Exhibit A Planning Commission Work Session Discussion Points <u>March 12, 2014</u>

- A. Is the proposed General Plan land use change, density, and PUD rezoning acceptable?
- B. Is the proposed positioning of the buildings, on-site circulation, parking location, parking ratio, private open space, common open space, and on-site amenities acceptable?
- C. Are the building designs, massing, heights, and colors and materials acceptable and compatible with the surrounding area?
- D. Is the proposed tree removal/replacement plan acceptable?
- E. Are the proposed Green Building measures and Climate Action Plan measures acceptable?
- F. What other information would the Planning Commission wish to see to assist its decision on the proposals (i.e. color and material board, photo simulations, etc.)?



Kottinger Gardens Planned Unit Development Application Narrative

Task Force Planning Process

Kottinger Gardens is the proposed redevelopment of Kottinger Place (50 homes) and Pleasanton Gardens (40 homes) into one integrated affordable housing development with 185 new homes for seniors. The proposed development is the result of thoughtful planning on the part of The Kottinger Place Redevelopment Task Force (Task Force). Formed by the City Council in 2004, the Task Force's goal was to evaluate the condition of the aging senior housing properties located on Kottinger Drive and develop a redevelopment plan that would allow for their continued and expanded use as affordable senior housing. The Task Foce consists of representatives from the City Council, Housing Commission, Parks and Recreation Commission, existing residents, neighbors, and local affordable housing advocates. For nearly ten years, the Task Force has carefully reviewed several options for redevelopment that would meet the City's growing demand for affordable senior housing and address several long-term challenges at both properties, including increasing maintenance requirements and the lack of accessibility and energy-efficient features in the homes. The following Task Force Objectives were established to guide the planning process:

- 1. Increase the supply of affordable senior housing in Pleasanton;
- 2. Retain the site's existing character, which has been integral to the historical success of the property, through the inclusion of cottages and open space;
- 3. Achieve financial efficiency and sustainability both in terms of the amount of public subsidy dollars required and in terms of the long-term management and service delivery at the property;
- 4. Respect the existing site context and be a good neighbor to the residents of Kottinger Drive and Vineyard by developing a site plan and architecutral details that are complimentary to the neighborhood.

Building Program & Parking

Working with MidPen Housing Corporation and City Staff, the Task Force developed the proposed plan to build 185 new and fully-accessbile homes in a combination of single-, two-, and three-story buildings. It is expected that 183 of the new homes will be affordable to low-income seniors and the remaining 2 homes will be reserved for on-site property managers. The proposed development will also include richly landscaped open space with shared gardens, pedestrian pathways, and a safer pedestrian crossing on Kottinger Drive. MidPen's Property Management and Resident Services will have offices on-site and will provide resident services and programming in the on-site community rooms, resident lounges, and fitness room. Shared laundry facilities with a minimum of one washer/dryer for every ten homes will also be provided on-site for the residents' convenience.



The proposed parking ratio on both sides of Kottinger Drive is .8:1, which is the same as the current .8:1 parking ratio at Kottinger Place and represents a significant increase to the .47:1 parking ratio currently at Pleasanton Gardens. Car ownership among the existing low-income senior residents also provided a very good indicator and helped determine the proposed parking ratio. Of the 66 residents who responded to the question when asked during resident interviews, only 40 existing households owned a car. This represents a ratio of .6:1, and therefore further supports a .8:1 ratio as more than adequate for residents and visitors. This parking ratio is also higher than what is currently offered at some of Pleasanton's other senior housing properties, such as The Gardens at Ironwood, which has a .7:1 parking ratio. In fact, The Gardens at Ironwood leases 16 additional parking spaces from the neighboring church, which brings their parking ratio to MidPen's proposed .8:1. MidPen is confident that a .8:1 parking ratio will be sufficient at Kottinger Gardens based on its experience developing and managing over 25 affordable senior housing properties, many of which are in similar neighborhoods as Kottinger Gardens.

Kottinger Gardens Site & Parcels

The 6.5 acre site consists of the following four parcels:

1. 240 Kottinger Drive (Kottinger Place) – 3.47 acres

Kottinger Place is currently improved with 50 existing affordable senior homes developed in 1972 and owned and operated as a HUD Public Housing property by the City of Pleasanton Housing Authority. There are 32 studio, 16 one-bedroom, and 2 twobedrooms. The site also includes a small community room, laundry facilities, and open space for gardening and socializing. The existing parking ratio is .8:1, which is sufficient for the current population. The homes are not accessible, making it difficult for residents to age-in-place, and due to demand, the studios often house couples, which can create crowded living environments. The nearly 40-year old homes are also experiencing increasing maintenance and repair needs, which need to be addressed. For these reasons, the Task Force determined that demolition of the existing homes was necessary.

2. 4138 Vineyard Avenue Parcel - .51 acres

This parcel is located northwest of the existing Kottinger Place site and is currently vacant. It was purchased by the City of Pleasanton in February 2011 with the redevelopment of Kottinger Place in mind.

3. 4133 Regalia Court - .50 acres

This parcel is adjacent to the Kottinger Place and Vineyard Avenue parcels, and is the site of the Regalia House, an under-utilized community facility and its parking. The Regalia House has suffered structural damage and is in poor condition. The proposed parcel is currently a part of Kottinger Village Park and is owned by the City of Pleasanton.

4. 251 Kottinger Drive (Pleasanton Gardens) - 1.95 acres



Pleasanton Gardens is located directly across Kottinger Drive from the other three parcels and is the site of 40 units of existing affordable senior housing developed in 1970. The site and its improvements are currently owned by Pleasanton Gardens, Inc., a nonprofit entity set up by four local churches in the 1960s. It has many of the same design issues and critical needs as Kottinger Place. In addition some of the existing buildings were constructed over a City culvert and the site has had some drainage issues in the past.

In addition to this PUD Application, MidPen is also requesting a Rezoning and General Plan Amendment that would change the designation on all four parcels to PUD-HDR (Planned Unit Development-High Density Residential). Prior to commencing construction, a formal application will be made to combine the Kottinger Place, Vineyard Avenue, and Regalia Court parcels through a Lot Line Adjustment.

Architecture & Landscape Design

The proposed project's site design, buildings, and landscaping were conceived within the context of Pleasanton's historic downtown, which has roots in both the cottage and farmhouse architectural styles. The buildings downtown are predominantly simple forms with covered front porches that extend the entire width of the home or stoop, lending a sense of symmetry to the building. The materials are generally lap siding with various levels of detailing and trim that is white or a contrasting accent color. The Kottinger Gardens design approach takes a fresh interpretation of these fundamental cottage and farmhouse characteristics, creating design that is suitable for both multi-story and single-story building scales and helping to create a cohesive community. The design creates a pattern of buildings, pedestrian walkways, and gardens that are contextualized, inspired by Pleasanton's downtown, the character of the existing properties, and the surrounding single-family homes.

The proposed project will include one 78,010 square foot two- and three-story building and nine separate single-story buildings ranging in size from 2,830 to 5,800 square feet on the current Kottinger Place, Vineyard Avenue, and Regalia Parcels north of Kottinger Drive. There are a total of 131 homes on this portion of the site, including 126 one-bedroom and 5 two-bedroom homes. One 31,600 square foot two-story building and four separate single-story buildings ranging in size from 1,430 to 8,850 square feet will be located on the current Pleasanton Gardens parcel south of Kottinger Drive. There are a total of 54 homes on this part of the site, including 50 one-bedroom and 4 two-bedroom homes.

The apartments were designed with the future residents in mind, and include ample storage, private patios/balconies, and accessibility features to help residents age-in-place and live independently for as long as possible. A typical one-bedroom home is 584 square feet and a two-bedroom home is 842 square feet. Shared indoor amenities include community rooms on both sides of the street for resident gatherings, resident lounges with computers, a fitness room for group exercise classes, and on-site resident services programming and coordination.



The landscape design provides a hierarchy of outdoor spaces ranging from public to private, seeking to foster a healthy senior community by facilitating social interaction. This hierarchy provides a variety of opportunities for residents to interact with the outdoor space at different times during the day or year. Distinctly themed neighborhood commons can foster a sense of community. There are a variety of outdoor spaces programmed for relaxing, socializing, and recreation. These include large common open spaces adjacent to the community rooms on both sides of Kottinger Drive, as well as a patchwork of courtyards and shared vegetable gardens. Each upper floor home has a private deck, which overlook gardens and toward the surrounding hills and horizon.

The landscape design incorporates as many of the existing healthy and suitable trees as possible. In some cases, the final location of the homes was adjusted to protect the best trees and many have become focal features scattered throughout the project. Using the Arborist's Report as a guide, the Kottinger Gardens design team evaluated each existing tree to determine overall suitability for the proposed development. Each tree's location, species, and health was taken into consideration. Of the 146 trees evaluated on-site, 22 trees will be retained and 124 will be removed. The landscape plan proposes to plant approximately 100 new trees on the site. MidPen will be proactive, working with the City and neighbors to identify new tree species as early as possible, and potentially plant new trees along the site perimeter prior to the start of construction to ensure adequate landscape screening.

Plant materials will provide seasonal interest and the plant palette will reflect the architectural character. In addition to the common gardens, a private porch or balcony can accommodate garden ornamentation, and provide an opportunity for residents to personalize their individual space. An automatic water-efficient irrigation system, Bay-Friendly landscape practices for healthy soil and water conservation, and selection of plants that are well-adapted to the local climate and setting will aid overall long-term maintenance. Additionally, planting design will consider the ultimate size of individual species at maturity to minimize need for pruning and green waste.

The adjacent park setting will help maintain the open space feel and character that exists today. An internal path system will link to the perimeter park trail at multiple locations, encouraging residents to access and enjoy park amenities. Visiting grandchildren will be able to enjoy the park's tot lot, and residents will have the opportunity to interact with the greater Pleasanton community as they walk through the park. While it is important to integrate with the park, it is also important to clearly distinguish the Kottinger Gardens open space system and paths. Where the internal path system intersects with the public path on the perimeter, the landscape portals will be designed to distinctly identify these private pedestrian entries.

Construction Phasing & Resident Relocation

The proposed project will involve a limited amount of temporary resident relocation to accommodate the new construction. In order to minimize the number of households who will need to move off-site in order to build the new homes, the construction will be phased. This will allow a majority of residents to stay in their current homes until their new home is

303 Vintage Park Drive, Suite 250 Foster City, CA 94404



constructed and ready for move-in. The first phase is expected to occur on the Vineyard Avenue Parcel, Regalia Parcel, and a portion of the Kottinger Place Parcel. The second phase would include the remainder of the Kottinger Place Parcel and the entire Pleasanton Gardens Parcel. MidPen has communicated frequently with the residents to inform them of their relocation rights and has engaged a relocation consultant to ensure that all relocation activities are conducted according to Federal and State laws and requirements.

Community Outreach & Engagement

An important component of the Task Force's planning process included extensive community outreach to the existing senior residents and neighbors. Since March, 2012, the Task Force has held eleven meetings to discuss the site planning and redevelopment. All of their meetings were open to members of the public and were often well-attended by interested residents and neighbors.

MidPen Housing Corporation conducted individual interviews with each existing resident to understand their likes and dislikes about their current homes and to inform them about the proposed redevelopment plans. In addition to the individual interviews, MidPen held several group resident meetings and also conducted a resident survey to receive important feedback about their interior and exterior design preferences. MidPen also met individually with many of the neighbors and held a neighborhood meeting in July, 2013. With over fifty people in attendance, neighbors received an overview of the proposed plan and were then provided an opportunity to speak directly with key members of the Kottinger Gardens design, development, and operations teams. The proposed site plan reflects the thoughtful and informative resident and neighborhood feedback received during the outreach process.

The project design respects the site's existing character, is thoughtful about building height and location in relationship to the neighborhood, and provides accessible homes in a variety of building types. These design elements reflect the invaluable input MidPen received from the Task Force, residents, and neighbors. MidPen is enthusiastic about the redevelopment of Kottinger Place and Pleasanton Gardens, and believes that the Task Force's thorough planning process and extensive community outreach have informed a well-designed project that will serve as a positive community asset for years to come.

KOTTINGER GARDENS COLOR PALETTE



GreenPoint Rated Checklist: Multifamily

The GreenPoint Rated checklist tracks green features incorporated into the home. <u>A home is only GreenPoint</u> <u>Rated if all features are verified by a Certified GreenPoint Rater through Build It Green</u>. GreenPoint Rated is provided as a public service by Build It Green, a professional non-profit whose mission is to promote healthy, energy and resource efficient buildings in California.

The minimum requirements for a GreenPoint Rated home are: Earn a total of 50 points or more; obtain the following minimum points per category: Community (6), Energy (30), Indoor Air Quality/Health (5), Resources (6), and Water (3); and meet the prerequisites A2a, E2a, H4a. (for 2008 permitted projects), J1a, N1. and Q0.

This checklist accommodates the verification of mandatory CALGreen measures but does not signify compliance unless accepted by jurisdictional authority. All CALGreen measures within the checklist must be selected as "Yes" or "n/a" for compliance with GreenPoint Rated. Build It Green is not a code enforcement agency.

The green building practices listed below are described in the GreenPoint Rated Multifamily Rating Manual. For more information please visit **www.builditgreen.org/greenpointrated**.

Multifamily New Home 2.2 / 2008 Title 24

 REQUIRED: ENTER FLOOR AREAS AND LANDSCAPED AREA BEFORE BEGINNING CHECKLIST

 Enter Total Conditioned Floor Area of the Project:
 98779

 Enter Total Non-Residential Floor Area of Project:
 0

 Percent of Project Dedicated to Residential Use
 100%

 Percentage of Site Dedicated to Landscaping
 0%



		Ā	5 S	Ene	IAQ	Res	Wat	Notes
AA. COMN	IUNITY DESIGN AND PLANNING			Possil	ole Poi	nts		
	1. Develop Infill Sites							
Yes	a. Project is an Urban Infill Development	1	1					
28.2	b. Conserve Resources by Increasing Density -15 Units Per Acre or Greater (1 Point for every additional 5 dwelling units/acre) Enter Project Density Number (In du/acre)	3	10					
TBD	c. Project Includes the Redevelopment of At Least One Existing Building	0				1		
No	d. Build on Designated Brownfield Site or City-Designated Redevelopment Area	0	1		_			
	2. Design for Walking & Bicycling							
Yes	a. Sidewalks Are Buffered from Roadways & Are 5 Feet Wide (8 Feet in Retail Areas)	1	1	1				
Yes	b. Install Traffic Calming Strategies	1	1					
Yes	c. Provide Dedicated, Covered & Secure Bicycle Storage for 15% of Residents	1	1					
Yes	d. Provide Secure Bicycle Storage for 5% of Non-Residential Tenant Employees & Visitors	1	1					
	3. Alternative Transportation							
	a. Site has Pedestrian Access Within 1/2 Mile of Community Services:						[
8	TIER 1: Enter number of services within ½ Mile:							
	1) Day Care 2) Community Center 3) Public Park							
	4) Drug Store 5) Restaurant 6) School							
	7) Library 8) Farmer's Market 9) After School Programs							
	10) Convenience Store Where Meat & Produce are Sold						[
8	TIER 2: Enter number of services within ½ Mile:						[
	Build It GraeRank 2) Place of Worship 3) Laundry/Cleangraitifamily Checklist ver		2/1.9				[1.753

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Total Targeted Points: 129



Health

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KOTTINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
4) Hardware 5) Theater/Entertainment 6) Fitness/Gym							
7) Post Office 8) Senior Care Facility 9) Medical/Dental							
10) Hair Care 11) Commercial Office or 12) Full Scale Supermarket							
Major Employer i 5 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	1		-				
ii 10 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	1	1 1					
b. Proximity to Public Transit: Development is Located Within					_		
Yes i. 1/4 Mile of One Planned or Current Bus Line Stop	1	1			-		
ii. 1/2 Mile of a Major Transit Stop (Commuter Train/Light Rail Transit System OR Two	0	1				- 1	
or More Planned/Current Bus Line Stops	0	1					
c. Reduced Parking Capacity							*
TBD i. Less than 1.5 Parking Spaces Per Unit	1	1					
Yes ii. Less than 1.0 Parking Spaces Per Unit	1	1					
4. Mixed-Use Developments							
No Tenants)	0	1					
b. Half of the Non-Residential Floor Space is Dedicated to Community Services						-	
(See AA3a)	U	10			_		
5. Outdoor Gathering Places							
Yes A. Private or Semi-Public Outdoor Gathering Places for Residents (Minimum of 50 st Per	1	1					
b. Outdoor Gathering Place of Compact Site Provides Natural Elements (mutually							and a standard terror to a standard terror
Yes exclusive with AA5a) (Projects Must Be a Minimum of 50 du/acre)	0	1					
Yes c. Public Outdoor Gathering Places have Direct Access to At Least Two Tier 1 Community	1	1					
Services (See AA3a)							
a Residence Entries Have Views to Callers (Mindows or Double Peen Holes) & Can Be	_		-		_		
Yes Seen By Neighbors	1	1					
TBD b. All Main Entrances to the Building and Site are Prominent and Visible from the Street	0	1					
7. Passive Solar Design		1					
Yes a. Provide Appropriate Orientation for Maximum Energy Efficiency	2		2				
b. Provide Appropriate Shading On All South-Facing Windows for Effective Passive Solar	0		1				
Control TRD c Provide Thermal Mass	0		2				
8 Adantable Buildings			2				
a. Include Universal Design Principles in Units							
TBD i. 50% of Units	1	1				- 1	
Yes ii. 80% of Units	1	1					
No b. Live/Work Units Include A Dedicated Commercial Entrance	0	1					20 Terr (1971)
9. Affordability							
a. Units are Dedicated to Households Making 80% or Less of AMI							
TBD i. 10% of All Units	1	1			1		
TBD ii. 25%	1	1					
Yes iii. 50% or More	1	1					
TBD b. Development Includes Multiple Bedroom Units	0	.1.					
LI Build to Build to Build the Build and	ver	2/1.9				1	

кот	INGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
No	c. At least 20% of Units at 120% or Less of AMI are For-Sale	0	1					
	Total Available Points in Community Design and Planning: 42	23						
ASITE				Poss	ible Po	oints		
A. SITE	1. Protect Tongoll and Minimize Discuntion of Existing Plants & Trees							
Vee	a Distant Tangail and Bourse After Construction	2	1			1		
Yes	a. Protect Topson and Reuse Aner Construction	1				1		
Yes	B. Limit and Delineate Construction Poolphint for Waximum Protection Divert/Decuals Leb Site Construction Waste (Including Green Waste and Evisting							
	2. Divert/Recycle Job Site Construction waste (including Green waste and Existing							
	a. Required: Divert 50% (by weight) of All Construction & Demolition Waste (Recycling	Y				R		
res	or Reuse) (CALGreen code)		_			-		
TBD	b. Divert 100% of Asphalt and Concrete and 65% (by weight) of Remaining Materials	0				2		
TBD	c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials	0				_2		
	3. Construction Environmental Quality Management Plan, Duct Sealing, and Pre-Occupancy Flush-Out [*This credit is a requirement associated with PJ1: EPA IAP]							
Yes	a. Duct openings and other related air distribution component openings shall be covered during construction. (CALGreen code if applicable)	1			1			
Yes	 b. Full environmental quality management plan and pre-occupancy flush out is conducted (Prerequisite is A5a) 	1			1			
Yes	4. Use Recycled Content Aggregate (Minimum 25%)	1			-	1		
TBD	5. Cool Site: Reduce Heat Island Effect on Site	0	1					
	Total Available Points in Site: 11	6						
B. LANDSO	CAPE			Poss	sible P	oints		
	1. Landscaping		5					
No	Is the landscape ≥ 10% of the site area? Sites with less than 10% of the total site area dedicated to landscaping can only earn up to 4 points for measure B1a through B1g. Calculate the landscape area percentage by dividing the landscape area by the total site area. Include the building footprint(s) and all other developed portions of the site up to the site boundary.							
Yes	a. Group Plants by Water Needs (Hydrozoning)	2					2	
Yes	 b. Mulch All Planting Beds to the Greater of 3 Inches or Local Water Ordinance Requirement 	2					2	
	c. Construct Resource-Efficient Landscapes							
Yes	i. No Invasive Species Listed by Cal-IPC Are Planted	0				1		
Yes	ii. No Plant Species will Require Shearing	0				1		
TBD	iii. 75% of Plants are Drought-tolerant, California Natives, Mediterranean or Other	0					З	
	A Minimize Turf in Landscape Installed by Builder							
Van	i. Turf Shall Not Be Installed on Slopes Exceeding 10% and No Overhead Sprinklers	0					2	
Tes	Installed in Areas Less than 8 Feet Wide						2	
Yes	ii. Turf Is ≤ 25% of Landscaped Area	0					2	
	e. Install High-Efficiency Irrigation Systems		-					
Yes	i. System Uses Only Low-Flow Drip, Bubblers or Sprinklers	0	-				2	
Yes	ii. System Has Smart (Weather-based) Controller (CALGreen code if applicable)	0					3	
Yes	f. Incorporate Two Inches of Compost in the Top 6 to 12 Inches of Soil	0					3	
	BBill Prigner and scape to Meet Water Budget Multifamily Checklist ver		2/1.9					

от	TINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Vec	i. Install Irrigation System That Will Be Operated at <70% Reference ET	0		1		-	1	
163	(B1a, and B1b, are Prerequisites for Credit)	-						2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
No	II. Install Imgation System That Will be Operated at <50% Reference CT (Pto, Ptb, and Pto), or Ptoil, are Prorequisites for Credit)	0					1	
Voc	b Incorporate Community Garden	1	4			-		
165	2 Source Water Efficiency		65.0		_			
No	a Lise Recycled Water for Indoor and/or Outdoor Water Lise	0		1000	_		2	
No	h Lise Reinwater for Indoor and/or Outdoor Water Lise	0					4	
NU	3. Outdoor Play Structures and Outdoor Furniture							
No	a Play Structures & Surfaces Have an Average Recycled Content ≥20%	0				1		
Vos	b. Environmentally Preferable Exterior Site Euroisbings	1				1		
Voc	4. Reduce Light Pollution by Shielding Fixtures and Directing Light Downward	1	1		-		-	
168	4. Reduce Light Pollution by Smellung Excless and Directing Light Pollution by Smellung Excless and Directing Light Pollution and Scape: 33	- 7						
				Poss	ible Po	ints		
JESIGI	1 Accurations Noise and Vibration Control			1 000			-	
	(minimum 2 points for credit including 1 Tier 1 measure maximum of 4 points)							1
TBD	TIER 1: 1) Exterior Noise Reduction	0	1	-				
Yes	2) Loud Single-Event Noise Reduction in Noise-Sensitive Spaces	1	1					
Yes	3) Airborne and Structure-borne Noise Reduction (e.g., walls, floor-ceilings)	1	1					
Yes	4) Mechanical Ventilation Noise and Vibration Control	1	1					
Yes	5) Plumbing Noise and Vibration Reduction	1	1				1	
TBD	TIER 2: 1) Minimize Stair Impact Noise	0	0.5			-		
TBD	2) Minimize Floor Squeaks	0	0.5					
TBD	3) Minimize Trash Chute Noise	0	0.5					
TBD	4) Mixed-Use Noise and Vibration Reduction	0	0.5					
	2 Mixed-Use Design Strategies							
TBD	a Develop Green Tenant Improvement Requirements for Build Outs	0	2					
TBD	b Commercial Loading Area Senarated from Residential area	0			1			
TRD	c Senarate Mechanical and Plumbing Systems	0			1			
	3 Commissioning		-				- 1	
	a. Design Phase (Define Owner's Project Requirements, Basis of Design, and Develop	0		- a.			-	
TBD	Plan)	U		1	1			
TBD	b. Construction Phase (Perform Functional Testing)	0		2				
TRD	c. Post-Construction Phase (Verify Compliance, Commissioning Report, Training and	0	1	1				
	Warranty Review)			- S - L				
	Total Available Points in Design Considerations: 14	4		Deee				
FOUND	ATION, STRUCTURAL FRAME & BUILDING ENVELOPE		Possible Points					
≥20%	1. Replace Portland Cement in Concrete with Recycled Fly Ash and/or Slag	2				3		
	(Minimum 20%)							
TBD	2. Design, Build and Maintain Structural Pest and Rot Controls (for low-	0			1 1			
100	2 Construction Material Efficiencies							
	a Wall and Floor Assemblies (excluding solid wall assemblies) are Delivered Panelized	_	1		-			
TBD	from Supplier (Minimum of 80% square feet)	0				1		

KOTTINGER GARDENS (DRAFT) 1/13/14	Points Achieved	mmunity	lergy	Q/Health	sources	ater	
		ပိ	ᇤ	≧∣	r a c	Š	Notes
c. Optimal Value Engineering							
Yes i. Studs at 24 Inch on Center at Interior Non-Bearing Walls and Top Floor	1				1		
Yes ii. Door & Window Headers Sized for Load	1				1		
TBD iii. Use Only Cripple Studs Required for Load	0				1		
4. Use Engineered Lumber							
TBD a. Engineered Beams and Headers	0				1		
Yes b. Wood I-Joists or Web Trusses for Floors	1				1		
TBD c. Engineered Lumber for Roof Rafters	0		- 4		1		
TBD d. Engineered or Finger-Jointed Studs for Vertical Applications	0				1		
Yes e. Oriented Strand Board for Subfloor	1				1		
TBD f. Oriented Strand Board for Wall and Roof Sheathing	0				1		
TBD 5. Insulated Headers	0		1	-			E CATALON CONTRACTOR AND
6. Use FSC-Certified Wood							
TBD a. Dimensional Lumber, Studs and Timber (Minimum 40%)	0				4		
TBD b. Panel Products (Minimum 40%)	0				2		6.0 W
Yes 7. Energy Heels on Roof Trusses for Low-Rise Projects	1		1		1		
8. Use Solid Wall Systems (Includes SIPS, ICFs, & Any Non-Stick Frame		1				-	
Assembly)		1					
TBD a. Floors	0				2		
TBD b. Walls	0	2			2		
TBD c. Roofs	0				1		
Total Available Points in Foundation, Structural Frame & Building Envelope: 34	7						
E. EXTERIOR			Possi	ble Po	ints		
1. Drainage Planes and Durable Siding							
TBD a. Install a Rain Screen Wall System	0				2		
Yes b. Use Durable and Non-Combustible Siding Materials	1				1		
2. Durable Roofing Options							
a. <i>Required:</i> All Roofing Has 3-Year Subcontractor Warranty and a 20-Year Manufacturer	Y				R		
Warranty							
Yes b. Use Durable and Fire Resistant Rooting Materials or Assembly	1				1		
IBD 3. vegetated Root (2 points for 25%, 4 points for 50%)	0	4				-	
Total Available Points in Extendr. o	2	1	Doppi	blo Do	into		
F. INSULATION			F0551	DIE PO	1115		
1. Install insulation with 75% Recycled Content	0			-	4		
IBD a. Waiis	0					-	
TBD D. Gellings	0				4		
IBU C. FIOOTS	0			- de la			
	0		Poeei	hle Po	inte		
i, PLUMBING 1. Water Efficient Eivtures			10551	UIE FU	1113		
a. Install High Efficiency Toilets (Dual Flush or ≤ 1.28 Gallons Per Flush (gpf)) (CALGreen code if applicable)			_				
Yes i. In All Residences	2				_	2	
Yes Build H. Green Non-Residential Areas Multifamily Checklist ver	0	2/1.9				0	

кот	TINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	b. High Efficiency Urinals or No-Water Urinals Are Specified:							
Yes	i. Average Flush Rate is ≤0.5 gpf (CALGreen code if applicable)	1					- 1	
TBD	ii. Average Flush Rate is ≤0.1 gpf	0					1	
	c. High Efficiency Showerheads Use ≤ 2.0 Gallons Per Minute (gpm) at 80 psi (CALGreen code if		-	-		-		
Yes	applicable)	3					3	
-	d. Flow Limiters Or Flow Control Valves Are Installed on All Faucets							
Yes	i, Residences: Kitchen - ≤ 1.8 gpm (CALGreen code if applicable)	1					1	
Yes	ii. Non-Residential Areas: Kitchen - < 1.8 gpm (CALGreen code applicable)	0					0	
Vec	iii Residences: Bathroom Faucets- < 1.5 gpm at 60psi	1					1	
165	iv Non-Residential Areas: Bath Faurets - < 5 nm or 25 nal for meter faurets (CAI Green	- · -				50 - E	NGC .	
TBD	code if applicable)	N					0	
	2. Distribute Domestic Hot Water Efficiently (G2a is a Prerequisite for credit for		-					
	G2 b-e. Maximum 5 Points)							· · · · · · · · · · · · · · · · · · ·
	a. Insulate All Hot Water Pipes	0	20 A 12	- an 1	30		1	
IBD	[*This credit is a requirement associated with PJ1: EPA IAP]	U		4.			1	
TBD	b. Use Engineered Parallel Plumbing	0				1	1	
TBD	c. Use Engineered Parallel Plumbing with Demand Controlled Circulation Loop(s)	0					1	
TRO	d. Use Traditional Trunk, Branch and Twig Plumbing with Demand Controlled Circulation	0		1			2	
IBD	Loop(s)	0		-			-	- <u> </u>
TBD	e. Use Central Core Plumbing	0		1	_	1	1	
No	3. Water Submetering: Bill Tenants for Actual Usage	0				-	4	
	Total Available Points in Plumbing: 18	8						
H. HEATIN	G VENTILATION AND AIR CONDITIONING			Poss	ible Po	ints		
No	1. Install High Performing Zoned Radiant Hydronic Heating	0		î	2			
TPD	2. Install High Efficiency Air Conditioning with Environmentally Preferable	0	4					
TBD	Refrigerants	Ŭ						
	3. Advanced Ventilation Practices for Cooling							
TBD	a. Operable Windows or Skylights Are Placed To Induce Cross Ventilation In At Least One	0		1	1			
100	Room In 80% of Units	1000						· · · · · · · · · · · · · · · · · · ·
	b. Mechanical Ventilation System for Cooling:			246 1				
TBD	i. ENERGY STAR Ceiling Fans and Light Kits in Living Areas & All Bedrooms	0		1			i	
TBD	ii. Whole House Fan (CALGreen code if applicable)	0		1			1	
	4. Advanced Mechanical Ventilation for IAQ			_				
Yes	a. Required: Compliance with ASHRAE 62.2 Mechanical Ventilation Standard (As	Y			R		3	
	Adopted in Title 24 Part 6). N/A for projects permitted under 2005 Title 24.	- 0			1000			
TBD	D. Advanced Ventilation Practices (Continuous Operation, Sone Limit, Minimum Efficiency,	0			1			
TOO	Minimum Ventilation Rate, Homeowher Instructions)	0			2			
	d. ENERCY STAP Bathroom Fans on Timer or Humidistat (CAI Groop code if applicable)	1			1			
res	u. ENERGY STAR Datition Fans for Controlled by Carbon Menovide Sensor	-						
Nie	Densive Ventilation Not Elizible)	0			1			
140	(Fassive ventilidition inot engine)				3 8		-	
	ן וזוס טובעוניס מ ובקעוובווקזו מסטטומנכע אונו דעד. ברא וארן							
Yes	6. Install Carbon Monoxide Alarms (or No Combustion Appliances in Living Space and No Attached Garage) [*This credit is a requirement associated with PJ1: EPA IAP]	1			1			
	Build It Green Total Available Points in Heating Ventilation and Anic Conditioning via	2	2/1.9		_			

KOTTINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
			Poss	sible P	oints		
TRD 11 Solar Hot Water System Preheats Domestic Hot Water	0		4				
2. Offset a Percentage of the Project's Estimated Electricity Demand with							
Ansite Penawshie Constation							
Vec a 50% of Common Area Load	4	2	2				54 DHMAN
All	0	2	2				N-80. 2 80.00
No 5.30% of common Alea Load	0	2	2				
Total Available Points in Renewable Energy 16	4	2	2				
I BUILDING BEBEODMANCE			Poss	ible Pr	ninte		
J. BUILDING FERFORMANCE			1 033	Sible I V	Jano		
1. Building Performance Exceeds Title 24							
2008 Is project permitted under 2005 Title 24 or 2008 Title 24?							
Enter the Percent Better I han 1 itle 24 for Residential and Non-Residential Portions of the							
Project.	-			9			
15% a. Required: Residences: Minimum 15% Better Than The 24. 2 Points for Every 1%	30		30+				
Bluer I nan Hule 24 b Non-Desidential Snaces: 1 Point for Every 1% Better Than Title 24 adjusted for square							45
15% fortage	0		1+				
2 Building Envelope Diagnostic Evaluations	- 1	-					
a Durt Testing Results in Leakage < 6%		-	1.1		2.23		
TBD [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
b. Blower Door Testing Results for Air Change per Hour is < 3.5 ACH ₅₀	0		2				
TBD [*This credit is a requirement associated with PJ1: EPA IAP]	U		2				2
c. Verify Quality of Insulation Installation & Thermal Bypass Checklist before Drywall	0		- 15				
[*This credit is a requirement associated with PJ1: EPA IAP]	Ŭ		<i>(</i> 0				
TRD 3. Design and Build Near Zero Energy Homes	0		6				
(Enter number of points, minimum of 2 and maximum of 6 points)				-			
Yes 4. Title 24 Prepared and Signed by a CABEC Certified Energy Plans Examiner (CEPE)	1		1	_			
5. Participation in Utility Program with Third Party Plan Review				_			
TBD a. Energy Efficiency Program [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
TBD b. Renewable Energy Program with Min. 30% Better Than Title 24 (High Performing Home)	0		1				
Total Available Points in Building Performance: 43+	31						
K. FINISHES			Poss	sible Po	pints		
1. Entryways							
Yes a. Design Entryways to Reduce Tracked-In Contaminants for All Home Entrances	1			1			
b. Permanent Walk-Off Systems Are Provided at All Main Building Entrances & In	0			4			
TBD Common Areas	U			1	_		
TBD 2. Use Recycled Content Paint	0				1		
3. Low/No-VOC Paints & Coatings							
[*This credit is a requirement associated with PJ1: EPA IAP]							
a. Low-VOC Interior Wall/Ceiling Paints (<50 grams per liter (gpl) VOCs regardless of							
sheen) (CALGreen code if applicable)				4	-	-	
Yes i. In All Residences	1			1		_	
Yes ii. In All Non-Residential Areas	0			0			
b. Zero-VOC: Interior Wall/Ceiling Paints (<5 gpl regardless of sheen)							
TBD i. In All Residences	0			1			
TBD Build it grau Non-Residential Areas Multifamily Checklist ver	0	2/1.9		0			

KOTTINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes		
c. Use Low-VOC Coatings That Meet SCAQMD Rule 1113 (CALGreen code if applicable)									
Yes i. In All Residences	2			2					
Yes ii. In All Non-Residential Areas	0			0					
4. Use Low VOC Caulks, Construction Adhesives and Sealants that Meet	1			4					
SCAQMD Rule 1168 (CALGreen code if applicable)		_		<u>.</u>					
5. Environmentally Preferable Materials for Interior Finish: A) FSC-Certified Wood, B) Reclaimed Lumber, C) Rapidly Renewable, D) Recycled- Content, E) Finger-Jointed, or F) Local a. Residences: At Least 50% of Each Material:									
TBD i. Cabinets	0				4				
TBD ii. Interior Trim	0				2	_			
TBD iii. Shelving	0			1	2				
TBD iv. Doors	0				2	-			
TBD v. Countertops	0				2				
b. Non-Residential Areas: At Least 50% of Each Material:									
TBD i. Cabinets	s 0 0								
TBD ii. Interior Trim	0				0				
TBD iii. Shelving	0				0	}			
TBD iv. Doors	0				0				
TBD v. Countertops	0				0				
6. Reduce Formaldehyde in Interior Finish – Meet Current									
Yes CARB Airborne Toxic Control Measure (ATCM) for Composite Wood	Y			0					
Formaldenyde Limits by Mandatory Compliance Dates (CALGreen code if applicable)	1								
7 Reduce Formaldehyde in Interior Finish - Exceed Current CARB ATCM					_	- 1			
for Composite Wood Formaldehyde Limits Prior to Mandatory									
Compliance Dates							· · · · · · · · · · · · · · · · · · ·		
a. Residences: At Least 90% of Each Material:									
Yes i. Doors	1			1					
Yes ii. Cabinets and Countertops	2			2					
TBD iii. Interior Trim and Shelving	0			1					
b. Non-Residential Areas: At Least 90% of Each Material									
Yes i. Doors	0		1	0					
Yes ii. Cabinets and Countertops	0			0					
Yes iii. Interior Trim and Shelving	0			0					
8. Durable Cabinets									
Yes a. Residences	1				1				
Yes b. Non-Residential Areas	0				0				
Yes 9. At Least 25% of All Newly Supplied Interior Furniture has	1				ĩ				
Environmentally Preferable Attributes									
I otal Available Points in Finishes: 26	10		Derell		inter .	_			
L. FLOORING		_	Possi	he Po	INTS		10 S S 2 2 3		

KOTTINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	AQ/Health	lesources	Vater	Notos
1. Use Environmentally Preferable Flooring (Minimum 15% of Floor Area) A) FSC-Certified Wood, B) Reclaimed or Refinished, C) Rapidly Renewable, D) Recycled- Content, E) Exposed Concrete, or F) Local. <i>Flooring Adhesives Must Meet SCAQMD</i> <i>Rule 1168 for VOCs</i>						>	Notes
TBD a. Residences	0				4		
≥50% b. Non-Residential Areas	0				0		
2. Low-Emitting Flooring		1					
[*This credit is a requirement associated with PJ1: EPA IAP]							
Yes (Partian 01250, CPI Crosp Label Diver Electropeta)	2			2		- ŝ	
b Non-Residential Areas: Low-Emitting Flooring (50% Minimum)						-	
Yes (Section 01350, CRI Green Label Plus, Floorscore)	0			0			
Yes 3. All carpet and 50% of Resilient Flooring is low emitting. (CALGreen code if applicable)	Y			0			
Total Available Points in Flooring: 6	2	1					
M. APPLIANCES & LIGHTING			Poss	ible Po	oints		
1. ENERGY STAR Appliances							
TBD a. Install ENERGY STAR Dishwasher (Must Meet Current Specifications)	0		1			1	
b. install ENERGY STAR Clothes Washer							
i. Meets ENERGY STAR and CEE Tier 2 Requirements	3		4			2	
(Modified Energy Factor ≥2.0; Water Factor ≤6.0) (Total 3 Points)						~	
TBD ii Meets ENERGY STAR and CEE Tier 3 Requirements	0					2	
(Modified Energy Factor 22.2; Water Factor 54.5) (Total 5 Points)							
C. Install ENERGY STAR Reingerators in All Locations	1		1				· · · · · · · · · · · · · · · · · · ·
Yes I. ENERGY STAR-Qualified & < 20 Cubic Feel Capacity			1				
Tes II. ENERGY STAR-Qualities & 20 Cubic Feet Capacity	1		-		1		· · · · · · · · · · · · · · · · · · ·
Yes 2, Common Laundry Facilities Are Provided for All Occupants					1		
IBD S. Provide Built-In Recycling Center in Each Residential Onic	0	1 222			1		
Yes Replaced	1				1		
Yes b. Low-Mercury Products Are Installed Wherever Compact Fluorescent Lamps Are Used or Replaced	1				t.		
5. Install High-Efficacy Lighting and Design Lighting System							
Yesa. Install High-Efficacy Lighting	1		1				
TBD b. Install a Lighting System to IESNA Footcandle Standards or Hire Lighting Consultant	0		1				
TBD 6. Gearless Elevators Are Installed	0		1				
Total Available Points in Appliances & Lighting: 16	9						
N. OTHER			Poss	ible Po	oints		
Yes 1. Required: Incorporate GreenPoint Rated Checklist in Blueprints	Y	R					
[This credit is a requirement associated with PJ1: EPA IAP]	1						
Yes Z. Pre-Construction Kick-Off Meeting with Kater and Subs					_		
3. Operations & Maintenance Manuals and Training (*This credit is a requirement associated with D [1: EDA [AD]							
Ves a Provide O&M Manual to Building Maintenance Staff (CAL Green code if applicable)	1		1				
Vas philipmytrie OEM Manual to Occupants and Orientation Multitamily Obseldiation	2	2/1 0	1			1	
		211.3				<u></u>	

кот	TINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	4. Residents Are Offered Free or Discounted Transit Passes	0	2				-	
Yes	5. Educational Signage of Project's Green Features	1	1					
Yes	6. Install Home/Building System Monitor(s)	1		1				
Yes	7. Use Vandalism Deterrence Practices and Develop Vandalism Management Plan	1	1			1		
	Total Available Points in Other: 9	7						
Q (Not Us	ed)							
P INNOV	ATIONS			Poss	ible Po	ints		
1.111000	A. Site							
	1. Stormwater Control: Prescriptive Path (Maximum of 3 Points, Mutually Exclusive With PA2)							
TBD	a. Use Permeable Paving for 25% of Driveways, Patios and Walkways	0	1					
Yes	b. Install Bio-Retention and Filtration Features	2	2					
Yes	c. Route Downspout Through Permeable Landscape	1	1					
Yes	d. Use Non-Leaching Roofing Materials	0	1					
TBD	e. Include Smart Street/Driveway Design	0	1					
<u> </u>	2. Stormwater Control: Performance Path (Mutually Exclusive With PA1):	0						
TBD	Perform a Soil Percolation Test and Capture and Treat 85% of Total Annual Runoff	0	3		i i i			
	D. Foundation, Structural Frame and Building Envelope					0		
TBD	1. Use Radon Resistant Construction [*This credit is a requirement associated with PJ1; EPA IAP]	0			2			
TBD	2. Install a Foundation Drainage System [*This credit is a requirement associated with PJ1: EPA IAP]	0				2		
TBD	3. Moisture Controlled Crawlspace [*For projects with crawlspaces, this credit is a requirement associated with PJ1: EPA IAP]	0			2			
	E. Exterior							
Vee	1. Flashing Installation Techniques Specified and Third-Party Verified	1				1		
res	[*This credit is a requirement associated with PJ1: EPA IAP]	· ·				2 1	12	
	H. Heating Ventilation and Air Conditioning							
TBD	1. Design and Install HVAC System to ACCA Manual J, D, and S Recommendations (CALGreen code if applicable) [*This credit is a requirement associated with PJ1: EPA IAP]	0		4				
TBD	 Pressure Relieve the Ductwork System (Mutually exclusive with H1) ["For projects with ducted systems, this credit is a requirement associated with PJ1: EPA IAP] 	0		1		_		·
Yes	3. Install High Efficiency HVAC Filter (MERV 6+, Mutually exclusive with H1.) [*This credit is a requirement associated with PJ1: EPA IAP]	1	0	1				
	J. Building Performance							<u></u>
TBD	Obtain EPA Indoor airPlus Certification (Total 39 possible points, not including Title 24 performance; read comment) (Total 39 possible points, not including Title 24 performance; read comment)	0		2				
TBD	2. I hird-Party Testing of Mechanical Ventilation Rates for IAQ (Meet ASHRAE 62.2) [*This credit is a requirement associated with PJ1: EPA IAP]	0			2			
TBD	3. ENERGY STAR New Homes: High-Rise Pilot Program	0		1	_			
	K. Finishes							
Yes	11. Use Moisture Resistant Material in Wet Areas: Kitchens, Bathrooms, Utility Rooms and Basements	2			1	1		
TOD	[This credit is a requirement associated with PJ1; EPA IAP]	0	1		-	5		
	Duild it Green Multifamily Checklist ver	SION 2	2/1.9	1		5		

кот	TINGER GARDENS (DRAFT) 1/13/14	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	N. Other							
	 Innovation: List innovative measures that meet green building objectives. Enter in the number of points in each category in the blue cells for a maximum of 4 points for the measure. The "points achieved" column will be automatically fill in based on the sum of the points in each category. Points and measures will be evaluated by Build It Green. 							
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0	1	1				
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0				1		
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0	1					
	Total Available Points in Innovation: 26+	7						
Q. CALGI	een CODE			Poss	ible Po	pints		
No	0. Home meets all applicable CALGreen measures listed in above Sections A - P of the GreenPoint Rated checklist.	N	R					
	The following measures are mandatory in the CALGreen code and do not earn points in the GreenPoint Rated Checklist but have been included in the Checklist for the convenience of jurisdictions. The GreenPoint Rater is not a code enforcement official. The measures in this section may be verified by the GreenPoint Rater at their own discretion and/or discretion of the building official.							
TPD	1 CALGreen 4 106 2 Storm water management during construction	N	-		-			
TPD	2 CALGreen 4 106 3 Design for surface water drainage away from buildings	N						
TBU	Z. CALGIEEIT4. 100.5 Design for sundee water draininge undy norr summinger					-		
TBD	 CALGreen 4.303.1 As an alternative to perscriptive compliance, a 20% reduction in baseline water use shall be demonstrated through calculation 	N						
TBD	 CALGreen 4.406.1 Joints and openings. Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected 	N						
TBD	 CALGreen4.503.1 Gas fireplace shall be a direct-vent sealed-combustion type. Woodstove or pellet stove shall comply with US EPA Phase II emission limits 	N						
TBD	 CALGreen 4.505.2 Vapor retarder and capillary break is installed at slab on grade foundations. 	N						
TBD	7. CALGreen 4.505.3 19% moisture content of building framing materials	N						
TBD	 CALGreen 702.1 HVAC system installers are trained and certified in the proper installation of HVAC systems. 	N						
	Total Available Points in CALGreen Code: 0	0						
Summ	arv							
	Total Available Points		62	86+	35	87	48	
	Minimum Points Required	sion 2	2/19	30	5	6	3	1

KOTTINGER GARDENS (DRAFT) 1/13/14

Total Points Achieved 129 36 44 15

Points Achieved

Community

IAQ/Health

Energy

Resources

19

Water

15

Notes

Project has not yet met the recommended minimum requirements

Sec. 2010 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100 - 100

- Required measures.

