of a fire.

**Answer:** No response since this is a statement.

**Question:** Will the detention pond area be flat (as it currently exists) or is this going to be dug down like an actual pond?

**Answer:** The detention area will be excavated below the existing ground elevation to accommodate sufficient detention volume for the proposed Development. In the future (timing unknown) the city will do further excavation within the existing detention pond constructed for the Polestar Development to create a Regional Detention Pond within the previously Platted Drainage Easement.

**Question:** What studies have you referred to or conducted regarding how this new development is going to impact water usage in the area?

**Answer:** The homes are being designed with energy and water use efficiency which meet the requirement of the City of Fort Collins at the time of Building Permitting. Polestar Gardens owns Pleasant Valley Irrigation Ditch Water Shares which are planned to be used for irrigating the Ornamental Landscape, Farm and Pocket Gardening areas of the proposed development. The Landscape will be designed with Water Wise Drought Tolerant Plant Material and shall meet the City's required irrigation requirements of the allowed Gallons / Sq. Ft. /Year standards.

#### **Process/Next Steps**

**Question:** What are the next steps here before this gets the go-ahead? Is this inevitable or is there opportunity to alter the plan?

**Answer:** Polestar Gardens will make a Preliminary Project Development Plan and Preliminary Utility Plan Submittal in late June 2022. The City's review will then follow the procedural steps set forth by the City Development Review Process outlined in the City's Land Use Code. The various Residential and Support Land Uses being proposed for the Polestar Village development are uses permitted within the RL or LMN Zone Districts. The proposed Unit Density of Polestar Village is below the Maximum Density allowed for the RL and LMN Zone Districts.

**Staff:** Thanks for attending tonight. The conversation will be summarized and available as public record. Residents that received notice of this meeting will also be notified of hearing. The next step in the development review process is for the applicant to consider refinements to the project design in preparation of a formal project submittal and review by City staff. A second neighborhood meeting is not required, but if the applicant chooses to hold another meeting residents that received the notice will also be notified again. The decision maker for this project is the Planning and Zoning Commission. If

neighbors want to reach out to staff, they are encouraged to contact either Neighborhood Services or Pete Wray in Planning, see meeting notice for contact information.

We, Dennis and Bailey Stenson, are the owners of parcel #9716200013 that abuts the Polestar Village property. We understand that as part of the development of the project, Polestar Gardens, Inc. will be required to secure a public access easement located on the west side of our property for a future 6' walkway that will connect from the Polestar Village property to West Elizabeth Street prior to their final approval. We agree to work with Polestar Gardens, Inc. for this easement and these improvements, and intend to convey to the City the needed 8' public access easement for this walkway. In addition to the public access easement for the walkway itself, we also intend to grant to the City a Temporary Construction Easement for construction of the walkway. We understand that that the future walkway construction would be done by the City in conjunction with construction of a sidewalk on West Elizabeth to which it would connect.