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CLIMATE ACTION PLAN CHECKLIST

Project Name: KOTTINGER GARDENS Project Address: 240, 251 Kottinger Drive; 4138 Vineyard Ave; 4133 Regalia ct.

Case No.	: P14-0011	Residential Units: 18	Sqft.	of C	om./S	Senior housing: 162,500	
	Gre	Project Aspects that redu enhouse Gas (GHG) Err	uce hissions	Yes	No	N/A	Comments
LU1: Sup	port Infill and H	ligh Density Develop	nent				
LU1-2	Project is infill devel reinforce, and repair	opment within the existing ur the surrounding area.	ban fabric that helps complete,	x			
LU1-3	Project is mixed-use residential units con activity areas. (Appli	development which incorpo sistent and with the Downtov ies to projects in the downtov	rates higher density and affordable wn Specific Plan with easy access to wn area only).	x			NOT FULL MIX-USE BUT DOES INCREASE DENSITY
LU1-4	Project is transit-orie corridors, in busines	inted development near BAF s parks, and/or in the downt	₹T station, along transportation own area.			x	
LU1-5	Project is high densi employment centers	ty development near and/or	around transportation hubs and	X			
LU1-6	Project is TOD (tran rail, BART, and othe	sit oriented development): lo	cated within 1/4 mile of commuter			x	
LU1-7	Project incorporates	affordable housing on a vac	ant infill site.	X			
LU2: Sup	port Mixed-use	Infill and New Develo	opment near Local-serving				
Commer	cial Areas		· · · · · · · · · · · · · · · · · · ·				
LU2-1	Project is located wi	thin convenient walking dista	ance to work, residences, and	x			
	Project provides nev	v housing and/or new emplo	yment located within 1/2-mile			<u>+</u>	
LU2-2	walking/biking proxir institutional, or recre	nity of complementary land in ational.	uses, including retail, employment,	x			
LU2-4	Project reconnects s requirements; and ir development near P	treets and adds streets; min icludes attractive and function leasanton BART station in H	imizes parking to below code onal urban plazas, (Applies to lacienda and development near	×			DOES RECONNECT AND ADDS URBAN PI AZAS BUT IS NOT NEAR BART
1112.0	Project includes live	KD.		+ ^^-			
1112 10	Project includes live	-WORK units.			<u>^</u>		
LU2-10	Project incorporates	elements of LEED for Neigr	Iborhood Development (LEED ND)	^			
LU3: Imp	rove I ransporta	ation Efficiency throu	gh Design Improvements			_	
LU3-1	Project provides key clusters or areas. (A	pplies to non-residential pro	alking distance of residential ects)			x	
LU3-2	Project provides buil that encourage trans	ding, landscape, and streets sit, bicycle, and pedestrian a	ccess.	х			NEW CONNECTING PATHS TO THE PARK AND TRAIL
LU3-3	Project encourages	transit use and provides ped	lestrian and bicycle facilities	X			
LU3-4	Project provides infra and predicting arriva shelters.)	astructure to facilitate 'NextE I times. (Applies to projects	lus' technologies for tracking buses that include two or more bus	x			2 BUS STOPS
LU3-5	Project provides stre AB 1358 Complete S pedestrians, bicyclis	et improvements that meet Streets and increase the safe ts, motorists, and transit ride	the municipal street standards and ety, convenience, and efficiency of ers.	x			NEW PEDESTRIAN CROSSWALK
LU3-6	Project includes peo except where prohib	lestrian and bicycle access ited by topography.	through cul-de-sacs in new projects,	X			MULTIPLE PATHS
LU3-7	Project includes neig through traffic and tr increase safety for p	hborhood traffic calming to affic-related noise, improve edestrians, bicyclists, and y	slow traffic speeds, reduce cut- the aesthetics of the street, and	x			
TR1 Imp	rove and increa	ee Traneit Ridershin	with Incentives				
Partnersh	nips, and Relate	d Investments	with incentives,				
TR1-6	The project offers dia through the HOA dua	scounted transit passes as p es. (Applies to residential de	part of HOA amenities, payable evelopment within 1/2 mile of transit.)		x	
	Gre	Project Aspects that red enhouse Gas (GHG) Em	uce	Yes	No	N/A	Comments

	100	110	1.007.5	Commenta
TR1-9 The project includes a condition of approval to limit diesel vehicle idling. (Applies to	v			
projects with associated bus or truck traffic.)	X			WILL INCORPORATE ONE
NM1: Enhance and Maintain a Safe, Convenient, and Effective System				

for Pedestrians and Bicyclists

NM1-1	Project provides a community trail, bike lane, staging area or other facility consistent with the Community Trails Master Plan or the Pedestrian and Bicycle Master Plan.	x			
NM1-4	Project provides bicycle-related improvements (i.e., work-place provision for showers, bicycle storage, bicycle lanes, etc.).			x	
NM1-5	Project provides bike parking. (Applies to non-residential and multi-family projects.)	Х			
NM1-7	Project provides bicycle detection at signalized intersections.		X		
NM1-8	Project provides safe and convenient bike racks. (Applies to private schools, business and office projects.)	х			
NM1-9	Project completes a section of the Iron Horse Trail. (Applies to developments adjacent to the trail location.)			х	
NM1-10	Project contributes to the bicycle/pedestrian underpass at 580/680 interchange (Johnson Drive canal) for connection to Dublin. (Applies to new projects in the immediate vicinity.)			x	

TDM1: Use Parking Policy/Pricing to Discourage Single Occupancy

Vehicle (SOV) Travel

TDM1-1	Project shares parking with adjacent use to reduce paved areas that contribute to urban heat islands and reduce stormwater infiltration.	х		SENIORS .8 RATIO
TDM1-2	Project separates fee-based parking from home rents/purchase prices or office leases. (Applies to projects within 1/2 mile of BART stations to increase housing and office affordability for those without a car or cars.)		x	
TDM1-3	Project tenants will participate in the City's TSM program to reduce auto trips. (Applies to non-residential projects.)		x	
TDM1-5	Project will participate in a parking demand management program.	X		
TDM1-6	Project provides one or more electric charging stations for plug-in vehicles.	Х		
TDM1-7	Project provides motorcycle or scooter parking. (Applies to projects located in Downtown.)	х		

TDM2: Promote Alternatives to Work and School Commutes

TDM2-4	Project provides a neighborhood telecommuting center.		X		
TDM2-7	Project provides transit passes or other transit use incentives for an interim period to establish transit use patterns for employees. (Applies to new non-residential projects of more than 20,000 s.f. within 1/4 mile of transit)			x	
TDM2-10	Project provides dedicated parking spaces for carpool, vanpool, alternative-fuel, and car-share vehicles.	х			
TDM2-11	Project incorporates a car-sharing service.		X		

EC1: Use City Codes, Ordinances and Permitting to Enhance Green

Building, Energy Efficiency, and Energy Conservation

EC1-1	Project meets LEED <i>Certified</i> rating level and achieves 25% above T-24, and incorporates new requirements for shade trees, cool roofs and landscape lighting. (Applies to civic projects and commercial projects over 20,000 s.f.)			x	THIS PROJECT WILL MEET A LEED RATING LEVEL
EC1-2	Project meets the City's residential green rating standard, including 25% above T- 24, and incorporates new requirements for shade trees, cool roofs and landscape lighting. (Applies to residential projects.)	x			THIS PROJECT WILL MEET A LEED RATING LEVEL
EC1-3	Project provides light-colored paving material for roads and parking areas, as well as parking lot shade trees.		х		

	Project Aspects that reduce Greenhouse Gas (GHG) Emissions	Yes	No	N/A	Discussion
EC4: Dev	elop Programs to Increase Energy Efficiency and Conservation				
EC4-4 ER1: Imp	Project incorporates solar tubes, skylights, and other daylighting systems within the design . blement Local Ordinances and Permitting Processes to Support		x		
Renewat	ble Energy				
ER1-1	Project provides residential renewable energy installations (e.g., wind turbines). (Applies to residential projects.)	x			SOLAR
ER2: Dev	elop Programs to Promote On-Site Renewable Energy in the				
Commun	iity				
ER2-3	Project incorporates distributed generation, especially PV, solar thermal, solar hot water, and solar cooling, and/or providing bloom box or other fuel cell technologies.	x			

ER2-5	Project includes a solar grid to power one or more EV charging stations.		X	
SW2: Ind Associat	crease Recycling, Organics Diversion, and Waste Reduction ted with the Entire Community			
SW2-12	Project provides adequate space and logistics for handling of recyclable and compostable materials. (Applies to commercial and multifamily residential projects.)	x		
VA1: Co Design a	onserve Community Water through Building and Landscape and Improvements			
WA 1-7	Project incorporates a water-saving landscape plan that includes xeriscaping and drought-resistant planting in lieu of lawns.	x		DROUGHT TOLERANT SPECIES
WA 1-8	Project limits lawn areas to designated play areas.	x		COMMUNITY GARDENS INCORPORATED INTO SITE
VA3: Ind	crease or Establish use of Reclaimed/Grey Water Systems			
WA3-2	Project utilizes reclaimed wastewater.		X	
WA3-4	Project incorporates rain harvesting.			

EXHIBIT E

Preliminary Tree Report

Kottinger Senior Housing Project Pleasanton, CA

Prepared for: MidPen Housing Corp. 303 Vintage Park Dr. Suite 250 Foster City, CA 94404

> Prepared by: HortScience, Inc. 325 Ray St. Pleasanton, CA 94566

> > July 3, 2013



Preliminary Tree Report Kottinger Place Pleasanton, CA

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Preliminary Tree Report Kottinger Senior Housing Project Pleasanton, CA

Introduction and Overview

MidPen Housing is planning to redevelop four properties in Pleasanton: Kottinger Place, Pleasanton Gardens, Regalia House, and 4138 Vineyard Ave. Kottinger Place and Pleasanton Gardens are active low-income senior housing units; Regalia House contains one building, and 4138 Vineyard Ave. is a mostly cleared empty lot. HortScience, Inc. was asked to prepare a **Preliminary Tree Report** for the site as part of the development application to the City of Pleasanton. This report is preliminary in nature as the plans are in conceptual stage and accurate tree trunk locations have yet to be established.

This report provides the following information:

- 1. An evaluation of the health and structural condition of the trees within and adjacent to the proposed project area based on a visual inspection from the ground.
- 2. A preliminary assessment of the development impacts to the trees based on the plans provided by the client.
- 3. Preliminary guidelines for tree preservation during the design, construction and maintenance phases of development.

Tree Assessment Methods

Trees were assessed in June 2013. The survey included trees 6" in diameter and greater, located within the proposed project area. Trees located off-site that were either near the proposed project or had canopies extending over the site were included. The assessment procedure consisted of the following steps:

- 1. Identifying the tree as to species;
- 2. Tagging each tree with an identifying number and recording its location on a map;
- 3. Measuring the trunk diameter at a point 4.5' above grade;
- 4. Evaluating the health and structural condition using a scale of 1 5:
 - **5** A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
 - 4 Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
 - 3 Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
 - 2 Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
 - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
- 5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come.

- *High*: Trees with good health and structural stability that have the potential for longevity at the site.
- *Moderate*: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'good' category.
- *Low*: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

City of Pleasanton Urban Tree Protection Requirements

The Pleasanton Municipal Code Chapter 17.16 controls the removal and preservation of heritage trees within the city. Heritage trees are defined as:

- 1. Any single-trunked tree with a circumference of 55" (18" in diameter) or more measured four and on half feet above ground level;
- 2. Any multi-trunked tree of which the two largest trunks have a circumference of 55" or more measured four and one half feet above ground level;
- 3. Any tree 35' or more in height;
- 4. Any tree of particular historical significance specifically designated by official action;
- 5. A stand of trees, the nature of which makes each dependent upon the other for survival or the area's natural beauty.

All trees with heritage designation are protected and require a permit for removal.

Description of Trees

The project site was characterized by a diverse tree population. One hundred seventy-seven (177) trees representing 52 species were evaluated (**Table 1**). All but seven trees were planted in the landscape surrounding the homes and in the adjacent Kottinger Village Park and adjacent private residences. Descriptions of each tree are found in the *Tree Assessment Form* and approximate locations are plotted on the *Tree Assessment Map* (see Exhibits).

Common name	Scientific name	Condition			
		Poor	Fair	Good	Total
		(1-2)	(3)	(4-5)	
Bailey acacia	Acacia baileyana	1	-	-	1
Blackwood acacia	Acacia melanoxylon	-	1	-	1
Silver maple	Acer saccharinum	-	-	1	1
Strawberry tree	Arbutus unedo	-	-	1	1
European white birch	Betula pendula	2	-	-	2
Incense cedar	Calocedrus decurrens	-	1	-	1
Catalpa	Catalpa sp.	3	4	1	8
Hackberry	Celtis occidentalis	-	-	1	1
Chitalpa	Chitalpa tashkentensis	-	1	-	1
Arizona cypress	Cupressus arizonica	-	1	-	1

Table 1. Condition Ratings and Frequency of Occurrence of Trees Kottinger Senior Housing Project, Pleasanton, CA

Common name	Scientific name		on		
		Poor (1-2)	Fair (3)	Good (4-5)	Tota
Cabbage tree	Cordyline australis	-	1	-	1
Bronze loquat	Eriobotrya deflexa	-	1	-	1
River red gum	Eucalyptus camaldulensis	3	5	1	9
Silver dollar gum	Eucalyptus polyanthemos	-	4	2	6
Raywood ash	Fraxinus augustifolia 'Raywood'	-	3	5	8
Modesto ash	Fraxinus velutina	3	6	-	9
Ginkgo	Ginkgo biloba	-	1	1	2
California black walnut	Juglans nigra	1	3	-	4
English walnut	Juglans regis	-	2	-	2
Hollywood juniper	Juniperus chinensis 'Torulosa'	-	2	-	2
Crape myrtle	Lagerstroemia indica	-	-	1	1
Glossy privet	Ligustrum lucidum	1	1	1	3
Sweetgum	Liquidambar styraciflua	-	10	1	11
Southern magnolia	Magnolia grandiflora	-	1	2	3
Mayten	Maytenus boaria	2	3	-	5
Avocado	Persea americana	-	1	-	1
Canary Island date palm	Phoenix canariensis	-	-	1	1
Colorado spruce	Picea pungens	-	-	1	1
Canary Island pine	Pinus canariensis	-	4	16	20
Aleppo pine	Pinus halepensis	1	3	_	4
Italian stone pine	Pinus pinea	1	1	-	2
Monterev pine	Pinus radiata	1	-	-	1
Scots pine	Pinus sylvestris	1	_	-	1
London plane	Plantanus x hispanica	1	-	1	2
Lombardy poplar	Populus nigra	-	-	1	1
Almond	Prunis dulcis	1	3	-	4
Purpleleaf plum	Prunus cerasifera	1	-	-	1
Peach	Prunus persica	-	-	1	1
Cherry	Prunus avium	_	1	-	1
Plum	Prunus domestica	_	2	_	2
Pyracantha	Pyracantha coccinea	_	1	_	1
Callery near	Pyrus callervana	1	2	З	6
Evergreen pear	Pvrus kawakamii	-	5	2	7
Coast live oak	Quercus agrifolia	-	-	2	2
Valley oak	Quercus lobata	_	2	- 3	5
Cork oak	Quercus suber	-	-	1	1
Idaho locust	Robinia idahoensis	_	2	-	2
California nenner	Schinus molle	1	- 1	1	ک ح
Coast redwood	Segunia sempervirens	-	с 1	י 11	1/
Chinese tallow	Triadica schifora	-	5	1	14
Siberian elm	i naulea sebileta I llmus pumile	-	- 5	I	ו ה
Zolkova	Zalkova sarrata	-	1	-	ນ 2
		-	1	•	4

Most of the trees were mature in size. Trunk diameters ranged from 6" (peach #6) to 56" (river red gum #123) for single-trunked trees. The median trunk diameter was 17". There were 29 trees with more than one trunk. Trees were generally in good to fair condition. Only 14% were in poor condition. A total of 78 or 46% of the trees evaluated qualified as Heritage trees. Heritage status of individual trees is provided in the *Tree Assessment Form* (see Exhibits). Twenty-six of the trees were off-site: 18 in Kottinger Village Park, five along the 4138 Vineyard Ave. fence line, and three just outside the Pleasanton Gardens property line

Canary Island pine was the most common species present, with 20 trees (12% of the population). They were planted around structures and along pedestrian pathways adjacent to Kottinger Village Park (photo 1). The trees ranged in condition from fair to good, some with somewhat thin canopies. The majority of the trees was tall and upright exhibiting good form and structure, and averaged 18" in diameter. Within the group were 15 Heritage trees.

Coast redwood was the second most common species with 14 trees (8% of the population). Averaging 30" in diameter, 11 trees were in good or excellent condition, and 12 were large enough to qualify as Heritage trees (Photo 2). Off-site trees (#62, 63, 66-68, 70, 71, 75 and 76) were located on the east side of Kottinger Place in Kottinger Village Park along the edge of a pedestrian path. Coast redwood #70 was distinctive among the off-site trees, with an extensive wound resulting from a codominant stem failure (Photo 3).



Photo 1: Canary Island pines along path bordering Kottinger Village Park. #55-58 are Heritage trees.



redwood #162 located at 4138 Vineyard Ave.

Sweetgum, another species present in larger numbers

Photo 3: Heritage coast redwood #70 was located in the park on the outside of a pedestrian path. It had a large trunk wound created when the codominant stem failed several years ago.

with 11 trees (6% of the population), was planted in small clusters in Pleasanton Gardens and Kottinger Place. Characteristic of the species, they exhibited codominant stems,

multiple attachments and poor form. All were in fair condition with one exception; #116 was in good condition. The average diameter was less than 16", and only two sweetgums were Heritage trees.

The Modesto ash species was represented by nine trees (5% of the population). They were all in fair to poor condition, resulting collectively from poor structure, branch failures, decay and extensive dieback due to repeated infection with anthracnose leaf disease. Located along the perimeter of the project in Kottinger Place and Regalia House, they averaged 23" in diameter; seven were Heritage trees.

Two eucalyptus species were present; river red gum and silver dollar gum. Many were multi-trunked trees, interplanted in a linear plane along the western perimeter of Kottinger Place and Regalia House. The red river gum was represented by nine trees (5% of the population) and the silver dollar gum by six trees (less than 4% of the population). As a group, eucalyptus ranged from fair to good, and was predominately characterized by poor structure, multiple attachments, branch failure, and wound decay. All eucalyptus trees with the exception of silver dollar gum #109 had Heritage status.

Two ornamental pear species were also present: seven evergreen pear (4%) and six Callery pear (3.5%). The evergreen pear was planted in Kottinger Place, and the Callery pear in Pleasanton Gardens. Exhibiting multiple attachments and codominant stems characteristic of both pear species, the collective condition rating ranged from fair to good, with the exception of Callery pear #21 rated poor from extensive dieback. With an average diameter less than 12", none of the pear trees were large enough for Heritage status.

Located primarily inside the pedestrian pathway in Kottinger Place, the *Catalpa* species was represented by eight trees (less than 4% of the population). All the trees had a single trunk, with the exception of tree #52, which was multitrunked. Large in stature (average diameter 22"), all but one of the trees had Heritage status and an average. It was noteworthy that trees #77, 80 and 81 exhibited extensive trunk and branch wounds, dieback and decay (Photo 5).

Eight Raywood ash were present that were in good to fair condition (Photo 6). Several had symptoms of Ash Dieback, a disease caused by the fungus *Botryosphaeria*. All were located along the parking area between Regalia House and the park.

> Photo 6. Raywood ash #175-177, 161 (left to right).



Photo 4: Heritage river red gums were the largest trees on the site. These were located on the northeast corner of Kottinger Place.



Photo 5: Catalpas #80 (Heritage) and 81 were in poor condition due to extensive branch dieback and trunk decay. Heritage tree #82 was in fair condition.



Five small mayten trees were planted in the interior at Kottinger Place. Two were multi-trunked (#136, 137), collectively they exhibited decay, dieback, and poor structure, and their condition ranged from poor to fair. The average diameter of the trees was less than 10".

Four Siberian elms were inter-planted with coast redwoods along the eastern pedestrian path in Kottinger Place. A cluster of small Siberian elms (#171) were located off-site adjacent to the Vineyard Ave. parcel in the north-west corner of the site. Two of the four on-site trees had Heritage status; all were in fair condition.

Five semi-mature valley oaks were scattered throughout Pleasanton Gardens, Kottinger Place and Regalia House. Tree #8 was located off-site in the southeast portion of the project. Nearby, trees #1 and 2 were located close together with inter-dependent canopies (Photo 7). These trees had fill soil and pavers place over the root collar many years ago. Two multi-trunked trees (#114, 152) were in fair condition; one suppressed in form and the other with twig dieback and power lines running through the crown. The remaining three were in good condition and all but one was a Heritage tree.

Three species were each represented by four trees and included the following:

- Aleppo pine generally in fair to good condition; two heritage trees on the west side (#90, 113) and two off-site trees on the east side, one with heritage status (#61). Tree #90 was impressively large, but had a significant structural defect that compromises its structural stability (Photo 8).
- Almond in a linear planting at Regalia House (#149-151,154). Trees had poor form and structure with an average diameter of nine inches.
- California black walnut (#166-169) in linear planting on the west side of Vineyard Ave. with three trees off-site. Two trees were multi-trunked and two had heritage status. Tree #167 was in poor condition with poor form and two dead stems. The other three were in fair condition with codominant stems and multiple attachments.

Three species were represented by two trees each and included the following:



Photo 7. Valley oaks #1 and #2 have grown next to each other and now form one canopy.



Photo 8. Aleppo pine #90 had codominant stems with included bark (see inset). This is a structurally weak condition that is likely to result in tree failure. A cable had been installed between the two stems to provide some support.

- California pepper at Kottinger Place; one each in good (#105), fair (#107) and poor (#106) condition. The trees had heritage status, the largest of which was in poor condition with extensive trunk and branch decay.
- Glossy privet were small, multi-trunked trees. One was located in Kottinger Place (#92), and one in Pleasanton Gardens (#25); #27 was a hedge of 30 stems located off-site on the fence line.
- Southern magnolia. Two planted in Pleasanton Gardens (#18, 33) had heritage status and were in good condition and #121 in Kottinger Place was fair with a thin crown and dieback.

Twelve species were each represented by two trees. Trees of note included:

- Coast live oak #164 in good condition, albeit with codominant trunks, and #165 in excellent condition were both heritage trees (Photo 9). These are naturallyoccurring trees native to Pleasanton. The canopies extended to the ground as is typical of the species. This form shades the root system and helps the trees survive the long dry summer. They were located at the west end of 4138 Vineyard Ave.
- Ginkgo #7 was a good young tree in Pleasanton Gardens (Photo 10), and moderate-sized #163 in the Vineyard Ave. was suppressed in form and in fair condition.



Photo 9. The canopy of Heritage coast live oaks #164 and 165 occupied the west end of the Vineyard Ave. property.

 Zelkova #51 was in fair condition because of multiple branch attachments and presence of a girdling root. Zelkova #132 was in good condition.

Twenty three species were represented by one tree each. Both Canary Island date palm #133 and the cork oak #56 were heritage trees (noted with an asterisk) in good condition. In Pleasanton Gardens, two small trees in excellent condition were Colorado spruce #28 with good form (Photo 11), and crape myrtle #29 with a full crown and multiple attachments at the base.



Photo 10 (left). Zelkova with multiple branch attachments (inset).

Photo 11 (right). Colorado spruce with good form and health.





Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health presents a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

• Tree health

Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

• Structural integrity

Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

• Species response

There is a wide variation in the response of individual species to construction impacts and changes in the environment. In general, coast redwoods are relatively tolerant of construction impacts and site changes while magnolia is intolerant of site disturbance.

• Tree age and longevity

Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees in good condition are better able to generate new tissue and respond to change.

• Species invasiveness

Species that spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database (<u>http://www.cal-ipc.org/paf/</u>) maintains a list and invasive ratings of plant species in California. Pleasanton is part of the Central West Floristic Province. Blackwood acacia is listed with a *moderate* invasiveness rating, and red river gum, purple-leafed plum and pyracantha have a *limited* invasiveness, rating.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (see *Tree Assessment* in Exhibits). We consider trees with good suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with poor suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Trees Suitability for preservation

- **High** These are trees with good health and structural stability that have the potential for longevity at the site. Forty-five trees were in this category (Table 3).
- **Moderate** Trees in this category have fair health and/or structural defects that may be abated with treatment. These trees require more intense management and monitoring, and may have shorter life-spans than those in the "high" category. Fifty-eight trees were in this category.
 - Low Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Seventy-four trees had low suitability for preservation.

Evaluation of Impacts and Recommendations for Preservation

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The *Tree Assessment (Exhibits)* was the reference point for tree condition and quality. Potential impacts from redevelopment of the site were evaluated using the Site Plan provided by Dahlin Group. This plan is conceptual in nature and identifies general layout of new homes, landscape, ad parking areas. No specific development information regarding site grading, utilities, or construction details were available at the time of this report. Trees have yet to be accurately located by engineer survey.

The plans indicated that the existing buildings, parking areas and landscapes will be demolished and new facilities will be constructed. Because of the intensity of the site changes, most trees on the site will be affected. The primarily opportunities for tree preservation are around the perimeter of the project. In most cases, grading or other excavation for construction is expected to be close to trees. It will be necessary to accurately locate the trunk of nearby trees to adequately assess potential tree impacts and design for tree preservation (Photo 12).

Based on the information available to date, it appears that at least 132 trees will be removed, 49 of which are Heritage trees (Table 4). Pending having accurate trunk locations, we think that 21 trees can be preserved, and another 24 could likely be preserved with some design accommodation. Tree-by-tree disposition is provided in Table 4 and on the Tree Disposition Plan (Exhibits).



Photo 12. Canary Island pines #83-86 are located at the Kottenger Dr. entrance to Kottinger Place. They are good candidates for retention. They are in the "possibly preserve" category (Table 4). We recommend accurately locating the trunks and designing for their preservation.

Tree #	Species	Diameter	Heritage?
1	Valley oak	20	Yes
2	Valley oak	20	Yes
7	Ginkgo	7	No
8	Valley oak	18	Yes
10	Coast redwood	25	Yes
12	Coast redwood	25	Yes
18	Southern magnolia	19	Yes
28	Colorado spruce	13	No
29	Crape myrtle	8,6,6,5,5	No
33	Southern magnolia	18	Yes
35	Coast redwood	39	Yes
36	Hackberry	11	No
39	Strawberry tree	7,5,5,5,5,5,4	No
40	Canary Island pine	18	Yes
42	Canary Island pine	17	No
48	Coast redwood	35	Yes
54	Canary Island pine	15	No
56	Cork oak	18	Yes
57	Canary Island pine	18	Yes
58	Canary Island pine	18	Yes
62	Coast redwood	16	No
63	Coast redwood	16	No
66	Coast redwood	34	Yes
67	Coast redwood	34	Yes
68	Coast redwood	43	Yes
72	Canary Island pine	18	Yes
74	Canary Island pine	20	Yes
83	Canary Island pine	19	Yes
84	Canary Island pine	21	Yes
86	Canary Island pine	24	Yes
102	Silver dollar gum	28	Yes
133	Canary Island date palm	49	Yes
138	London plane	25	Yes
141	Canary Island pine	18	Yes
142	Canary Island pine	22	Yes
143	Canary Island pine	17	No
144	Canary Island pine	18	Yes
145	Canary Island pine	13	No
162	Coast redwood	38	Yes
164	Coast live oak	35	Yes
165	Coast live oak	24	Yes
172	Raywood ash	16	No
172	Raywood ash	17	No
174	Raywood ash	17	No
175	Raywood ash	17	No

Table 3: Trees with High Suitability for PreservationKottinger Senior Housing Project, Pleasanton, CA

Heritage tree?	Preserve	Possibly Preserve	Remove
No	7	9	83
Yes	14	15	49
Total	21	24	132

Table 4: Summary of Tree Disposition: Number of trees estimated to be removed and preserved based on current site development plans.

Of the 26 off-site trees, 16 will be preserved; seven possibly preserved; and three removed. Three trees that will be removed are Raywood ash along the parking lot between Regalia House and the park. These trees are included in Tables 4 and 5.

Preservation of the trees is predicated on the construction impacts being within the tolerances of the trees and on the implementation of specific recommendations in the *Tree Preservation Guidelines*. Specific tree root and crown impacts near the limits of grading should be evaluated when construction plans and accurate trunk locations are available. Depending on the extent of impact, additional trees may be recommended for removal.

Tree	Species	Trunk	Heritage	Suitability for	Disposition
#		Diameter (in.)	?	Preservation	
1	Valley oak	20	Yes	High	Preserve
2	Valley oak	20	Yes	High	Preserve
3	Sweetgum	19	Yes	Moderate	Remove
4	Sweetgum	20	Yes	Moderate	Remove
5	Sweetgum	17	No	Moderate	Remove
6	Peach	6	No	Moderate	Remove
7	Ginkgo	7	No	High	Preserve
8	Valley oak	18	Yes	High	Preserve
9	Arizona cypress	9	No	Moderate	Possibly preserve
10	Coast redwood	25	Yes	High	Remove
11	Incense cedar	11	No	Moderate	Remove
12	Coast redwood	25	Yes	High	Remove
13	Callery pear	13	No	Moderate	Remove
14	Callery pear	11	No	Moderate	Remove
15	Sweetgum	14	No	Low	Remove
16	Sweetgum	14	No	Low	Remove
17	Cherry	10,7,5	No	Moderate	Remove
18	Southern magnolia	19	Yes	High	Remove
19	Callery pear	14	No	Moderate	Remove
20	Desert willow	10	No	Low	Remove
21	Callery pear	10	No	Low	Remove
22	Callery pear	15	No	Low	Remove
23	Callery pear	15	No	Moderate	Remove
24	Monterey pine	8,8	No	Low	Remove
25	Glossy privet	6,5,3	No	Low	Remove

Table 5: Preliminary Assessment of Tree Preservation and Removal Kottinger Senior Housing Project, Pleasanton, CA

26 English walnut 14,11 Yes Moderate P	reserve				
27 Glossy privet multi-stem No Low F	reserve				
28 Colorado spruce 13 No High F	Remove				
29 Crape myrtle 8,6,6,5,5 No High F	Remove				
30 European white birch 6 No Low F	Remove				
31 European white birch 7 No Low F	Remove				
32 Purple-leafed plum 6,5,4,4,3 No Low F	Remove				
33 Southern magnolia 18 Yes High F	Remove				
34 Chinese tallow 12 No Moderate F	Remove				
35 Coast redwood 39 Yes High Possi	bly preserve				
36 Hackberry 11 No High F	Remove				
37 Modesto ash 21 Yes Moderate F	Remove				
38 Modesto ash 21 Yes Moderate Possi	bly preserve				
39 Stawberry tree 7,5,5,5,5,4 No High F	Remove				
40 Canary Island pine 18 Yes High F	Remove				
41 Blackwood acacia 9.7.7.4 No Low F	Remove				
42 Canary Island pine 17 No High F	Remove				
43 Raywood ash 14 No Low F	reserve				
44 Modesto ash 14 No Low F	reserve				
45 Modesto ash 21 Yes Low F	reserve				
46 Idaho locust 11 No Low Possi	bly preserve				
47 Modesto ash 20 Yes Low F	Remove				
48 Coast redwood 35 Yes High Possi	bly preserve				
49 Pyracantha 8.6.5 No Low F	Remove				
50 Scots pine 10 No Low F	Remove				
51 Zelkova 15 No Moderate F	Remove				
52 Catalpa 15.10.8.6 Yes Moderate F	Remove				
53 Catalpa 18 Yes Moderate F	Remove				
54 Canary Island pine 15 No High Possi	bly preserve				
55 Canary Island pine 18 Yes Moderate Possi	bly preserve				
56 Cork oak 18 Yes High F	Remove				
57 Canary Island pine 18 Yes High F	Remove				
58 Canary Island pine 18 Yes High F	Remove				
59 Idaho locust 11 No Low F	reserve				
60 Aleppo 8 No Low F	Remove				
61 Aleppo 29 Yes Low F	reserve				
62 Coast redwood 16 No High F	reserve				
63 Coast redwood 16 No High F	reserve				
64 Siberian elm 18 Yes Low F	Remove				
65 Siberian elm 10 No Moderate F	Remove				
66 Coast redwood 34 Ves High F	Preserve				
67 Coast redwood 34 Ves High F					
68 Coast redwood 43 Vac High E					
69 Siberian elm 22 Vas Low F	Remove				
70 Coast redwood 35 Yes Moderate F	Preserve				
Tree #	Species	Trunk Diameter (in.)	Heritage ?	Suitability for Preservation	Disposition
-----------	--------------------	----------------------------	---------------	---------------------------------	-------------------
71	Coast redwood	39	Yes	Moderate	Preserve
72	Canary Island pine	18	Yes	High	Remove
73	Canary Island pine	21	Yes	Moderate	Remove
74	Canary Island pine	20	Yes	High	Remove
75	Coast redwood	22	Yes	Low	Preserve
76	Coast redwood	25	Yes	Moderate	Preserve
77	Catalpa	24	Yes	Low	Remove
78	Catalpa	18	Yes	Moderate	Remove
79	Catalpa	27	Yes	Moderate	Possibly preserve
80	Catalpa	21	Yes	Low	Remove
81	Catalpa	15	No	Low	Remove
82	Catalpa	27	Yes	Moderate	Possibly preserve
83	Canary Island pine	19	Yes	High	Possibly preserve
84	Canary Island pine	21	Yes	High	Possibly preserve
85	Canary Island pine	20	Yes	Moderate	Possibly preserve
86	Canary Island pine	24	Yes	High	Possibly preserve
87	Bronze loquat	6,5,4,3	No	Low	Remove
88	Evergreen pear	7	No	Moderate	Remove
89	Evergreen pear	6	No	Moderate	Remove
90	Aleppo	35	Yes	Low	Remove
91	Plum	7	No	Low	Remove
92	Glossy privet	6,6,3,3	No	Moderate	Remove
93	Evergreen pear	11	No	Moderate	Remove
94	River red gum	23	Yes	Moderate	Remove
95	River red gum	21	Yes	Low	Remove
96	River red gum	20,12	Yes	Low	Remove
97	Cabbage tree	6	No	Low	Remove
98	Evergreen pear	11	No	Moderate	Remove
99	Evergreen pear	13	No	Low	Remove
100	Evergreen pear	14	No	Low	Remove
101	Silver dollar gum	32	Yes	Moderate	Remove
102	Silver dollar gum	28	Yes	High	Remove
103	Silver dollar gum	30	Yes	Low	Remove
104	Silver dollar gum	14,12,12,12, 10,9,9,7,7	Yes	Low	Remove
105	California pepper	11	No	Moderate	Remove
106	California pepper	18	Yes	Low	Remove
107	California pepper	15	No	Moderate	Remove
108	River red gum	32	Yes	Low	Remove
109	Silver dollar gum	10	No	Low	Remove
110	Italian stone pine	15	No	Low	Remove
111	Silver dollar gum	18,15,12,8	Yes	Low	Remove
112	Canary Island pine	12	No	Moderate	Remove
113	Aleppo	23	Yes	Moderate	Remove
114	Valley oak	10.5	No	Low	Remove
115	Sweetgum	14	No	Low	Remove
116	Sweetgum	17	No	Moderate	Remove

Tree	Species	Trunk	Heritage	Suitability for	Disposition
#	O	Diameter (in.)	?	Preservation	
117	Sweetgum	12	NO	Moderate	Remove
118	Sweetgum	13	NO	Low	Remove
119	Sweetgum	15	No	Low	Remove
120	Sweetgum	16	No	Low	Remove
121	Southern magnolia	15	No	Low	Remove
122	English walnut	7,7	No	Low	Remove
123	River red gum	56	Yes	Moderate	Remove
124	Bailey acacia	9	No	Low	Remove
125	Italian stone pine	11	No	Low	Remove
126	River red gum	18	Yes	Moderate	Remove
127	Lombardy poplar	11,10,10,10	No	Moderate	Remove
128	Silver maple	8	No	Moderate	Remove
129	Evergreen pear	10	No	Moderate	Remove
130	Mayten	7	No	Low	Remove
131	Mayten	8	No	Low	Remove
132	Zelkova	16	No	Moderate	Remove
133	Canary Island palm	49	Yes	High	Remove
134	Siberian elm	6,5	No	Moderate	Remove
135	Mayten	10	No	Low	Remove
136	Mayten	8,3,3	No	Low	Remove
137	Mayten	9,7	No	Low	Remove
138	London plane	25	Yes	High	Remove
139	London plane	14	No	Low	Remove
140	Canary Island pine	19	Yes	Moderate	Remove
141	Canary Island pine	18	Yes	High	Remove
142	Canary Island pine	22	Yes	High	Remove
143	Canary Island pine	17	No	High	Remove
144	Canary Island pine	18	Yes	High	Remove
145	Canary Island pine	13	No	High	Remove
146	River red gum	32 26 26 24	Yes	Moderate	Remove
147	Plum	6644	No	Low	Remove
148	River red aum	24	Yes	Low	Remove
149	Almond	8	No	Low	Remove
150	Almond	10	No	Low	Remove
151	Almond	7	No	Low	Remove
152	Vallev oak	10.8	Yes	Moderate	Remove
152	River red gum	12 11 10 0	Ves	Moderate	Remove
153	Almond	12,11,10,3	No		Remove
154	Modesto ash	12	No	Low	Remove
155	Modesto ash	20	Voc	Low	Pomovo
150		30 15	No	LOW	Remove
107		10	NO	LOW	Remove
100		11	NO	LOW	Remove
159	Modesto ash	31	res	woderate	Remove
160	Nouesto ash	32	r es		Remove
161	Raywood ash	16	INO	ivioderate	Remove
162	Coast redwood	38	Yes	High	Possibly preserve
163	Ginkgo	12	No	Moderate	Remove
164	Coast live oak	35	Yes	High	Possibly preserve

Tree	Snecies	Trunk	Heritage	Suitability for	Disposition
#	opooloo	Diameter (in.)	?	Preservation	Disposition
165	Coast live oak	24	Yes	High	Possibly preserve
166	California black walnut	8,6,6,6	No	Low	Possibly preserve
167	California black walnut	14,12,12	Yes	Low	Possibly preserve
168	California black walnut	16	No	Low	Possibly preserve
169	California black walnut	24	Yes	Low	Possibly preserve
170	Avocado	12	No	Moderate	Possibly preserve
171	Siberian elm	14,14,13,12,1 2,12,12	Yes	Low	Preserve
172	Raywood ash	17	No	High	Remove
173	Raywood ash	16	No	High	Remove
174	Raywood ash	17	No	High	Remove
175	Raywood ash	17	No	High	Possibly preserve
176	Raywood ash	17	No	Moderate	Possibly preserve
177	Raywood ash	17	No	Moderate	Possibly preserve

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained on sites that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees depends on the amount of excavation and grading, care with which demolition is undertaken, and construction methods. Coordinating any construction activity inside the **TREE PROTECTION ZONE** can minimize these impacts.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

- 1. Accurately locate trees currently designated as "preserve" and "possibly preserve".
- 2. Modify site design to preserve as many trees in the "possibly preserve" category as possible.
- 3. Any changes to the plans affecting the trees should be reviewed by the consulting arborist with regard to tree impacts. These include, but are not limited to, site plans, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.
- 4. TREE PROTECTION ZONE shall be established around each tree. No grading, excavation, construction or storage of materials shall occur within that zone. No underground services including utilities, sub-drains, water or sewer shall be placed in the TREE PROTECTION ZONE. Spoil from trench, footing, utility or other excavation shall not be placed within the TREE PROTECTION ZONE, either temporarily nor permanently. The limits of the TREE PROTECTION ZONE will be adjusted following review of grading and

construction plans. For design purposes, the **TREE PROTECTION ZONE** trees shall be defined as the tree dripline.

- 5. **Tree Preservation Notes**, prepared by the Consulting Arborist, should be included on all plans.
- 6. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
- 7. Irrigation systems must be designed so that no trenching that severs roots larger than 1" diameter will occur within the **TREE PROTECTION ZONE**.
- 8. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.

Pre-construction treatments and recommendations

- 1. The construction superintendent shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.
- 2. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link or equivalent as approved by the City. Fences are to remain until all grading and construction is completed. Where demolition must occur close to trees, such as removing curb and pavement, install trunk protection devices such as winding silt sock wattling around trunks or stacking hay bales around tree trunks.
- 3. Prune trees to be preserved to clean the crown of dead branches 2" and larger in diameter, raise canopies as needed for construction activities, and reduce weight on weak attachments. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300). The Consulting Arborist will provide pruning specifications prior to site demolition.
- 4. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain shall be removed by a Certified Arborist or Certified Tree Worker and not by the demolition contractor. The Certified Arborist or Certified Tree Worker shall remove the trees in a manner that causes no damage to the tree(s) and understory to remain.

Recommendations for tree protection during construction

- 1. Any approved grading, construction, demolition or other work within the **TREE PROTECTION ZONE** should be monitored by the Consulting Arborist.
- 2. All contractors shall conduct operations in a manner that will prevent damage to trees to be preserved.
- 3. Tree protection devices are to remain until all site work has been completed within the work are. Fences or other protection devices may not be relocated or removed without permission of the Project Arborist.

- 4. Construction trailers, traffic and storage areas must remain outside **TREE PROTECTION ZONE** at all times.
- 5. Any root pruning required for construction purposes shall receive the prior approval of and be supervised by the Project Arborist. Roots should be cut with a saw to provide a flat and smooth cut. Removal of roots larger than 2" in diameter should be avoided.
- 6. If roots 2" and greater in diameter are encountered and during site work must be cut to complete the construction, the Project Arborist must be consulted to evaluate effects on the health and stability of the tree and recommend treatment.
- All grading within the dripline of trees shall be done using the smallest equipment possible. The equipment shall operate perpendicular to the tree and operate from outside the TREE PROTECTION ZONE. Any modifications must be approved and monitored by the Consulting Arborist.
- 8. Redwoods require regular, frequent irrigation. If irrigation systems are not operable during construction, provisions must be made to provide adequate irrigation by other means. Supplemental irrigation shall be applied as determined by the Consulting Arborist.
- 9. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.
- 10. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.
- 11. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Maintenance of impacted trees

Trees preserved at the Kottinger Senior Housing site will experience a different physical environment than previously. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, monitoring tree health and structural stability following construction must be made a priority. As trees age, the likelihood of failure of branches or entire trees increases. Therefore, it is recommended that the property owner have the trees inspected annually for hazard potential.

HortScience, Inc.

Nelde Mathery

Nelda Matheny Register Consulting Arborist #243 Board Certified Master Arborist #WE-0195B



Exhibits

Tree Assessment Map

Tree Disposition Maps

Tree Assessment





Tree Assessment Map

Kottinger Senior Housing Project Pleasanton, CA

Prepared for: MidPen Housing Corporation Foster City, CA

June 2013

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No Scale

Notes: Site plan provided by: The Dahlin Group

Numbered tree locations are approximate.

Refer to HortScience Tree Assessment for description of the trees





Tree Dispostion Plan

Kottinger Senior Housing Project Southern Section Pleasanton, CA

Prepared for: MidPen Housing Corporation Foster City, CA

July 3, 2013

No Scale

Notes:

Site plan provided by: The Dahlin Group

Numbered tree locations are approximate.

Refer to HortScience Tree Assessment for description of the trees.

55 = Trees to preserve
55 = Trees to possibly preserve
55 = Trees to be removed ►

= Heritage trees

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325 Ray Street Pleasanton, CA 94566 Phone 925.484.0211 Fax 925.484.0596 www.hortscience.com

HORT



Tree Dispostion Plan

Kottinger Senior Housing Project Northern Section Pleasanton, CA

Prepared for: MidPen Housing Corporation Foster City, CA

July 3, 2013

No Scale

Notes:

Site plan provided by: The Dahlin Group

Numbered tree locations are approximate.

Refer to HortScience Tree Assessment for description of the trees.

55 = Trees to preserve
55 = Trees to possibly preserve
55 = Trees to be removed
► = Heritage trees



Tree	Assessme	nt Kottin Pleasar June 20	ger Senior nton, CA 013	Housing P	roject	HORT SCIENCE
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS
1	Valley oak	20	Yes	4	High	One-sided to N.; multiple attachments at 20'; fill and paving stones over root collar.
2	Valley oak	20	Yes	4	High	Multiple attachments at 10'; crown to S.; fill and paving stone over root collar; codominant form with #1.
3	Sweetgum	19	Yes	3	Moderate	Codominant at 8'; topped; very large surface roots.
4	Sweetgum	20	Yes	3	Moderate	Multiple attachments at 10'; topped; small cavity on W.
5	Sweetgum	17	No	3	Moderate	Topped; mounded at base; large surface roots.
6	Peach	6	No	4	Moderate	Multiple attachments at 5'.
7	Ginkgo	7	No	4	High	Good young tree.
8	Valley oak	18	Yes	4	High	Off-site; no tag; base engulfed in ivy; full crown.
9	Arizona cypress	9	No	3	Moderate	Very high narrow crown.
10	Coast redwood	25	Yes	4	High	Crown lifted to 25'.
11	Incense cedar	11	No	3	Moderate	Crown lifted to 12'; thin crown.
12	Coast redwood	25	Yes	4	High	Crown lifted to 12'; a bit thin; minor tip burn.
13	Callery pear	13	No	4	Moderate	Multiple attachments at 8' with narrow attachment; full crown.
14	Callery pear	11	No	4	Moderate	Multiple attachments at 8';
15	Sweetgum	14	No	3	Low	Codominant at 8' with very narrow attachment.
16	Sweetgum	14	No	3	Low	Codominant at 5' with very narrow attachment and included bark.
17	Cherry	10,7,5	No	3	Moderate	Multiple attachments at 3'; trunk decay.
18	Southern	19	Yes	4	High	Codominant at 6'; nice full crown.
19	Callery pear	14	No	4	Moderate	Multiple attachments at 10' with narrow attachment.

Tree	Assessme	nt Kottin Pleasa June 2	iger Senior nton, CA 013	Housing P	roject	HORTSCIENCE	
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS	
20	Desert willow	10	No	3	Low	Extensive cracks in trunk and branches; good form.	
21	Callery pear	10	No	2	Low	Extensive dieback.	
22	Callery pear	15	No	3	Low	Leaning to E.; multiple attachments at 6'; bark checking at base.	
23	Callery pear	15	No	3	Moderate	Multiple attachments at 6'; topped; full crown.	
24	Monterey pine	8,8	No	1	Low	Little live foliage.	
25	Glossy privet	6,5,3	No	2	Low	Multiple attachments at 1'; poor form.	
26	English walnut	14,11	Yes	3	Moderate	Off-site; no tag; codominant at 5'; full crown.	
27	Glossy privet	multi-stem	No	3	Low	Off-site; no tag; hedge of 30 stems 6" and smaller at fence line.	
28	Colorado spruce	13	No	5	High	Nice tree; good form.	
29	Crape myrtle	8,6,6,5,5	No	5	High	Multiple attachments at base; full crown; excellent health.	
30	European white birch	6	No	1	Low	Topped; extensive dieback.	
31	European white birch	7	No	2	Low	Topped; dieback.	
32	Purple-leafed	6,5,4,4,3	No	2	Low	Multiple attachments at 4'; extensive trunk decay.	
33	Southern	18	Yes	4	Hiah	Full crown: small cavity on S.	
34	Chinese tallow	12	No	4	Moderate	Codominant at 7'; interior deadwood; surface roots.	
35	Coast redwood	39	Yes	5	High	Excellent health and structure.	
36	Hackberry	11	No	4	High	Good form; minor dieback.	
37	Modesto ash	21	Yes	3	Moderate	Codominant at 5'; stem to N. is starting to separate; thinning crown.	
38	Modesto ash	21	Yes	3	Moderate	Multiple attachments at 5'; branch tore out on E.; thinning crown with dieback.	

Tree	Assessme	nt Kottin Pleasa June 20	iger Senior nton, CA 013	Housing P	roject	HORT	
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS	
39	Strawberry tree	7,5,5,5,5,5,4	No	4	High	Multiple attachments at base; full crown.	
40 41	Canary Island pine Blackwood acacia	18 9,7,7,4	Yes No	4 3	High Low	Tall narrow form. At edge of building; multiple attachments at 2'; branches twist around each other.	
42 43	Canary Island pine Raywood ash	17 14	No No	4 3	High Low	Tall narrow form. Poorly pruned; one upright stem remains.	
44	Modesto ash	14	No	3	Low	Codominant at 6'; extensive dieback; trunk leans S.	
45	Modesto ash	21	Yes	3	Low	Multiple attachments at 6'; extensive dieback.	
46 47	Idaho locust Modesto ash	11 20	No Yes	3 2	Low Low	Very thin; enlarged basal flare. Trunk decay from base into upright stems; full crown.	
48	Coast redwood	35	Yes	5	High	Excellent health and structure.	
49	Pyracantha	8,6,5	No	3	Low	Poor form; dieback.	
50	Scots pine	10	No	2	Low	Tall narrow form; leans N.	
51	Zelkova	15	No	3	Moderate	Multiple attachments at 6'; nice full crown; girdling root.	
52	Catalpa	15,10,8,6	Yes	3	Moderate	Multiple attachments at base; root pruned?	
53	Catalpa	18	Yes	4	Moderate	Good upright form; decay in roots; root pruned?	
54	Canary Island pine	15	No	4	High	Good upright form; a bit thin.	
55	Canary Island pine	18	Yes	4	Moderate	Good upright form; a bit thin; one-sided to E.	
56	Cork oak	18	Yes	4	High	Good form and structure.	
57	Canary Island pine	18	Yes	4	High	Good upright form; a bit thin.	
58	Canary Island pine	18	Yes	4	High	Good upright form; a bit thin.	

Tree	Assessmer	nt Kottin Pleasar June 20	ger Senior nton, CA)13	Housing P	roject	HORT SCIENCE
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS
59	Idaho locust	11	No	3	Low	Off-site; edge of existing path; multiple attachments at 4' with decay in point of attachment.
60	Aleppo	8	No	2	Low	Off-site; edge of existing path; failing at base.
61	Aleppo	29	Yes	3	Low	Off-site; edge of existing path; codominant at 15'; heavy low lateral limb.
62	Coast redwood	16	No	5	High	Off-site; edge of existing path; excellent health and structure.
63	Coast redwood	16	No	5	High	Off-site; edge of existing path; excellent health and structure.
64	Siberian elm	18	Yes	3	Low	Codominant at 6'; twig dieback.
65	Siberian elm	10	No	3	Moderate	Codominant at 7'; base at edge of building.
66	Coast redwood	34	Yes	5	High	Off-site; edge of existing path; excellent health and structure.
67	Coast redwood	34	Yes	5	High	Off-site; edge of existing path; excellent health and structure.
68	Coast redwood	43	Yes	4	High	Off-site; edge of existing path; excellent health; codominant high in crown.
69	Siberian elm	22	Yes	3	Low	Multiple attachments at 12'; full heavy crown; extensive surface roots with decay.
70	Coast redwood	35	Yes	3	Moderate	Off-site; edge of existing path; extensive wound from codominant failure.
71	Coast redwood	39	Yes	4	Moderate	Off-site; edge of existing path; codominant at 18'; otherwise good.
72	Canary Island pine	18	Yes	4	High	Good form; thin crown.
73	Canary Island pine	21	Yes	3	Moderate	Codominant high in crown.

Tree	Assessmer	nt Kottin Pleasa June 20	iger Senior nton, CA 013	Housing P	roject	HORTSCIENC		
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS		
74	Canary Island pine	20	Yes	4	High	Good upright form.		
75	Coast redwood	22	Yes	3	Low	Off-site; edge of existing path; very thin.		
76	Coast redwood	25	Yes	3	Moderate	Off-site; edge of existing path; corrected form; thin crown.		
77	Catalpa	24	Yes	2	Low	Extensive trunk and branch wounds; full crown.		
78	Catalpa	18	Yes	3	Moderate	Narrow crown; trunk wound.		
79	Catalpa	27	Yes	3	Moderate	Heavy low lateral; dieback.		
80	Catalpa	21	Yes	2	Low	Extensive trunk and branch decay.		
81	Catalpa	15	No	2	Low	Extensive dieback.		
82	Catalpa	27	Yes	3	Moderate	Multiple attachments at 12'; full crown; small trunk wound.		
83	Canary Island pine	19	Yes	4	High	Good form and structure; a bit thin.		
84	Canary Island pine	21	Yes	4	High	Heavy low lateral; otherwise good.		
85	Canary Island pine	20	Yes	3	Moderate	Codominant high in crown.		
86	Canary Island pine	24	Yes	4	High	Good form; a bit thin.		
87	Bronze loquat	6,5,4,3	No	3	Low	Multiple attachments at base; decay in 3" stem.		
88	Evergreen pear	7	No	3	Moderate	Suppressed; thin crown.		
89	Evergreen pear	6	No	4	Moderate	Ok form.		
90	Aleppo	35	Yes	3	Low	Codominant at 8' with very narrow attachment; cabled; stem		
						to S. heavy weight over bus stop.		
91	Plum	7	No	3	Low	Crown bows away from building.		
92	Glossy privet	6,6,3,3	No	4	Moderate	Multiple attachments at 2'; good young tree.		
93	Evergreen pear	11	No	4	Moderate	Codominant at 6'; full crown.		
94	River red gum	23	Yes	4	Moderate	Good form; lerp psyllid.		
95	River red gum	21	Yes	2	Low	Poor form and structure; topped; lerp psyllid.		
96	River red gum	20,12	Yes	3	Low	History of branch failure; lerp psyllid.		

Tree	Assessme	nt Kotting Pleasar June 20	ger Senior _{iton,} CA 13	Housing P	roject	HORTSCIENCE	
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS	
97 98 99	Cabbage tree Evergreen pear Evergreen pear	6 11 13	No No No	3 3 3	Low Moderate Low	Single stem. Corrected form. Codominant at 12'; history of branch failure; thin crown.	
100	Evergreen pear	14	No	3	Low	Multiple attachments at 6'; history of branch failure.	
101	Silver dollar gum	32	Yes	4	Moderate	Multiple attachments at 6'; one-sided to south	
102	Silver dollar gum	28	Yes	4	High	Multiple attachments at 8'; good form and structure.	
103	Silver dollar gum	30	Yes	3	Low	History of branch failure; multiple attachments at 7'; thin crown	
104	Silver dollar gum	14,12,12,12,10	Yes	3	Low	Stump sprouts from base; full dense crown.	
105	California pepper	11	No	4	Moderate	Crooked form; basal wound with decay.	
106	California pepper	18	Yes	2	Low	Extensive trunk and branch decay; very thin.	
107 108	California pepper River red gum	15 32	No Yes	3 2	Moderate Low	Branch dieback. Extensive wound in trunk extends up into upright stems.	
109	Silver dollar gum	10	No	3	Low	Trunk and crown sweep up; codominant attachment removed at base.	
110	Italian stone pine	15	No	3	Low	Girdling root; codominant high in crown.	
111	Silver dollar gum	18,15,12,8	Yes	3	Low	Multiple attachments at 4'; trunk wound; thin crown.	
112	Canary Island pine	12	No	3	Moderate	Tall narrow form; codominant high in crown.	
113	Aleppo	23	Yes	3	Moderate	Codominant at 8'; crown beginning to separate.	

Tree	Assessmer	nt Kottin Pleasa June 20	iger Senior nton, CA 013	Housing P	roject	HORT SCIENCE
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS
114	Valley oak	10,5	No	3	Low	Suppressed by #113; poor form; on fence line.
115 116	Sweetgum Sweetgum	14 17	No No	3 4	Low Moderate	Poor form; twig dieback. Twig dieback; high crown with multiple attachment.
117	Sweetgum	12	No	3	Moderate	Multiple attachments at 12'; low lateral extends over building.
118	Sweetaum	13	No	3	Low	Thin crown: dieback.
119	Sweetaum	15	No	3	Low	Codominant at 6': large surface roots.
120	Sweetgum	16	No	3	Low	Multiple attachments at 6'; girdling roots;
121	Southern	15	No	3	Low	Thin crown with dieback.
122	English walnut	7,7	No	3	Low	Codominant at 3'; exposed roots.
123	River red gum	56	Yes	3	Moderate	Multiple attachments at 6'; huge tree very close to building; starting to displace foundation; good form; thin crown.
124	Bailey acacia	9	No	2	Low	Poor form and structure; trunk turns 90 degrees at base.
125	Italian stone pine	11	No	2	Low	Failing at base.
126	River red gum	18	Yes	3	Moderate	Corrected form to W.
127	Lombardy poplar	11,10,10,10	No	4	Moderate	Multiple attachments at base; large surface roots.
128	Silver maple	8	No	4	Moderate	Codominant at 6'; full crown.
129	Evergreen pear	10	No	3	Moderate	Crown to S.
130	Mayten	7	No	2	Low	Extensive dieback; trunk decay.
131	Mayten	8	No	3	Low	Codominant at 6'; poor form.
132	Zelkova	16	No	4	Moderate	Multiple attachments at 7'; full wide crown; good form.
133	Canary Island date palm	49	Yes	4	High	6' clear trunk.
134	Siberian elm	6,5	No	3	Moderate	Codominant at base; full crown.

Tree	Assessmei	nt Kottir Pleasa June 2	iger Senior nton, CA 013	Housing P	roject	HORTSCIENC	
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS	
135	Mayten	10	No	3	Low	Codominant at 5'; dieback.	
136	Mayten	8,3,3	No	1	Low	Extensive decay.	
137	Mayten	9,7	No	3	Low	Codominant at base; dieback.	
138	London plane	25	Yes	4	High	Excellent form and structure; heavy low lat over carport; full dense crown.	
139	London plane	14	No	2	Low	Extensive twig and branch dieback; epicormic growth.	
140	Canary Island pine	19	Yes	3	Moderate	Codominant high in crown.	
141	Canary Island pine	18	Yes	4	High	Narrow form.	
142	Canary Island pine	22	Yes	5	High	Excellent form and structure.	
143	Canary Island pine	17	No	4	High	Corrected form.	
144	Canary Island pine	18	Yes	4	High	Good form; a bit thin.	
145	Canary Island pine	13	No	4	High	Good form; a bit thin.	
146	River red gum	32,26,26,24	Yes	3	Moderate	Multiple attachments at base; topped; thin crown;	
147	Plum	6,6,4,4	No	3	Low	Multiple attachments at 2'; twig dieback.	
148	River red gum	24	Yes	2	Low	Extensive wound with decay; twig dieback; declining.	
149	Almond	8	No	3	Low	Partially failed at base; twig dieback.	
150	Almond	10	No	3	Low	Poor form and structure.	
151	Almond	7	No	2	Low	Very poor form; branch failure.	
152	Valley oak	10,8	Yes	3	Moderate	Twig dieback; codominant at 1'; power lines go through crown.	
153	River red gum	12,11,10,9	Yes	3	Moderate	Multiple attachments at base; stump sprouts; full crown.	
154	Almond	12	No	3	Low	Poor form and structure; twig dieback.	
155	Modesto ash	17	No	3	Low	Crown and trunk to N.	
156	Modesto ash	30	Yes	2	Low	Codominant at 7' with crack between stems; cabled and bolted; girdling roots.	

Tree	Assessme	nt Kottin Pleasar June 20	ger Senior hton, CA)13	Housing P	roject	HORT SCIENCE
TREE No.	SPECIES	TRUNK DIAMETER (inches)	HERITAGE TREE?	CONDITION 1=Poor 5=Excellent	SUITABILITY FOR PRESERVATIO	COMMENTS
157	Hollywood juniper	15	No	3	Low	Crown and trunk severely bow away from building.
158 159	Hollywood juniper Modesto ash	11 31	No Yes	3 3	Low Moderate	Suppressed. Multiple attachments at 6'; no basal flare; girdling root; thin upper crown
160	Modesto ash	32	Yes	2	Low	Multiple attachments at 5' with decay below attachment; decay in upright stem; history of branch failure.
161	Ravwood ash	16	No	4	Moderate	Good form.
162	Coast redwood	38	Yes	4	High	Multiple stems arise at 25'; full dense crown.
163	Ginkao	12	No	3	Moderate	Suppressed by neighbor: thin crown:
164	Coast live oak	35	Yes	4	High	Codominant at 2'; trunks fused together; weight of crown to W.
165	Coast live oak	24	Yes	5	High	Excellent form and structure.
166	California black walnut	8,6,6,6	No	3	Low	Multiple attachments from base; stump sprout
167	California black walnut	14,12,12	Yes	2	Low	Off-site, no tag; multiple attachments from base; poor form; center stem and stem to N. are dead.
168	California black walnut	16	No	3	Low	Off-site, no tag; good form; codominant at 7'.
169	California black walnut	24	Yes	3	Low	Off-site, no tag; codominant at 4' with decay in point of attachment.
170	Avocado	12	No	3	Moderate	Off-site, no tag; base at fence; full crown.
171	Siberian elm	14,14,13,12,12 ,12,12	Yes	3	Low	Off-site, no tag; small grove of trees; stems from base; twig and branch dieback; thin crown.



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Kottinger Drive Senior Housing Project Traffic Impact Analysis

to the

City of Pleasanton

from

MidPen Housing Corporation

Updated Draft Report

February 13, 2014

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Executive Summary

The proposed Kottinger Drive Housing project would result in the development of 185 residential units for seniors on aa site located at 240 Kottinger Drive (Kottinger Place) and 251 Kottinger Drive (Pleasanton Gardens) in the City of Pleasanton. The proposed project would demolish the 90 existing senior housing units and build 54 new units on the Pleasanton Gardens site and 131 units on the Kottinger Place site, for a net increase of 95 senior units. It was determined that this project was not included in the recently approved *Pleasanton Housing Element EIR*.

The project is anticipated to generate an average of 295 net new trips on a daily basis, of which 20 trips would occur during the morning peak hour and 24 trips during the evening peak hour. It should be noted that the trip generation analysis presented in this report is based on a previous concept plan that included a total of 189 new residential units. However, based on the most recent site plan dated January 2014, the project would provide 185 new residential units. Therefore, the trip generation and traffic operation analysis presented in this report is conservative based on the slightly higher unit count.

Currently the study intersection of 1st Street/Bernal Avenue-Sunol Boulevard operates unacceptably at LOS E during the p.m. peak hour and it would continue to do so under all study scenarios without and with the addition of project-generated traffic. However, according to the *City of Pleasanton General Plan*, Downtown intersections, including 1st Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*. All the remaining study intersections would operate at acceptable levels of service under all study scenarios without and with the addition of project-generated traffic.

Vehicular access to the Kottinger Place project site would be provided via two new full access driveways: one on Vineyard Avenue and one on Kottinger Drive. Vehicular access to the Pleasanton Gardens project site would be maintained through an existing driveway located on the south side of Kottinger Drive. To maintain clear sight lines, it is recommended that on-street parking be prohibited for 50 feet on either side of the proposed driveway on Vineyard Avenue. Additionally, periodic maintenance, including trimming of the vegetation on both sides of the project driveways on Kottinger Drive and Vineyard Avenue, should be undertaken.

The proposed project would provide 149 parking spaces which is expected to be adequate to satisfy the projected parking demand of 0.8 parking spaces per dwelling unit, which is the same as the current site.

Pedestrian and bicycle access to the site is expected to be adequate. Separate pedestrian entrances on Kottinger Drive would be provided to connect the Pleasanton Gardens and Kottinger Place sites and avoid pedestrian access through the parking lot. Existing transit route and bus stops adjacent to the project site on Vineyard Avenue and Ist Street together with the relocated bus stop on Kottinger Drive along the project frontage would adequately serve the project-generated transit trips.



Introduction

This report presents an analysis of the potential traffic impacts that would be associated with the development of 185 residential units for seniors located at 240 Kottinger Drive and 251 Kottinger Drive in the City of Pleasanton. The traffic study was completed in accordance with the criteria established by the City of Pleasanton, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to safety, including for pedestrians and bicyclists, and to transit are also addressed.

Project Profile

The project as proposed includes the development of 185 residential units for seniors on sites that are located at 240 Kottinger Drive (Kottinger Place) and 251 Kottinger Drive (Pleasanton Gardens) in the City of Pleasanton, as shown in Figure 1. Currently, the two project sites are occupied by 90 residential units (50 on the Kottinger Place site and 40 on the Pleasanton Gardens site) for seniors. The proposed project would demolish the existing units and build 54 new units on the Pleasanton Gardens site and 131 units on the Kottinger Place site, for a net increase of 95 senior residential units. As part of the proposed project, the Regalia House site located at 4133 Regalia Court and a vacant parcel located at 4138 Vineyard Avenue would be incorporated into the new plan for Kottinger Place. The Kottinger Place project site would be accessed via two new full access driveways: one on Vineyard Avenue and one on Kottinger Drive, while access to the Pleasanton Gardens project site would be maintained through an existing driveway on Kottinger Drive.





Operational Analysis

Study Area and Periods

The study area includes the immediate site vicinity and local roadways, as well as the following eight intersections:

- I. Ist Street/Vineyard Avenue-Ray Street
- 2. Ist Street/Kottinger Drive-Spring Street
- 3. Ist Street/Neal Street
- 4. I st Street/Bernal Avenue
- 5. Vineyard Avenue/Adams Way
- 6. Kottinger Drive/Adams Way-Mirador Drive
- 7. Stanley Boulevard/Bernal Avenue-Valley Avenue
- 8. Bernal Avenue/Vineyard Avenue-Tawny Drive

Operating conditions during typical weekday the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

At the direction of City staff, traffic volume data presented in the recently approved *Pleasanton Housing Element Transportation Analysis* (Fehr & Peers, 2011), were incorporated into this analysis. Existing traffic volume data were not available for the study intersections of Kottinger Drive/Adams Way and Vineyard Avenue/Adams Way; therefore, new a.m. (7:00-9:00) and p.m. (4:00-6:00) peak hour turning movement counts were conducted in April 2013.

Study Intersections

Ist Street/Ray Street-Vineyard Avenue is a four-way, signalized intersection with protected left-turn phasing on the northbound and southbound Ist Street approaches and split, or exclusive, phasing on the eastbound Ray Street approach and westbound Vineyard Street approach. Marked crosswalks are provided across all legs of the intersection, along with pedestrian signals and push buttons.

Ist Street/Kottinger Drive-Spring Street is a signalized four-legged intersection with permissive left-turn phasing on all approaches. Marked crosswalks and pedestrian signal heads with push buttons are provided across all legs of the intersection except the southern leg.

1st Street/Neal Street is a four-legged, signalized intersection with permissive left-turn phasing on all approaches. Marked crosswalks and pedestrian crossing signal equipment are provided across all legs of the intersection.

Ist Street/Bernal Avenue is a four-legged signalized intersection with protected left-turn phasing on all approaches. Marked crosswalks and pedestrian crossing signal equipment are provided across all legs of the intersection.



Vineyard Avenue/Adams Way is an unsignalized tee-intersection with the eastbound and westbound Vineyard Street approaches being free and the northbound Adams Way approach being stop controlled. Marked crosswalks are provided across all legs of the intersection.

Kottinger Drive/Adams Way-Mirador Drive is a four-way, all-way stop-controlled intersection. Marked crosswalks are provided across all legs of the intersection except the western leg.

Stanley Boulevard/Bernal Avenue-Valley Avenue is a four-legged, signalized intersection with protected leftturn phasing on all approaches. Marked crosswalks and pedestrian crossing signal equipment are provided across the southern and western legs.

Bernal Avenue/Vineyard Avenue-Tawny Drive is a four-legged, signalized intersection with protected leftturn phasing on the northbound and southbound Bernal Avenue approaches and exclusive left-turn phasing on the eastbound and westbound Kottinger Drive-Tawny Drive approaches. Marked crosswalks with pedestrian signal heads and push buttons are provided across all legs of the intersection except the southern leg.

The locations of the study intersections as well as the existing lane configurations and traffic controls are shown in Figure 1.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site. Marked crosswalks and pedestrian signal phasing are provided at all signalized intersections. Additionally, a mid-block crosswalk exists on Kottinger Drive near the project vicinity providing pedestrian connectivity between the Pleasanton Gardens and Kottinger Place sites.

Bicycle Facilities

The Highway Design Manual, California Department of Transportation (Caltrans), 2012, classifies bikeways into three categories:

- Class I Multi-Use Path: a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- · Class II Bike Lane: a striped and signed lane for one-way bike travel on a street or highway.
- Class III Bike Route: signing only for shared use with motor vehicles within the same travel lane on a street or highway.

Within the project vicinity, Class II bike lanes exist on Vineyard Avenue, First Street north of Vineyard Avenue, and Bernal Avenue south of Stanley Boulevard.

Transit Facilities

Transit service in Pleasanton is provided by three agencies: The Livermore Amador Valley Transit Authority provides fixed route bus service, and the Bay Area Rapid Transit District (BART) and the



Altamont Commuter Express (ACE) both operate commuter rail service. Following is a summary of the transit lines that currently service the project site.

Wheels Bus

The Livermore Amador Valley Transit Authority provides fixed route bus service under the name "Wheels" in the City of Pleasanton as well as the neighboring Cities of Dublin, Livermore, and unincorporated portions of Alameda County.

Wheels Bus Route 8 provides weekday and weekend (Saturday) service along Kottinger Drive and Vineyard Avenue between the East Dublin/Pleasanton BART Station and Downtown Pleasanton connecting Hopyard Road, Civic Center, Senior Center, Fairgrounds and Vintage Hills. During weekdays, service is provided between 6:00 a.m. and 7:00 p.m. with about 60-minute headways. On Saturdays, service is provided between 6:00 a.m. and 9:00 p.m. with approximately 60 to 120 minute headways. Bus stops are provided in both the eastbound and westbound directions along the Kottinger Place site frontage. The eastbound direction bus stop is on the south side of Vineyard Avenue just east of Regalia Court. The westbound direction bus stop is on the north side of Kottinger Drive approximately 190 feet east of 2nd Street.

Wheels Bus Route 10 provides weekday and weekend service along 1st Street between the East/Dublin Pleasanton Station to the west and Livermore Transit Center and beyond to the east. On weekday evenings and weekends, this route continues east to the Stoneridge Mall. Service is generally provided between 4:30 a.m. and 12:30 a.m. with approximately 30 to 40 minute headways. Bus stops are provided in both the northbound and southbound directions on 1st Street near the project vicinity. The northbound direction bus stop is located on the east side of 1st Street just north of Kottinger Drive. The southbound direction bus stop is located on the west side of 1st Street approximately 200 feet north of Kottinger Drive.

Two bicycles can be carried on most Wheels buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on Wheels buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. The City of Pleasanton Dial-a-ride is designed to serve the needs of individuals with disabilities within Pleasanton which is supplemented by the Livermore Amador Valley Transit Authority in the greater Livermore-Amador Valley region.

BART

The Bay Area Rapid Transit District (BART) provides heavy-rail rapid transit service within Alameda, Contra Costa, San Francisco and San Mateo Counties. The East Dublin/Pleasanton station, located along I-580 between Hopyard Road-Dougherty Road and Hacienda Drive, is the easternmost station along that segment of the BART system and is approximately four miles northwest of the proposed project site. Additionally the West Dublin Pleasanton station, located near the Stoneridge Mall, serves the City. One line provides service to the two Dublin/Pleasanton stations with the line terminating in Daly City. Passengers can transfer to other BART lines that terminate at Richmond, Pittsburg/Bay Point, Fremont, Millbrae and the San Francisco International Airport. Wheels Bus Route 8 provides service between the project site and the East Dublin/Pleasanton BART Station.



ACE

The Altamont Commuter Express (ACE) is an intra-city rail transit service that provides commuter service between Stockton and San Jose with ten stations. Four westbound trains are provided in the morning and four eastbound trains are provided in the evening. The ACE station in Pleasanton is located at Pleasanton Avenue north of Bernal Avenue. Wheels Bus Route 8 does not provide direct service between the project site and the Pleasanton ACE station.



Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. The use of these methodologies is consistent with the recently completed City of Pleasanton Housing Element traffic analysis.

The Levels of Service for the study intersection of Vineyard Avenue/Adams Way, which has side-street stop controls, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall age delay for the intersection.

The study intersection of Kottinger Drive/Adams Way has stop signs on all approaches, and was analyzed using the "All-Way Stop-Controlled" Intersection" methodology from the HCM. This methodology evaluates delay for each approach based on turning movements, opposing and conflicting traffic volumes, and the number of lanes. Average vehicle delay is computed for the intersection as a whole, and is then related to a Level of Service.

All of the remaining study intersections are controlled by traffic signals and were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle (in seconds) is used as the basis for evaluation in this LOS methodology.

The ranges of delay associated with the various levels of service are indicated in Table 1.



LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
В	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
С	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

 Table I

 Intersection Level of Service Criteria

Reference: Highway Capacity Manual, Transportation Research Board, 2000

Traffic Operation Standards

The City of Pleasanton has adopted an LOS standard of D or better for intersection operations per the General Plan (adopted July 2009). However, there are a few exceptions to the LOS D standard in the Downtown area and at the City of Pleasanton gateway intersections. These intersections may have a level of service below the LOS D standard if no reasonable mitigation exists or if the necessary mitigation is contrary to other goals and policies of the City. Traffic impacts at the study intersections would be considered significant if the Project would result in any of the following:

Signalized Intersections

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F
- The project adds ten or more trips to a signalized intersection projected to operate at LOS E prior to the addition of project traffic

Unsignalized Intersections

• Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:



- Project traffic results in satisfaction of the peak hour volume traffic signal warrant;
- Project traffic increases minor movement delay by more than 30 seconds; or
- Where the peak hour volume signal warrant is met without Project traffic and delay cannot be measured, Project increases traffic by 10 or more vehicles per lane on the controlled approach.

Traffic Model

The City of Pleasanton's traffic model is maintained by City Staff and uses Synchro analysis software. The model was provided by City staff to use for this analysis. This citywide model was last updated for the City's Housing Element update and is consistent with the buildout of the City's General Plan. The proposed project was not included in the environmental analysis for the City's Housing Element update. Level of service was evaluated at the study intersections for the following scenarios:

- Existing conditions traffic volume data were obtained directly from the model for the existing conditions without project scenario.
- Existing plus Project conditions project traffic volumes were added to the existing conditions traffic volumes to represent existing plus project conditions.
- Existing plus Approved Projects conditions short-term future traffic volume data was directly obtained from the City's model.
- Existing plus Approved Projects plus Project conditions project traffic volumes were added to the short-term conditions traffic volumes to represent existing plus approved project plus project conditions.
- Cumulative conditions Cumulative conditions traffic volumes were obtained directly from City's model.
- Cumulative plus Project conditions project traffic volumes were added to the cumulative conditions traffic volumes to represent cumulative plus project conditions.

Recent traffic volume data for the intersections of Kottinger Drive/Adams Way and Vineyard Avenue/ Adams Way were not available. Therefore, traffic volumes for these intersections under short-term and cumulative scenarios were developed based on balancing traffic volumes with adjacent intersections.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes.

Under existing conditions, all study intersections operate acceptably at LOS D or better except for the intersection of First Street/Bernal Avenue-Sunol Boulevard, which currently operates at LOS E during the p.m. peak hour. According to the *City of Pleasanton General Plan*, Downtown intersections, including Ist Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard. The existing traffic volumes are shown in Figure 2. A summary of the intersection level of service calculations is contained in Table 2, and copies of the Level of Service calculations are provided in Appendix A.





St	udy Intersection	Existing Conditions						
	Approach	AM	Peak	PM Peak				
		Delay	LOS	Delay	LOS			
Ī.	lst St/Vineyard Ave-Ray St	20.5	С	28.5	С			
2.	Ist St/Kottinger Dr-Spring St	18.3	В	21.1	С			
3.	Ist St/Neal St	14.8	В	19.8	В			
4.	Ist St/Bernal Ave-Sunol Blvd*	33.8	С	65.9	Е			
5.	Vineyard Ave/Adams Way	6.6	А	1.8	Α			
	Northbound (Adams Ave) approach	16.1	С	11.2	В			
6.	Kottinger Dr/Adams Way-Mirador Dr	11.2	В	7.7	Α			
7.	Stanley Blvd/Bernal Ave-Valley Ave	52.2	D	47.4	D			
8.	Bernal Ave/Vineyard Ave-Tawny Dr	17.4	В	10.7	В			

Table 2Existing Peak Hour Intersection Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; *According to the *City of Pleasanton General Plan*, Downtown intersections, including 1st Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard.

Traffic Impact Fee Program

The City of Pleasanton has established a Traffic Impact Fee (TIF) program to fund future enhancements to the transportation network based on anticipated needs. As part of the City's program, there are plans to modify the following two intersections:

Stanley Boulevard/Bernal Avenue-Valley Avenue

The westbound Stanley Boulevard approach is to be converted to two left-turn lanes, two through lanes and a free right-turn lane. Additionally, the eastbound approach would be modified to provide two leftturn lanes, two through lanes and a shared through/right-turn lane. These improvements were included for the analysis of Existing plus Approved Projects and Cumulative Conditions scenarios.

1st Street/Bernal Avenue-Sunol Boulevard

The westbound Bernal Avenue approach is to be converted to two left-turn lanes, one through lane and a shared through/right-turn lane. Per the City's direction, this improvement was included for the analysis of only the Cumulative Conditions scenario.

Project Description

The project as proposed includes the development of 185 residential units for seniors located at 240 Kottinger Drive (Kottinger Place) and 251 Kottinger Drive (Pleasanton Gardens). Currently, the two project sites include 90 senior housing units (50 on the Kottinger Place site and 40 on the Pleasanton Gardens site) for seniors. The proposed project would demolish the existing units and build 54 new units on the Pleasanton Gardens site and 131 units on the Kottinger Place site, for a net increase of 95



senior units. As part of the proposed project, the Regalia House site located at 4133 Regalia Court and a vacant parcel located at 4138 Vineyard Avenue would be incorporated into the new plan for Kottinger Place. The Kottinger Place project site would be accessed via two new driveways: one on Vineyard Avenue and one on Kottinger Drive, while access to the Pleasanton Gardens project site would be maintained through the existing driveway on Kottinger Drive. The proposed site plan is shown in Figure 3A and 3B.

Trip Generation

The anticipated trip generation for the proposed project was estimated using the fitted curve equations for Senior Adult Housing-Attached (ITE Trip Generation Land Use #252) published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. Because the site is currently occupied by 90 housing units for seniors, the trip generation of the existing use was also considered.

The expected trip generation potential for the proposed project is indicated in Table 3, with deductions taken for existing trips at the site. The proposed project is expected to result in a net increase of 295 daily trips, including 20 a.m. peak hour trips and 24 p.m. peak hour trips.

Land Use	Units	Daily		AM Peak Hour			PM Peak Hour				
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Proposed			1.			10					
Senior Housing-Attached	189* du	3.0	584	0.20	38	13	25	0.25	47	25	22
Existing						1					
Senior Housing-Attached	-90 du	-3.0	-289	-0.20	-18	-6	-12	-0.26	-23	-13	-10
Total Net-New Trips	100	1.1	295		20	7	13		24	12	12

Table 3 Trip Generation Summary

Note: du = dwelling unit; * = the trip generation for the proposed project was based on a previous concept plan that included 189 new residential units. However, the new site plan has proposed 185 residential units. The trip generation analysis and traffic operations analysis in this report are conservative based on the slightly higher unit count

Trip Distribution

The trip distribution patterns used to allocate new project trips to the street network were determined by reviewing existing turning movements at the study intersections, location of the project site access points and traffic distribution patterns applied in a recently completed traffic study for 3150 Bernal Avenue. The applied distribution assumptions are shown in Table 4 and the resulting net new project traffic volumes are shown in Figure 4.








The Distribution Assumptions					
Route	Percent				
Santa Rita Rd north of Vineyard Ave	30%				
Hopyard Rd west of I st St	10%				
Sunol Blvd south of Bernal Ave	25%				
Bernal Ave west of Ist St	15%				
Stanley Blvd east of Bernal Ave	20%				
TOTAL	100%				

	Table 4	
	Trip Distribution Assump	tions
e		Perce

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, all of the study intersections but one are expected to operate acceptably at LOS D or better during both the a.m. and p.m. peak hours. The intersection of Ist Street/Bernal Avenue-Sunol Boulevard would continue to operate at an unacceptable LOS E during the p.m. peak hour. A summary of the intersection level of service analysis is provided in Table 5 and copies of the Level of Service calculations are provided in Appendix A.

Study Intersection		Exi	sting (Conditie	Exis	Existing plus Project			
	Approach		AM Peak PM Pe		Peak	AM	Peak	PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Ι.	Ist St/Vineyard Ave-Ray St	20.5	С	28.5	С	20.6	С	28.7	С
2.	Ist St/Kottinger Dr-Spring St	18.3	в	21.1	С	18.9	В	21.7	С
3.	Ist St/Neal St	14.8	В	19.8	В	14.8	В	19.9	В
4.	Ist St/Bernal Ave-Sunol Blvd*	33.8	С	65.9	Е	33.9	С	66.6	E
5.	Vineyard Ave/Adams Way	6.6	Α	I.8	Α	6.7	Α	1.9	Α
	Northbound Adams Ave	16.1	С	11.2	В	16.2	С	11.2	В
6.	Kottinger Dr/Adams Way-Mirador Dr	11.2	В	7.7	Α	11.2	В	7.7	Α
7.	Stanley Blvd/Bernal Ave-Valley Ave	52.2	D	47.4	D	52.3	D	47.4	D
8.	Bernal Ave/Vineyard Ave-Tawny Dr	17.4	В	10.7	В	17.5	В	10.7	В

Table 5 Existing and Existing plus Project Peak Hour Intersection Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; *According to the City of Pleasanton General Plan, Downtown intersections, including Ist Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard

The intersection of Ist Street/Bernal Avenue-Sunol Boulevard currently operates at an unacceptable LOS E during the p.m. peak hour. With the addition of the proposed project, the intersection would continue to operate at an unacceptable LOS E. However, according to the City of Pleasanton General Plan, Downtown intersections such as Ist Street/Bernal Avenue-Sunol Boulevard are exempt from the



LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the Downtown Specific Plan.

Finding: The study intersections are expected to continue operating at an acceptable level of service with the addition of project-generated traffic except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard which would continue to operate at an unacceptable LOS E. However, according to the *City of Pleasanton General Plan*, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard.

Existing plus Approved Projects Conditions

Existing plus Approved Projects operating conditions were determined with traffic that would be generated by all approved and pending projects, added to existing traffic volumes, including the City's Housing Element, as contained in the City's Synchro traffic model. It should be noted that the planned TIF improvements at the intersection of Stanley Boulevard/Bernal Avenue-Valley Avenue were included in this analysis. Under these conditions, all of the study intersections are expected to operate at an acceptable LOS D or better, except for the intersection of Ist Street/Bernal Avenue-Sunol Boulevard, which would operate at an unacceptable LOS E during the p.m. peak hour. These results are summarized in Table 6, and Existing plus Approved Projects volumes are shown in Figure 5.

St	udy Intersection	Existing Plus Approved Conditions						
	Approach	AM	Peak	PM I	Peak			
		Delay	LOS	Delay	LOS			
Ι.	Ist St/Vineyard Ave-Ray St	20.6	С	26.9	С			
2.	Ist St/Kottinger Dr-Spring St	34.0	С	34.1	С			
3.	Ist St/Neal St	17.5	В	34.2	С			
4.	Ist St/Bernal Ave-Sunol Blvd*	47.4	D	79.6	Е			
5.	Vineyard Ave/Adams Way	6.6	А	1.8	Α			
	Northbound Adams Ave	16.7	С	11.2	В			
6.	Kottinger Dr/Adams Way-Mirador Dr	11.5	В	7.8	Α			
7.	Stanley Blvd/Bernal Ave-Valley Ave	27.0	С	29.4	С			
8.	Bernal Ave/Vinevard Ave-Tawny Dr	25.3	С	10.8	В			

 Table 6

 Existing plus Approved Projects Peak Hour Intersection Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; *According to the *City of Pleasanton General Plan*, Downtown intersections, including Ist Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard; Shaded cells = conditions with planned TIF improvements

Existing plus Approved Projects plus Project Conditions

Upon the addition of project-related traffic added to Existing plus Approved Projects volumes, and the planned TIF improvements, all of the study intersections are anticipated to operate at an acceptable LOS





D or better, except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard, which would deteriorate from LOS E to LOS F during the p.m. peak hour. However, according to the *City of Pleasanton General Plan*, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*. A summary of the intersection level of service analysis is provided in Table 7 and copies of the level of service calculations are provided in Appendix A.

Study Intersection		V	Vithou	t Proje	ct		With	Project	
	Approach	AM	AM Peak		Peak		Peak	PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Ι.	Ist St/Vineyard Ave-Ray St	20.6	С	26.9	С	20.7	С	27.1	С
2.	Ist St/Kottinger Dr-Spring St	34.0	С	34.1	С	35.2	D	36.0	D
3.	Ist St/Neal St	17.5	В	34.2	С	17.5	В	34.8	С
4.	Ist St/Bernal Ave-Sunol Blvd*	47.4	D	79.6	E	47.9	D	80.4	F
5.	Vineyard Ave/Adams Way	6.6	Α	1.8	Α	6.7	Α	1.8	Α
	Northbound Adams Ave	16.7	С	11.2	В	16.8	С	11.2	В
6 .	Kottinger Dr/Adams Way-Mirador Dr	11.5	В	7.8	Α	11.5	В	7.8	Α
7.	Stanley Blvd/Bernal Ave-Valley Ave	27.0	С	29.4	С	27.0	С	29.4	С
8.	Bernal Ave/Vineyard Ave-Tawny Dr	25.3	С	10.8	В	25.4	С	10.9	В

Table 7	
Existing plus Approved Projects plus Project Peak Hour Inte	ersection Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; *According to the *City of Pleasanton General Plan*, Downtown intersections, including 1st Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard; Shaded cells = conditions with planned TIF improvements

Finding: With the addition of project-generated traffic, the study intersections are expected to continue operating at an acceptable level of service except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard which would deteriorate from LOS E to LOS F. However, according to the *City of Pleasanton General Plan*, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*.

Cumulative Conditions

Cumulative peak hour volume projections were taken from the build-out analysis contained in the *Pleasanton Housing Element Transportation Analysis*. This scenario represents cumulative traffic conditions that would be expected upon build out of the land uses identified in the *General Plan*, including the updated Housing Element. It should be noted that the planned TIF improvements at the intersections of 1st Street/Bernal Avenue-Sunol Boulevard and Stanley Boulevard/Bernal Avenue-Valley Avenue were included in this analysis.



Under the anticipated Future volumes and considering the planned TIF improvements at the intersections of 1st Street/Bernal Avenue-Sunol Boulevard and Stanley Boulevard/Bernal Avenue-Valley Avenue, all of the study intersections but one are expected to operate at an acceptable LOS D or better. The intersection of 1st Street/Bernal Avenue-Sunol Boulevard is expected to operate at an unacceptable LOS E during the p.m. peak hour even after the implementation of the planned improvements. However, according to the *City of Pleasanton General Plan*, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*. Cumulative buildout volumes are shown in Figure 6 and operating conditions are summarized in Table 8.

St	udy Intersection	Cumulative Conditions						
	Approach	AM	Peak	PM I	Peak			
		Delay	LOS	Delay	LOS			
Ī.	Ist St/Vineyard Ave-Ray St	19.5	В	25.2	С			
2.	Ist St/Kottinger Dr-Spring St	48.7	D	22.1	С			
3.	Ist St/Neal St	19.2	В	39.5	D			
4.	Ist St/Bernal Ave-Sunol Blvd*	36.1	D	76.6	E			
5.	Vineyard Ave/Adams Way	7.9	Α	2.0	Α			
	Northbound Adams Ave	20.5	С	11.4	В			
6.	Kottinger Dr/Adams Way-Mirador Dr	12.6	В	8.0	Α			
7.	Stanley Blvd/Bernal Ave-Valley Ave	31.2	С	32.4	С			
8.	Bernal Ave/Vineyard Ave-Tawny Dr	35.8	D	12.3	В			

		1	Table 8		
Cumulative	Peak	Hour	Intersection	Levels of	of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*; **Bold** text = deficient operation; *According to the *City of Pleasanton General Plan*, Downtown intersections, including 1st Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard; Shaded cells = conditions with TIF planned improvements

It was noted that some intersections are expected to operate better under Cumulative conditions than they would under the Existing plus Approved Projects Conditions. This is attributed to the fact that the City is anticipating regional improvements that would increase capacity elsewhere, resulting in a shift in traffic patterns.

Cumulative plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Cumulative volumes, the Ist Street Street/Bernal Avenue-Sunol Boulevard intersection is expected to continue operating at an unacceptable LOS E during the p.m. peak hour. As discussed previously, this intersection is exempt from the LOS D standard unless the City determines that improvements are necessary to maintain a LOS D standard. All of the remaining intersections would continue to operate at an acceptable LOS D or better with the addition of project generated traffic. A summary of the intersection level of service analysis is provided in Table 9 and copies of the level of service calculations are provided in Appendix A.





Study Intersection			Cum	ulative		Cum	Cumulative plus Project			
Approach		AM	AM Peak PM Peak		AM Peak		PM F	PM Peak		
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Ι.	Ist St/Vineyard Ave-Ray St	19.5	В	25.2	С	19.6	В	25.3	С	
2.	Ist St/Kottinger Dr-Spring St	48.7	D	22.1	С	49.8	D	23.5	С	
3.	Ist St/Neal St	19.2	В	39.5	D	19.5	В	40. I	D	
4.	Ist St/Bernal Ave-Sunol Blvd*	36.1	D	76.6	E	36.3	D	77.4	E	
5.	Vineyard Ave/Adams Way	7.9	Α	2.0	Α	7.9	Α	2.0	Α	
	Northbound Adams Ave	20.5	С	11.4	В	20.6	С	11.5	В	
6.	Kottinger Dr/Adams Way-Mirador Dr	12.6	В	8.0	Α	12.6	В	8.0	Α	
7.	Stanley Blvd/Bernal Ave-Valley Ave	31.2	С	32.4	С	31.2	С	32.4	С	
8.	Bernal Ave/Vineyard Ave-Tawny Dr	35.8	D	12.3	В	35.9	D	12.3	В	

 Table 9

 Cumulative and Cumulative plus Project Peak Hour Intersection Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation; *According to the *City of Pleasanton General Plan*, Downtown intersections, including 1st Street/Bernal Avenue-Sunol Boulevard, are exempt from the LOS D standard; Shaded cells = conditions with TIF planned improvements

Finding: Upon the addition of project-generated traffic, the study intersections are expected to operate at an acceptable level of service except for 1st Street/Bernal Avenue-Sunol Boulevard which would continue to operate at an unacceptable LOS E. However, according to the *City of Pleasanton General Plan*, Downtown intersections (1st Street/Bernal Avenue-Sunol Boulevard) are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*.

Queuing

Queuing analysis was performed of the study intersections of 1st Street/Vineyard Avenue-Ray Street and 1st Street/Kottinger Drive-Spring Street to determine if there would be adequate left-turn lane storage at these locations with the addition of project-generated traffic. Under the Existing plus Approved Projects Conditions and Cumulative Conditions, the queue lengths for left-turn pockets that would potentially receive project-generated traffic were determined using the SIMTRAFFIC application of Synchro, and averaging the 95th percentile queues for each of five runs.

The 95th percentile queue lengths are summarized in Table 10. Copies of the SIMTRAFFIC projections are provided in Appendix B.



Intersection movement	Available Storage	e 95 th percentile Queues AM Peak Hour					95 th percentile Queues PM Peak Hour			
		E+A	E+A+P	С	C+P	E+A	E+A+P	С	C+P	
Ist St/Vineyard Ave-Ray St										
Southbound left-turn	125	*	*	*	*	50	9 1	119	93	
Westbound left-turn	75	120	128	118	122	101	101	95	Ш	
Ist St/Kottinger Dr-Spring St					1.1.1					
Southbound left-turn	90	*	*	*	*	67	57	120	100	

Table 10 95th Percentile Left-Turn Queues

Notes: All distances are measured in feet; * = The project would not add traffic to these movements therefore, the queue length has not been reported; E+A = existing plus approved projects conditions, E+A+P = existing plus approved projects plus project conditions, C = cumulative conditions, C+P = cumulative plus project conditions; **Bold** text = queue length exceeds available storage

At the intersection of 1st Street/Vineyard Avenue-Ray Street, the 95th percentile queue for the westbound left-turn movement is expected to exceed the available storage length during both peak hours under the Existing plus Approved Project Conditions and Cumulative Conditions. With the addition of project-generated traffic, the queue length is expected to increase slightly but is not anticipated to result in an additional vehicle extending beyond the storage area assuming the typical size and spacing of vehicles in a turn lane to be in the range of 20 to 25 feet. During the p.m. peak hour, the southbound left-turn movement is expected to be accommodated within the available storage length under both scenarios. Further, with the addition of project-generated traffic, the queue length is expected to decrease slightly.

At the intersection of Ist Street/Kottinger Drive-Spring Street, the queue length for the southbound leftturn movement is expected to be accommodated within the available storage length under the Existing plus Approved Project Conditions without and with the addition of project generated trips during the p.m. peak hour. However, under Cumulative Conditions, the queue is anticipated to exceed the available storage length without and with the project.

It should be noted that with the addition of project-generated traffic, the queue lengths for the southbound left-turn movement at both of these study intersections would slightly decrease during the p.m. peak hour. The Southbound through queues would extend a significant distance in the through lane, blocking the left-turn pocket. Some of the project trips would not be able to enter the left-turn pocket due to the queuing in through lanes, which in turn would result in a decreased queue length in the left-turn pocket.

Findings: At the intersection of Ist Street/Vineyard Avenue-Ray Street, the westbound left-turn queue length is expected to exceed the available storage length under all scenarios without and with the addition of project-generated trips. During the p.m. peak hour, the southbound left-turn queue is expected to fit within the available storage length, without and with the project under both scenarios. The southbound left-turn queue at the Ist Street/Kottinger Drive-Spring Street intersection is expected to be accommodated within the available storage length under Existing plus Approved Projects Conditions, and exceed the storage length under Cumulative Conditions without and with the project. The increase in queue length due to the addition of the project-generated traffic would be less-than-significant.



Site Access

Vehicular access to the Pleasanton Garden project site would be maintained through an existing driveway located on the south side Kottinger Drive. Vehicular access to the Kottinger Place project site would be provided via two new full access driveways: one on Kottinger Drive and one on Vineyard Avenue. Internally, pathways would connect the building units to the parking areas and streets.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distance along Vineyard Avenue and Kottinger Drive for the proposed Kottinger Place project site driveways was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor-street approaches that are either a private road or a driveway are based on stopping sight distance with the approach travel speeds as the basis for determining the recommended sight distance. Sight distance at the proposed project driveways on Vineyard Avenue and Kottinger Drive were field measured.

Vineyard Avenue

The posted speed limit on Vineyard Avenue is 25 miles per hour (mph). Based on a design speed of 25 mph, the minimum stopping sight distance needed is 150 feet. Vineyard Street is relatively flat and straight on either side of the project site; therefore, sight distance from the project driveway to the east and west would be adequate. However, it should be noted that on-street parking is permitted on the south side of Vineyard Street near the project vicinity. In order to have a clear line of sight for drivers exiting the proposed driveway it is recommended that on-street parking be prohibited for 50 feet on either side of the proposed driveway. Additionally, periodic maintenance, including trimming of the vegetation on both sides of the project driveway should be undertaken to maintain clear sight lines.

Kottinger Drive

The speed limit on Kottinger Drive is not posted. For sight distance evaluation, a speed limit of 25 mph was assumed. Based on a design speed of 25 mph, the minimum stopping sight distance needed is 150 feet. Kottinger Drive is relatively flat and straight on either side of the project site; therefore, sight distance from the project driveway to the east and west would be adequate. However, to maintain clear sight lines, periodic maintenance inducing trimming of vegetation should be undertaken.

Finding: Sight distance at the proposed project driveways on Vineyard Avenue and Kottinger Drive would be adequate in either direction.

Recommendation: On-street parking should be prohibited on the south side of Vineyard Avenue for 50 feet on either side of the proposed driveway. Periodic maintenance, including trimming of the vegetation on both sides of the project driveways on Kottinger Drive and Vineyard Avenue, should be undertaken.



Parking

To ensure that the proposed project would provide adequate on-site parking, the City of Pleasanton Municipal Code (§ 18.88.030) was reviewed. However, the code does not specify parking requirements for a residential land use that includes senior housing such as the proposed project. Based on the information provided by the project team, parking for the existing use is provided at a rate of 0.8 spaces per dwelling unit and is considered adequate for residents, visitors and other users. The proposed project would include 185 units, which would require 148 parking spaces based on the parking ratio demand for the existing use. The proposed project would provide 149 parking spaces including four visitor parking spaces and seven disabled parking spaces. The proposed parking would adequately satisfy the projected demand.

Finding: The proposed 148 parking spaces including four visitor parking spaces and five disabled parking spaces at the project site are expected to be adequate.



Pedestrian Facilities

Sidewalks currently exit on the project frontage along Kottinger Drive and Vineyard Avenue connecting the project site to the surrounding area. The project would create a separate pedestrian entrance to Pleasanton Gardens from Kottinger Drive to avoid pedestrian access through the parking lot and provide better connectivity between the two sites. It is anticipated that the existing and proposed pedestrian facilities would adequately serve the project site.

Finding: Existing and proposed pedestrian facilities would adequately serve the project site.

Bicycle Facilities

Due to the nature of the proposed project, bike oriented trips would be minimal. Existing bicycle facilities are expected to adequately serve the project site.

Finding: Bicycle facilities serving the project site are expected to be adequate.

<u>Transit</u>

The existing transit bus stops located on the project frontage at Vineyard Avenue and on 1st Street are within acceptable walking distance of both sites. The proposed project would relocate the existing transit stop located on the north side of Kottinger Drive slightly to the east due to the proposed frontage improvements. Existing and proposed pedestrian facilities that would connect the project site to the existing as well as the relocated bus stop are adequate. The existing and proposed transit and pedestrian facilities are anticipated to adequately accommodate the project-generated transit trips.

Finding: Existing and proposed transit route and bus stops adjacent to the project site are expected to be adequate.



Collision History

The collision histories for the study intersections were reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on collision data available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. A five-year period between July I, 2006, and June 30, 2011, was used in the analysis. The calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in 2009 Accident Data on California State Highways, Caltrans.

The study intersections of Ist Street/Neal Street, Ist Street/Bernal Avenue-Sunol Boulevard and Vineyard Avenue/Adams Way were determined to have collision rates higher than the statewide averages for similar facilities. All of the remaining intersections experienced collision rates lower than the statewide averages for similar facilities. No fatalities were reported during the five-year period studied, although the injury rate for all the signalized intersections was higher than the statewide average for similar facilities. It should be noted that at the study intersection of Ist Street/Neal Street, six collisions out of the I9 reported involved a pedestrian or a bicyclist.

The calculated collision rates are presented in Table 11 and details are provided in Appendix C.

Study Intersection		Number of Collisions	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
Ϊ.	Ist St/Vineyard Ave-Ray St	6	0.15	0.36
2.	Ist St/Kottinger Dr-Spring St	9	0.25	0.36
3.	Ist St/Neal St	19	0.51	0.36
4.	Ist St/Bernal Ave-Sunol Blvd	31	0.47	0.36
5.	Vineyard Ave/Adams Way	3	0.39	0.15
6.	Kottinger Dr/Adams Way-Mirador Dr	1	0.23	0.25
7.	Stanley Blvd/Bernal Ave-Valley Ave	15	0.16	0.36
8.	Bernal Ave/Vineyard Ave-Tawny Dr	8	0.28	0.36

		Та	able	la de la construcción de la constru
Collision	Rates	at (the Study	Intersections

Note: c/mve = collisions per million vehicles entering; **Bold text** indicates calculated collision rates higher than the statewide average

The collision data for the intersections with higher-than-average collision rates were further examined to determine any apparent trends in collision types. At the study intersections of 1st Street/Neal Street and 1st Street/Bernal Avenue-Sunol Boulevard, the majority of the collisions reported were rear-end type collisions, which is a common collision type for a signalized intersection on an arterial, especially where conditions are occasionally congested. The primary collision factor associated with the rear-end collision was "unsafe speed."



At the study intersection of Vineyard Avenue/Adams Way, three collisions were reported over the fiveyear period, but no trend in collision types was noticed. The higher collision rate at this intersection can be attributed to the low traffic volumes.

Although the calculated collision rates at the three intersections were determined to be higher than the statewide averages for similar facilities, this does not indicate a safety concern because the intersections selected to determine the statewide collision rates does not necessarily correlate to the local conditions at the study intersections due to various factors including intersection spacing, signal timing, geometric design, traffic volumes, adjacent land uses, and travel mode.

Finding: All of the study intersections except three were determined to have a collision rates lower than the statewide averages for similar facilities. The higher collision rate at the three study intersections does not indicate any safety concern.



Conclusions

The following summarizes the findings of this analysis.

Existing Conditions

- Currently the intersection of 1st Street/Bernal Avenue-Sunol Boulevard operates at an unacceptable LOS E during the p.m. peak hour, but all other study intersections operate acceptably.
- The City's Traffic Impact Fee (TIF) program includes planned improvements to Stanley Boulevard/ Bernal Avenue-Valley Avenue and 1st Street/Bernal Avenue-Sunol Boulevard intersections.

Project Conditions

• The proposed project is anticipated to generate an average of 295 net new vehicle trips on a daily basis, of which 20 would occur during the a.m. peak hour and 24 would occur during the p.m. peak hour.

Existing plus Project Conditions

The study intersections are expected to continue operating at acceptable levels of service with the addition of project-generated traffic except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard which would continue to operate at an unacceptable LOS E during the p.m. peak hour. However, according to the City of Pleasanton General Plan, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the Downtown Specific Plan.

Existing plus Approved Projects Condition

- Under Existing plus Approved Projects Conditions and considering the planned improvements at the intersection of Stanley Boulevard/Bernal Avenue-Valley Avenue, the study intersections are expected to continue operating at acceptable levels of service except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard, which would continue to operate at an unacceptable LOS E during the p.m. peak hour.
- With the addition of project-generated traffic, the intersection of 1st Street/Bernal Avenue-Sunol Boulevard would deteriorate from an unacceptable LOS E to LOS F during the p.m. peak hour. However, according to the *City of Pleasanton General Plan*, this intersection is exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*. All of the remaining intersections would operate acceptably.
- The westbound left-turn queue at the 1st Street/Vineyard Avenue-Ray Street is expected to extend beyond the storage area without and with the addition of project-generated trips during both peak hours. The slight increase in the queue length due to the addition of project-generated traffic would result in a less-than-significant impact. During the p.m. peak hour, the southbound left-turn queue is expected to be accommodated within the available storage length without and with the project.



• The southbound left-turn queue at the 1st Street/Kottinger Drive-Spring Street intersection is expected to be accommodated within the available storage length without or with the project during the p.m. peak hour.

Cumulative Scenario

- Under Cumulative without Project Conditions and considering the planned improvements at the intersections of Stanley Boulevard/Bernal Avenue-Valley Avenue and 1st Street/Bernal Avenue-Sunol Boulevard, the study intersections are anticipated to operate acceptably except for the intersection of 1st Street/of Bernal Avenue-Sunol Boulevard, which would operate at an unacceptable LOS E during the p.m. peak hour even with planned improvements.
- With the addition of project-generated traffic, all study intersections are expected to operate acceptably except for the intersection of 1st Street/Bernal Avenue-Sunol Boulevard, which would continue to operate at an unacceptable LOS E during the p.m. peak hour. However, according to the *City of Pleasanton General Plan*, Downtown intersections such as 1st Street/Bernal Avenue-Sunol Boulevard are exempt from the LOS D standard unless the City determines that improvements necessary to maintain LOS D are consistent with the goals for the *Downtown Specific Plan*.
- The westbound left-turn queue length at the intersection of 1st Street/Vineyard Avenue-Ray Street is expected to exceed the available storage length without and with the addition of projectgenerated trips during both peak hours. The slight increase in the queue length due to the addition of project-generated traffic would result in a less-than-significant impact. During the p.m. peak hour, the southbound left-turn queue is expected to be accommodated within the available storage length without and with the project.
- The southbound left-turn queue at the Ist Street/Kottinger Drive-Spring Street intersection is expected to exceed the storage length under Cumulative Conditions without and with the project. The slight increase in the queue length due to the addition of project-generated traffic would result in a less-than-significant impact.

Project Access/Parking

- The project site would be accessed via one existing and one new full access driveway on Kottinger Drive and one new full access driveway on Vineyard Avenue.
- Parking would be provided at a rate of 0.8 spaces per one dwelling unit, resulting in 148 parking spaces. The proposed 149 parking spaces at the project site are expected to satisfy the projected parking demand.

Alternative Modes of Transportation

- Existing and proposed pedestrian facilities as well as existing bicycle facilities would adequately serve the project site.
- Existing transit route and bus stops adjacent to the project site on Vineyard Avenue and Ist Street together with the relocated bus stop on Kottinger Drive would adequately serve the project-generated transit trips.



Collision History

• For the five-year period of July 1, 2006, through June 30, 2011, the calculated collision rates for all study intersections except three were determined to be lower than the statewide average rates for similar facilities. The higher collision rate at the three study intersections does not indicate any safety concern.

Recommendations

- It is recommended that on-street parking be prohibited for 50 feet on either side of the proposed driveway on Vineyard Avenue to maintain clear sight lines.
- It is recommended that periodic maintenance, including trimming of the vegetation on both sides of the project driveways on Kottinger Drive and Vineyard Avenue, be undertaken to maintain clear sight lines.



Study Participants

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Technician/Graphics:	Deborah J. Mizell
Editing/Formatting:	Angela McCoy
Quality Control Review:	Dalene J. Whitlock, PE, PTOE

References

2009 Collision Data on California State Highways, California Department of Transportation, 2009 Altamont Commuter Express, <u>http://www.acerail.com</u> BART, <u>http://www.bart.gov/stations/schedules/</u> Downtown Specific Plan, City of Pleasanton, 2002 Highway Capacity Manual, Transportation Research Board, 2000 Highway Design Manual, 6th Edition, California Department of Transportation, 2006 Livermore Amador Valley Transit Authority, <u>http://www.lavta.org/</u> Pleasanton General Plan 2005-2025, City of Pleasanton, 2009 Pleasanton Housing Element Transportation Analysis, Fehr & Peers, 2011 Pleasanton Municipal Code, Quality Code Publishing, 2013 Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2006-2011 Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012

PLE004



Appendix A

Intersection Level of Service Calculations



HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Vallev

Movement ane Configurations Volume (vph)			•	•		,	^	-		A	+	¥
Lane Configurations Volume (vph)	83	181	F.B.G	WBI	WBT	VIGR	NPI	NRT	NBR	195	CBT	SRR
Volume (vph)	F.	\$	×	5	4	*	*	\$	*	5	44	
	204	195	4	185	836	1201	115	446	111	216	298	156
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fotal Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
ane Util, Factor	16.0	0.95	1.00	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.95	
rpb, ped/bikes	1.00	1.00	0.97	1.00	0.98	1.00	1.00	1.00	0.98	1.00	1.00	
Ipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Li L	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	0.95	
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd Flow (prot)	3547	3657	1591	3547	3241	1489	1829	3657	1599	3547	3469	
-It Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd Flow (perm)	3547	3657	1591	3547	3241	1489	1829	3657	1599	3547	3469	
^b eak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	224	214	48	203	919	1320	126	490	122	237	327	171
RTOR Reduction (vph)	0	0	28	0	87	198	0	0	0	0	74	0
ane Group Flow (vph)	224	214	20	203	1452	502	126	490	122	237	424	0
Confl Peds (#/hr)			12			36			36			
Turn Type	Prol		Perm	Prot		Prot	Prof		Free	Prot		
Protected Phases	÷	9		ŝ	2	2	ო	00		2	4	
Permitted Phases			9						Free			
Actuated Green, G (s)	10.3	37.0	37.0	10.2	36.9	36.9	10.8	19.8	100.0	12.0	21.0	
Effective Green, g (s)	11.3	41.0	41.0	11.2	40.9	40.9	11.8	22.8	100.0	13.0	24.0	
Actuated g/C Ratio	0.11	0.41	0.41	0.11	0.41	0.41	0.12	0.23	1.00	0.13	0.24	
Clearance Time (s)	4.0	0"1	7.0	4.0	0.7	0.7	40	6.0		4 0	6.0	
/ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3 O	3.0	
ane Grp Cap (vph)	401	1499	652	397	1326	609	216	834	1599	461	833	
//s Ratio Prol	c0.06	0.06		0.06	c0.45	0.34	c0.07	c0.13		0.07	0.12	
I/s Ralio Perm			0.01						c0.08			
//c Ratio	0.56	0 14	0.03	0.51	1.10	0.82	0.58	0.59	0.08	0.51	0.51	
Jnitorm Delay, d1	42.0	18.5	17.6	41.8	29.6	26.3	41.8	34.4	0.0	40.6	32.9	
Progression Factor	1.01	0 90	1 14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
ncremental Delay, d2	1.7	0.2	0-1	11	55.0	12.0	4.0	11	0.1	1.0	0.5	
Delay (s)	44.1	16.8	20.2	42.9	84.5	38.4	45.7	35.5	0.1	41.5	33.4	
evel of Service	٥	-	U	0	Ľ	0		0	A	0	U	
Approach Delay (s)		29.7			67.8			31.4			36.0	
Approach LOS		O			ш			o			0	
otesection Summary		0								i i		
HCM Average Control Delay			52.2	£	M Level	of Servic			٥			
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			100.0	Su	m of lost	time (s)			12.0			
Intersection Capacity Utilization	_		81.5%	Ö	U Level o	f Service			0			
Analysis Period (min)			6									

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

Momental ER MB1 MB2 MB1	HCM Signalized Inter 30: Vineyard-Tawny {	sectio & Berr	n Cap al	acity /	Vnalysi	s						4/1	7/2013
Non-motion ER WB1 W		٩	1	1	5	Ŧ	~	4	-	٩	٨	-	7
	Movement	EBL	EBT	EBR	WBI	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Molume (wph) 127 3 23 33 33 157 333 150 300 100	Lane Configurations	*	ŧ			4	×	*	44		r	4	
Teal Earl Flow (prici) 190 1900	Volume (vph)	127	4	32	74	29	173	33	E0E	16	75	385	150
Lare Util Factor 30	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fib Display TO <	Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
F(h) pach/hises 100 039 100 100 100 100 039 F(h) pach/hises 100 034 100 035 100 036 100 100 100 100 100 100 100 100 100 100 100 100	Lane Util, Factor	0.95	0.95			1.00	1.00	1 00	0.95		1.00	1.00	
	Frpb, ped/bikes	1 00	66'0			1.00	1.00	1.00	1 00		1.00	66-0	
Fri 100 034 100 035 100 100 100 100 <td>Flpb, ped/bikes</td> <td>1,00</td> <td>1.00</td> <td></td> <td></td> <td>1.00</td> <td>1.00</td> <td>1_00</td> <td>1 00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td>	Flpb, ped/bikes	1,00	1.00			1.00	1.00	1_00	1 00		1.00	1.00	
II. Promitted 036 037 037 036 <	Frt	1.00	0.94			1.00	0.85	1 00	66'0		1.00	96 0	
Sald. Flow (port) 1477 1412 1532 1532 1532 1533 <td>Filt Protected</td> <td>0.95</td> <td>0,97</td> <td></td> <td></td> <td>16.0</td> <td>1,00</td> <td>0.95</td> <td>1.00</td> <td></td> <td>0,95</td> <td>1 00</td> <td></td>	Filt Protected	0.95	0,97			16.0	1,00	0.95	1.00		0,95	1 00	
	Satd Flow (prot)	1477	1412			1592	1391	1829	3629		1829	1829	
Sald, Flow (pm) 1477 1412 1522 1531 1532 1532 1532 1532 1532 1532 1532 1532 1532 1532 1533 1533 1533 1533 1533 1533 1533 1533 1533 1533 1533 1533 1533 1533 153 153 153 153 153 153 153 153 153 153 153 153 153 153 153 153 153 153 143 143 114	Flt Permitled	0,95	0,97			0.97	1.00	0.21	1_00		0,51	1 00	
Peak-Induction (wh) 0.87 0.85 <th0.85< th=""> 0.85 0.85<td>Satd. Flow (perm)</td><td>1477</td><td>1412</td><td></td><td></td><td>1592</td><td>1391</td><td>398</td><td>3629</td><td>ļ</td><td>973</td><td>1829</td><td></td></th0.85<>	Satd. Flow (perm)	1477	1412			1592	1391	398	3629	ļ	973	1829	
Rdi, Flow (vpr), Banding (eff) 146 5 38 87 69 204 39 356 19 88 453 170 Lame Group Flow (vph), Band Group Flow (vph) 6 2 0 0 10	Peak-hour factor, PHF	0.87	0,85	0.85	0.85	0.85	0,85	0.85	0.85	0.85	0.85	0.85	0.85
RTOR Reduction (vph) 0 26 0 10 10 10 10 10 14 0 Confl. Peck (#Inh) 10	Adj Flow (vph)	146	2	38	87	69	204	39	356	19	88	453	176
Conflicted Flow (rph) 56 7 0 155 94 39 371 0 86 615 0 Conflicted Flows 10	RTOR Reduction (vph)	0	26	0	0	0	110	0	4	0	0	14	0
Continue (Hinth) 3 3 4 Performagi (Hinth) 10	Lane Group Flow (vph)	96	67	0	0	156	8	39	371	0	88	615	0
Parking (#hr) 10	Confl. Peds. (#/hr)			e	e			4					4
	Parking (#/hr)	10	10	10	10	10	9						
Ordeneter Phases 4 4 3 3 2 2 6 Permitter Phases 3 3 3 2 2 6 296	Turn Type	Split			Splil		Perm	Perm			Perm		
Permiller Phases 3 2 3 2 6 296 204 047<	Protected Phases	4	4		e7	m			~			9	
Actualed Green (5) 39 39 39 130 130 130 296	Permitted Phases						e	2			9		
Filterine Green, g(s) 113 113 115 115 115 316	Actuated Green, G (s)	66	6.6			13.0	13.0	29.6	29.6		29.6	29.6	
Actualed g/C Ratio 0.18 0.19 0.19 0.19 0.19 0.47 <td>Effective Green, g (s)</td> <td>11.9</td> <td>11.9</td> <td></td> <td></td> <td>15.0</td> <td>15.0</td> <td>31.6</td> <td>31.6</td> <td></td> <td>316</td> <td>31.6</td> <td></td>	Effective Green, g (s)	11.9	11.9			15.0	15.0	31.6	31.6		316	31.6	
Cheratore Time (s) 50	Actuated g/C Ralio	0.18	0.18			0.22	0.22	0.47	0.47		0.47	0.47	
Vehicle Extension (s) 3.0	Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5,0	5.0	
Lane Grp Cap (Yeh) 260 249 334 309 166 1699 456 856 Vis Ratio Pretin 0.01 0.07 0.07 0.07 0.09 0.03 Vis Ratio Pretin 0.37 0.27 0.07 0.07 0.09 0.09 0.03 Vis Ratio Pretin 0.37 0.27 0.44 0.31 0.21 0.09 0.03 0.72 0.09 0.03 0.72 0.09 0.72 0.09 0.72 0.09 0.72 0.09 0.72 0.74 0.71 0.73 0.72 0.74 0.71 0.73 0.72 0.74 0.71 0.73 0.72 0.74 0.71 0.73 0.72 0.74 0.71 0.73 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.74 0.72 0.72 0.74 0.72 0.72 0.74 0.72 0.74 0.72	Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	1
vis Ratio Prot c0.07 0.05 c0.10 0.01 0.01 c0.34 Vis Ratio Prem 0.37 0.27 0.19 0.22 0.19 0.22 Vis Ratio Prem 0.37 0.27 0.14 0.31 0.22 0.19 0.72 Vis Ratio Prem 0.37 0.10 1.00 1.00 1.00 1.00 1.00 Vis Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Vis Ratio 0.9 0.6 0.10 0.01 0.01 0.01 0.01 0.01 0.01 0.01 1.00 <td>Lane Grp Cap (vph)</td> <td>260</td> <td>249</td> <td></td> <td></td> <td>354</td> <td>309</td> <td>186</td> <td>1699</td> <td></td> <td>456</td> <td>856</td> <td>Ì</td>	Lane Grp Cap (vph)	260	249			354	309	186	1699		456	856	Ì
vis Ralio Permit	v/s Ratio Prot	c0.07	0.05			c0.10			0.10			c0.34	
vic Ratio 0.37 0.27 0.24 0.31 0.22 0.19 0.72 Unlikom Delay, d1 24,5 24,0 22,6 13,9 10,6 10,0 </td <td>v/s Ralio Perm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.07</td> <td>0.10</td> <td></td> <td></td> <td>0.09</td> <td></td> <td></td>	v/s Ralio Perm						0.07	0.10			0.09		
Uniform Delay, d1 24,5 24,0 22,6 21,9 10,6 10,5 14,4 Pogression Factor 1,00 <t< td=""><td>v/c Ratio</td><td>0.37</td><td>0.27</td><td></td><td></td><td>0.44</td><td>0.31</td><td>0.21</td><td>0.22</td><td></td><td>0.19</td><td>0.72</td><td></td></t<>	v/c Ratio	0.37	0.27			0.44	0.31	0.21	0.22		0.19	0.72	
Progression Factor 1.00 <td>Uniform Delay, d1</td> <td>24.5</td> <td>24.0</td> <td></td> <td></td> <td>22.6</td> <td>21.9</td> <td>10.6</td> <td>10.6</td> <td></td> <td>10.5</td> <td>14.4</td> <td></td>	Uniform Delay, d1	24.5	24.0			22.6	21.9	10.6	10.6		10.5	14.4	
Incremental Delay, d2 0.9 0.6 0.1 0.2 2.9 Delay (s) 2.5.4 24.6 2.3.5 2.1.1 10.7 17.3 Level of Services C C 2.3.5 2.2.5 11.1 10.7 17.3 Approach Delay (s) 2.5.0 2.5.0 2.5.0 10.7 10.7 17.3 Approach Delay (s) 2.5.0 2.5.0 2.2.9 10.7 8 16.5 Approach Delay (s) 2.5.0 C B 10.7 8 8 Approach Delay (s) 2.5.0 C 2.8.9 17.4 HCM Level of Service B 8 Actualed Cycle Length (s) 0.58 Sum of Iost line (s) 9.0 9.0 8 4 Arables Cycle Length (s) 67.5 Sum of Iost line (s) 9.0 9.0 8 4 4 Arables Cycle Length (s) 54.% ICU Level of Service B 9.0 6 6 6 6 6 6 6 6	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Delay (s) 25.4 24.6 23.5 22.5 111 10.7 17.3 Level of Service C C C C C 10.7 17.3 Approach Delay (s) 25.0 C B B B B B Approach Delay (s) 25.0 C C B B B B Approach Delay (s) C C C B B B Moreage Control Delay 17.4 HCM Level of Service B B B B HCM Volume to Capacity ratio 0.58 Sum of lost time (s) 9.0 0 0 Intersection Capacity Unitization 58.4% ICU Level of Service B B Analysis Period (min) 15 c C micel Lane Group 16 C C 16 17.3	Incremental Delay, d2	0.9	0.6			0.9	0.6	0.6	0.1		0.2	2.9	
Level of Service C C C B B B Approach Delay (s) 2.5.0 2.2.9 10.7 16.5 Approach Delay C 0.7 B B Approach Delay C 0.7 16.5 B Approach Delay 17.4 HCM Level of Service B B HCM Average Control Delay 17.4 HCM Level of Service B HCM Volume to Capacity ratio 0.58 Sum of lost time (s) 9.0 Intersection Capacity Unitration 58.4% ICU Level of Service B Analysis Period (min) 54.4% ICU Level of Service B	Delay (s)	25.4	24.6			23.5	22.5	111	10.7		10.7	17.3	
Approach Delay (s) 25.0 22.9 10.7 16.5 Approach LOS C C B B B Approach LOS C C B B B Actualed Cycle Length (s) 67.5 Sum of lost time (s) 9.0 HCM Average Control Delay 17.4 HCM Level of Service B Actualed Cycle Length (s) 67.5 Sum of lost time (s) 9.0 Intersection Capacity Utilization 15.8.4% ICU Level of Service B Analysis Period (min) 15 C Critical Lane Group	Level of Service	ပ	ပ			o	U	•	•		80	8	
Approach LOS C C B B Approach LOS C C B B Intersection Summary 17.4 HCM Level of Service B HCM Volume (c Capacity ratio 0.58 Num of lost lime (s) 9.0 Actuated Cycle Length (s) 67.5 Sum of lost lime (s) 9.0 Analysis Period (min) 15 Critical Lane Group	Approach Delay (s)		25.0			22.9			10.7			16.5	
Intersection Summary HCM Average Control Delay 17.4 HCM Level of Service B HCM Volume to Capacity ratio 0.58 0.58 9.0 Actuated Cycle 67.5 Sum of lost time (s) 9.0 Intersection 58.4% ICU Level of Service B Analysis Period (min) 15 C.U Level of Service B	Approach LOS		U			U			8			80	
HCM Average Control Delay 17.4 HCM Level of Service B HCM Volume to Capacity ratio 0.58 0.58 Actuated Cyte Length (s) 67.5 Sum of lost time (s) 9.0 Intersection Capacity Utilization 54.4% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	Intersection Summary								X				F
HCM Volume to Capacity ratio 0.58 Actuated Cyde Length (s) 67.5 Sum of lost time (s) 9.0 Intersection Capacity Unitization 58.4% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	HCM Average Control Delay			17.4	Ξ	CM Level	of Servic			60			1
Actualed Cyde Length (s) 67.5 Sum of lost lime (s) 9.0 Intersection Capacity Utilization 58.4% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	HCM Volume to Capacity ratio			0.58									
Intersection Capacity Utilization 58.4% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	Actuated Cycle Length (s)			67.5	SL	m of lost	time (s)			9.0			
Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilization	-		58.4%	2	U Level c	f Service			æ			
	Analysis Period (min)			15									
	c Critical Lane Group												

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

HCM Signalized Intersection Capacity Analysis 93: Vineyard-Ray St & First

dinum ant	•				1	•	,	•		-	-	
devement	、	t	r	6	ŀ	1	1	F	¢	*	+	•
	EBL	183	EBR	WBI	WBT	WBR	NBL	TBN	NBR	SBL	SBT	RBS
ane Configurations	۴	+	۴.	*	+	¥.	F	44		*	\$	
/olume (vph)	21	107	87	134	224	59	43	369	61	38	813	138
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
fotal Lost time (s)	3.0	3.0	3.0	3.0	30	3.0	3.0	30		0.6	3.0	30
ane Util, Factor	1.00	1.00	1.00	1 00	1 00	1.00	1 00	0.95		1 00	0.95	1 00
rpb, ped/bikes	1.00	1.00	0.99	100	1.00	66.0	00	66 0		100	1 00	0.96
-lpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1.00		1.00	1 00	1.00
int in the second se	1.00	1.00	0.85	1 00	1 00	0.85	1 00	0.98		1 00	1 00	0.85
Fit Prolected	0.95	1.00	1.00	0.95	1 00	1.00	0.95	1 00		0.95	1 00	1 00
Satd. Flow (prot)	1829	1925	1614	1554	1636	1372	1829	3550		1829	3657	1577
It Permitted	0.95	1.00	1.00	0.95	1,00	1.00	0.95	1,00		0.95	1.00	1 00
Satd. Flow (perm)	1829	1925	1614	1554	1636	1372	1829	3550		1829	3657	1577
^b eak-hour factor, PHF	06'0	06"0	0.90	06.0	06'0	06-0	06.0	06'0	0.90	06'0	0.90	0.90
Adj. Flow (vph)	23	119	67	149	249	99	48	410	89	42	903	153
RTOR Reduction (vph)	0	0	83	0	0	26	0	10	0	0	0	80
ane Group Flow (vph)	23	119	14	149	249	40	48	468	0	42	606	73
Confl. Peds. (#/hr)			-			-			თ			4
Parking (#/hr)				10	10	10	1	-	ł			
Furn Type	Split		Perm	Split		Perm	Prot			Prol		Perm
Protected Phases	4	4			e		-	9		S	2	
permitted Phases			4			e						2
Actuated Green, G (s)	13,3	13.3	13.3	18.9	18.9	18.9	5.2	45.7		5,1	45.6	45.6
Iffective Green, g (s)	14.3	14.3	14.3	19.9	19.9	19.9	6.2	47.7		6.1	47.6	47.6
Actuated o/C Ratio	0.14	0.14	0.14	0.20	0.20	0.20	90'0	0.48		90.06	0.48	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
(ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
ane Gro Can (voh)	262	275	231	309	326	273	113	1693		112	1741	751
//s Ratio Prot	0.01	c0.06		0.10	c0 15		c0 03	0.13		0.02	c0.25	
I/s Ratio Perm			0.01			0.03						0.05
//c Ratio	60 0	0.43	0.06	0.48	0.76	0.15	0.42	0.28		0.38	0.52	0.10
Jniform Delay, d1	37.2	39.1	37.0	35,5	37.8	33.1	45.2	15.8		45.1	18.2	14.4
Progression Factor	1.00	1.00	1 00	1.00	1.00	1 00	1.37	0.70		1.51	0.37	0.11
ncremental Delay, d2	0.1	1.1	0.1	1.2	10.2	0.3	2.4	0.4		1.9	1.0	0.2
Delay (s)	37.3	40.2	37.1	36.7	48.0	33.3	64.2	11.4		6.69	7.8	1.9
evel of Service	0	۵	0	0		o	ш	80		ш	A	4
Approach Delay (s)		38.7			42.3			16.2			9.4	
Approach LOS		o			٥			æ			A	
ntersection Summary	8			No. of Lot			BI C	h				
HCM Average Control Delay			20.5	H	CM Level	of Servic	e		U			
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			100.0	Su	im of lost	time (s)			12.0			
ntersection Capacity Utilization			54.1%	Ö	U Level c	of Service			4			
Analysis Period (min)			15									
Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

Montretit EBI EBI EBI Montretit EBI EBI Montretit EBI EBI Montretit EBI EBI<	4 9 4 4 4 10 12 1 1 1 10 12 1 1 1 10 12 1 1 1 10 12 1 1 1 10 12 1 1 1 11 12 1 1 1	1900 se	+ ₩BT	~	1	+	٩	۶	→	7
	B1 E84 60 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	26 1900	WBT							
	4 4 1010 101 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100	26 1900		WBR	NBL	NBT	NBR	SBL	SBT	SBR
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	144 144 130 190 199 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 99 90 99 90 90 10 10 10 10	26 1900	+7	*	*	+1		*	+1	
Teal Faw (wnin) 1900	1900 1900 1900 1900 1900 1900 1900 1900	1900	74	51	23	419	37	35	919	92
Terr Induction 30	200 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1900	1900	1900	1900	1900	1900	1900	1900
Fine bull Factor 100	00 999 94 94 94 94 94 94 10 91 10 91 10 94 10 91 10 10 10 10 10 10 10 10 10 10 10 10 10		3.0	3.0	3.0	30		30	3.0	
Frip, pachtikes 0.99 1.00 0.39 1.00 1.00 1.00 1.00	99 98 98 94 91 91 91 10 91 10 91 10 91 10 10 10 10 10 10		1 00	1.00	1.00	1 00		1.00	1 00	
Flow 038 039 100 </td <td>99 98 98 94 99 99 10 10 10 10 10 10 10 10 10 10 10 10 10</td> <td></td> <td>1.00</td> <td>0.93</td> <td>1.00</td> <td>0.99</td> <td></td> <td>1 00</td> <td>0 99</td> <td></td>	99 98 98 94 99 99 10 10 10 10 10 10 10 10 10 10 10 10 10		1.00	0.93	1.00	0.99		1 00	0 99	
Fraction 038 100 035 100 036 100 100 100 100 100 100 100 100 100 100 100 100 10	98 94 94 91 91 91 91 91 91 91 91 91 91 91 91 91		0.99	1 00	1,00	1.00		0.96	1 00	
FIP Pretect 0.98 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.94 100 0.94 100 0.94 100 0.94 100 0.94 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.94 100 0.91	99 449 91 0.91 91 0.91 91 0.91 9 0 65 0 65 0 10 10		1.00	0.85	1 00	0,99		1 00	66 0	
Start Free (not) 1549 1523 1222 1554 1600 1487 1603 Safd, Free (pert) 1471 1310 1291 031	49 94 91 091 65 0 65 24 10 10		0.99	1 00	0.95	1,00		0,95	1 00	
Filt Fermitted 034 100 018 100 045 100 100 100 100	94 771 991 091 9 0 65 0 65 24 10 10 4		1592	1292	1554	1600		1487	1603	
Salut, Flow (perm) 1471 1500 1222 290 1600 705 1603 0.91 <th0.91< th=""> 0.91 0.91</th0.91<>	71 91 0.91 65 0 0 10 24 10 10		0.93	1.00	0,18	1.00		0.45	1 00	
Peak-hour factor, PHF 0.31	91 0.91 9 48 12 9 0 0 10 24 10 10		1500	1292	290	1600		705	1603	
Adi Flow (vph) 14 48 12 29 81 56 25 460 41 38 1010 84 Lane Group Flow (vph) 0 9 0 0 10	48 12 9 0 65 0 10 10 4 10	0.91	0.91	0,91	0.91	0.91	0.91	0,91	0.91	0.91
RTOR Reduction (vpn) 0 6 0 10	9 0 65 0 10 10	29	81	56	25	460	41	38	1010	84
Lare Group Flow (ph) 0 65 0 0 100 0 100 <th< td=""><td>65 0 10 10</td><td>0</td><td>0</td><td>48</td><td>0</td><td>2</td><td>0</td><td>0</td><td>2</td><td>0</td></th<>	65 0 10 10	0	0	48	0	2	0	0	2	0
Confl. Peds (#hr) 36 24 24 36 37 37 78	10 10 4	0	110	80	25	499	0	38	1092	0
Parking (#hr) 10	10	24		36	36		36	36		36
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	4	10	10	10	10	10	10	10	10	10
Protected Phases 4 8 2 6 Protected Phases 4 8 2 6 6 Actualed Green G (s) 13.3 13.3 13.3 73.7 73.7 73.7 Effective Green (g (s) 13.3 13.3 13.3 73.7 73.7 73.7 Effective Green (g (s) 13.3 13.3 13.3 73.7 73.7 73.7 Effective Green (g (s) 13.3 13.3 73.7 73.7 73.7 73.7 Effective Green (g (s) 3.4 3.4 3.4 3.3 3.7 73.7 Vehaled Green (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Vehaled Green (s) 3.4 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Clearance Time Green (s) 3.4 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 <	4	Perm		Perm	Perm			Perm		
Permitted Phases Actualated Frances A B 2 6 78/7 <td></td> <td></td> <td>80</td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td>			80			2			9	
Activated Green, G (s) 13.3 13.3 13.3 13.3 13.3 13.3 13.7 13.7 78.		80		8	2			9		
Effective Green, g(s) 14.3 14.3 14.3 14.3 17.3 7.37 3.30	3.3		13.3	13.3	7.8.7	78.7		78.7	78.7	
Clastication 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.16 0.06	4.3		14.3	14.3	79.7	19.7		79.7	1.97	
Addition (s) 4.0 <t< td=""><td>14</td><td></td><td>0.14</td><td>0.14</td><td>0.80</td><td>0.80</td><td></td><td>0.80</td><td>0.80</td><td></td></t<>	14		0.14	0.14	0.80	0.80		0.80	0.80	
Vehicle Extension (s) 3.0	4.0		4.0	4.0	4.0	40		4.0	4,0	
Care Grp Cap (right) 210 215 185 231 1275 562 1278 vis Ratio Prot 0.01 0.01 0.01 0.03 0.03 0.08 vis Ratio Prot 0.02 0.01 0.01 0.01 0.05 0.08 vis Ratio Perm 0.04 0.01 0.03 0.51 0.04 0.11 0.05 vis Ratio Perm 0.31 0.51 0.04 0.11 0.39 0.07 0.85 Progression Factor 1.00 1.00 1.00 1.00 1.22 6.5 Incremental Delay, d2 39.3 2.1 1.37 0.4 6.3 1.6 2.00 Progression Factor 1.00 1.00 1.62 1.31 0.52 2.06 Incremental Delay, d2 39.3 2.1 7.10 4.6 6.3 1.6 2.00 Approach Delay 10 0.1 0.1 0.1 0.3 0.2 6.0 Aprorach Delay 18.3 4	3.0		3.0	3.0	3.0	3.0	1	3.0	3.0	
vis Ratio Prot vis Ratio Prot Vic Ratio Uniform Delay (1 2) 21 0.01 0.03 0.03 0.03 0.03 Vic Ratio Uniform Delay (1 3) 0.01 0.03 0.03 0.03 Uniform Delay (1 3) 0.01 0.01 0.01 0.02 2.06 Uniform Delay (2 3) 0.01 0.01 0.01 0.02 2.06 Incremental Delay (2 3) 0.01 0.02 2.06 Incremental Delay (2 3) 0.01 0.02 2.06 Incremental Delay (2 3) 0.01 0.02 2.06 21 0.1 0.01 1.00 1.00 1.02 2.06 21 0.1 0.01 1.00 1.22 1.63 22 0.57 23 3.0 2.1 0.1 0.02 2.06 21 0.1 0.01 1.00 1.22 1.63 21 0.1 0.02 2.06 21 0.1 0.01 0.02 2.06 21 0.1 0.03 2.00 21 0.1 0.00 21 0.1 0.00 22 0.1 0.00 23 0.1 0.00 23 0.1 0.00 24 0.1 0.00 24 0.1 0.00 25 0.1 0.00 26 1 0.00 20 1.0 0.00 20 1	10		215	185	231	1275		562	1278	1
vis Ratio Perm. 004 c007 0.01 0.09 0.07 0.07 0.85 Unit Ratio Perm. 0.31 0.51 0.4 0.11 0.39 0.07 0.85 Unitorn Palsy d1 38.6 37.0 2.3 1.81 0.62 2.06 Unitorn Palsy d2 0.3 0.3 1.0 1.0 1.0 1.2 2.5 6.5 Progression Factor 1.00 1.00 1.00 1.82 1.81 0.62 2.06 Unitorne Palsy d2 0.3 0.3 0.3 0.3 0.4 6 6.3 0.5 2.6 1.81 0.62 2.06 Unitorne Palsy d2 0.3 0.3 0.3 0.3 0.3 0.4 6 6.3 0.5 2.6 1.81 0.62 2.06 Unitorne Palsy d2 0.3 0.3 0.3 0.3 0.3 0.3 0.6 2.2 6.5 0.4 0.1 0.1 0.0 1.50 1.2 0.5 2.06 Unitorne Palsy d2 0.3 0.3 0.4 1.7 0.3 0.3 0.3 0.5 2.6 1.81 0.62 2.06 Unitorne Palsy d2 0.3 0.3 0.4 1.7 0.3 0.3 0.3 0.3 0.5 0.7 0.85 0.1 0.0 1.00 1.00 1.00 1.62 0.4 1.6 0.3 0.3 0.3 0.3 0.3 0.3 0.4 0.1 0.62 2.6 1.94 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3						0.31			c0.68	
vic Ratio 0.31 0.51 0.4 0.11 0.39 0.07 0.85 Progression Factor 1.00 1.00 1.00 1.01 1.23 3.01 2.22 6.5 Progression Factor 1.00 1.00 1.00 1.01 1.23 3.01 2.22 6.5 Progression Factor 0.00 0.01 1.03 0.10 1.62 2.00 Incremental Delay, d2 0.39 2.1 0.1 0.9 0.9 0.2 6.7 Approach Delay, d3 3.93 4.17 37.0 4.6 6.3 1.6 2.00 Approach Delay 0.3 3.93 4.17 37.0 4.6 6.3 1.6 2.00 Approach LOS 0.3 3.03 4.17 37.0 4.6 6.3 1.6 2.00 Approach LOS 0.3 0.3 0.1 A A A C C Approach LOS 0.3 0.3 0.1 A A<	04		c0.07	0.01	0.09			0.05		
Uniform Delay, d1 38.4 33.6 37.0 2.3 3.0 2.2 6.5 Progression Factor 1.00 1.00 1.00 16.2 1.81 0.62 2.06 Incremental Delay, d2 39.3 2.1 0.1 0.62 2.06 Delay (s) 39.3 4.17 37.0 4.6 6.3 1.5 2.00 Delay (s) 39.3 4.17 37.0 4.6 6.3 1.5 2.00 Approach Delay 39.3 4.17 37.0 4.6 6.3 1.9 4.7 Approach Delay 39.3 40.1 6.2 1.94 6.2 1.94 Approach Delay 18.3 HCM Level of Service B A A A Actuated Cycle Length relio 0.80 0.80 0.80 0.80 1.94 A A A A C C A C C A A C C A A C C A </td <td>31</td> <td></td> <td>0.51</td> <td>0.04</td> <td>0,11</td> <td>0.39</td> <td></td> <td>0.07</td> <td>0.85</td> <td></td>	31		0.51	0.04	0,11	0.39		0.07	0.85	
Progression Factor 100 100 100 100 100 100 103 133 134 0.52 2.06 Delay (s) 03 2.1 0.1 0.9 0.9 0.2 6.7 Delay (s) 03 3.3 4.17 7.10 4.6 6.7 6.7 Delay (s) 03 0.3 4.17 7.10 4.6 6.7 6.7 Approach Delay 03 3.3 4.0.1 6.2 19.4 6.2 Approach Delay 0 0 0 0 0 6.2 19.4 Approach Delay 18.3 HCM Level of Service 8 6.2 19.4 Hettsection 0.80 0.80 0.80 0.80 6.0 19.4 Actualed Cycle Length (s) 13.3 HCM Level of Service 8 8 6.0 Actualed Cycle Length (s) 100.0 0.80 0.80 0.80 6.0 6.0 Actualet Cycle Length (s) 73.0%	8.4		39.6	37.0	23	3.0		2.2	6.5	
Incremental Delay (2 03 03 05 67 16 16 16 16 16 16 16 16 16 16 16 16 16	00		1.00	1.00	1.62	1.81		0.62	2.06	
Delety(s) 39.3 41.7 37.0 46 6.3 15 200 Level of Service D D D A A A C Approach LOS 33.3 40.1 A A A C Approach LOS 33.3 40.1 A A A C Approach LOS D D D A A C 19.4 Approach LOS D D A A A C 19.4 Attrastection Summary D D HCM Level of Service B A A A A A B A A B A A B A A B A B A B B A B B A B B A B B A B B A B B A B B B B B B B </td <td>0.9</td> <td></td> <td>2,1</td> <td>0.1</td> <td>0.9</td> <td>0.9</td> <td></td> <td>0.2</td> <td>6.7</td> <td></td>	0.9		2,1	0.1	0.9	0.9		0.2	6.7	
Level of Service D D A A C Approach Delay (s) 39.3 40.1 6.2 19.4 Approach Delay D D A 8.2 Approach Delay D D A 8.4 Approach Delay 18.3 40.1 6.2 19.4 HCM Average Control Delay 18.3 HCM Level of Service B HCM Volume Coaschy retio 0.80 0.80 0.80 Actuated Cyte Leopht (s) 100.0 Sum of lost line (s) 6.0 Intersection Capacity Ulization 73.0% 1CU Level of Service C	9.3		417	37.0	4.6	6.3		1.6	20.0	
Approach Delay (s) 39.3 40.1 6.2 19.4 Approach Delay (s) D D A B Approach LOS D D A B Approach LOS D A B B Approach LOS Normeley 18.3 HCM Level of Service B HCM Average Control Delay 18.3 HCM Level of Service B B Actuated Cycle Length (s) 0.80 Sum of lost time (s) 6.0 B Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 C Analysis Period (min) 75	a				A	A		A	U	
Approach LOS D D A B Intersection Summary Intersection Summary 18.3 HCM Level of Service B HCM Average Control Delay 18.3 HCM Level of Service B HCM Average Control Delay 18.3 HCM Level of Service B HCM Average Control Delay 18.3 HCM Level of Service B Actuated Cycle Length (s) 0.80 0.80 C Analysis Period (min) 73.0% ICU Level of Service C	9.3		40.1			6.2			19.4	
Intersection Summary Item and the section Summary B HCM Average Control Delay 18.3 HCM Level of Service B HCM Average Control Delay 18.3 HCM Level of Service B Actuated Cycle Length (3) 0.80 Sum of lost time (3) 6.0 Intersection Capacity Utilization 73.0% ICU Level of Service C Analysis Period (min) 15 ICU Level of Service C	G					A			8	
HCM Average Control Delay 18.3 HCM Level of Service B MCM Volume to Capacity relico 0.80 0.80 Actuated Cycle Level of Service 6.0 Actuated Cycle Level (10.0 Sum of lost line (s) 6.0 Intersection 73.0% ICU Level of Service C Analysis Period (min) 15 Analysis Period (min)						1				
Actuated Cycle Length (a) Actuated Cycle Length (3) Intersection Capacity Utilization 73.0% tCU Level of Service C Analysis Period (min) 15 Analysis Period (min)	18.3	н	M Level	of Servic			•••			
Actuated Cyde Length (s) 10U 5Um or of lost time (s) 6U Intersection Capacity Utilization 73.0% ICU Level of Service C 2. Oxiver 1.0.000000 (min) 15	OR D		:							
Analysis Period (min) 15	73.0%	ב צב	T of lost	lime (s) f Service			o o			
	15									
c Unitical Lane Group	22 33 33 93 93 93 93 93 93 18 10 80 10 10 10 10 10 10 10 10 10 10 10 10 10		Đế số H	2.1 3.5 3.6 3.6 3.6 3.6 4.7 4.1 4.1 4.1 4.1 4.1 1 4.0 1 HCM Level 1 CU Level 1 CU Level 1 CU Level 1 CU Level 1 CU L	c0 07 0.01 9.51 0.04 39.5 10.04 31.00 1.00 2.1 0.1 41.7 37.0 40.1 1.0 40.1 0 40.1 0 40.1 0 1 0 40.1 0 1 0 8.um of lost litme (s) ICU Level of Service	c0.07 0.01 0.09 0.51 0.04 0.11 0.55 7.04 0.11 38.6 37.0 4.01 2.1 0.1 0.0 4.17 37.0 4.6 4.17 37.0 4.6 40.1 0 4.6 40.1 0 1.0 1 0 1.0 40.1 0 1.0 1 0 1.0 1 1.0 1.0 1 1.0 1.0 2 1.0 1.0 40.1 0 1.0 1 0 1.0 2 1.0 1.0 3 0.1 1.0 1 0.1 1.0 2 0.0 1.0 3 0.0 1.0 3 0.0 1.0 4.0 0.0 1.0 1 0.0 1.0	and the second s	c0.07 0.01 0.09 0.51 0.04 0.11 0.39 386 37.0 23 3.0 2.1 0.1 0.10 1.62 1.81 4.1 37.0 4.6 6.3 4.0 D A 6.2 6.3 4.0 A 6.2 6.3 4.0 A 6.2 6.3 4.0 A 6.2 6.3 A 40.1 A 6.2 6.3 A 1.0 A 6.3 A 6	c0.07 0.01 0.09 0.05 0.51 0.04 0.11 0.39 0.07 0.51 0.04 0.11 0.39 0.07 0.51 0.01 1.00 1.00 1.02 2.2 1.00 1.00 1.00 1.62 1.81 0.62 2.1 0.1 0.39 0.39 0.22 2.2 4.01 7.0 4.6 6.3 1.6 0.62 D A A A A A A Hold D A A A A A A D A A A A A A A HCMLevel of Service A	a007 0.01 0.09 0.06 0.06 0.06 0.05 0.06 0.05 <td< td=""></td<>

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Praject AM Peak Hour Existing Conditions

HCM Signalized Inters 96: Bernal & First St	sectio	n Cap	acity A	nalysi	s						4/1	7/2013
-	٩	t	*	5	Ŧ	~	r	+	•	۶	→	1
Movement	E	E81	EBR	WBIT	WBT	WBR	NBL	18N	NBR	SBL	SBT	SBR
Lane Configurations	5	\$	*-	*	44		*	*	*	*	44	Î
Volume (vph)	1000	260	195	275	653	34	128	339	14	18	733	240
Total Lost time (s)	30	0 E	3.0	3.0	3.0	1300	30	3.0	3.0	3.0	3 0	1200
Lare Util. Factor	0.97	0.95	1.00	1 00	0.95		0.97	1 00	1 00	1 00	0.95	
Frpb, ped/bikes	1.00	1 00	0.89	1 00	1.00		1.00	1.00	0.82	1.00	66 0	
Flpb, ped/bikes	1 00	1.00	1.00	1 00	1.00		1.00	1.00	1.00	1,00	1.00	
Fit	1.00	1 00	0.85	1.00	66-0		1.00	1.00	0.85	1.00	0.96	
Fit Protected	0 95	1 00	1 00	0.95	1 00		0.95	1 00	1 00	0,95	1.00	
Satd Flow (prot)	3547	3657	1452	1829	3624		3547	1925	1345	1554	3223	
FIL Permilled Sate Elow (norm)	0.95	1.00	1 00	0.95	1_00		0.95	1.00	1.00	0.95	1.00	
Peak-hour factor PHE	100	1010	101	0.01	101	100	1400	1923	1040	100	3223	.00
Adi Flow (voh)	16.0	286	214	302	718	37	141	373	10	18:0	15.0	18.0
RTOR Reduction (vph)	2 0	20	177	0	4	; 0	e 0	0	55	30	22	0
Lane Group Flow (vph)	164	286	37	302	751	0	141	373	38	20	1042	0.00
Confl Peds (#/hr)			72			12			8	i		24
Parking (#/hr)		ł			1					10	10	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prol		
Protected Phases	2	4		e	80		S	2		-	9	
Permitted Phases		4	4						2			
Actuated Green, G (s)	6.6	15.3	15.3	20.8	26.2		8.9	42.6	42.6	3.3	37.0	
Effective Green, g (s)	10.9	17.3	17.3	21,8	28.2		6.6	44.6	44.6	4.3	39.0	
Actualed g/C Ratio	0.11	0 17	0.17	0.22	0 28		0.10	0.45	0.45	0.04	0.39	
Clearance Time (s)	40	2.0	2.0	4 0	5,0		4.0	5.0	5.0	4.0	5.0	
Venicle Extension (s)	0.E	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	387	633	251	399	1022		351	859	600	67	1257	
V/s Ratio Prol	0.05	c0 08		0.17	c0.21		c0.04	0.19	1	0.01	c0,32	
V/S Katio Perm			0.03	0	010				60.0			
V/C Kallo	147	C+ 0	01.U	0/0	5/70		0.40	0.43	90.0	0.30	1.63	
Uniform Delay, a I Dromssion Eacher	4 00	1.00	1.00 1	100	32.3		0.00	19.0	0.01	40.4	5/2	
Incremental Delay 42		0.5	0.0	0.8	a c		80'0	1.0	0.0	2.5	nn'i	
Delay (s)	42.4	37.6	35.4	44.6	35.3		38.4	16.1	13.3	48.9	33.9	
Level of Service		٥	Q	0			0	-	8		0	
Approach Delay (s)		38.1			37.9			21.0			34.2	
Approach LOS		۵						U			U	
Intersection Summary		0					-					1
HCM Average Control Delay			33.8	H	M Level	of Service			0			1
HCM Volume to Capacity ratio			0.71									
Actualed Cycle Length (s)			100.0	ng :	m of lost	time (s)			12.0			
Intersection Capacity Utilization Analysis Dariod (min)			11.8%	5	Level of	Service			2			
c Critical Lane Group			2									

Momenti ER FR Mol MB <	Momenti E81 E81 E81 MB1		1	t	1	1	ŧ	~	1	-	•	1	→	1
	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Movement	BB	183	EBR	WBL	18M	WBR	NBL	NBT	NBR	SBL	S81	SBR
All Site Site Site S		Lane Configurations	*	4		*	\$		*	4 2		*	4	
Clast Flow (prici) 300		Volume (vph)	4	55	67	43	114	24	28	416	27	4	881	11
Threat network 30	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Filt Total Total <tht< td=""><td>Functional 100 000 100</td><td>1 and [14] Castor</td><td>2.0</td><td>5.0</td><td></td><td></td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td></tht<>	Functional 100 000 100	1 and [14] Castor	2.0	5.0			3.0		3.0	3.0		3.0	3.0	
Fib Fib <td>Fig. Fig. <th< td=""><td>Errh ned/bikes</td><td>3 2</td><td>0.08</td><td></td><td>3 8</td><td>000</td><td></td><td>38</td><td>3.8</td><td></td><td></td><td>3.9</td><td></td></th<></td>	Fig. Fig. <th< td=""><td>Errh ned/bikes</td><td>3 2</td><td>0.08</td><td></td><td>3 8</td><td>000</td><td></td><td>38</td><td>3.8</td><td></td><td></td><td>3.9</td><td></td></th<>	Errh ned/bikes	3 2	0.08		3 8	000		38	3.8			3.9	
Fri Tri Tri <td>Fri Tit Tit<td>Flab, ped/bikes</td><td>0.99</td><td>100</td><td></td><td>660</td><td>1 00</td><td></td><td>1 00</td><td>8</td><td></td><td>800</td><td>100</td><td></td></td>	Fri Tit Tit <td>Flab, ped/bikes</td> <td>0.99</td> <td>100</td> <td></td> <td>660</td> <td>1 00</td> <td></td> <td>1 00</td> <td>8</td> <td></td> <td>800</td> <td>100</td> <td></td>	Flab, ped/bikes	0.99	100		660	1 00		1 00	8		800	100	
Ft Protected 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.047 1.00 0.41 0.41 0.41	Ft Protected 0.85 1.00 0.85 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 <th0.95< th=""> 0.95 0.95</th0.95<>	Ed	1.00	0.92		1.00	16.0		1.00	0.99		1.00	0.99	
Safet Flow (prof) 1531 1412 1536 1544 1412 1554 1554 1516 1547 150 1547 150 1547 150 151	Salt Flow (part) 1331 1432 1536 1534 1534 1535 1535 1534 1535	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Reference 0.47 1.00 0.51 1.00 0.21 1.00 0.47 1.00 Sett (Free/gem) 754 472 295 556 0.55 0.56 0.55 0.56 0.55 0.56 0.55	Fit Permitted 0.47 1.00 0.51 1.00 0.21 1.00 0.47 1.00 Rest-noum fector 7.41 1.20 0.55 0.55 0.55 0.56 0.56 0.56 0.56 0.55 0.75 <th0.75< th=""> 0.7</th0.75<>	Satd. Flow (prot)	1537	1472		1536	1584		1554	1618		1543	1613	
Start, Flow (perm) 754 4172 829 154 4172 829 154 417 1518 751 1513 751 1513 751 1513 751 1513 751 1513 751 1513 753 753 753 753 753 753 753 753 753 753 751<	State frow (berrin) 754 4422 823 1564 347 1618 761 1613 Perk-hund fectorin 743 587 0.95	Fit Permitted	0.47	1.00		0.51	1.00		0.21	1.00		0.47	1.00	
Adj Fraw (var) 055 <th055< th=""> <</th055<>	Preschend fraction (heit) 035 036 035 035 035 <td>Satd. Flow (perm)</td> <td>764</td> <td>1472</td> <td></td> <td>829</td> <td>1584</td> <td></td> <td>347</td> <td>1618</td> <td></td> <td>761</td> <td>1613</td> <td></td>	Satd. Flow (perm)	764	1472		829	1584		347	1618		761	1613	
All Flow (ren) 43 58 71 45 120 25 29 438 28 77 RTOR Reduction 43 55 5	All Flow (vph) 43 58 71 45 100 25 26 436 27 75 RTOR Reduction (vph) 43 55 5	Peak-hour factor, PHF	0.95	0.95	0.95	0,95	0.95	0,95	0.95	0.95	0.95	0.95	0.95	0.95
TOR Reduction (wh) 0 55 0 0 5	TUTNPR Could Packs Could Packs <thcould packs<="" th=""> <thcould packs<="" th=""> <thc< td=""><td>Adj. Flow (vph)</td><td>43</td><td>68</td><td>H.</td><td>\$</td><td>120</td><td>25</td><td>53</td><td>438</td><td>28</td><td>শ</td><td>927</td><td>75</td></thc<></thcould></thcould>	Adj. Flow (vph)	43	68	H.	\$	120	25	53	438	28	শ	927	75
Turn Type Canting Flaw (wh) 43 74 0 45 156 0 25 455 0 4 100 0 Curn Type Permine Pe	Turn Type 1	RTOR Reduction (vph)	0	55	0	0	0	0	0	~	0	0	3	0
Conflicted Phases 5	Confliction 5 <t< td=""><td>Lane Group Flow (vph)</td><td>4</td><td>74</td><td>0</td><td>\$</td><td>136</td><td>0</td><td>58</td><td>465</td><td>0</td><td>4</td><td>1000</td><td>0</td></t<>	Lane Group Flow (vph)	4	74	0	\$	136	0	58	465	0	4	1000	0
Turn Type To Ach	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Confl. Peds (#ihr)	ŝ		'n	un i		vo	'n		0	0		ò
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		Parking (#/hr)	10	9	9	9	9	2	10	01	9	10	10	9
Advalued Green, G(s) 13,9<		Turn Type	Perm			Регт			Perm			Perm		
Permitted Phases 4 8 2 6 Actuated Green, G(s) 139 139 139 139 731		Protected Phases		4			80			2			9	
Adualed Green, G (s) 13,9 13,0<	Adualed Green, G (s) 139 130 30	Permitted Phases	4			80			2			9		
Effective Green, g(s) 14.3 14.9 14.3 0.79	Effective Green, g(s) 14.3 14.3 14.3 14.3 14.3 14.3 14.3 17.3 73.1	Acluated Green, G (s)	13.9	13.9		13.9	13.9		78.1	78.1		78.1	78.1	
Addied Expertise 0.15 0.15 0.15 0.15 0.15 0.15 0.19 0.76 0.76 <th0.76< th=""> 0.76 0.76</th0.76<>	Addie for Ratio 0.15 0.15 0.15 0.79 <th0.76< th=""> 0.71 0.71</th0.76<>	Effective Green, g (s)	14.9	14.9		14.9	14.9		79.1	79.1		79,1	79.1	
Clearance Time (s) 4.0	Cheratore Time (s) 4.0	Acluated g/C Ratio	0.15	0,15		0.15	0.15		0.79	61.0		0.79	0.79	
Arribide Extension(s) 3.0	Whide Extension (s) 3.0 3.1	Clearance Time (s)	4.0	4.0		4.0	4 0		4.0	4.0		4 0	4,0	
Lare Gr, Cap (wh) 112 219 124 236 214 1280 602 1276 Vis Ratio Perim 0.06 0.03 0.03 0.03 0.03 0.02 0.02 Vis Ratio Perim 0.06 0.05 0.03 0.03 0.01 <t< td=""><td>Lare Gr, Cap (wh) 112 219 124 236 214 1280 602 1276 vis Ratio Perm 0.06 0.03 0.03 0.03 0.01 0.05 vis Ratio Perm 0.06 0.03 0.57 0.11 0.36 0.67 0.01 0.01 vis Ratio Perm 0.06 0.38 0.57 0.11 0.36 0.57 0.11 0.36 0.57 0.01</td><td>Vehicle Extension (s)</td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td>T</td></t<>	Lare Gr, Cap (wh) 112 219 124 236 214 1280 602 1276 vis Ratio Perm 0.06 0.03 0.03 0.03 0.01 0.05 vis Ratio Perm 0.06 0.03 0.57 0.11 0.36 0.67 0.01 0.01 vis Ratio Perm 0.06 0.38 0.57 0.11 0.36 0.57 0.11 0.36 0.57 0.01	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	T
vic Ratio Perti 0.05 c.003 0.29 c.0.62 vic Ratio Perti 0.06 0.35 0.01 0.36 0.01 0.78 vic Ratio 0.36 0.36 0.37 0.03 0.36 0.01 0.78 vic Ratio 0.38 0.34 0.36 0.36 0.01 0.36 0.01 0.78 Vic Ratio 0.38 0.36 0.36 0.36 0.36 0.01 0.76 Vic Ratio 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.26 Incremental Delay (4) 38.4 38.1 38.3 36 2.4 31 2.2 57 Delay (5) 0.0 1.00 1.00 1.00 1.00 2.6 7 Approach Delay (2) 0 0 1.00 1.00 3.2 3.8 A B Approach Delay (2) 0 0 0 0.0 1.00 1.00 Approach Delay (2) 0	vic Ratio Pert 0.05 0.09 0.29 0.66 0.06 0.66 0.01 0.68 0.01 0.68 0.01 0.68 0.01 0.68 0.01 0.68 0.01 0.66 0.01 0.66 0.01 0.68 0.01 0.66 0.01 0.66 0.01 0.66 0.01 0.66 1.33 0.01 0.66 0.01 0.66 0.33 0.01 0.01 0.66 1.33 0.01	Lane Grp Cap (vph)	112	219		124	236		274	1280		602	1276	
vis Ratio Perm 0.06 0.03 0.03 0.03 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.01 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.71 0.78 0.78 0.76 0.71 0.78	vis Ratio 0.06 0.03 0.03 0.01 0.06 Uniform Bely, d1 334 0.57 0.11 0.36 0.01 0.78 Uniform Bely, d1 334 0.57 0.11 0.36 0.01 0.76 Uniform Bely, d1 334 0.57 0.11 0.36 0.01 0.76 Progression Factor 1.00 1.00 1.00 1.00 1.00 0.02 0.86 1.43 Progression Factor 2.0 9 1.68 3.4 0.8 0.8 1.43 Destrict D D D D A A A B Approach Delay (s) 3.0 A 4.23 3.8 A B Approach Delay (s) D D D A A B B Approach Delay (s) D D D A A B B Approach Delay (s) D D D D A A<	v/s Ratio Prot		0.05			c0.09			0.29			c0.62	
Vic Ratio 0.38 0.34 0.35 0.11 0.36 0.01 0.78 Vic Ratio 0.38 0.34 0.35 0.57 0.11 0.36 0.01 0.78 Progression Factor 1.00 1.00 1.00 1.00 1.00 0.86 1.43 Progression Factor 1.00 1.00 1.00 1.00 1.00 0.86 1.43 Incremental Delay, d2 2.2 0.9 1.8 3.4 0.8 0.0 2.6 Deley(s) 40.6 3.0 1.8 3.4 0.8 0.8 1.9 1.8 Approach Delay (s) D D D D A A A A A B B Approach LOS D A A A A A B B Approach LOS D A 4 2.3 A B B Approach LOS D D D A A	Mic Fabio 0.38 0.34 0.35 0.57 0.11 0.36 0.01 0.78 Unifixim Delay, d1 38.4 38.1 33.3 39.6 2.4 3.1 2.5 5.7 Progression Factor 1.00 1.00 1.00 1.00 1.00 0.86 1.33 Incremental Delay, d2 2.2 0.9 1.8 3.4 0.8 0.0 2.6 Incremental Delay, d2 3.0 4.0 3.0 4.1 4.3 3.8 0.0 2.6 Approach Delay (s) 3.0 4.1 4.3 3.8 4 3.8 4 3.8 Approach Delay (s) 0.0 1.0 1.0 1.0 3.2 3.9 1.0 Approach Delay 1 4.2.3 3.8 4.2.3 3.8 10.8 Approach Delay 1.4.3 7.7 3.8 1.0.8 10.8 Approach Delay (s) 0 0.7 7.3 3.8 10.8 Approach Dela	v/s Ratio Perm	0.06			0.05			0 08			0.01		
Uniform Delay, d1 384 381 383 3956 24 31 22 57 Uniform Delay, d1 100 </td <td>Uniform Delay, d1 384 38.1 38.3 39.6 2.4 3.1 2.2 57 Incremental Delay, d1 100 100 100 100 100 100 100 100 Incremental Delay (s) 40.6 39.0 40.1 43.0 3.2 3.9 1.9 10.8 Delay (s) 40.6 39.0 40.1 43.0 3.2 3.9 1.9 10.8 Approach Delay (s) 0 0 0 0 3.2 3.9 1.9 10.8 Approach Delay (s) 0 0 0 1.0 1.0 4.0.1 4.0.1 4.0.1 Approach Delay (s) 0 0 0 0 0 0.0 2.4 3.8 Approach Delay (s) 0 0 0 0 0 0.0 2.4 3.8 Approach Delay 14.8 HCM Level of Service B B A HCM Volume to Capacity Tatio 0.75 Sum of fost lime (s) 0.0 5.0 Actuade Cycle Langh (s) 170.0 Sum of fost lime (s) 0.0 1.0 Actuade Cycle Langh (s) 170.0 Sum of fost lime (s) 0.0 0.0 Actuade Cycle Langh (so</td> <td>v/c Ratio</td> <td>0.38</td> <td>0.34</td> <td></td> <td>0.36</td> <td>0.57</td> <td></td> <td>0.11</td> <td>0.36</td> <td></td> <td>0.01</td> <td>0.78</td> <td></td>	Uniform Delay, d1 384 38.1 38.3 39.6 2.4 3.1 2.2 57 Incremental Delay, d1 100 100 100 100 100 100 100 100 Incremental Delay (s) 40.6 39.0 40.1 43.0 3.2 3.9 1.9 10.8 Delay (s) 40.6 39.0 40.1 43.0 3.2 3.9 1.9 10.8 Approach Delay (s) 0 0 0 0 3.2 3.9 1.9 10.8 Approach Delay (s) 0 0 0 1.0 1.0 4.0.1 4.0.1 4.0.1 Approach Delay (s) 0 0 0 0 0 0.0 2.4 3.8 Approach Delay (s) 0 0 0 0 0 0.0 2.4 3.8 Approach Delay 14.8 HCM Level of Service B B A HCM Volume to Capacity Tatio 0.75 Sum of fost lime (s) 0.0 5.0 Actuade Cycle Langh (s) 170.0 Sum of fost lime (s) 0.0 1.0 Actuade Cycle Langh (s) 170.0 Sum of fost lime (s) 0.0 0.0 Actuade Cycle Langh (so	v/c Ratio	0.38	0.34		0.36	0.57		0.11	0.36		0.01	0.78	
Progression Factor 1.00 2.6 1.30 <td>Progression Factor 1.00 1.00 1.00 1.00 1.00 1.43 Incremental Delay (2) 2.2 0.9 1.41 3.4 0.8 0.8 0.3 0.0 2.6 Delay (s) D D D D D A A A B Delay (s) 394 0.1 4.01 3.2 3.2 3.9 1.0 1.08 Approach Delay (s) 394 4.2.3 3.8 3.8 1.0.8 Approach Delay (s) 394 4.2.3 3.8 1.0.8 Approach Delay D D A A A B Approach Delay 1.4.8 HCM Level of Service B 10.8 HCM Average Control Delay 14.4 HCM Level of Service B A HCM Volume to Capacity ratio 0.75 Sum of fost time (s) 6.0 B HCM Volume to Capacity value 10.0 7.3.3% (C) Level of Service D D Arralysis Period (</td> <td>Uniform Delay, d1</td> <td>38.4</td> <td>38.1</td> <td></td> <td>38.3</td> <td>39.6</td> <td></td> <td>2.4</td> <td>3.1</td> <td></td> <td>2.2</td> <td>5.7</td> <td></td>	Progression Factor 1.00 1.00 1.00 1.00 1.00 1.43 Incremental Delay (2) 2.2 0.9 1.41 3.4 0.8 0.8 0.3 0.0 2.6 Delay (s) D D D D D A A A B Delay (s) 394 0.1 4.01 3.2 3.2 3.9 1.0 1.08 Approach Delay (s) 394 4.2.3 3.8 3.8 1.0.8 Approach Delay (s) 394 4.2.3 3.8 1.0.8 Approach Delay D D A A A B Approach Delay 1.4.8 HCM Level of Service B 10.8 HCM Average Control Delay 14.4 HCM Level of Service B A HCM Volume to Capacity ratio 0.75 Sum of fost time (s) 6.0 B HCM Volume to Capacity value 10.0 7.3.3% (C) Level of Service D D Arralysis Period (Uniform Delay, d1	38.4	38.1		38.3	39.6		2.4	3.1		2.2	5.7	
Incremental Delay, d2 22 0.9 1.8 3.4 0.8 0.8 0.0 2.6 Incremental Delay (2 3.2 0.9 1.1 4.3.0 3.2 3.9 1.9 10.8 Level of Service D D D D D A A B A A A A A A A A A A A A	Incremental Delay, d2 22 0.9 1.8 3.4 0.8 0.8 0.0 2.6 Delay (s) 40.6 30.0 40.1 43.0 3.2 3.9 1.9 10.9 Level of Service D D D A A A A B Approach Delay (s) 39.4 42.3 3.2 3.9 1.9 10.8 Approach Delay (s) D D D A A A B Approach Delay (s) D N HCM Level of Service B 10.8 Actualed Cycle Length (s) 1.75 HCM Neuroide B A HCM Nourme to Capacity Tatio 0.75 Sum of fost time (s) 6.0 Analysis Period (min) 73.3% ICU Level of Service D Citical Lane Group 15 Citical Lane Group 0.75	Progression Factor	1.00	1.00		1 00	1.00		1.00	1.00		0.86	1.43	
Delet(s) 40.6 30.0 40.1 43.0 32 39.9 19 10.8 Level of Service D D D D A A A B Approach LOS D D D D A A A B Approach LOS D A A A A B B Approach LOS D A D A B B B Morssector Summary 1 H HCM Level of Service B B B Actualed Control Delay 14.8 HCM Level of Service B B B Actualed Cyster 100.0 Sum of lost time (s) 6.0 D D A B B B Actualed Cyster of Capacity ratio 73.3% ICU Level of Service D D D A B B B B B B B B B B B B B	Delet(s) 40.6 30.0 40.1 43.0 32 39 19 108 Level of Service D D D D A A A B A Approach Deley(s) D D D A A A B B Approach Deley(s) D A 4 3 3 B B Approach LOS D A 4 A A B B Approach LOS D A 4 3 3 B B HORSection Summary 14.8 HCM Level of Service B B A A B HCM Notime to Capacity ratio 0.75 Sum of lost time (s) 6.0 B A A B Actuador Capacity ratio 73.3% ICU Level of Service B D D A A A B A A A B A A B B B	Incremental Delay, d2	2.2	6 0		1.8	3.4		0.8	0.8		0.0	2.6	
Level of Service D D D D A A A B Approach lost 39.4 42.3 3.8 10.8 Approach lost 0.7 0 0 3.8 10.8 Approach lost 0.7 0.16 A 8 Approach lost 14.8 HCM Level of Service 8 8 HCM Noume lost 0.75 Sum of lost line (s) 6.0 Actuated Cycle Length (s) 10.0 Sum of lost line (s) 6.0 Intersection Capacity ratio 7.3.3% ICU Level of Service 8 Arrades Service 0 7.3.3% ICU Level of Service 0	Level of Service D D D D A A A A A B Approach Delay 39.4 42.3 33.8 10.8 Approach DS 0 0 3 42.3 3.8 10.8 Approach DS 0 1 14.8 HCM Average Control Delay 14.8 HCM Level of Service B HCM Average Control Delay 1.75 0.75 Sum of lost time (s) 6.0 Actuated Cycle Length (s) 73.3% (CU Level of Service B Analysis Period (min) 15 CU Level of Service D Analysis Period (min) 15 CU Level of Service D	Delay (s)	40.6	39.0		401	43.0		3.2	3.9		1.9	10.8	
Approach Delay (s) 39.4 42.3 3.8 10.8 Approach Delay (s) 39.4 42.3 3.8 10.8 Approach LOS D Approach LOS D A B Approach LOS D A Arrise Control Delay 14.8 HCM Level of Service B HCM Volume to Capacity Tables and the Service D Antersection Capacity Utilization 73.3% (CU Level of Service D Antersection Capacity Utilization 15 Cultical Lane Group C Critical Lane Group	Approach Delay (s) 39.4 42.3 3.8 10.8 Approach Delay (s) 0.4 B A B Hexector Summary 14.8 HCM Level of Service B HCM Average Control Delay 14.8 HCM Level of Service B HCM Volume to Capacity Tatio 0.75 3.0 (not lime (s) 6.0 Intersection Capacity Utilization 73.3% ICU Level of Service D Analysis Petrod (min) 73.3% ICU Level of Service D Analysis Petrod (min) 15	Level of Service		0		۵	0		4	A		A	æ	
Approach LOS D D A B Intersection Summary Intersection Summary 14.3 HCM Level of Service B MCM Volume to Capacity Tatio 0.75 VCM Level of Service B A Actuated CypeL tength (3) 100.0 Sum of lost time (s) 6.0 D Actuated CypeL tength (3) 130.0 Sum of lost time (s) 6.0 D Actuated CypeL tength (3) 130.0 Sum of lost time (s) 6.0 D Actuated CypeL tength (3) 130.0 Sum of lost time (s) 0.0 D D Actuated CypeL tength (7) 13.3 ICU Level of Service D D D	Approach LOS D D A B Intersection Summary 14.8 HCM Level of Service B HCM Navarge Control Delay 14.9 HCM Level of Service B HCM Navarge Control Delay 14.9 HCM Level of Service B Actuated Cycle Length (s) 0.75 Sum of lost time (s) 6.0 Actuated Cycle Length (s) 10.0 Sum of lost time (s) 6.0 Intersection Capacity Tation 73.3% ICU Level of Service D Analysis Period (min) 15 Collical Lane Group Collical Lane Group	Approach Delay (s)		39.4			42.3			3.8			10.8	
Mercention Summary 14.8 HCM Level of Service B HCM Average Control Delay 14.8 HCM Level of Service B HCM Average Control Delay 0.75 HCM Level of Service B Actuated CypeL ength (3) 0.0.0 Sum of lost time (s) 6.0 Intersection Capacity Valication 73.3% ICU Level of Service D Analysis Period (min) 15 Citical Lane Group Citical Lane Group	Intersection Summary HCM Average Control Delay 14.8 HCM Level of Service 8 HCM Average Control Delay 14.8 HCM Level of Service 8 HCM Adume to Spacify ratio 0.73 Actuated Cycle Length (s) 100.0 Sum of lost Line (s) 6.0 Intersection Capacity Utilization 73.3.% ICU Level of Service 0 Analysis Period (min) 15 c. Chilcal Lane Group	Approach LOS		٥			0			A			89	
HCM Average Control Delay 14.8 HCM Level of Service B 14.8 HCM Average Control Delay 14.8 HCM Level of Service B Artualed Cytone to Equation 10.05 Sum of lost line (s) 6.0 Intersection Capacity Utilization 73.3% ICU Level of Service D Analysis Period (min) 15 Critical Lane Group C Critical Lane Group	HCM Average Control Delay 14.8 HCM Level of Service B HCM Average Control Delay 14.8 HCM Noturne to Spacify ratio 0.75 0.75 6.0 Actuated Cycle Length (s) 100.0 Sum of lost Lime (s) 6.0 Intersection Capacity Utilization 73.3% ICU Level of Service D Analysis Period (min) 15 c. Chilcal Lane Group	Intersection Summary							11.0010					
HCM Volume to Capacity ratio 0.75 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 7.3.3% ICU Level of Service D Analysis Period (min) 15 c. Critical Lane Group	HCM Volume to Capacity ratio 0.75 HCM Volume to Capacity ratio 0.75 3um of lost time (s) 6.0 Intersection Capacity Utilization 7.3.3% (CU Level of Service D Analysis Period (min) 15 c. Critical Lane Group	HCM Average Control Delay			14.8	H	M Level	of Service			60			
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 7.3.3% ICU Level of Service D Analysis Period (min) 15 c. Chilcal Lane Group	Actualed Cycle Length (s) 100.0 Sum of lost lime (s) 6.0 Intersection Careford Utilization 7.3.3% ICU Level of Service D Analysis Period (min) 15 c Critical Lane Group	HCM Volume to Capacity ratio			0.75									
Intersection capacity Utilization 7.3.% ICU Level of Service D Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilization 7.3.3% ICU Level of Service D Analysis Period (min) 15 c Critical Lane Group	Actuated Cycle Length (s)			100.0	ng :	m of lost	lime (s)			0.9			
c. Children and Youry	c. Childel Lane Group	Intersection Capacity Utilization Analysis Period (min)			13.3%	5	J Level o	Service			-			
		c Critical Lane Group												

Synchro 7 - Reporl W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

HCM Unsignalized Int 597: Kottinger & Adan	erseo	tion C	apacity	(Anal)	/sis	ł					4/17	/2013
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Movement	田田	EBJ	EBR	MBL	WBT	WBR	NBL	NBT	NBR	SBL	58T	SBR
Lane Configurations		ŧ			4			4	1		4	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	83	27	14	22	88	87	22	54	16	12	63	32
Peak Hour Factor	0.60	0.60	0.60	090	0.60	09.0	0.60	09.0	0.60	09.0	0.60	0.60
Hourly flow rate (vph)	138	45	23	37	147	145	37	90	27	20	105	53
Direction, Lane #	E8 1	WB1	NB 1	SB 1					100			
Volume Total (vph)	207	328	153	178								
Volume Left (vph)	138	37	37	20								
Volume Right (vph)	23	145	27	23								
Hadj (s)	0.10	-0.18	-0.02	-0.12								
Departure Headway (s)	5.4	5.0	5.6	5.5								
Degree Utilization, x	0.31	0.46	0.24	0.27								
Capacity (veh/h)	609	677	569	590								
Control Delay (s)	10.9	12.1	10.4	10.5								
Approach Delay (s)	10.9	12.1	10.4	10.5								
Approach LOS	60	B	8									
Intersection Summary	disease.				1			1		100		5
Delay HCM Level of Service Intersection Capacity Utilization Analysis Period (min)			11.2 B 44.1% 15	Q	U Level o	if Service			×			

4/17/2013

HCM Unsignalized Intersection Capacity Analysis 595: Vineyard & Adams

Movement EB1 EB1 EBR ane Configurations	100	and the second s			
are Configurations 4 00 86 00 00 00 86 00 80 00 00 80 00 80 86 00 80 00 00 80		L WBI	NBL	NBR	And the second of the second
(olume (veh/h) 99 86 Sign Control Free Eade 0% Other Anour Factor 0.64 0.64 Jourh Row rate (voh) 155 134		*7	>		
Sign Control Free Stade 0% Case Hour Factor 0.64 0.64 Nourh flow rate (voh) 155 134		3 84	67	86	
Srade 0% eak Hour Factor 0.64 0.64 Iourty flow rate (voh) 155 134		Free	Stop		
Peak Hour Factor 0.64 0.64 Hourty flow rate (voh) 155 134		%0	%0		
Hourty flow rate (vph) 155 134	0 0	14 0.64	0.64	0.64	
		131	152	134	
Pedestrians 20		20	20		
ane Width (ft) 13.0		13.0	13.0		
Valking Speed (ft/s) 4.0		4.0	4.0		
Percent Blockage 2		2	2		
Right turn flare (veh)					
Median type None		None			
Median storage veh)					
Jpstream signal (ft)					
 platoon unblocked 					
/C, conflicting volume	ਲ	6	465	262	
/C1, stage 1 conf vol					
rC2, stage 2 conf vol					
rCu, unblocked vol	30	6	465	262	
C, single (s)	4		6.4	6.2	
C, 2 stage (s)					
F (s)	~	2	3.5	3.3	
00 queue free %		17	71	82	
cM capacity (veh/h)	5	6	520	749	
Direction, Lane # EB 1 WB 1	BN			The second second	Constant Carlo State
Volume Total 289 167	2	99			
Volume Left 0 36	1	22			
Volume Right 134 0	+	E			
SH 1700 1229	9 6	17			
Volume to Capacity 0.17 0.03	3 0.4	11			
Queue Length 95th (ft) 0 2	-	33			
Control Defay (s) 0.0 1.9	9 16	1			
A A A	_	U			
Approach Delay (s) 0.0 1.9	9 16	1			
Approach LOS		ç			
Intersection Summary		20.00			
Average Delav	Ű	9			
ntersection Capacity Utilization	40.4	% 10	CU Level o	i Service	A
Analysis Period (min)		5			

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

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Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Vallev

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	\$		5	44	*	*	*	R	-	44	
Volume (vph)	171	1144	68	119	263	302	62	343	538	1158	196	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	19.0	0.95	1,00	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1 00	1.00	16.0	1.00	0.99	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1 00	1 00	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fri	1.00	1.00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.98	
Fit Protected	0.95	1 00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd, Flow (prot)	3547	3657	1586	3547	3285	1489	1829	3657	1599	3547	3582	
Fit Permitled	0.95	1 00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1586	3547	3285	1489	1829	3657	1599	3547	3582	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adi Flow (vph)	182	1217	96	127	280	321	99	365	572	1232	847	134
RTOR Reduction (vph)	0	0	61	0	41	123	0	0	0	0	a	0
Lane Group Flow (vph)	182	1217	34	127	374	63	99	365	572	1232	972	0
Confl. Peds. (#/hr)			12			36			36			
Turn Type	Prot		Perm	Prof		Prot	Prot		Free	Prot		
Protected Phases	-	9		50	2	2	e		1020	7	4	
Permitted Phases			9						Free			
Actualed Green, G (s)	11.5	38.6	38.6	9.4	36.5	36.5	8.5	14.6	120.0	36.4	42.5	
Effective Green, q (s)	12.5	42.6	42.6	10.4	40.5	40.5	9.5	17.6	120.0	37.4	45.5	
Actuated q/C Ratio	0.10	0.36	0.36	0.09	0.34	0.34	0.08	0.15	1.00	0.31	0.38	
Clearance Time (s)	4.0	7.0	0.7	4.0	7.0	0.7	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	369	1298	563	307	1109	503	145	536	1599	1105	1358	
v/s Ratio Prot	30.05	c0.33		0.04	0.11	0.04	0.04	c0.10		c0 35	0.27	
v/s Ratio Perm			0.02						c0.36			
v/c Ralio	0.49	0.94	0.06	0,41	0.34	0.12	0.46	0.68	0.36	1.11	0.72	
Uniform Delay, d1	50.8	37.4	25.5	51.9	29.7	27.5	52.8	48.5	0.0	41.3	31.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.66	
Incremental Delay, d2	1.0	13.9	0.2	0.9	0.2	0.1	2.3	3.6	0.6	61.9	1.4	
Delay (s)	51.8	51.3	25,7	52.8	29.9	27.6	55.0	52.1	0.6	92.8	22.3	
Level of Service	٥	0	o	0	0	o	ш	0	A	L	0	
Approach Delay (s)		49.8			33.3			22.9			615	
Approach LOS		0			υ			U			ш	
Intersection Summary												
WOW Assessed Control Delaut			A 7 A	E	MAI aver	of Cocijo			4			I
HCM Volume to Capacity ratio			0.90	É	INI LEVEI		23		a,			
Actuated Cycle Length (s)			120.0	Su	m of lost	lime (s)			9.0			
Intersection Capacily Utilization			94.3%	ICI	J Level o	f Service			L			
Analysis Period (min)			15									
c Critical Lane Group												

	٩	t	۴	5	ŧ	~	1	•	•	٨	→	7
dovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	*	4			4	ĸ	*	44		r	-1	
(olume (vph)	134	51	21	29	29	65	23	794	58	52	225	26
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
ane Util, Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	
Trpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	0.99	
Ipb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1 00	
th the second se	1.00	0.97			1.00	0.85	1.00	0.99		1.00	0.95	
Fit Protected	0.95	0,99			0.98	1.00	0.95	1.00		0.95	1.00	
sald Flow (prot)	1477	1480			1596	1391	1822	3620		1829	1824	
It Permitted	0.95	66 0			0.98	1.00	0.48	1.00		0.23	1.00	
Satd. Flow (perm)	1477	1480			1596	1391	922	3620		434	1824	
beak-hour factor, PHF	0.96	0,96	0.96	0.96	0.96	96 0	0.96	0.96	0.96	0.96	0.96	0.96
(dj Flow (vph)	140	53	22	30	30	68	24	827	60	54	234	101
(TOR Reduction (vph)	0	17	0	0	0	28	0	80	0	0	23	0
ane Group Flow (vph)	108	90	0	0	60	10	24	879	0	2	312	0
Confl Peds (#/hr)			e	e			4					4
Parking (#/hr)	9	10	10	10	₽	9			1			
urn Type	Spiil			Split		Perm	Регт			Perm		
rotected Phases	4	4		e	m			2			60	
ermitted Phases						en,	2			φ		
ctuated Green, G (s)	1.7	1.7			4.2	4.2	17.3	17.3		17.3	17,3	
cffective Green, g (s)	9.7	9.7			6.2	6.2	19.3	19.3		19.3	19.3	
Incluated g/C Ratio	0.22	0.22			0.14	0.14	0.44	0.44		0.44	0.44	
clearance Time (s)	5.0	5.0			5.0	5.0	5.0	2.0		5.0	5.0	
(ehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	1
ane Grp Cap (vph)	324	325			224	195	403	1581		190	196	
As Ratio Prot	c0.07	0.06			c0.04			c0.24			0.17	
Is Ratio Perm						0.01	0.03			0.12	-	
Ic Ratio	0.33	0.28			0.27	0.05	0.06	0.56		0.28	0.39	
Initorm Delay, d1	14.5	14.3			17.0	16.4	12	5		80	8.5	
Trogression Factor	8	8			1.00	1.00	100	1.00		1.00	8	
ncremental Lielay, dz	9.0	0.0			9.0	5	0.1	6.9		8.0	6.0	
letay (s)	10	14.0			971	16.6	7.3	1.6		8.9	80	
EVEI OF SERVICE	'n				n ;	æ	×	A of		4	« «	
(c) (si (international data		1.0			5			2			p p	
Approach Luos		0			a			¥			4	
ntersection Summary										A. S.	U,	
HCM Average Control Delay			10.7	Ħ	CM Level	of Servic	ø		80			
ICM Volume to Capacity rai	9		0.44									
Actuated Cycle Length (s)			44.2	SI	um of losl	lime (s)			9.0			
ntersection Capacity Utilizat	Ion		54.9%	0	U Level c	f Service			×			
Analysis Period (min)			15				12					

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

HCM Signalized Intersection Capacity Analysis

Momentary A	Movement EBL EDI EBN Lane Configurations 1 1 1 Volume (volt) 63 163 77 Uders (frew (vphpl)) 100 100 100 Lane Util Factor 1 100 100 100 Fipt, peublikes 1 100 100 100 Fint Pask (word) 120 100 100 100 Fint Pask (word) 120 100 100 100 Fint Pask (point) 0.95 100 100 100 Fint Pask (point) 0 0 0 0 0 0 0 0 100 100 100 100 100 100 100 100 <t< th=""><th>MBL 300 2955 200 2955 2955 2955 2955 2955 295</th><th>WBT 92 1900 1,00 1,00 1,00</th><th>ABR</th><th>~</th><th>•</th><th>•</th><th>۶</th><th>-</th><th>1</th></t<>	MBL 300 2955 200 2955 2955 2955 2955 2955 295	WBT 92 1900 1,00 1,00 1,00	ABR	~	•	•	۶	-	1
Momentary Edi Edi Edi Edi Edi Mol Meit	Movement EBL EBL <th>WBL 92 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0</th> <th>WBT 92 92 92 92 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0</th> <th>WBR</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>•</th>	WBL 92 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	WBT 92 92 92 92 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	WBR						•
Lare Configurations I	Lane Configurations Lane Configurations <thlane configrations<="" th=""> Lane Configrations</thlane>	92 1900 1900 100 100 100 100 100 100 100 1	+ 92 3.0 1.00 1.00 1.00		NBIL	NBT	NBR	SBL	SBI	SBR
Wordner (wh) 63 163 77 32 33 63 163 173 33	Volume (vph) 63 163 77 Undex Forw (vph) 100 100 100 100 Lake Unit Factor 100 100 100 100 100 Fipb, pedbhers 100 100 100 100 100 100 Fipb, pedbhers 100 100 100 100 100 100 Fipb, pedbhers 100 100 100 100 100 100 Filt Pretexted 0.95 100 100 100 100 100 Statu Flow (pon) 1829 1925 1613 940 100 10 1 Park-Nour (perm) 0.95 100 100 1 </td <td>92 1900 310 1100 1100 1100 1100 100 94 94 94 94 94 94 94 94 94 94 94 94 94</td> <td>92 3.0 1.00 1.00 1.00</td> <td>×.</td> <td>-</td> <td>44</td> <td></td> <td>*</td> <td>\$</td> <td>*</td>	92 1900 310 1100 1100 1100 1100 100 94 94 94 94 94 94 94 94 94 94 94 94 94	92 3.0 1.00 1.00 1.00	×.	-	44		*	\$	*
Ideal fore, (r/mel) 1900 </td <td>Ideal Flow (varb) 1900<td>1900 1900 100 100 100 100 100 100 100 10</td><td>1900 1,00 1,00 1,00 1,00 1,00</td><td>38</td><td>89</td><td>356</td><td>133</td><td>67</td><td>444</td><td>8</td></td>	Ideal Flow (varb) 1900 <td>1900 1900 100 100 100 100 100 100 100 10</td> <td>1900 1,00 1,00 1,00 1,00 1,00</td> <td>38</td> <td>89</td> <td>356</td> <td>133</td> <td>67</td> <td>444</td> <td>8</td>	1900 1900 100 100 100 100 100 100 100 10	1900 1,00 1,00 1,00 1,00 1,00	38	89	356	133	67	444	8
Total Lost Intervel 30 <td>Total Last lime (s) 30 30 30 30 50 Fipb, pedbies 100 100 100 100 100 100 Fipb, pedbies 100 100 100 100 100 100 Fip, pedbies 100 100 100 100 100 100 Fib remetced 0.95 1.00 1.00 100 100 100 Sadd Flow (prot) 1829 1925 1513 100 100 100 Fit Permutted 0.95 1.00 1.00 100 100 100 Sadd Flow (prot) 0.95 1.00 1.00 100</td> <td>3.0 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.00000 1.00000 1.00000000</td> <td>2 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>1900</td> <td>1800</td> <td>1900</td> <td>1900</td> <td>1900</td> <td>1900</td> <td>1900</td>	Total Last lime (s) 30 30 30 30 50 Fipb, pedbies 100 100 100 100 100 100 Fipb, pedbies 100 100 100 100 100 100 Fip, pedbies 100 100 100 100 100 100 Fib remetced 0.95 1.00 1.00 100 100 100 Sadd Flow (prot) 1829 1925 1513 100 100 100 Fit Permutted 0.95 1.00 1.00 100 100 100 Sadd Flow (prot) 0.95 1.00 1.00 100	3.0 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.00000 1.00000 1.00000000	2 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	1900	1800	1900	1900	1900	1900	1900
Lane Ull Factor 100	Flag. Ull Factor 1.00 1.00 1.00 1.00 Flpb, pedbiess 1.00 1.00 1.00 0.05 Flpb, pedbiess 1.00 1.00 1.00 0.05 Flp, pedbiess 1.00 1.00 1.00 0.05 Flip Pretenden 0.95 1.00 1.00 1.00 Satd. Flow (poth) 1.823 1.925 1.925 1.61 Parton tactor, PHF 0.95 1.00 1.00 40 Lane Group Flow (poth) 0.95 1.00 1.00 40 Parking (#hr) 0.95 1.00 1.0 40 Parking (#hr) 0 0 0 40 Parking (#hr) 0 0 4 4 Prom Press (#hr) 0 1 1 1 Parking (#hr) 0 0 0 3 3 Parking (#hr) 0 1 1 1 1 Parking (#hr) 0 1 <td>100 100 1100 1100 1100 1005 1005 1005 1</td> <td>8888</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td>3.0</td>	100 100 1100 1100 1100 1005 1005 1005 1	8888	3.0	3.0	3.0		3.0	3.0	3.0
Frip, pedibless 100	Frph, pedibles 1,00	100 100 1554 1554 1554 100 1554 100 1554 100 1554 100 1554 100 1554 100 1554 100 1554 100 100 100 100 100 100 100 100 100 10	888	1.00	1.00	0.95		1.00	0.95	8
Flich 100 </td <td>Flph, pedbixes 1.00 1.00 1.00 1.00 Fit Fit Pentitoled 0.95 1.00 1.00 Sald, Flow (prod) 1.35 1.35 1.53 1.53 Fit Permitted 0.95 1.00 1.00 1.00 Sald, Flow (prod) 1.829 1.925 1.53 1.53 Peak-hour factor, PHF 0.98 0.98 0.96 79 Adj, Flow (wph) 64 166 79 79 Adj, Flow (wph) 64 166 79 79 Lane Group Flow (wph) 64 166 79 79 Confl. Peds (#hr) 64 166 79 70 Parking (#hr) 64 166 79 79 Turm Tupe Salt 518 79 70 40 Parking (#hr) 64 166 79 79 40 Parking (#hr) 51 8 168 168 168 168 168 168</td> <td>1,00 1,00 1,00 1,00 0,95 0,95 0,94 0,94 0,94 0,94 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,035 0,036 0,0300000000</td> <td>88</td> <td>0.99</td> <td>1.00</td> <td>0.99</td> <td></td> <td>1.00</td> <td>1.00</td> <td>0.96</td>	Flph, pedbixes 1.00 1.00 1.00 1.00 Fit Fit Pentitoled 0.95 1.00 1.00 Sald, Flow (prod) 1.35 1.35 1.53 1.53 Fit Permitted 0.95 1.00 1.00 1.00 Sald, Flow (prod) 1.829 1.925 1.53 1.53 Peak-hour factor, PHF 0.98 0.98 0.96 79 Adj, Flow (wph) 64 166 79 79 Adj, Flow (wph) 64 166 79 79 Lane Group Flow (wph) 64 166 79 79 Confl. Peds (#hr) 64 166 79 70 Parking (#hr) 64 166 79 79 Turm Tupe Salt 518 79 70 40 Parking (#hr) 64 166 79 79 40 Parking (#hr) 51 8 168 168 168 168 168 168	1,00 1,00 1,00 1,00 0,95 0,95 0,94 0,94 0,94 0,94 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,038 0,035 0,036 0,0300000000	88	0.99	1.00	0.99		1.00	1.00	0.96
Fracture 100 10	Frt 1.00 1.00 0.05 Filt Preteted 0.95 1.00 1.00 0.05 Filt Pereteted 0.95 1.00 1.00 0.05 Filt Pereteted 0.95 1.00 1.00 1.00 Filt Pereteted 0.95 1.00 1.00 1.00 Filt Pereteted 0.95 1.00 1.00 1.00 Parkuckurtur, Philt 0.95 1.00 1.00 40 Lame Group Flow (wph) 64 1.66 79 40 Parking (#hr) 0 0 0 40 40 Parking (#hr) 0 0 0 40 44 4 Posteled Oren, G (s) 15.8	1,00 1,554 1,554 1,554 0,98 94 0,98 94 0,98 94 0,98 33	1.00	1.00	1.00	1.00		1.00	100	1.00
Fit Prenetated 0.05 1.00 0.05	Fit Protected 0.95 1.00 1.00 Stud. Flow (perm) 1823 1925 1613 Pask-hour stack, PHF 0.98 0.98 0.98 Adj. Flow (wph) 1823 1925 1613 Pask-hour stack, PHF 0.98 0.98 0.98 Adj. Flow (wph) 64 165 73 Camb Coup Flow (wph) 64 166 73 Cant. Peds. (#hr) 0 0 40 Lun Type Split 1 1 Parking (#hr) 0 0 40 Lun Type Split 1 1 Parking (#hr) 1 1 1 Uru Type Split 168 16.8 Actualed Green, G (s) 15.8 15.8 15.8 Parking (#hr) 0 1 1 1 Votaled Green, G (s) 15.8 15.8 15.8 Actualed Green, G (s) 15.8 15.8 15.8 Votaled Green, G (s) 15.8 <td>0.95 1554 1554 0.98 0.98 0.98 0.98 0.98 0.98 0.0 0.98 0.0 0.98 0.0 0.98 0.0 0.098 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.035 0.0380 0.0380 0.0380000000000</td> <td></td> <td>0.85</td> <td>1.00</td> <td>0.98</td> <td></td> <td>1.00</td> <td>001</td> <td>0.85</td>	0.95 1554 1554 0.98 0.98 0.98 0.98 0.98 0.98 0.0 0.98 0.0 0.98 0.0 0.98 0.0 0.098 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.035 0.0380 0.0380 0.0380000000000		0.85	1.00	0.98		1.00	001	0.85
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Salar Flew (perm) 1223 1325 153	Satu Flew (perm) 1829 1825 1613 Peak-hour (ptch) 0.88 0.86 0.96 Adj, Flow (wph) 0 0 40 Entow (wph) 0 0 40 Adj, Flow (wph) 0 0 40 Carn Group Flow (wph) 64 166 73 Carn Peak (#hr) 0 0 40 Carn Group Flow (wph) 64 166 39 Carn Peak (#hr) 0 0 40 40 Turn Type Split 1 1 1 Parking (Hhr) Split 4 4 4 Parking (Hr) 5 15.8 15.8 15.8 Parking (Hr) 0.14 0.14 0.14 0.14 Actualed Green, G(s) 15.8 15.8 16.8 16.8 Actualed Green, G(s) 16.0 10.14 0.14 0.10 0.02 Vacualed Green, G(s) 3.0 0.03 0.03 0.02 0.02	1554 0.98 0.98 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038	1.00	1.00	0.95	1.00		0.95	1.00	1.00
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Lare Group Flow (vph) E4 15 39 34 34 5 63 100 0 50 453 Corn Pow (vph) 3 1 10	Lane Group Flow (vph) 64 166 39 Conf. Proses (#hn) 1 Parking (#hn) 1 1 Profile (#hn) 1 1 Profile (#hn) 15.8 4 Permited Phases 15.8 15.8 4 Permited Creen, G (s) 15.8 15.8 15.8 Actuated Crean, G (s) 16.8 16.8 16.8 Actuated Scratic 0.14 0.14 0.14 Vencile 2.0 1.0 1.4 4.0 Vencile 2.0 3.0 3.0 3.0 3.0 Vencile 2.0 0.03 0.00 2.0 0.02 2.0 Vencile 2.0 0.03 0.00 0.02 0.00 0.02	Split 10 &	0	æ	0	9	0	0	0	22
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Vehicle Extension (s) 3.0	Vehicle Extension (s) 3.0 3.0 3.0 3.0 Lane Gry Cap (vph) 2.56 2.70 2.66 Vis Ratio Perm 0.03 c0.09 2.66 vis Ratio Perm 0.25 0.61 0.17 Uniform Delay, df 4.60 4.86 4.55 Progression Factor 1.00 1.00 100 Progression Factor 1.05 4.65 4.55 Delay (s) 4.65 5.2.7 4.56	4.0	4.0	40	4.0	5.0		4.0	5.0	5.0
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vis Ratio Prot 0.03 c.0.06 0.06 0.04 c.0.31 c.0.03 0.12 vis Ratio 0.25 0.61 0.02 0.03 0.53 0.12 0.03 0.12 vis Ratio 0.25 0.61 0.01 0.03 0.55 0.41 0.42 0.22 0.12 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.55 0.41 0.42 0.22 0.12 0.02 0	vis Ratio Prol 0.03 0.09 vis Ratio Prol 0.03 0.09 vis Ratio Prom 0.25 0.61 0.17 vic Ratio 0.25 0.61 0.17 Uniform Delay, d1 46 0.48.6 45.5 Progression Factor 1.00 1.00 1.00 Hordenetial Delay, d2 0.5 2.7 458 Delay(s) 465 5.2.7 458	190	200	168	125	2039		119	2081	894
vis Ratio Perm 002 000 100	vis Ratio Perm 0.02 vic Ratio Perm 0.25 0.61 0.17 Vic Ratio 0.17 0.61 0.17 Uniform Delay d1 46.5 45.5 Progression Factor 1.00 1.00 Incremental Delay d2 0.5 4.1 0.4 Delay (s) 46.5 52.7 45.8	c0.06	0.06		0.04	c0.31		c0 03	0.12	
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Level of Service U U U U U 2 C E B Approach Delay (s) 43.6 50.2 24.2 16.7 Approach Delay (s) 28.5 HCM Level of Service C HCM Valume to Capacity ratio 0.54 HCM Level of Service C Actualed Cycle Length (s) 12.0 Nume to Capacity Utilization 6.2.% (CU Level of Service B Actualed Cycle Length (s) 12.0 Nume to Capacity Utilization 15.0 Sum of fost time (s) HCM Valume to Capacity Utilization 5.2.% (CU Level of Service B Actualed Cycle Length (s) 12.0 Nume to Capacity Utilization 5.2.% (CU Level of Service B Actualed Cycle Length (s) 12.0 Nume to Capacity Utilization 5.2.% (CU Level of Service B C Actualed Cycle Length (s) 12.0 Nume to Capacity Utilization 5.2.% (SU Level of Service B C C C C C C C C C C C C C C C C C C		7.10	g.Dc	40.4	0.50 L	R LZ		P.00	0.61	4 0
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HCM Volume to Capacity ratio 0.54 Actualed Cycle Lendin (s) 12.0 Intersection Capacity Utilization 62.2% ICU Level of Service B Analysis Period (min) 15 Curciad Lane Group	HCM Average Control Delay 28.5	HCI	M Level of	Service			o			
Actuated Cycle Length (s) 120.0 Sum of lost time (s) 12.0 Intersection Gapacity Utilization 62.2% ICU Level of Service B Analysis Period (min) 15 c Ortical Lane Group	HCM Volume to Capacity ratio 0.54									
Intersection Capacity Utilization 62.2% (CU Level of Service B Analysis period (min) 15 c Critical Lane Group	Actualed Cycle Length (s) 120.0	Sur	n of lost tir	ne (s)			12.0			
c Critical Lane Group	Intersection Capacity Utilization 62.2%	100	Level of 3	Service			20			
	Critical and Cruin									

HCM Signalized Intersection Capacity Analysis

Movement Lane Configurations	•											
Movement Lane Configurations		t	۴	5	ţ	~	•	•	•	۶	→	¥
Lane Configurations	EBL	E81	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Malu Aucht		÷			*7	*	٣	¢±		r	¢±	1
(uda) amnioa	81	36	47	14	30	39	28	1058	18	26	564	37
Ideal Flow (vphpl) 19	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3,0	3,0	3.0		3.0	3.0	
Lane Util, Faclor		1 00			1.00	1.00	1,00	1.00		1 00	1.00	
Frpb, ped/bikes		0.97			1.00	0.92	1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.97			0.99	1.00	96.0	1.00		1.00	1.00	
Fri		96 0			1.00	0.85	1.00	1 00		1 00	0,99	
FII Protected		0.98			0.98	1 00	0,95	1.00		0.95	1.00	
Satd. Flow (prot)		1442			1590	1276	1499	1628		1554	1607	
FII Permitted		0.83			0.91	1_00	0.38	1 00		0.16	1.00	
Satd Flow (perm)		1222		1	1471	1276	599	1628		254	1607	
Peak-hour factor, PHF 0	26.0	0.97	0.97	0.97	0.97	0.97	0,97	0.97	0.97	0.97	0,97	0.97
Adj. Flow (vph)	84	37	48	14	31	40	29	1091	19	27	581	38
RTOR Reduction (vph)	0	12	0	0	0	33	0	0	0	0	2	0
Lane Group Flow (vph)	0	157	0	0	45	7	29	1110	0	27	617	0
Confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
Parking (#/hr)	10	10	10	9	10	10	10	10	10	10	10	10
Turn Type Po	erm			Регш		Perm	Perm			Perm		
Protected Phases		4			00			2			9	
Permitted Phases	4			60		80	2			9		
Actuated Green, G (s)		19.7			19.7	19.7	92.3	92.3		92.3	92.3	
Effective Green, g (s)		20.7			20.7	20.7	93.3	93.3		93.3	93.3	
Actuated g/C Ratio		0.17			0.17	0.17	0.78	0.78		0.78	82.0	
Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	1
Lane Grp Cap (vph)		211			254	220	466	1266		197	1249	e I
v/s Ratio Prot								c0.68			0,38	
v/s Ralio Perm		c0.13			0.03	0.01	0.05			0.11		
v/c Ratio		0.74			0.18	0.03	0.06	0.88		0.14	0.49	
Uniform Delay, d1		47 1			42.4	413	3.1	93		3.3	48	
Progression Factor		1.00			1.00	1.00	0.74	1.36		2.33	2,63	
Incremental Delay, d2		13.1			0.3	0.1	0.2	22		1 4	14	
Delay (s)		60.3			42.7	414	2.5	18.2		92	14.1	
Level of Service		ш			0	٥	A	æ		A	8	
Approach Delay (s)		60.3			42.1			17.8			13.9	
Approach LOS		ш						80			m	
Intersection Summary												
HCM Average Control Delay			21.1	Ŧ	CM Level	of Servic	a		U			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Lenglh (s)			120.0	ซี	um of lost	time (s)			6.0			
Intersection Capacity Utilization			91 7%	2	U Level o	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

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Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

section Capacity Analysis	
HCM Signalized Inter 95: Neal St & First	

95: Neal St & First			·	·							4/1	7/2013
	٩	1	۴	۶	ŧ	4	¥	+	٠	٨	-	¥
Movement	EBL	EBT	EBR	TBM	WBT	VIBR	NBL	181	NBR	SBL	SBT	SBR
Lane Configurations	*	<u>ب</u>		۴	4		*	¢2		*	4	
Volume (vph)	85	26	6/	34	58	25	38	991	25	80	524	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util, Factor	1.00	1 00		1.00	1.00		1.00	1,00		1 00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	66.0		1.00	1,00		100	1.00	
Fipb, ped/bikes	86'0	1 00		0.99	1.00		0.99	1 00		1 00	1.00	
Fr	1 00	0.93		1.00	0.96		1.00	1.00		1 00	0.98	
FIt Protected	0,95	1 00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd Flow (prol)	1530	1500		1538	1545		1546	1629		1554	1602	
Flt Permitted	0.62	1_00		0.35	1.00		0.38	1.00		0.18	1.00	
Satd. Flow (perm)	1000	1500		563	1545		626	1629		300	1602	T
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0,95	0.95	0.95	0.95	0.95
Adj Flow (vph)	68	102	83	36	61	26	40	1043	26	80	552	68
RTOR Reduction (vph)	0	26	0	0	13	0	0	-	0	0	e	0
Lane Group Flow (vph)	68	159	0	36	74	0	40	1068	0	8	617	0
Confl. Peds. (#/hr)	ŋ		5	\$		2	5		5	ς		5
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			00			2			9	
Permilled Phases	4			80			2			9		
Actuated Green, G (s)	17.8	17.8		17.8	17.8		94.2	94.2		94.2	94.2	
Effective Green, g (s)	18.8	18.8		18.8	18.8		95.2	95.2		95.2	95.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.79	0.79		0.79	0.79	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	N.
Lane Grp Cap (vph)	157	235		88	242		497	1292		238	1271	ĥ
v/s Ratio Prol		c0.11			0.05			c0.66			0.39	
v/s Ratio Perm	0.09			0.06			0.06			0.03		
v/c Ratio	0.57	0.68		0.41	0.30		0.08	0.83		0.03	0.49	
Uniform Delay, d1	46.8	47.7		45.6	44.8		2.7	7.5		2.6	4.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		2.10	2.42	
Incremental Delay, d2	4.6	7.5		3.1	0.7		0.3	6.2		0.2	12	
Delay (s)	51.5	55.2		48.7	45.5		3.1	13.6		5.8	11.3	
Level of Service	0	ш		0	0		A	B		A	60	
Approach Delay (s)		54.0			46.4			13.2			11.2	
Approach LOS		0			۵			B			80	
Intersection Summary				1				ľ				
HCM Average Control Delay			19.8	Ħ	M Level	of Servic	0		80			
HCM Volume to Capacity ratio			0,80									
Actuated Cycle Length (s)			120.0	Su	m of lost	time (s)			6.0			
Intersection Capacity Utilizatio	5		78.5%	0	J Level o	f Service			0			
Critical Lane Group			2									

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Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

HCM Signalized Intersection Capacity Analysis 96: Bernal & First St

Morreneti EBI E	96: Bernal & First St											4/1	7/2013	
Konneri EB EB EB MB MB <t< th=""><th></th><th>٩</th><th>†</th><th>۴</th><th>7</th><th>Ŧ</th><th>~</th><th>ŕ</th><th>+</th><th>٩</th><th>۶</th><th>-</th><th>¥</th></t<>		٩	†	۴	7	Ŧ	~	ŕ	+	٩	۶	-	¥	
	Movement	EBL	EBT	EBR	WBI	WB1	WBR	NBL	TBN	NBR	SBL	SBT	SBR	
Woulmule (whi) 667 510 112 330 331 334 336 330	Lane Configurations	F	ŧ	ĸ	*			÷,	+		*	14		
Main Table Table <tht< td=""><td>Volume (vph)</td><td>687</td><td>510</td><td>112</td><td>83</td><td>231</td><td>33</td><td>194</td><td>723</td><td>358</td><td>10</td><td>431</td><td>200</td></tht<>	Volume (vph)	687	510	112	83	231	33	194	723	358	10	431	200	
	Ideal Flow (vphpl)	1900	1900	1900	1900	1800	1900	1900	1900	1900	1900	1900	1900	
Function 037 100 100 100 100 100 000 000 Function 100 <th< td=""><td>Total Lost time (s)</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td></td></th<>	Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		
	Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	0.95		
Fib. pacticlies 100	Frpb, ped/bikes	1.00	1,00	0.87	1.00	1.00		1.00	1.00	0.79	1.00	0.98		
Free 100 100 100 055 100 055 100 055 100 055 100 055 100 055 100 055 100 055 100 055 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 100 055 100 <td>Fipb, ped/bikes</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td>	Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		
FI Premeted 0.55 1.00 1.00 0.55 1.00 1.00 0.55 1.00 1.00 0.55 1.00	Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.95		
Salet Town (port) 3547 3557 419 829 3577 3577 1554 1755 1737 3773 Rith Permitedin 3347 3577 107 0.35 100 0.35 100 0.35 100 0.35 100 0.75	Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Eff Permitted 035 100 100 035 100 100 035 100 100 035 100 100 035 100 035 100 035 100 035 100 035 100 035 100 035 100 035 100 035 100 035 100 035 100 035 236 337 336	Satd. Flow (prot)	3547	3657	1419	1829	3572		3547	1925	1291	1554	3173		
Salet Flow (perm) 3547 3557 1419 1829 3572 3547 1554 1755 154 1754 3173 0.78 0.76 0.78	FII Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00		
Peak-hour lactor, PHF 0.78 0.76	Satd. Flow (perm).	3547	3657	1419	1829	3572		3547	1925	1291	1554	3173	Í	
Add, Flow, (nb) 555 654 144 119 296 42 249 921 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 554 553 553 511 553 553 511 553 533	Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
And Methodine (wei) 0 0 0 153 64 56 153 15 16 10	Adj. Flow (vph)	855	654	44	119	296	42	249	927	459	8	563	256	
Count Plane (roup) 855 654 56 119 2249 927 306 90 766 0 Count Peaks 7 4 3 8 5 2 927 306 90 766 0 Turn Type 7 4 3 8 5 10	RTOR Reduction (vph)	0	0	88	0	8	0	0	0	153	0	4	0	
	Lane Group Flow (vph)	855	654	26	119	329	0	249	927	306	06	766	0	
Protein fithen 10 <th c<="" td=""><td>Cantl. Peds. (#/hr)</td><td></td><td></td><td>22</td><td></td><td></td><td>12</td><td></td><td></td><td>98</td><td></td><td></td><td>24</td></th>	<td>Cantl. Peds. (#/hr)</td> <td></td> <td></td> <td>22</td> <td></td> <td></td> <td>12</td> <td></td> <td></td> <td>98</td> <td></td> <td></td> <td>24</td>	Cantl. Peds. (#/hr)			22			12			98			24
	Parking (#/hr)					l		-			10	10	10	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Turn Type	Prot		Perm	Prot			Prot		Perm	Prot			
	Protected Phases	1	4		e	80		G	2		-	9		
Actualed Green, G (s) 222 257 127 162 190 535 535 101 446 Actualed Green, g (s) 232 277 137 182 200 555 510 146 Actualed Green, g (s) 323 277 277 137 182 200 555 510 405 56 411 446 Actualed Green, g (s) 30 406 466 66 66 66 66 66 66 67 67 66	Permitted Phases		4	4						2				
Effective Green, g(s) 232 277 137 182 200 555 511 466 Actuated of Katto 119 0.23 0.11 0.15 0.23 0.11 466 0.39 0.39 Actuated of Katto 119 0.23 0.11 0.15 0.23 0.11 0.46 0.39 0.39 0.39 Vehicle Extension (s) 30	Actualed Green, G (s)	22.2	25.7	25.7	12.7	16.2		19,0	53.5	53.5	10.1	44.6		
Additional of Ratio 019 0.23 0.23 0.11 0.15 0.17 0.46 0.09 0.39 Clearance Time(s) 4,0 5,0 4,0	Effective Green, g (s)	23.2	27.7	27.7	13.7	18.2		20.0	55.5	55.5	11.1	46.6		
Vehicle Extension (s) 4,0 5,0 4,0 5,0 4,0 5,0 4,0 5,0 3,0 1,0	Actuated g/C Ratio	0.19	0.23	0.23	0.11	0.15		0.17	0.46	0.46	60.0	0.39		
Lare Circ Car (which E xdension (s)) 3.0 1.03 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 <th1.01< th=""> 1.01 1.01</th1.01<>	Clearance Time (s)	4,0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0		
Image: Section of the sectio	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	1	
Ratio Co.24 0.18 0.07 C0.09 0.07 C0.44 0.06 C0.24 vs Ratio Perm 1.5 0.7 0.14 0.57 0.61 0.42 1.04 0.57 0.62 vc Ratio 1.55 0.7 0.17 0.57 0.61 0.42 1.04 0.57 0.62 Vniform Delay, cf1 48.4 43.2 36.9 50.4 47.6 44.8 32.2 25.4 29.6 Vniform Delay, cf1 1.00	Lane Grp Cap (vph)	686	844	328	209	542		591	890	597	144	1232		
vis Ratio Perm vis Ratio Perm Vis Ratio Perm Progression Factor Trocemental Delay, d1 Progression Factor Progression Proceential Progression Proceential Progression Proceential Procential Proceential Procential Proceential Proceential	v/s Ratio Prot	c0.24	0.18		0.07	c0.09		10.0	c0.48		90.0	c0.24		
Mc Ratio 1.25 0.77 0.17 0.57 0.61 0.42 1.04 0.67 0.62 0.66 0.71 0.61 0.71 0.61 0.71 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62	v/s Ratio Perm			0.04						0.24				
Uniform Delay, 11 48, 432 369 504 476 448 322 227 524 296 Uniform Delay, 11 48, 432 369 504 476 448 322 227 524 296 Incremental Delay, 122, 845 02 349, 5 322 603 100 100 100 Incremental Delay (s) 1712 47, 372 53, 495 322 603 104 606 32,0 Delay (s) 1712 47, 372 53, 495 322 603 104 606 32,0 Delay (s) 1712 47, 372 53, 495 322 603 104 606 32,0 Approach Delay (s) 10,7 50,6 42,0 29 82 24 Approach Delay (s) 10,7 50,6 42,0 29 82 24 Approach Delay (s) 10,7 50,6 42,0 29 82 24 Approach Delay (s) 10,7 50,6 42,0 29 7 HCM Average Control Delay 65,9 HCM Level of Service HCM Volume to Capacity ratio Analysis Period (min) 6 Critical Lare Group c Critical Lare Group	v/c Ratio	1.25	0.77	0.17	0.57	0.61		0.42	1.04	0.51	0.62	0.62		
Progression Factor 1.00 <td>Uniform Delay, d1</td> <td>48.4</td> <td>43.2</td> <td>36.9</td> <td>50.4</td> <td>47.6</td> <td></td> <td>44.8</td> <td>32.2</td> <td>22.7</td> <td>52.4</td> <td>29.6</td> <td></td>	Uniform Delay, d1	48.4	43.2	36.9	50.4	47.6		44.8	32.2	22.7	52.4	29.6		
Incremental Delay, d2 122.8 4.5 0.2 3.5 1.9 0.5 4.0.4 2.9 8.2 2.4 Delay(s) 11/1 47.1 37.2 53.9 49.5 32.2 60.3 10.4 60.6 32.0 Level of Service F 0 0 0 0 0 0 60.6 32.0 Approach Delay (s) 110.7 50.6 42.0 8.4.8 34.8 34.8 Approach Delay (s) 110.7 50.6 42.0 3.4.8 54.8 54.6 34.8 Approach Delay (s) 110.7 50.6 42.0 3.4.8 54.8 Approach Delay (s) 170.7 50.6 42.0 3.4.8 54.8 Anualized Order Length (s) 0.7 5.9 4.7 4.2.0 5.7 5.7 Actualed Cycle Length (s) 0.7 5.7 5.7 5.7 5.7 5.7 Ansistic Period (min) 1.7.0 Sum of lost tinne (s) 1.7.0 7.2 <t< td=""><td>Progression Factor</td><td>1 00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1_00</td><td></td><td>0.71</td><td>0.61</td><td>0.33</td><td>1.00</td><td>1.00</td><td></td></t<>	Progression Factor	1 00	1.00	1.00	1.00	1_00		0.71	0.61	0.33	1.00	1.00		
Delay(s) 11/12 477 37.2 53.9 49.5 32.2 60.3 10.4 60.6 32.0 Level of Service F D D D C E B E C Approach Delay(s) F D D D C E B E C Approach Delay(s) F D D C E B E C Approach Delay F D D C 420 C C Actuated Cycle Length (s) 110.0 Sum of lost time (s) Actuated Cycle Length (s) 120.0 Sum of lost time (s) T Actuated Cycle Length (s) 120.0 Sum of lost time (s) T Actuated Cycle Length (s) T Actuated Cycle Length (s) 120.0 Sum of lost time (s) T Actuated Cycle Length (s) T C C Actuated Cycle Length (s) T C C C C C C C C C C C C	Incremental Delay, d2	122.8	4.5	0.2	3.5	1.9		0.5	40.4	2.9	8.2	2.4		
Level of Service F D D D D C E C Approach Delay (s) 110.7 50.6 420 34.8 34.8 Approach Delay (s) F D D D C 2 34.8 Approach Delay F D D D C 34.8 Approach Delay 65.9 HCM Level of Service E 34.8 HCM Average Control Delay 65.9 HCM Level of Service E Actualed Cycle Length (s) 120.0 Sum of fost time (s) 12.0 Intersection Capacity ratio 0.97 Sum of fost time (s) 12.0 Analysis Period (min) 12.0 Sum of fost time (s) E Analysis Period (min) E C<	Delay (s)	171.2	47.7	37.2	53.9	49.5		32.2	60.3	10.4	60.6	32.0		
Approach Delay (s) 110.7 50.6 42.0 34.8 Approach Delay (s) 110.7 50.6 42.0 34.8 Approach Delay (s) F D D C C Hardracton Survival Service E HCM Average Control Delay 65.9 HCM Level of Service E HCM Volume to Capacity ratio 0.97 Current (s) 12.0 Network (min) 15.0 Sum of Institure (s) 12.0 Analysis Period (min) 15.0 Current (min) 15.0 Current (s) 12.0 Current (s) 15.0 Current (s)	Level of Service	u	0	٥	0	0		o	ш	æ	ш	o		
Apprach LOS F D D C C Apprach LOS F D D C C Intersection Summary 65.9 HCM Level of Service E C HCM Notwing Control Delay 65.9 HCM Level of Service E C Actualed Cycle Length (s) 120.0 Sum of lost time (s) 120.0 Sum of lost time (s) 120.0 Antisis Period (min) 15 c Ortical Lane Group c C C C C C C C C C C C C C C C C C C	Approach Delay (s)		110.7			50.6			42.0			34.8		
Intersection Summary 65.9 HCM Level of Service E HCM Average Control Delay 65.9 HCM Level of Service E HCM Volume to Capacity ratio 0.97 Actuated Cycle Length (s) 12.0 Sum of lost time (s) 12.0 Intersection Capacity Utilization 94.1% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	Approach LOS		ш						۵			U		
HCM Average Control Delay 65.9 HCM Level of Service E E E E E E E E E E E E E E E E E E E	Intersection Summary		ľ							1000				
HCM Volume to Capacity ratio 0.97 Actuated Cycle Length (s) 1200 Sum of lost time (s) 12.0 Intersection Capacity Utilization 84.1% ICU Level of Service E Analysis Period (min) 15 c Oritical Lane Group	HCM Average Control Delay			65.9	H	CM Level	of Service	0		w				
Actualed Cycle Length (s) 120.0 Sum of lost time (s) 12.0 Interesction Capacity Unitization 94.1% ICU Level of Service E Analysis Period (min) 15 ICU Level of Service c Orticcal Lane Group	HCM Volume to Capacity ratio			16.0										
Intersection Capacity Utilization B4.1% ICU Level of Service E Analysis Period (min) 15 15 c Critical Lane Group c Critical Lane Group	Actualed Cycle Length (s)			120.0	SL	im of lost	time (s)			12.0				
Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilization	-		84.1%	≌	U Level o	Service			ш				
c Critical Lane Group	Analysis Period (min)			15										
	c Critical Lane Group													

Kottinger Drive Senier Housing Project PM Peak Hour Existing Conditions

	t	۴	5	ŧ	•	4		
Movement	E81	588	WBI	WBI	NBL	NBR	LT AL N	COLUMN TO A DESCRIPTION OF A DESCRIPTION
Lane Configurations	**			4 3	>			
Volume (veh/h)	186	22	13	136	26	32		
Sign Control	Free			Free	Stop			
Grade	%0			%0	%0			
Peak Hour Factor (0.91	0.91	0,91	0.91	0.91	0.91		
Hourly flow rate (vph)	204	24	14	149	ଷ	35		
Pedestrians	20			20	20			
Lane Width (ft)	13.0			13.0	13.0			
Walking Speed (ft/s)	4.0			4.0	4.0			
Percent Blockage	2			2	2			
Right turn flare (veh)								
Median type N	lone			None				
Median storage veh)								
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume			249		435	256		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu. unblocked vol			249		435	256		
tC. single (s)			4.1		6.4	6.2		
tC 2 stane (s)								
HE (S)			2.2		3.5	3.3		
p0 aueue free %			66		95	95		
cM capacity (veh/h)			1293		552	754		
Constant and it.	1.02	1.001	1.011					
	1	104	101					
Volume otal	877	ž,	3					
Volume Left	•	4	53					
Volume Right	24	0	35					
cSH cSH	002	1293	648					
Volume to Capacity.	0.13	0.01	0.10					
Queue Length 35th (ft)	0	-	80					
Control Delay (s)	0.0	0.8	11.2					
Lane LOS		A	80					
Approach Delay (s)	0.0	0.8	11.2					
Approach LOS			80					
Intersection Summary					3		ALC: NO.	ALC: HEREIN
Averade Delau			4 8					
Intersection Capacity Utilization			33.4%	Ō	U Level of	Service		A
Analysis Feriou (mini)			2					

HCM Unsignalized Intersection Capacity Analysis 597: Kottinger & Adams

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597: Kottinger & Ada	ms										4/1	7/2013
	1	t	1	8	Ŧ	~	*	+	٩	٨	-	Y
Movement	EBI	EBI	EBR	WBL	WBI	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	1
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	20	47	15	7	æ	10	17	35	13	7	24	10
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	25	58	19	6	42	12	21	43	16	თ	30	12
Direction, Lane #	E81	WB 1	NB 1	88 I		ł	j		ļ			
Volume Total (vph)	101	63	80	51								1
Volume Left (vph)	58	6	21	6								
Volume Right (vph)	19	12	16	12								
Hadj (s)	-0.01	-0.06	0.00	-0.08								
Departure Headway (s)	6,4	4.3	4.3	4,3								
Degree Utilization, x	0.12	0.07	0.10	0.06								
Capacity (veh/h)	815	814	793	803								
Control Delay (s)	7.8	7.6	7.8	7.6								
Approach Delay (s)	7.8	7.6	7,8	7,6								
Approach LOS	¥	A	×	A								
Intersection Summary	M.M.				11	10-01			1			F
Delay			17		-	1			Į			ř.
HCM Level of Service			A									
Intersection Capacity Utilizatic Analvsis Period (min)	c		26.8% 15	D	U Level o	f Service			A			

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

	1	t	۴	4	ŧ	4	4	+	۰.	۶	→	7
Movement	EBL	E81	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	\$		14	44		*	\$	*	*	4	
Volume (vph)	204	196	44	186	837	1201	115	446	112	216	298	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util, Factor	0.97	0.95	1.00	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fit	1.00	1.00	0.85	1.00	0.94	0.85	1.00	1.00	0.85	1.00	0.95	
FIt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3547	3657	1591	3547	3241	1489	1829	3657	1599	3547	3469	
FIL Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1591	3547	3241	1489	1829	3657	1599	3547	3469	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	224	215	48	204	920	1320	126	490	123	237	327	171
RTOR Reduction (vph)	0	0	28	0	87	198	0	0	0	0	74	0
Lane Group Flow (vph)	224	215	20	204	1453	502	126	490	123	237	424	0
Confl. Peds. (#/hr)			12			36			36			
Turn Type	Prot		Perm	Prol		Prol	Prot		Free	Prot		
Protected Phases		9		'n	2	2	e	80		1	4	
Permitted Phases			9						Free			
Actuated Green, G (s)	10.3	37,0	37.0	10.2	36.9	36.9	10.8	19.8	100.0	12.0	21.0	
Effective Green, g (s)	11.3	41.0	41.0	11.2	40.9	40.9	11.8	22.8	100.0	13.0	24.0	
Actuated g/C Ratio	0.11	0.41	0.41	0.11	0.41	0.41	0.12	0.23	1 00	0.13	0.24	
Clearance Time (s)	4.0	0'2	1.0	4.0	7.0	7.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	401	1499	652	397	1326	609	216	834	1599	461	833	
v/s Ratio Prot	c0.06	0.06		0.06	c0.45	0.34	c0.07	c0.13		0.07	0.12	
v/s Ratio Perm			0.01						c0.08			
v/c Ratio	0.56	0.14	0 03	0.51	1.10	0.82	0.58	0.59	0.08	0.51	0.51	
Uniform Delay, d1	42.0	18.5	17.6	41.8	29.6	26.3	41.8	34.4	0.0	40.6	32.9	
Progression Factor	1.01	0.90	1.14	1,00	1 00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	0.2	0.1	Ξ	55.3	12.0	4.0	1.1	0.1	1.0	0.5	
Delay (s)	44.1	16.8	20.2	43.0	84.8	38.4	45.7	35.5	0.1	41.5	33.4	
Level of Service	0	8	U		u.	0		0	A	٩	C	
Approach Delay (s)		29.7			68.0			31.3			36.0	
Approach LOS		o			ш			U			0	
Intersection Summary	1 PAGE	R						ł				
HCM Average Control Detay		ş	52.3	오	M Level	of Servic	e		9			
HCM Volume to Capacity ra	tio		0.81									
Actuated Cycle Length (s)			100.0	Su	m of lost	time (s)			12.0			
Intersection Capacity Utiliza	lion		81.5%	Q) Level o	f Service			0			
Analysis Period (min)			15									

Synchro 7 - Report W-Trans

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

	-		,			•	,	•		•		
Contraction of the second s	ě	t	~	4	ļ	/	1	-	•	*	-	7
Movement	EBL	EBT	EBR	WBL	TBW	WBR	NBN	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	¢			÷	K.,	*	4		۴	¢±	
Volume (vph)	128	4	32	74	59	173	33	303	16	75	385	151
Ideal Flow (vphpl) Total Loot time (a)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	3.0	3.0			0.5	3.0	3.0	3.0		3.0	3.0	
Erah and hikas	0.80	0.00			00.1	0.1	1.00	0.95		1.00	1.00	
Fipu, peu/ukes		66.0			00.1	00.1	001	1.00		1.00	0.99	
ripu, pearoikes	00 1	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
	1 00	0.94			1.00	0.85	1.00	0.99		1.00	0.96	
FIL Protected	0.95	0.97			0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1477	1412			1592	1391	1829	3629		1829	1828	
FIL Permitled	0.95	0.97			0.97	1.00	0.20	1.00		0.50	1.00	
Satd. Flow (perm)	1477	1412			1592	1391	393	3629		972	1828	
Peak-hour factor, PHF	18.0	0.85	0.85	0,85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj Flow (vph)	147	G	38	87	69	204	39	356	19	88	453	178
RTOR Reduction (vph)	0	26	0	0	0	110	0	4	0	0	14	0
Lane Group Flow (vph)	67	67	0	0	156	8	39	371	0	88	617	0
Confl Peds (#/hr)			ო	e			4					4
Parking (#/hr)	10	10	10	10	10	10						
Turn Type	Split			Split		Perm	Perm			Perm		
Protected Phases	4	4		e	e			2			9	
Permitted Phases						e	2			9		
Actuated Green, G (s)	10.0	10.0			13.1	13.1	29.7	29.7		29.7	29.7	
Effective Green, g (s)	12.0	12.0			15.1	15.1	31.7	31.7		31.7	31.7	
Actuated g/C Ratio	0.18	0.18			0.22	0.22	0.47	0.47		0.47	0.47	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	261	250			355	310	184	1697		454	855	
v/s Ratio Prot	20.07	0.05			c0.10			0.10			c0.34	
v/s Ratio Perm						0.07	0,10			0.09		
v/c Ratio	0.37	0.27			0.44	0.30	0.21	0.22		0.19	0.72	
Uniform Delay, d1	24.6	24.1			22.7	22.0	10.7	10.7		10.6	14.5	
Progression Factor	1.00	1.00			1 00	1.00	1 00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.6			0.9	0.6	0.6	0,1		0.2	3.0	
Delay (s)	25.5	24.7			23.6	22.5	11.2	10.8		10.8	17.5	
Level of Service	0	0			o	o	80	æ		8	æ	
Approach Delay (s)		25.1			23.0			10.8			16.7	
Approach LOS		CO I			U			æ			8	
Intersection Summary							0					T
HCM Average Control Delay			17.5	모	M Level	of Service			a			
HCM Volume to Capacity ratio			0.58									
Actualed Cycle Length (s)			67.8	Sul	m of lost	time (s)			9.0			
Intersection Capacity Utilization			58.4%	l0L	J Level o	f Service			8			
Analysis Period (min)			15									
c Critical Lane Group												

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

HCM Signalized Intersection Capacity Analysis 93. Vineyard-Ray St & First

Operation Ed.		1	t	1	5	ŧ	~	•	+	٩	٨	-	¥
arrend Configurations arrend Configurating arrend Configurating <	Invented	FRI	FBT	FRR	WBI	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
multi cynth 21 106 87 137 226 60 43 370 50 300<	and Configurations	-	4	R	*	+	*	*	44		*	ŧ	-
lear Flow (vpr) 1900	olume (voh)	24	108	87	137	226	60	43	370	63	38	813	138
Odd Lost time (e) 3.0	ieal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
are buil Factor 1.00	otal Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
pp pertinises 100 <	ane Util, Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
(b) (b) (c) (c) <td>rpb, ped/bikes</td> <td>1.00</td> <td>1.00</td> <td>0.99</td> <td>1.00</td> <td>1.00</td> <td>0.99</td> <td>1.00</td> <td>66.0</td> <td></td> <td>1.00</td> <td>1.00</td> <td>0.96</td>	rpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	66.0		1.00	1.00	0.96
The field 100 1	lpb, ped/bikes	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
It Protected 055 100 100 055 100 055 100 055 100 055 10 045 10 045 10 100 055 100 055 100 055 100 055 100 055 100 055 100 100	L L L L L L L L L L L L L L L L L L L	1.00	1.00	0.85	1.00	1.00	0.85	1.00	86.0		1.00	1.00	0.85
aut. Flow (prot) 1823 1925 1614 1554 1564 1563 1302 1323 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 133 143 152 151 151 133 <	It Protected	0.95	1.00	1.00	0,95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Il Pamilleri 035 100 100 055 100 100 055 10 035 10 035 10 035 10 036 10 036 10 036 10 036 10 036 10 036 036 036 1372 1829 355 10 037 035 036 036 036 036 036 036 036 036 036 036	atd. Flow (prot)	1829	1925	1614	1554	1636	1372	1829	3548		1829	3657	1577
and Flow (perm) 1823 1824 1554 1554 1554 1554 1554 1554 1554 1529 3556 1229 3556 1229 3556 1229 3556 1229 3556 1229 3556 120 020 029 020 020 <th< td=""><td>II Permitled</td><td>0.95</td><td>1.00</td><td>1.00</td><td>0.95</td><td>1.00</td><td>1.00</td><td>0.95</td><td>1.00</td><td></td><td>0.95</td><td>1.00</td><td>1.00</td></th<>	II Permitled	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Technic factor, PHF 0.30 </td <td>atd. Flow (perm)</td> <td>1829</td> <td>1925</td> <td>1614</td> <td>1554</td> <td>1636</td> <td>1372</td> <td>1829</td> <td>3548</td> <td></td> <td>1829</td> <td>3657</td> <td>1577</td>	atd. Flow (perm)	1829	1925	1614	1554	1636	1372	1829	3548		1829	3657	1577
dj Flow (vph) 23 120 97 132 231 67 48 411 70 42 90 and Group Flow (vph) 0	teak-hour factor, PHF	06.0	0.90	06'0	06.0	06.0	06'0	0.00	06.0	0 90	06-0	0.90	0.90
T(OR Reduction (vph) 0	(dj Flow (vph)	23	120	67	152	251	67	48	411	02	42	903	153
and Group Flow (vph) 23 120 14 152 251 41 48 471 0 42 30 and Group Flow (vph) 23 120 14 152 251 41 48 471 0 42 30 and Reac Split Form Split Form For For For For For For For 5 5 4 5 </td <td>TOR Reduction (vph)</td> <td>0</td> <td>0</td> <td>83</td> <td>0</td> <td>0</td> <td>26</td> <td>0</td> <td>9</td> <td>0</td> <td>0</td> <td>0</td> <td>8</td>	TOR Reduction (vph)	0	0	83	0	0	26	0	9	0	0	0	8
Total Test (#/h) 1 10	ane Group Flow (vph)	23	120	14	152	251	41	48	471	0	42	903	73
Tarking (#hr) 10	confl Peds (#/hr)			-			-			σ			4
Um Type Split Perm Split Perm Protected Preses 4 4 3 3 1 6 5 5 5 5 5 5 5 5 5 5 5 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5 5 4 5	arking (#/hr)				9	10	10						
Tratected Phases 4 4 3 3 1 6 5 Tratected Phases 4 4 3 3 130 130 130 5 456 5 1 45. cutated Phases 0 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.10 0.00 0.20 0.00 0.20 0.00 0.40 0.06 0.40 0.06 0.40 0.06 0.40 0.01 0.02 0.02 0.03 0.13 0.02 0.02 0.02 0.03 0.13 0.02 <td< td=""><td>urn Type</td><td>Split</td><td></td><td>Perm</td><td>Split</td><td></td><td>Регт</td><td>Prot</td><td></td><td></td><td>Prol</td><td></td><td>Perm</td></td<>	urn Type	Split		Perm	Split		Регт	Prot			Prol		Perm
emilted Prases 4 3 13	rotected Phases	4	4		e	0		-	9		2	2	
Character (Teen, G (s)) 133	ermitted Phases			4			ო						2
The Circle Creen, g (s) 14.3 14.3 2.00 2.00 6.2 47.6 6.1 47.7 Circline Circle, (s) 0.14 0.10 0.15 0.13 0.16 0.13 0.13 0.13 0.13 0.13 0.12 0.12 0.12 0.12 0.12 0.13 0.12 0.13 0.12 0.13 0.12 0.13 0.12 0.13 0.12 0.12 0.12 0.12 0.13 0.12 0.12 0.12 0.12 0.13 0.12 0.13 0.12 0.13	(ctuated Green, G (s)	13.3	13.3	13.3	19.0	19.0	19.0	5.2	45.6		5.1	45.5	45.5
Culated gC Ratio 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.16 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.48 0.06 0.49 0.17 0.17 0.13 0.01 0.05	effective Green, g (s)	14.3	14.3	14_3	20.0	20.0	20.0	6.2	47.6		6.1	47.5	47.5
Clearance Time (s) 4.0 4.0 4.0 4.0 4.0 4.0 5.0 3.0	vcluated g/C Ratio	0.14	0.14	0.14	0.20	0.20	0.20	0.06	0.48		0.06	0.48	0.48
Centole Extension (s) 3.0	Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
are Gry Cap (vph) 262 275 231 311 327 274 113 1659 112 173 18 Rate Pert 0.01 0.05 0.01 0.05 0.03 0.13 0.02 0.02 0.02 18 Ratio Pert 0.01 0.01 0.015 0.42 0.28 0.03 0.15 0.16 Patio Pert 1.0 0.19 0.10 0.10 1.01 0.15 0.42 0.28 0.38 0.5 inform Delay d1 372 392 37.0 355 37.8 33.0 452 15.8 0.38 0.5 inform Delay d1 373 4.0 3 37.1 0.1 0.10 1.00 1.00 1.00 1.00 1.00 1.	(ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Is Ratio Perri 001 c0.06 0.10 c0.15 c0.03 0.13 0.02 c0.2 c0.2 maintain for the state form 0.09 0.44 0.06 0.49 0.77 0.15 0.42 0.28 0.38 0.5 in the state form 0.09 0.44 0.06 0.49 0.77 0.15 0.42 0.28 0.38 0.5 in the state form 1.00 1.00 1.00 1.00 1.37 0.70 1.51 0.3 in the state form 1.00 1.00 1.00 1.00 1.37 0.70 1.51 0.3 in the state form 1.00 1.00 1.37 0.30 1.51 0.3 in the state form 1.00 1.00 1.00 1.30 1.37 0.70 1.15 0.30 0.5 in the state form 1.37 0.30 1.31 0.32 0.5 in the state form 1.31 0.3 1.31 0.31 0.32 0.5 in the state form 1.31 0.31 0.32 0.33 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.	ane Grp Cap (vph)	262	275	231	311	327	274	113	1689		112	1737	749
(s Ratio 0.01 0.03 0.44 0.01 0.03 0.45 0.16 0.43 0.17 0.13 0.42 0.28 0.38 0.55 0.16 0.42 0.28 0.33 0.55 0.17 0.13 0.13 0.15 0.15 0.38 0.55 0.13 0.13 0.15 0.15 0.38 0.55 0.38 0.55 3.38 3.03 3.22 0.03 0.15 0.38 0.55 3.18 3.03 3.23 4.21 1.61 0.3 0.33 2.44 0.41 1.93 1 0.51 0.3 1 1.51 0.3 1 0.51 0.3 1 1.51 0.3 0.3 2.44 1.41 1.93 1 0.3 1 3.2 4.2 1.1 0.3 3.3 3.42 1.41 1.93 1 3.3 2.42 1.41 1.93 1.3 3.3 3.42 1.41 1.93 3.3 3.42 1.41 1.93 3.3	/s Ratio Prot	0.01	c0.06		0.10	c0.15		c0.03	0.13		0.02	c0.25	
(c Ratio 0.09 0.44 0.06 0.49 0.77 0.15 0.42 0.28 0.38 0.5 indiorm Delay (ct 372 392 370 355 370 355 370 45.1 18 indiorm Delay (ct 371 371 355 370 355 373 431 137 137 131	/s Ratio Perm			0.01			0.03	1					0.05
Inform Delay, d1 372 392 370 355 378 330 452 158 451 18 regression Factor 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,01 1,1	/c Ratio	60"0	0.44	0.06	0.49	0.77	0.15	0.42	0.28		0.38	0.52	0.10
rorgenssion Factor 100 100 100 100 100 137 0.10 131 0.3 rorgenssion Factor 100 100 100 100 133 0.3 0.3 0.3 leave(s) 213 0.3 71 6.2 133 0.3 6.4 0.4 131 leave(s) 213 0.3 71 6.2 133 0.3 6.4 0.4 131 leave(s) 213 0.3 71 6.1 12 0.1 12 0.1 12 0.1 12 0.1 12 leave(s) 20.6 10 0.0 0.0 100 100 100 100 100 100 100	Jniform Delay, d1	37.2	39,2	37.0	35.5	37.8	33.0	45.2	15.8		45.1	18.3	14.4
recremental Delay, d2 0,1 1,1 0,1 1,2 10,3 2,4 0,4 19 1, elay (s) 3,3 4,03 3,1 36,7 41,1 3,3 42,3 14 19 1, elay (s) 3,3,3 4,03 3,1 36,7 41,1 3,3 64,2 14 69,9 7 evel of Service D D D D C E 8 7 9 7 kiproach Delay (s) 38,7 40,3 3,7 36,7 41,1 0,1 12,0 7 9 7 9 7 9 7 9 7 9 7 9 7 36,3 6,4 7 3 7 9 7 9 7 9 7 19 7 19 7 19 7 19 7 19 7 19 7 19 7 19 7 16 10 7	Progression Factor	1.00	1.00	1.00	1 00	1 00	1.00	1.37	0.70		1.51	0.37	110
elety(s) 37.3 40.3 37.1 36.7 48.1 33.3 64.2 11.4 69.9 / evel of Service D D D D C E B E 9 evel of Service D D D C E B E 9 everation Service D 2.3 H6.2 2.3 H6.2 9 typrach LOS D D 2.0.6 HCM Level of Service C C totact LOS D 0.56 HCM Level of Service C C C totact Cube Length (s) 10.0 Sum of last time (s) 12.0 12.0 A resection Capacity Unitation 54.1% ICU Level of Service C A A	ncremental Delay, d2	10	F	0.1	1.2	10.3	0.3	2.4	0.4		1.9		
evel of Service D D D D C E B E typroach Delay (s) 38.7 42.3 16.2 9 typroach Delay (s) 38.7 42.3 16.2 9 typroach Delay 0 0 0 8 9 tersection Summery 0 0 0 8 9 tersection Capacity ratio 0.56 HCM Level of Service C C tensection Capacity Utilization 54.1% 10.0 Level of Service C 12.0 natives the inder (min) 54.1% 10.0 Level of Service A A	Delay (s)	37.3	40.3	37.1	36,7	48.1	33.3	64.2	11.4		6.69	8 /	5° -
Approach Delay (s) 38.7 42.3 16.2 8 Approach Delay D B B B B B B B B B B B B B B B B B B	evel of Service						υ	ш	8		ш	₹ 2	<
Upprach LOS D D B Intersection Summary Intersection Summary Intersection Summary ICM Average Control Delay 20,6 HCM Level of Service C ICM Volume to Capacity tatio 0,56 HCM Level of Service C ICM Volume to Capacity tatio 0,56 HCM Level of Service C ICM Volume to Capacity Utation 54,1% ICU Level of Service A Analysis Period (min) 15 15 A	Approach Delay (s)		38.7			42.3			16.2			9.4	
Inestaction Summary CM Average Control Delay 20.6 HCM Level of Service C 40M Volume to Capacity attic 0.56 HCM Level of Service C 40M Volume to Capacity attic 0.56 Num of last lime (s) 12.0 teretaed Capacity Unitation 54,1% ICU Level of Service A 4 viatysis Period (min) 15	Approach LOS		٥			0			m			¥	
CM Average Control Delay 20.6 HCM Level of Service C M Volume to Capacity ratio 0.56 HCM Level of Service C Model Control Delay 0.56 Sum of lost time (s) 12.0 Atensed Cycle Length (s) 10.0 Sum of lost time (s) 12.0 Analysis Period (min) 54.1% ICU Level of Service A	ntersection Summary	1				ł					101	0	
HCM Volume to Capacity ratio 0.56 Sum of lost lime (s) 12.0 terested Cyrels terestion 54.1% ICU Level of Service A Analysis Period (min) 51.15 ICU Level of Service 5 A	HCM Average Control Delay			20.6	Ī	CM Level	of Servic	ey.		U			
Actuated Cycle Lengin (s) 100.0 Sum of lost lime (s) 12.0 Intersection Capacity Utilization 54,1% ICU Level of Service A Analysis Period (min) 15	HCM Volume to Capacity ratio			0.56									
Nersection Capacity Unization 34,1% ILU LEVELUI SErvice A Analysis Period (min)	Actuated Cycle Lenglh (s)			100.0	σ, s	um of losi	lime (s)			0.21			
	ntersection Capacity Utilization			54.1%	2	'U Level (¢			
Critical and Gruin	Analysis Periou (min)			2									

HCM Signalized Intersection Capacity Analysis

94: Kottinger-Sprine	g & Firs										4/1	9/2013
	٦	1	۴	1	Ŧ	~	*	+	٩	۶	-	¥
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	TBN	NBR	100	SBT	SBR
Lane Configurations		4			47	*	F	¢2		*	¢±	
Volume (vph)	13	46	1	29	11	52	23	420	39	35	921	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			1.00	0.93	1.00	0.99		1.00	0.99	
Flpb, ped/bikes		0.99			0.99	1.00	1.00	1.00		0.96	1.00	
Fit		0.98			1.00	0.85	1.00	0.99		1.00	0.99	
FII Protected		0.99			0.99	1.00	0.95	1.00		0.95	1.00	
Sald Flow (prot)		1553			1591	1292	1554	1599		1488	1602	
Fit Permitted		0.94			0.93	1.00	0.17	1.00		0.45	1.00	
Satd. Flow (perm)		1477		2	1493	1292	283	1599		101	1602	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	16.0	0.91	0.91
Adj Flow (vph)	14	51	12	32	85	57	25	462	43	38	1012	85
RTOR Reduction (vph)	0	80	0	0	0	49	0	2	0	0	2	0
Lane Group Flow (vph)	0	69	0	0	117	60	25	503	0	38	1095	0
Confl. Peds. (#/hr)	36		24	24		36	36		36	36		38
Parking (#ihr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm		Perm	Perm	Ŷ		Perm	2 2	
Prolected Phases		4			80			5			9	
Permitted Phases	4			60		60	2			9		
Actuated Green, G (s)		13.7			13.7	13.7	78.3	78.3		78.3	78.3	
Effective Green, g (s)		14.7			14.7	14,7	79.3	79.3		79.3	79.3	
Actuated g/C Ratio		0.15			0.15	0.15	0.79	0.79		0.79	0.79	
Clearance Time (s)		4.0			4 0	4 0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0			3.0	3.0	30	3.0		3.0	3.0	
Lane Grp Cap (vph)		217			219	190	224	1268		556	1270	
v/s Ratio Prol								0.31			c0.68	
v/s Ralio Perm		0.05			c0.08	0.01	0 0			0.05		
v/c Ratio		0.32			0.53	0.04	0.11	0.40		0.07	0.86	
Uniform Delay, d1		38.2			39.5	36.6	2.4	31		2.3	6.8	
Progression Factor		1.00			1.00	1.00	1.62	1.80		0.63	2.01	
Incremental Delay, d2		0.9			2.5	0.1	1.0	0.9		0.2	7.1	
Delay (s)		39.0			42.0	36.7	4.8	6.5		1.6	20.7	
Level of Service		۵			0		A	A		¥	o	
Approach Delay (s)		39.0			40.3			6.4			20.1	
Approach LOS		٥			۵			۷			U	
Intersection Summary	1000						10.41		1000	N-L-N	1111	
HCM Average Control Deta	A		18.9		ICM Level	of Servic	ey.		60			
HCM Volume to Capacity ra	atio		0.81		ä							
Actuated Cycle Length (s)			100.0	0) :	um of losi	time (s)			9.0			
Intersection Capacity Utiliza	ation		73.2%	*	CU Level (of Service			a			
Analysis Period (min)			<u>6</u>									
C CHINCAL LANG CIUM												

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Movement EBL ADI TO TA	EBR W 1 1950 19 1950 19 1950 19 1950 19 1950 19 1100 11 100 11 1100 11 1100 11 1100 11 1100 11 1110 01 1110 01 1111 10 1111 10 11111 10 11111 10 11111 10 11111 10 11111 10 11111111	655 50 1900	4	4	+	4	۶	Т	¥
Movement EBL EB	EBR W 195 2 195 2 195 2 195 2 195 2 195 2 195 2 100 1190 1190 1190 1190 11100 11100 11100 11100 11100 11100 11100 11100 11100 1100 11000 11000 11000 11000 11000 11000 11000 11000 110000	1 WB1	COLUMN					•	
Lane Configurations (Ph) 150 260 19 Volume (vph) 150 260 19 Total Lost line (s) 30 3.0 3.0 3.1 Lane Uil, Factor (p) 30 0.0 0.8 Frp. pedbikes 1.00 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 0.	1195 2 3.0 19 3.0 19 3.0 2 3.0 2 3.0 2 1.100 1-1100 1-1100 1.1100 0.11100 0 1.1100 0.11100 0 1.1100 0.11100 1-1100 1-110	75 653 00 1900	MAK	NBL	181	NBR	SBL	SBT	SBR
Volume (vph) 150 250 190 Ideal Flow (vph) 1900 1900 1900 Inclai Lost time (s) 30 30 30 30 Frpb, ped/bikes 1,00 1,00 1,00 1,00 Frb, ped/bikes 1,00 1,00 1,00 1,00 1,00 Frb, ped/bikes 1,00 1,00 1,00 1,00 1,00 1,00 Frb, ped/bikes 1,00 1,00 1,00 1,00 1,00 1,00 Frb ped/bikes 1,00 1,00 1,00 1,00 1,00 1,00 Satd 547 3557 145 557 145 Peak-hour factor, PHF 0,91 0,91 0,91 0,91 0,91 0,91 0,91 0,91 26 3657 145 Adj, Flow (perm) 3547 3657 146 26 21 47 26 21 26 21 26 21 26 21 26 21 26<	195 2 196 3 3.0 3 3.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.00 1.1 1.0 1.17 3 1.17 3	75 653		**	*	*	*	4	
least Few (vp/mp) 1900 1900 1900 1901 1901 1900 1901 190	1300 13 3.0 3.0 3.0 1.100 1.100 1.100 1.100 1.100 1.100 1.100 1.100 0.85 1.100 1.100 1.100 1.100 1.100 2.14 1.100 2.214 1.177 3.18	00 1900	34	128	341	74	18	736	242
Total Lost Inne (s) 3.0	3.0 3.0 3.0 0.88 1.100 1. 0.86 1.100 1. 1452 18 1.452 1452 18 0.01 1200 0. 0. 1452 18 0.01 177 0.01 0.		1900	1900	1900	1900	1900	1900	1900
Lare ULI, Factor 0.97 0.97 0.95 1.0 Frip, ped/bikes 1,00 1,00 1.00 0.0 Frip, ped/bikes 1,00 1,00 1,00 0.0 Frip, ped/bikes 1,00 1,00 1,00 0.0 0.0 Frip, ped/bikes 1,00 1,00 1,00 1,00 0.0 0.0 Frip, Protected 0,95 1,00 1,00 1,00 1,00 1,00 0.0 1.0 1.00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,01	1,00 1. 0,89 1. 1,00 1. 1,00 1. 1,452 18 1,452 1	.0 3.0		3.0	3.0	3.0	3.0	3.0	
Frpb. ped/bikes 100 100 100 0.0 Firb. ped/bikes 1.00 1.00 1.00 0.0 Fir Protected 0.95 1.00 1.00 1.00 1.00 Stat/ 547 357 145 145 145 145 Fir Protected 0.95 1.00 1.00 100 10 10 Satd Flow (proth) 3547 3657 145 145 145 100 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11<	0.89 1. 1.00 1. 1.00 1. 1.452 18 1452 18 1452 18 1452 18 214 3 214 3	0 0 06		0.97	1 00	1.00	1,00	0.95	
Hpb. pecifolkes 1,00	1,00 1. 0.85 1. 1452 18 1452 18 1452 18 1452 18 0.91 0. 214 3 177	00 1 00		1.00	1.00	0.82	1.00	66 0	
нт При при при при при при при при при при п	0.85 1. 1.00 0. 1452 18 1452 18 1452 18 1452 18 214 3 214 3 177	00 1 00	-	1.00	1 00	1.00	1,00	1.00	
FI: Protected 0.95 1.00 1.0 Sald, Flow (prot) 3547 3557 145 R: Pre-intect 0.95 1.00 1.0 Sald, Flow (perm) 3547 3657 145 Peark-hour factor, PHF 0.91 0.91 0.0 Adj, Flow (perm) 3547 3657 145 Park-hour factor, PHF 0.91 0.91 0.0 Adj, Flow (pph) 165 286 21 Adj, Flow (ph) 165 286 3 7 Lane Group Flow (ph) 0 0 1 7 7 Lun Type Prot Prot Prot Prot Prot Prot Proticted Phases 7 4 Prot Prot 15 15 Fffective Green, G (s) 11.0 15 3 17 17	1,00 0. 1452 18 1452 18 1452 18 1452 18 0.91 0. 214 3 177	0 0 00	-	100	1 00	0.85	1.00	0.96	
Said Flow (prot) 3347 3557 145 Fit Permitted 0.95 1.00 1.0 Fit Permitted 0.95 1.00 1.0 Said Flow (perm) 3547 3557 145 Peak-hour factor, PHF 0.91 0.91 0.9 Adj Flow (vph) 165 2.86 3 Adj Flow (vph) 165 2.86 3 Lane Group Flow (vph) 165 2.86 3 Confit Peaks, (#hr) 165 2.86 3 Turn Type Prot Prot Perturn Proticeted Phases 7 4 Perturn Proticeted Phases 7 4 Perturn Proticetore Green, G(s) 11.0 17.3 17	1452 18 1.00 0. 1452 18 1452 18 0.91 0. 214 3 177	95 1.00	-	0,95	1.00	1.00	0,95	1.00	
EIL Permitted 0.95 1.00 1.0 Satt Flow (perm) 3547 3557 145 Satt Flow (perm) 3547 3657 145 Adj Flow (perm) 3547 3657 145 Adj Flow (perm) 165 0.96 0.9 17 Lane Group Flow (pph) 165 2.86 3 17 Lane Group Flow (pph) 165 2.86 3 7 7 Parking (#hr) 0 0 1165 2.86 3 7	1,00 0. 1452 18 0.91 0. 214 3 177	29 3624		3547	1925	1345	1554	3223	
Sald Tow, (perm) 3347 3657 145 Peak-hour factor, PHF 0.91 0.91 0.91 0.91 Peak-hour factor, PHF 0.91 0.91 0.91 0.91 0.91 RTOR Reduction (vph) 165 286 31 0.91	1452 18 0.91 0. 214 3 177	35 1.00	~	0.95	1_00	1_00	0,95	1.00	
Peak-hour factor, PHF 0.91 0.91 0.9 Adj, Flow (vph) 165 286 21 Adj, Flow (vph) 165 286 3 Lane Group Flow (vph) 165 286 3 Confl. Peak (#hr) 0 0 17 Parting (#hr) 165 286 3 Turn Type Prot Prot Parting (#hr) Protlected Phases 7 4 Partiaded Green, G (s) 11.0 15 3 15 Fiftective Green, G (s) 11.0 15 3 17 17	0.91 0. 214 3 177	29 3624		3547	1925	1345	1554	3223	
Adj. Flow (typt) 165 286 21 RTOR Reduction (typh) 0 0 17 Lane Group Flow (typh) 165 286 3 Conf. Peats (#Ihr) 165 286 3 Penting Peats (#Ihr) 165 286 3 Parting Peats (#Ihr) 165 286 3 Parting Peats 7 4 Penting Peats Protected Phases 7 4 Penting Peats Protected Phases 7 6(s) 10.0 15 3 Fertualed Green, G(s) 10.0 15 3 15	214 3	91 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
RTOR Reduction (vph) 0 0 17 Lare Group Flow (vph) 165 286 3 Conf. Peats (#hr) 7 7 7 Parking (#hr) Prot 7 7 Turn Type Prot Prot Peat Pertiaded Phases 7 4 Peat Protected Phases 7 4 4 Pertuited Phases 7 15 15 Pertuited Green, G (s) 11.0 15 15 Effective Green, G (s) 11.0 17 17	177	718	37	141	375	81	20	809	266
Lare Group Flow (rph) 165 286 3 Confl. Peck. (#hr.) 7 7 7 Desking (#hr.) 7 7 7 Turn Type Prot Pen 7 Protected Phases 7 4 Pen Protected Phases 7 6 4 Permitted Phases 7 10.0 15 15 Effective Green, G (s) 11.0 17 17 17		0 4	0	0	0	45	0	27	0
Conf. Peds. (#hr) 7 7 Turn Type Prot Pen Turn Type 7 4 Protected Phases 7 4 Permited Phases 7 6 Franteid Chases 7 15 15 Effective Green, G (s) 11.0 15 15	37 3	151 751	0	141	375	36	20	1048	0
Parking (#/hr) Percing Turn Type Prot Percind Protected Phases 7 4 Actualed Green, G (s) 10.0 15.3 15 Effective Green, G (s) 11.0 17.3 17.3	72		12			96			24
Turn Type Prot Pen Protected Phases 7 4 Pretmitled Phases 7 4 Actualed Green, G (s) 10.0 15.3 15. Effective Green, G (s) 11.0 17.3 17.3 17.3							10	10	10
Protected Phases 7 4 Permitted Phases 7 4 Actualed Seven, G (s) 10.0 53 15, Effective Green, G (s) 11.0 17.3 17.	erm Pi	ot		Prot		Perm	Prot		
Permitted Phases 4 Actuated Green, G (s) 10.0 15.3 15, Effective Green, g (s) 11.0 17.3 17,		3	-	ŝ	2		-	9	
Actualed Green, G (s) 10.0 15.3 15. Effective Green, g (s) 11.0 17.3 17.	4					2			
Effective Green, g (s) 11.0 17.3 17.	15.3 20	.9 26.2		8.9	42.5	42.5	3.3	36.9	
	17.3 21	.9 28.2	•	6 6	44.5	44.5	4.3	38.9	
Actuated g/C Ratio 0.11 0.17 0.1	0.17 0.	22 0.26		0,10	0.44	0.44	0.04	0.39	
Clearance Time (s) 4.0 5.0 5.	5.0 4	.0 5.0	_	4,0	5.0	5.0	4.0	5.0	
Vehicle Extension (s) 3.0 3.0 3.	3.0 3	.0 3.0		3.0	3.0	3.0	3.0	3.0	1
Lane Grp Cap (vph) 390 633 25	251 4	11 1022	•	351	857	599	67	1254	
v/s Ratio Prot 0.05 c0.08	0	17 c0.21		c0.04	0.19		0.01	c0.33	
v/s Ratio Perm 0.0	0.03					0.03			
v/c Ratio 0.42 0.45 0.1	0.15 0.	75 0.73		0.40	0.44	0.06	0:30	0.84	
Uniform Delay, d1 41.5 37.1 35.	35.1 36	.5 32.5		42.3	19.1	15.8	46.4	27.7	
Progression Factor 1.00 1.00 1.0	1.00 1.	00 1.00		0.89	0.76	0.83	1.00	1.00	
Incremental Delay, d2 0.7 0.5 0.	0.3	.8 2.8		0.8	1.6	0.2	2.5	6.7	
Delay (s) 42.3 37.6 35.	35.4 44	.3 35.3		38.5	16.2	13.3	48.9	34.3	
Level of Service D D	0	0		0	8	8	0	ပ	
Approach Delay (s) 38.0		37.9			21.1			34.6	
Approach LOS					o			υ	
Intersection Summary				SPACE N					
HCM Average Control Delay 33.	33.9	HCM Lev	tel of Servic	æ		ပ			ſ
HCM Volume to Capacity ratio 0.7	0.71								
Actualed Cycle Length (s) 100.	0.00	Sum of Ic	ost time (s)			12.0			
Intersection Capacity Utilization 77.9	.9%	ICU Leve	el of Service	ľ		0			
Analysis Period (min)	15								

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Synchro 7 - Report W-Trans

Movement EBI EDI EDI EDI EDI MBI MB		1	1	-	•	۶	-	Y
Lane Configurations 1 5 6 7 43 114 24 Volume (vph) 900 1900 1900 1900 1900 1900 1900 1900	WBL WBT	WBR	NBI	NBT	NBR	SBI	SBI	SBR
Volume (vph) 41 55 67 43 114 24 Toleal Funk (vph) 300 300 190 10 1 10 100 111 10 <td>4 4</td> <td></td> <td>-</td> <td>24</td> <td></td> <td>-</td> <td>4</td> <td></td>	4 4		-	24		-	4	
ldeal Flow (ynh) 1900 1900 1900 1900 1900 1900 1900 190	43 114	24	28	419	27	4	886	71
Total Losi time (s) 3.0	1900 1900	1900	006	1900	1900	1900	1900	1900
Lare Ull, Factor 1.00	3.0 3.0		3.0	3.0		3.0	3.0	
Frip, pad/bikes 1.00 0.39 1.00 0.39 1.00 0.39 1.00 0.39 1.00 0.39 1.00 0.39 1.00 0.37 1.1 1.00 0.39 1.00 0.37 1.1 1.00 0.39 1.00 0.37 1.1 1.00 0.37 1.1 0.0 0.37 1.1 0.0 0.37 1.1 0.0 0.37 1.1 0.0 0.37 1.1 0.0 0.35 0.36 1.30 0.35 0.36 0.30 0.0 0.37 1.1 1.1 0.0 0.37 1.1 0.0 0.37 1.1 1.00 0.35 0.36 0.36 0.30 0.30 0.30 0.30 0.30 0.30 0.31 0.30 0.31 0.30 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35 <th0.35< th=""> 1.33 1.33</th0.35<>	1.00 1.00		1.00	1 00		1.00	1.00	
Flab. perclohkes 0.39 1.00 0.39 1.00 0.37 1.00 0.35	1.00 0.99		1.00	1.00		1.00	1.00	
Fri 1.00 0.92 1.00 0.97 1.10 Satid Flow (pot) 1531 1472 1536 1584 10 Satid Flow (pot) 1531 1472 1536 1584 10 Fit Permitted 0.47 1.00 0.55 1.00 0.95 100 Fat Nour factor, HHF 0.95	0.99 1.00		1.00	1.00		0.99	1.00	
Fil Protected 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 <th0.35< th=""> 0.35 0.35</th0.35<>	1.00 0.97		1.00	0.99		1.00	66.0	
Sald Flow (proit) 1537 1472 1536 1584 15 Sald Flow (proit) 744 1.00 0.51 1.00 0.5 Sald Flow (proit) 7.44 1.00 0.51 1.00 0.5 Pack-hour factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Pack-hour factor, PHF 0.95	0.95 1.00		0.95	1 00		0.95	1.00	
Fill Permitted 0.47 1.00 0.51 1.00 0 Fall Formitted 0.47 1.00 0.51 1.00 <	1536 1584		554	1618		1543	1614	
Salut Flow (perm) 754 1472 829 1584 33 Rait Now (spin) 035 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0 0 325 0	0.51 1.00		0.21	1.00		0.47	1.00	
Peak-hour factor, PHF 0.95 0.55 0.05 0.95	829 1584		343	1618		758	1614	8
Adj. Flow (vph) 43 56 71 45 25 Adj. Flow (vph) 0 55 0 0 26 Lame Grup Flow (vph) 5	0.95 0.95	0,95	0.95	0,95	0.95	0,95	0,95	0.95
RTOR Reduction (vph) 55 0 0 5 0 0 Lame Group Flow (vph) 5 7 0 45 75 0 0 45 156 0 Confl Reduction (vph) 5 6	45 120	25	29	441	28	4	933	75
Lane Group Flow (vph) 43 74 0 45 136 0 Confl Peds, (µh) 10 10 10 10 10 10 10 Turn Type Parking (µh) 10 10 10 10 10 10 10 Turn Type Permit	6 0	0	0	-	0	0	7	0
Confl. Peds. (#hr) 5 7 Turn Use Prases 4 8 8 8 8 9 13,9 13,9 13,9 13,9 17 7 Actualed Green, g(s) 14,9 14,9 14,9 14,9 17 9 13,9 17 9 13,9 17 7	45 136	0	29	468	0	4	1006	0
Parking (#/hr) 10	co.	S	2		5	5		5
Turn Type Perm Permute Prases 4 8 8 71 Permute Prases 4 8 8 71 Permute Prases 71 Permute Prases </td <td>10 10</td> <td>₽</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> <td>9</td> <td>10</td>	10 10	₽	10	10	10	10	9	10
Protected Phases 4 8 Protected Phases 4 8 8 Actualed Green, G (s) 13,9 13,9 13,9 73 Effective Green, g (s) 14,9 14,9 14,9 73 Effective Green, g (s) 14,9 14,9 14,9 73 Effective Green, g (s) 0.15 0.0 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.0 0.03 0.05 0.03 0.05 <td>berm</td> <td>а.</td> <td>erm</td> <td></td> <td></td> <td>Perm</td> <td></td> <td></td>	berm	а.	erm			Perm		
Permitted Phases 4 8 Actuated Green, G (s) 13,9 14,9 10,9 10,0 10,0 10,0 10,0 13,0 14,9 13,4 14,1 13,4 14,1 13,4 14,1 13,4 14,1 13,4 14,1 13,4 14,1 13,4 14,1 1	8			2			9	
Actualed Green, G (s) 13.9 13.0 13.9 13.0	89		2			9		
Effective Green, g(s) 14.9 14.9 14.9 14.9 14.9 14.9 14.9 17.0 14.9 17.0 14.9 17.0	13.9 13.9		78.1	78.1		78.1	78.1	
Actualed gC Ratio 0.15 <td>14.9 14.9</td> <td></td> <td>79.1</td> <td>79.1</td> <td></td> <td>79.1</td> <td>79.1</td> <td></td>	14.9 14.9		79.1	79.1		79.1	79.1	
Clearance Time (s) 4.0	0.15 0.15		6/ 0	0.79		0.79	0.79	
Venicle Extension (s) 3.0 2.0 2 2 2 2 2 2 2 2 0 1 <th1< th=""> 1 <th1< th=""> <th1< th=""></th1<></th1<></th1<>	40 40		4 0	4 0		4.0	4.0	
Lane Grp Cap (vpn) 112 219 124 236 2 vis Radio Prot 0.05 0.05 0.09 0.09 0.09 0.09 0.09 0.09 0.04 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.0 0.0 0.0 0.0 0.0 0.05 0.0 0.05 0.0 0.05 0.0 0.0 0.05 0.0 <td< td=""><td>3.0 3.0</td><td></td><td>3.0</td><td>3.0</td><td></td><td>3.0</td><td>3.0</td><td></td></td<>	3.0 3.0		3.0	3.0		3.0	3.0	
vis Raio Prot 0.05 0.09 vis Raio Prot 0.05 0.09 vis Raio Pent 0.06 0.05 0.05 vis Raio Prot 2.0 0.05 0.05 0.57 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01	124 236		271	1280		600	1277	
vis Raio Perm 0.06 0.34 0.05 0.0 vis Raio Perm 0.08 0.34 0.36 0.57 0.0 Uniform Delay, d1 38,4 38,1 38,3 39,6 5.7 0.0 Progression Factor 1.00 1.00 1.00 1.00 1.0 Incremental Delay, d2 22 0.9 1.8 3.4 1.4 3.0 Progression Factor 0.00 1.00 1.00 1.00 1.0 Incremental Delay, d2 40.1 4.3.0 Evel of Service 0.0 0.0 0.0 0.0 Aptroach Delay (s) 39.4 42.3 Aptroach Delay (s) 0.0 0.0 0.0	c0.09			0.29			c0.62	
vic Ratio 0.34 0.34 0.35 0.57 0. Uniform Delay, d1 38.4 38.1 38.3 39.6 7. Progression Factor 1.00 1.00 1.00 1.0 Incremental Delay, d2 2.2 0.9 1.8 3.4 1.1 Levelay (a 2.2 0.9 1.8 3.4 1.1 Levelay (a 2.2 0.9 1.8 3.4 1.1 Aptroach Delay (a 3.0 3.0 40.1 4.3.0 1.1 Aptroach Delay (a 3.0 40.1 4.3.0 1.1 Aptroach Delay (a 3.0 40.1 4.3.0 1.1 Aptroach Delay (a 3.0 40.1 4.2.3 1.1 Aptroach Delay (a 3.0 1.1 1.1)	0.05		0.08			0.01		
Uniform Delay, d1 38.1 38.1 38.5 39.6 1.2 1. Progression Factor 1.00 1.00 1.00 1.1 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	0.36 0.57		0.11	0.37		0.01	0.79	
Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	38.3 39.6		24	ص 1		2.2	5.8	
Incententa Leav, oz 2.2 0.9 1.4 3.4 Delay (s. 40.6 39.0 40.1 4.3.0 Level of Service D D D D D 2 Approach Delay (s) 39.4 42.3 Approach LOS D D D D D	1 00 1.00		00	1.00		0.83	1.42	
Detay (s) 4.0 3.0 4.1 4.0 7 4.0 7 4.0 7 5 7 4.0 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	4.5 B.1		9 0	8 0		0.0	9.2	
Lever of Delay (s) 39.4 42.3 Approach Delay (s) 39.4 42.3 Approach LOS D	0.04		2.0	D <		0.4	8.01 0	
Approach LOS 39.4 42.3 Approach LOS D D			¢	K (≮		
Approach LOS U D	42.3			3.8			10.9	
	D			A			-	
Intersection Summary		Contraction of the			110	14		
HCM Average Control Delay 14.8 HCM Level of Service	HCM Level of	of Service			60			
HCM Volume to Capacity ratio 0.75					ļ			
Actualed Cycle Length (s) 100.0 Sum of lost time (s)	Sum of lost 1	time (s)			0.9			
Intersection departy our autour 13.0% ILO LEVELUI SERVICE Analysis Period (min) 15		ANNIAC			2			
c Critical Lane Group								

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

	t	۴	5	ŧ	4	•			
lovement	EBT	EBR	WBT	WBI	NBL	NBR		NAME OF TAXABLE	
ane Configurations	*			¢Ŧ.	×				
olume (veh/h)	100	86	23	84	97	87			
ign Cantrol	Free			Free	Stop				
irade	%0			%0	%0				
eak Hour Factor	0.64	0.64	0.64	0.64	0.64	0.64			
ourly flow rate (vph)	156	134	36	131	152	136			
edestrians	20			20	20				
ane Width (ft)	13.0			13.0	13.0				
(alking Speed (ft/s)	4.0			4.0	4.0				
ercent Blockage	5			2	2				
light turn flare (veh)									
ledian type	None			None					
edian storage veh)									
pstream signal (ft)									
k, platoon unblocked									
C, conflicting volume			311		467	263			
C1, stage 1 conf vol									
22, stage 2 conf vol									
Ju, unblocked vol			115		104	FOZ			
, single (s)			41		6.4	6.2			
, z stage (s)					5				
(2)			7 5		2.7	3			
I queue tree %			18		-	20 1			
A capacity (veh/h)			1227		519	747			
rection. Lane #	田	WB.1	NB.1			10 A 40 -		LCL N	La sul
olume Total	291	167	288						
olume Left	0	36	152						
olume Right	134	0	136						
H	1700	1227	607						
olume to Capacity	0.17	0.03	0.47						
ueue Length 95th (ft)	0	2	64						
ontrol Delay (s)	0.0	1.9	16.2						
ane LOS		A	U						
pproach Delay (s)	0.0	1.9	16.2						
pproach LOS			U						
itersection Summary					1000	122	21 11		
verage Delay			67						
tersection Capacity Utilizatio	c		40.5%	Ð	U Level o	f Service	A		
Anim Dariad (min)			11						

HCM Unsignalized Inti 597: Kottinger & Adarr	ersec	tion C	apacity	/ Analy	sis						4/1	9/2013	
	1	t	~	5	Ŧ	~	*	+	•	۶	-	1	
Morement	EBI	EBT	EBR	WBL	18M	WBR	NBL	181	NBR	281	SB1	SBR	
Lane Configurations		ŧ			¢			¢			÷		
Sign Control		Stop			Stop			Stop			Slop		
Volume (vph)	8	27	14	22	88	87	22	54	16	12	63	32	
Peak Hour Factor	0.60	0.60	09.0	09.0	09.0	0.60	090	0.60	09.0	0.60	0.60	0.60	
Hourly flow rate (vph)	140	45	23	37	147	145	37	6	27	20	105	53	
Direction, Lane #	E8 1	WB 1	NB 1	SB 1								E	
Volume Total (vph)	208	328	153	178								8	
Volume Left (vph)	140	37	37	20									
Volume Right (vph)	23	145	27	53									
Hadj (s)	0.10	-0.18	-0.02	-0.12									
Departure Headway (s)	5.4	50	5.6	5.5									
Degree Utilization, x	0.32	0.46	0.24	0.27									
Capacity (veh/h)	609	676	568	589									
Control Delay (s)	10.9	12.1	10.4	10.5									
Approach Delay (s)	10.9	12,1	10.4	10.5									
Approach LOS	æ	80	8	80									
Intersection Summary		•				X	0.00		13C				
Delay			11.2										
HCM Level of Service			89										
Intersection Capacity Utilization			44.2%	Ø) Level o	f Service			A				
Analysis Period (min)			15										

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Kottinger Drive Senior Housing Project AM Peak Hour Existing Conditions plus Project

Synchro 7 - Report W-Trans

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

	1	Ť	r	5	ŧ	4	•	+	*	۶	-	¥
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBI	TBN	NBR	581	SRI	SAR
Lane Configurations	F	\$	R	5	44	¥.,	*	*		5	44	
Volume (vph)	171	1145	89	120	264	302	62	343	539	1158	796	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3'0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Utif, Factor	0.97	0.95	1.00	0.97	0.91	0.91	1.00	0.95	1,00	0.97	0 95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	66.0	1.00	1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1 00	1.00	1.00	1.00	1.00	1 00	1,00	1 00	1.00	1 00	
Fr	1.00	1 00	0.85	1.00	0.95	0.85	1.00	1.00	0.85	1.00	0.98	
Fit Protected	0.95	1_00	1.00	0.95	1.00	1.00	0.95	1,00	1 00	0.95	1 00	
Satd. Flow (prol)	3547	3657	1586	3547	3286	1489	1829	3657	1599	3547	3582	
Fit Permitted	0.95	1 00	1.00	0.95	1.00	1.00	0.95	1,00	1 00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1586	3547	3286	1489	1829	3657	1599	3547	3582	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj Flow (vph)	182	1218	95	128	281	321	99	365	573	1232	847	134
RTOR Reduction (vph)	0	0	61	0	41	123	0	0	0	0	6	0
Lane Group Flow (vph)	182	1218	34	128	375	63	99	365	573	1232	972	0
Confl. Peds. (#/hr)			12			36			36			
Turn Type	Prol	9	Perm	Prol	1	Prol	Prot		Free	Prot	Í	
Protected Phases		Ð		υ.	2	2	e	80		7	4	
Permitted Phases			9						Free			
Actuated Green, G (s)	11.5	38.6	38.6	9.4	36.5	36.5	8.5	14.6	120.0	36.4	42.5	
Effective Green, g (s)	12.5	42.6	42.6	10.4	40.5	40.5	9.5	17.6	120.0	37.4	45.5	
Actuated g/C Ratio	0.10	0.36	0.36	0.09	0.34	0.34	0.08	0.15	1.00	0.31	0.38	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	0.7	4.0	6,0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	369	1298	563	307	1109	503	145	536	1599	1105	1358	
v/s Ratio Prot	c0.05	c0.33		0.04	0.11	0.04	0.04	c0.10		c0.35	0.27	
v/s Ratio Perm			0.02						c0.36			
v/c Ratio	0.49	0.94	0.06	0.42	0.34	0.12	0.46	0.68	0.36	1.11	0.72	
Uniform Delay, d1	50.8	37.4	25.5	51.9	29.7	27.5	52.8	48.5	0.0	41.3	31.7	
Progression Factor	1 00	1,00	1.00	1.00	1 00	1,00	1 00	1.00	1,00	0.75	0.66	
Incremental Delay, d2	10	14.0	0,2	6.0	0.2	0.1	2.3	3.6	9.0	61.9	14	
Delay (s)	51.8	51.5	25.7	52.8	29.9	27.6	55.0	52.1	0.6	92.8	22.3	
Level of Service	۵	۵	o	۵	o	o	ш	0	4	LL.	0	
Approach Delay (s)		49.9			33.3			22.9			61.5	
Approach LOS		0			C			o			ш	
Intersection Summary		8		1000		-						
HCM Average Control Delay			47.4	H	M I evel	of Service			c			
HCM Volume to Capacity ratio			0 80	2					Ŋ			
Actuated Cycle Length (s)			120.0	Su	m of lost	time (s)			0.6			
Intersection Capacity Utilization	c		94,4%	D	J Level o	f Service			u			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

	١	t	r	5	ţ	4	¥	+	4	هر	-	1
	500	ter.	000	- New	1000	A DO		-		-		0.000
	ē	ē	TOK	TOM	TRN +	MBM	NBL	ISN	NBN	SBL	281	HAN
Volume Viceh	301	1 3		00	Ŧ	- 5	• 6		e i	- (1 10	
	1000	10007	17	R7 R7	R7.	60.01	52	\$5.	88	25	C77	88
Total Flow (vpnpi)	00EL	0061	1900	1900	0061	0061	1900	1900	1900	1900	1900	1900
LOLAI LOSI UME (S)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	30	
Lane Util Factor	0.95	0.95			1 00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1 00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1 00	1.00	1.00	1.00		1.00	1.00	
Fr	1.00	0.97			1 00	0.85	1.00	0.99		1.00	0.95	
FIt Protected	0.95	0.99			0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1477	1480			1596	1391	1822	3620		1829	1823	
Flt Permitted	0.95	0.99			0.98	1.00	0.48	1.00		0.23	1.00	
Satd. Flow (perm)	1477	1480			1596	1391	920	3620		434	1823	
Peak-hour factor, PHF	0.96	0,96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	141	53	22	30	30	68	24	827	09	3	234	102
RTOR Reduction (vph)	0	17	0	0	0	58	0	80	0	0	53	0
Lane Group Flow (vph)	109	06	0	0	60	10	24	879	0	3	313	0
Canfl. Peds. (#Ihr)			e	3			-1					4
Parking (#/hr)	10	10	10	10	10	10						
Turn Type	Split			Split		Perm	Perm			Perm		E.
Protected Phases	4	4		e	e			2			9	
Permitted Phases						67	2			Ø		
Actuated Green, G (s)	L'L	EL.			4.2	4.2	17.3	17.3		17.3	17.3	
Effective Green, g (s)	9.7	1.8			6.2	6.2	19.3	19.3		19.3	19.3	
Actuated g/C Ratio	0.22	0.22			0.14	0.14	0.44	0.44		0.44	0.44	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3,0	3.0		1	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	325			224	195	402	1581		190	796	
v/s Ratio Prol	c0.07	90.0			c0_04			c0.24			0.17	
v/s Ratio Perm						0.01	0.03			0.12		
v/c Ratio	0.34	0.28			0.27	0.05	0.06	0.56		0.28	0.39	
Uniform Delay, d1	14.5	14.3			17.0	16.4	7.2	9.3		8.0	8.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5			0.6	0.1	0.1	0.4		0.8	0.3	
Delay (s)	15.2	14.8			17.6	16.6	7.3	9.7		8.8	8.8	
Level of Service	æ	æ			80	æ	A	٩		A	A	
Approach Delay (s)		15.0			17.1			9.6			8.8	
Approach LOS		æ			œ			A			A	
Intersection Summary					ľ	10 O					ľ	
HCM Average Control Delay			10.7	¥	M Level	of Servic			60			
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			44.2	ns.	m of lost	time (s)			0.6			
Intersection Capacity Utilization Analysis Period (min)	-		54.9%	0	U Level o	f Service			A			
			2									

-Kotlinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

HCM Signalized Intersection Capacity Analysis 93: Vineyard-Ray St & First

	•	t	1	6	Ļ	~	¥	+	•	۶	-	7
dovement	BI	EBT	EBR	WBL	WBT	MBR	NBL	181	NBR	SBL	185	SBR
ane Configurations	*	+	R	٢	*		٢	44			\$	*
(olume (vph)	8	165	11	92	2	39	68	957	136	29	445	20
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
fotal Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
ane Ulil, Factor	1.00	1.00	1,00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
rpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.96
"Ipb, ped/bikes	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
H.	1.00	1.00	0.85	1,00	1.00	0.85	1.00	0.98		1,00	1.00	0.85
Fit Protected	0.95	1.00	1,00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1829	1925	1613	1554	1636	1371	1829	3560		1829	3657	1571
It Permitted	0.95	1,00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1925	1613	1554	1636	1371	1829	3560		1829	3657	1571
Peak-hour factor, PHF	0.98	0.98	0.98	96.0	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	\$	168	61	87	98	40	69	116	139	51	484	51
RTOR Reduction (vph)	0	0	4	0	0	35	0	-	0	0	0	2
ane Group Flow (vph)	g	168	39	97	36	0	69	1109	0	51	454	59
Confl. Peds. (#/hr)			-			-			a			4
^b arking (#/hr)				10	10	10						
fum Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		3	e		÷	9		'n	2	
Permitted Phases			4			3						2
Actuated Green, G (s)	15.9	15.9	15.9	13.8	13.8	13.8	7.2	66.5		6.8	66.1	66.1
Effective Green, g (s)	16.9	16.9	16.9	14.8	14.8	14.8	8.2	68.5		7.8	68.1	68.1
Actuated gIC Ratio	0.14	0.14	0.14	0.12	0.12	0.12	10.0	0.57		90.06	0.57	0.57
Clearance Time (s)	4.0	4,0	4.0	4,0	4,0	4.0	4.0	20		4.0	5.0	5.0
(ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
ane Grp Cap (vph)	258	271	227	182	202	169	125	2032		119	2075	892
vis Ratio Prot	0.03	c0.09		c0.06	0.06		0.04	c0.31		c0.03	0.12	
//s Ratio Perm			0.02			0.00						0.02
//c Ratio	0.25	0.62	0.17	0.51	0.48	0.03	0.55	0.55		0.43	0.22	0.03
Uniform Detay, d1	45.9	48.5	45.4	49.2	48.0	46.3	54.1	16.1		54.0	12.8	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.13	1.34		100	1.00	1.00
ncremental Delay, d2	0.5	42	0.4	2.1	8	0	27	80		52	0.2	
Delay (s)	46.4	52.7	45.7	51.3	50.7	46.3	63.7	220		4.1	13.1	-
evel al Service	0	0	0	9	2	2	IJ	5		u	n :	a
Approach Delay (s)		49.6			50.2			24.5			16.9	
Approach LOS		a			0			o			m	
Intersection Summary							2					
HCM Average Control Delay			28.7	Ħ	CM Level	of Servic	a		o			
HCM Volume to Capacity ratio			0.54	ć		1-1-1			0 6 7			
Actuated Cycle Length (S)			120.021	ี่มี ⊆	I level I	f Saning						
Analysis Period (min)			15	2);			

HCM Signalized Inters 94: Kottinger-Spring &	Eirst	n Capi	acity A	nalysi	s						4/1	9/2013
	٩.	t	1	1	ŧ	~	r	+	*	۶	-	7
Movement	EBL	EBT	EBR	WBL	WBI	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			÷	×	۴	±,		*	4	
Volume (vph)	82	39	47	17	33	40	28	1060	21	27	566	38
Ideal Flow (vphpl) 1	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0	30	3,0		3.0	3.0	
Lane Util Factor		00.1				00.1	001			8	000	
Frpu, peu/bikes Finh ned/hikes		70.0				1 00	1 97			80	1 00	
Fn.		0.96			1.00	0.85	1.00	1.00		1 00	66 0	
Fit Protected		0.98			0.98	1.00	0.95	1.00		0.95	1.00	
Satd Flow (prot)		1446			1585	1276	1500	1627		1554	1607	
FIL Permitted		0.82			0.89	1.00	0.38	1.00		0.15	1.00	
Satd Flow (perm)		1222	ł	-	1429	1276	595	1627	4	247	1607	1
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	85	40	48	18	34	41	29	1093	22	28	584	39
RTOR Reduction (vph)	0	12	0	0	0	¥	0	0	0	0	2	0
Lane Group Flow (vph)	•	161	0	0	52	2	29	1115	0	28	621	0
Confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
Parking (#/hr)	10	9	10	9	9	40	10	10	10	9	9	₽
Turn Type P	erm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			9	
Permitted Phases	4			80		80	2			9		
Actuated Green, G (s)		20.0			20.0	20.0	92.0	92.0		92.0	92.0	
Effective Green, g (s)		21.0			21.0	21.0	93.0	93.0		93.0	93.0	
Actuated g/C Ratio		0.18			0 18	0.18	0.78	0.78		0.78	0.78	
Clearance Time (s)		4 0			4 0	4 0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		30			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		214			250	223	461	1261		191	1245	
v/s Ratio Prot								c0.69			0.39	
v/s Ratio Perm		c0.13			0.04	0.01	0.05	1		0.11	1	
v/c Ratio		0.75			0.21	E0.0	0.06	0.88		0.15	0:50	
Uniform Delay, d1		47.0			42.4	41.1	3.2	9.6		3.4	5.0	
Progression Factor		1 00			1.00	1.00	0.74	1.36		2.33	2.61	
Incremental Delay, d2		13.8			0.4	0.1	0.2	5.8		1.6	1.4	
Delay (s)		60.8			42.8	41.1	2.5	18.9		9.6	14.4	
Level of Service		ш :				2	×	20 1		×	B 9	
Approach Delay (s)		60.8			42.1			18.5			14.2	
Approach LOS		ш						8			80	
Intersection Summary	ie:	1		199				and the second se	100	1000		U.
HCM Average Control Delay			21.7	Ĩ	CM Level	of Servic	Ð		U			
HCM VOIUME to Capacity ratio			0.80									
Actuated Cycle Length (s)			120,0	⊼⊆	11 1 aval o	f Service) 1 1 1 1			
Analysis Period (min)			15	2								
c Critical Lane Group												

Kollinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project
city Analysis	
Signalized Intersection Capac eal St & First	
HCM 95: N	

95: Neal St & First											4/1	9/2013
	1	t	۲	1	ŧ	~	*	+	٩	۶	-	¥
Movement	EBL	EBT	EBR	WBI	WBT	WBR	NBL	181	NBR	SBL	18S	SBR
Lane Configurations	F	.*		*	4		*	24		*	12	
Volume (vph)	85	67	62	34	58	25	38	966	25	80	529	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util, Factor	1.00	1,00		1,00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1 00	0.98		1 00	0.99		1 00	1.00		1 00	1.00	
Flpb, ped/bikes	0.98	1 00		0,99	1.00		0,99	1.00		1.00	1.00	
Fri	1 00	0.93		1.00	0.96		1.00	1.00		1 00	86'0	
Fit Protected	0.95	1.00		0.95	1_00		0.95	1.00		0.95	1.00	
Satd. Flow (prol)	1530	1500		1538	1545		1546	1629		1554	1603	
FIL Permitted	0.62	1.00		0,35	1.00		0.38	1.00		0.18	1.00	
Satd. Flow (perm)	1000	1500	ŝ	563	1545	l	622	1629	ŀ	297	1603	t
Peak-hour faclor, PHF	0.95	0.95	0.95	0,95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj Flow (vph)	68	102	83	36	61	26	40	1048	26	89	557	68
RTOR Reduction (vph)	0	26	0	0	13	0	0	-	0	0	en en	0
Lane Group Flow (vph)	68	159	0	36	74	0	40	1073	0	8	622	0
Confl. Peds. (#/hr)	ç		с,	5		2	40		S	5		ŋ
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			80			2			9	
Permitted Phases	4			æ			2			9		
Actuated Green, G (s)	17.8	17.8		17.8	17.8		94.2	94.2		94.2	94.2	
Effective Green, g (s)	18,8	18.8		18.8	18,8		95.2	95,2		95.2	95.2	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		61.0	0.79		0.79	0.79	
Clearance Time (s)	4,0	4.0		4.0	4.0		4 0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3,0		3.0	3.0		3.0	3.0	l
Lane Grp Cap (vph)	157	235		88	242		493	1292		236	1272	
v/s Ratio Prot		c0.11			0.05			c0.66			0.39	
v/s Ratio Perm	0.09			0.06			0.06			0.03		
v/c Ratio	0.57	0.68		0.41	0.30		0.08	0.83		0.03	0.49	
Uniform Delay, d1	46.8	47.7		45.6	44.8		2.7	1.5		2.6	4.2	
Progression Factor	1.00	1 00		1 00	1.00		1.00	1.00		2.09	2.42	
Incremental Delay, d2	4.6	7.5		3.1	0.7		0.3	6.3		0.2	1.2	
Delay (s)	51.5	55.2		48.7	45.5		3.1	13.8		5.7	11.3	
Level of Service	٥	ш		0	٥		A	æ		A	æ	
Approach Delay (s)		54.0			46.4			13,4			11.3	
Approach LOS		٥			٥			8			8	
Intersection Summary			l	122				5				
HCM Average Control Delay			19.9	Ŧ	CM Level	of Service			8			
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			120.0	Su	im of lost	time (s)			6.0			
Intersection Capacity Utilization			78.8%	ē	U Level o	f Service						
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 96: Bernal & First St

90: Bernai & First St											4/1	9/2013
	٩	t	r	4	ŧ	~	*	+	•	۶	-	7
Movement	EBI	EBT	EBR	WBL	TBW	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	\$	×.	*	44		F	*	۴.	*	-14	
Volume (vph)	699	510	112	93	231	33	194	726	358	0/	434	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3,0	3.0	3.0	3.0	3.0	
Lane Util, Factor	0.97	0.95	1.00	1.00	0.95		0.97	1 00	1.00	1.00	0.95	
Frpb, ped/bikes	1 00	1.00	0.87	1.00	1.00		1.00	1.00	0.79	1.00	0.98	
Flpb, ped/bikes	1 00	1,00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Fit	1.00	1.00	0.85	1.00	0.98		1 00	1.00	0,85	1.00	0.95	
Fit Protected	0.95	1,00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd Flow (prot)	3547	3657	1419	1829	3572		3547	1925	1291	1554	3172	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Sald. Flow (perm)	3547	3657	1419	1829	3572		3547	1925	1291	1554	3172	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj Flow (vph)	858	654	144	119	296	42	249	931	459	06	556	259
RTOR Reduction (vph)	0	0	88	0	6	0	0	0	152	0	43	0
Lane Group Flow (vph)	858	654	56	119	329	0	249	931	307	06	772	0
Confl. Peds. (#/hr)			72			12			96			24
Parking (#/hr)										10	10	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		Î
Protected Phases	7	4		e	8		2	2		-	9	
Permitted Phases		4	4						2			
Actuated Green, G (s)	22.2	25.7	25.7	12.7	16.2		19.0	53.5	53.5	10.1	44.6	
Effective Green, g (s)	23.2	27.7	27.7	13.7	18.2		20.0	55.5	55.5	11.1	46.6	
Actuated g/C Ratio	0.19	0.23	0.23	0.11	0.15		0.17	0.46	0.46	60.0	0.39	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	686	844	328	209	542		591	890	597	144	1232	Ĩ
vis Ratio Prot	c0.24	0.18		0.07	c0.09		0.07	c0.48		0.06	c0.24	
vis Ratio Perm			0.04	11000	100000		10.00	1	0.24			
vic Ratio	1.25	11.0	0.17	0.57	0.61		0.42	1.05	0.51	0.62	0.63	
Uniform Delay, d1	48.4	43.2	36.9	50.4	47.6		44.8	32.2	22.7	52.4	29.7	
Progression Factor	1.00	1.00	1 00	1.00	1.00		0.71	0.62	0.33	1.00	1.00	
Incremental Delay, d2	124.7	45	0.2	3.5	1.9		0.5	41.8	29	82	2.4	
Delay (s)	173.1	47.7	37.2	53.9	49.5		32.3	61.7	10.4	9.09	32.1	
Level of Service	u.	0	0	0	0		o	w	8	w	υ	
Approach Delay (s)		111.7			50.6			42.9			34.9	
Approach LOS		u			0			٥			0	
Intersection Summary						9 14						
HCM Average Control Delay			AR R	H	M aval	of Samire			u			Î
HCM Volume to Capacity ratio			0.98	í					5			
Actuated Cycle Length (s)			120.0	15	m of lost	time (s)			12.0			
Intersection Capacity Utilization	ł		84.3%	ġ	d level o	Service						
Analysis Period (min)			15						I			
c Critical Lane Group												

-Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

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Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

enthent EBT EBR WBL WBT NBL N re Configurations h +					t
Configurations H I <thi< th=""> I I <</thi<>	NBR	and the second s	Movement	EBL	EBT
me (verm) lor zz 14 los zo Control Free Free Free Stap 0%	55		Lane Configurations		top +
e 0% 0% 0% 0% 0% 0% 0% 19 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0	8		Volume (vph)	21	47
Hour Factor 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91			Peak Hour Factor	0.81	0.81
y flow ratie (vpr) 2/U5 24 15 151 29 strians 20 20 20 Width (ft) 13.0 13.0	0.91		Hourly flow rate (vph)	26	28
Width (ft) 13.0 13.0 13.0	es S		Direction, Lane #	E81	WB 1
			Volume Total (vph)	102	8
na Speed (ft/s) 4.0 4.0			Volume Left (vph)	8	o (
nt Blockage 2 2 2			Volume Kigni (vpn)	P 000	71 00
turn flare (veh)			Denartitre Headway (s)	0.00	43
In type None None			Degree Utilization x	0.12	0.07
in storage veh)			Capacity (veh/h)	814	813
aam signat (it) aloon unblocked			Control Delay (s)	6.7	1.6
inflicting volume 250 439	258		Approach Delay (s)	4.9	16
stage 1 conf vol			Approach LUS	A	•
tage 2 conf vol			Intersection Summary	and	
nblocked vol 250 439	258		Delay		
gle (s) 4.1 6.4	6.2		HCM Level of Service		
tage (s)	0		Intersection Capacity Utilizat	tion	
	5.3 DE		Analysis Period (min)		
ide ree 76 33 33 and ref 76 33 33 33 and ref 76 33 33 33 33 33 33 33 33 33 33 33 33 33	753				
on, Lane # EB1 WB1 NB1					
e Total 230 166 65					
e Lett 0 13 23					
1700 1292 647					
e to Capacity 0.14 0.01 0.10					
t Length 95th (ft) 0 1 8					
M Delay (s) 0.0 0.8 11.2					
A B					
ach Dellay (s) 0,0 0.0 11.2					
ach LOS B					
ection Summary	The second s				
ge Delay 1.9 ection Capacity Utilization 34.3% ICU Level of S. sis Period (min) 15	Service	A			

pacity Analysis

7: Kottinger & Adarr	SI					1					4/1	9/2013
	٩	t	1	5	Ŧ	~	*	+	٩	٨	-	r
rement	EBL	EBĬ	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBI	SBR
le Configurations		4			4			4			4	
n Control		Stop			Stop			Stop			Stop	
ume (vph)	21	47	15	7	34	10	17	35	13	2	24	11
ik Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
urly flow rate (vph)	26	58	19	6	42	12	21	43	16	ср,	30	14
sclion, Lane#	E8 1	WB 1	NB 1	SB 1		11 SN	1		THE O		1	
ume Total (vph)	102	63	80	52								
ume Left (vph)	26	6	21	6								
ume Right (vph)	19	12	16	14								
j (s)	0.00	90 0-	00.0	60 0-								
parture Headway (s)	4 3	4.3	43	4,3								
gree Utilization, x	0.12	0.07	0,10	0.06								
pacity (veh/h)	814	813	792	805								
ntrol Delay (s)	7.9	1.6	7.8	7.6								
proach Delay (s)	7.9	16	2.8	2'6								
proach LOS	A	A	A	A								
rsection Summary				2			Ĩ		and the second se	100		
ay			11			F	ľ	ł				1÷
M Level of Service			4									
ersection Capacity Utilization alvsis Period (min)			27.0%	0	U Level c	f Service			A			

Kotlinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

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Kottinger Drive Senior Housing Project PM Peak Hour Existing Conditions plus Project

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Motioneric EBI EBI EBI MBI		١	t	۴	6	ŧ	1	•	-	•	٨	-	¥
Lare Configurations 1	Movement	EBL	E81	EBR	MBL	18M	WBR	NBL	18N	NBR	SBL	SBI	SBR
Volume (wh) 261 272 70 286 1136 1128 154 384 132 210 300 <t< td=""><td>Lane Configurations</td><td>F</td><td>144</td><td></td><td>44</td><td>:</td><td>*</td><td>*</td><td>+</td><td>K.</td><td>*</td><td>44</td><td></td></t<>	Lane Configurations	F	144		44	:	*	*	+	K.	*	44	
Ideal (hew (hen)) 1900 <td>Volume (vph)</td> <td>261</td> <td>272</td> <td>70</td> <td>286</td> <td>1136</td> <td>1128</td> <td>154</td> <td>384</td> <td>132</td> <td>210</td> <td>316</td> <td>171</td>	Volume (vph)	261	272	70	286	1136	1128	154	384	132	210	316	171
Total Lost lime (s) 3.0	ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Tane Utilizator 0.97 0.91 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.07 1.00 1.00 1.00 0.095 1.00 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 1.00 0.095 3.657 1.90 0.095 3.657 1.90 1.00 0.095 3.657 1.90 3.657 1.90 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 3.657 1.93 <	Total Lost lime (s)	3.0	3.0		3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	
Flipp, pedicikes 100	Lane Util, Factor	0.97	0.91		0.97	0.95	1.00	1.00	0,95	1 00	0.97	0.95	
Final File 100	Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
Frt 1.00 0.37 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 <th0.05< th=""> 0.05 0.05 0</th0.05<>	Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1 00	1.00	1,00	
Fit Pratected 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.09 5.47 5.65 5.94 5.87 1.599 3.847 5.65 3.547 5.69 3.547 5.69 3.547 5.69 3.547 5.599 3.547 5.599 3.547 5.599 3.547 5.599 3.547 5.599 3.547 5.599 3.547 5.599 3.547 2.599 3.547 3.591 5.51 3.51	Fit	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1 00	0.95	
Sald, Flow (prot) 3547 3657 1599 1829 3657 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 3537 1599 353 3557 1599 3537 1599 3537 3595 3537 1599 3537 3595 3537 1599 3537 3595 3537 3595 3537 3595 3537 3595 3537 3595 3537 3595 3537 3595 3537 3595 3537 3595 3537 359 3537 359 3537 353 353 353 3537 353 3537 353 353 353 353 353 353 353 353 3537 353 3537 353 353 353 353 353 353 353	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Fit Permitter 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 <th0.05< th=""> 0.05 0.05</th0.05<>	Satd. Flow (prot)	3547	5065		3547	3657	1599	1829	3657	1599	3547	3460	
Sald, Flow (perm) 3547 3657 3557 1599 3567 1558 2397 1597 2397 1597 2397 2396 237 2367 1599 3567 1599 3567 359 357 359 357 359 357 359 357 359 357 359 350 357 359 3500 367 360 360	FIt Permilled	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Presk-hour factor, PHF 0.31 0.3	Satd. Flow (perm)	3547	5065		3547	3657	1599	1829	3657	1599	3547	3460	
Adj. Flow (ren), 287 299 77 314 1246 1246 125 145 231 RTO(R Reduction (ren)) 0 40 0	Peak-hour factor, PHF	0.91	0.91	16.0	0.91	0.91	0.91	0.91	0.91	16.0	0.91	0.91	0.91
RTOR Reduction (ym) 0 40 0 40 0	Adi. Flow (vph)	287	299	11	314	1248	1240	169	422	145	231	347	195
Lane Group Flow (vph) 281 336 0 314 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 125 135 13 <td>RTOR Reduction (vph)</td> <td>0</td> <td>40</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>98</td> <td>0</td>	RTOR Reduction (vph)	0	40	0	0	0	0	0	0	0	0	98	0
Conf. Peris, (#hr) 12 36 36 36 36 36 36 36 37 7<	Lane Group Flow (vph)	287	336	0	314	1248	1240	169	422	145	231	456	0
Turn Type Frot Free Prot Pro Prot Prot	Confi. Peds. (#/hr)			12			36			98			
Protection Phases 1 5 2 3 8 7 Permitted Phases Provection Phases Free 3 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 9 100 10	Turn Type	Prot			Prot		Free	Prot	1	Free	Prot		
Permitted Phases Free	Protected Phases	**	æ		u)	2		0	80	102201	r-	4	
Actuated Green, G (s) B 0 36 0 12.4 40.4 100 0 100 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 100 0 101 203 30 31 201 31 201 31 203 30 <th< td=""><td>Permitted Phases</td><td></td><td></td><td></td><td></td><td></td><td>Free</td><td></td><td></td><td>Free</td><td></td><td></td><td></td></th<>	Permitted Phases						Free			Free			
Effective Green, g(s) 9.0 4.0.0 13.4 4.4.4 10.00 11.0 23.9 10.00 10.1 Actualed g(s) 4.0 7.0 4.0 7.0 4.1 0.00 0.11 0.24 10.0 0.11 0.24 10.0 0.11 0.24 10.0 0.11 0.24 10.0 0.11 0.24 10.0 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 4.0 0.0 0.01 4.0 0.01	Actuated Green, G (s)	8.0	36.0		12.4	40.4	100.0	10.0	20.9	100.0	9.7	20.6	
Actuated g(C Raino 0.09 0.40 0.13 0.44 1.00 0.11 0.24 1.00 0.11 Octamente (s) 3.0	Effective Green, q (s)	9.0	40.0		13.4	44.4	100.0	11.0	23.9	100.0	10.7	23.6	
Clearance Time (s) 4.0 7.0 4.0 7.0 4.0 6.0 4.0 Vencle Extension (s) 3.0 <t< td=""><td>Actuated g/C Ratio</td><td>0.09</td><td>0.40</td><td></td><td>0.13</td><td>0.44</td><td>1.00</td><td>0.11</td><td>0.24</td><td>1.00</td><td>0.11</td><td>0.24</td><td></td></t<>	Actuated g/C Ratio	0.09	0.40		0.13	0.44	1.00	0.11	0.24	1.00	0.11	0.24	
Vehicle Extension (s) 3.0	Clearance Time (s)	4.0	7.0		4.0	7.0		4.0	6.0		4.0	6.0	
Lane Grp Cap (rph) 319 2026 475 16.24 15.99 201 874 15.99 380 vic Ratio Perm 0.08 0.07 0.39 0.34 0.09 0.17 0.00 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.09 0.01 0.	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
vis Ratio Prei vis Ratio Prei vis Ratio Prei vis Ratio Prei vis Ratio Preim 0 00 0 017 0 05 0 077 0 78 0 04 0 43 0 00 0 00 0 00 0 00 0 00 0 00	Lane Grp Cap (vph)	319	2026		475	1624	1599	201	874	1599	380	817	
vis Ratio Perm vis Ratio Perm vis Ratio Derm Progression Factor 0.90 0.17 0.66 0.77 0.78 0.49 0.48 0.09 0.61 Uniform Delay (d) 45 11 9.3 41.1 2.37 0.0 4.36 3.27 0.0 4.26 Progression Factor 0.90 1.04 1.00 1.00 1.00 1.00 1.00 Progression Factor 0.90 1.04 1.00 1.00 1.00 1.00 1.00 1.00 Progression Factor 0.90 1.04 1.00 1.00 1.00 1.00 1.00 Progression Factor 0.90 1.04 1.00 1.00 1.00 1.00 1.00 Progression Pactor 0.90 1.04 1.00 1.00 1.00 1.00 1.00 1.00 Approach Delay (s) 40.5 1.0 2.0 3.7 69.5 3.32 0.1 45.4 1.00 Approach Delay (s) 40.5 1.0 2.0 3.7 69.5 3.32 0.1 45.4 1.00 Approach Delay (s) 40.5 1.0 2.0 3.7 69.5 3.32 0.1 45.4 1.00 Approach Delay (s) 40.5 1.0 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Advated Cycle Length (s) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/s Ratio Prot	0.08	0.07		0.09	0.34		0.09	0.12		0.07	0.13	
vic Ratio 0.30 0.11 0.66 0.77 0.78 0.24 0.39 0.61 Progression Factor 0.30 104 100	v/s Ratio Perm						c0 78			0.09			
Uniform Delay, d1 45,1 19,3 41,1 23,5 0.0 43,6 32,7 0.0 42,6 Progression Factor 0.30 1,00 <td< td=""><td>v/c Ratio</td><td>0.90</td><td>0.17</td><td></td><td>0.66</td><td>0.77</td><td>0.78</td><td>0.84</td><td>0.48</td><td>0.09</td><td>0.61</td><td>0.56</td><td></td></td<>	v/c Ratio	0.90	0.17		0.66	0.77	0.78	0.84	0.48	0.09	0.61	0.56	
Progression Factor 0.30 1.04 1.00 <td>Uniform Delay, d1</td> <td>45.1</td> <td>19.3</td> <td></td> <td>41.1</td> <td>23.5</td> <td>0.0</td> <td>43.6</td> <td>32.7</td> <td>0.0</td> <td>42.6</td> <td>33.6</td> <td></td>	Uniform Delay, d1	45.1	19.3		41.1	23.5	0.0	43.6	32.7	0.0	42.6	33.6	
Incremental Delay, d2 36, 37 25, 90, 01 27 Delay(s) 66, 20, 44, 27 3, 16, 37 83, 32 0,1 45, 44 Level of Sarvice E C D C A E C A D Aptroach Delay (s) D C B 18, 33, 20, 14, 45 Aptroach Delay (s) D B C B 18, 33, 20, 44, 40, 5 Aptroach Delay (s) D C B 18, 33, 20, 44, 40, 5 Aptroach Delay (s) D C B 18, 33, 20, 44, 40, 40, 40, 40, 5 Aptroach Delay C C A D C A C A D C A	Progression Factor	0.90	1.04		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Leeled (5) 66.9 20.3 44.6 27.0 37. 69.5 33.2 0.1 45.4 Approach Delay (s) E C D C A E C A D Approach Delay (s) D T F C A D T 45.6 T 45.4 D Approach Delay 18.7 D T F C A D Approach LOS D HCM Vervee of the componence of the comp	Incremental Delay, d2	26.2	0.2		3.4	3.6	3.7	25.9	0.4	0.1	2.7	0.8	
Level of Service E C D C A E C A D Approach Delay (s) 40.5 18.7 35.0 35.0 A D Approach LOS D B A C A E C A D A D A C A A D A C A A D A C A A D A A C A A A A	Delay (s)	60.9	20.3		44.6	27.0	3.7	69.5	33.2	0.1	45.4	34.4	
Approach Delay (s) 40.5 18.7 35.0 Approach LOS D B C C Approach LOS D B C C Intersection Sommary C D HCM Verage Control Delay C Activated Cycle Length (s) 0.78 HCM Verage Control Delay C C Actuated Cycle Length (s) 0.00 Sum of lost time (s) 0.0 D Actuated Cycle Length (s) 100.0 Sum of lost time (s) D D <td>Level of Service</td> <td>ш</td> <td>0</td> <td></td> <td>٥</td> <td>0</td> <td>A</td> <td>ш</td> <td>J</td> <td>A</td> <td>٥</td> <td>C</td> <td></td>	Level of Service	ш	0		٥	0	A	ш	J	A	٥	C	
Appricach LOS D B C Astronomary 27.0 HCM Level of Service C HCM Average Control Delay 27.0 HCM Level of Service C Actuated cycle Langler 0.78 HCM Level of Service C Intersection 0.78 Unitization 0.0 0.0	Approach Delay (s)		40.5			18.7			35.0			37.7	
Intersection Sommary Z7.0 HCM Level of Service C HCM Average Control Delay Z7.0 HCM Level of Service C HCM Volume to Capacity ratio 0.78 Sum of lost time (s) 0.0 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 0.0 Intersection 75.1% ICU Level of Service D	Approach LOS		0			8			o			۵	
HCM Average Control Delay 27.0 HCM Level of Service C HCM Volume to Capacity ratio 0.78 Unitersection 0.78 Sum of lost time (s) 0.0 Intersection 55.1% ICU Level of Service D Anomen Decond Valitzation 75.1% ICU Level of Service D	Intersection Shimmary					8				8	Å		l
HCM Volume to Capacity ratio 0.78 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 0.0 Intersection 75.1% ICU Level of Service D Actuated Parad Irrity	HCM Average Control Delav			27.0	H	M Level	of Service			C			
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 0.0 Intersection 75.1% ICU Level of Service D Actuation Decision 2.1% ICU Level of Service D	HCM Volume to Capacity ratio			0.78									
Intersection Capacity Utilization 75.1% ICU Level of Service D	Actuated Cycle Length (s)			100.0	Su	m of lost	time (s)			0.0			
Andlarie Doried (min)	Intersection Capacity Utilizatio	ç		75.1%	D	J Level o	f Service			٥			
	Analysis Period (min)			15									

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions with Planned TIF Improvements-No Project

HCM Signalized Inters 30: Vineyard-Tawny 8	sectio & Berr	n Cap Ial	acity /	Analysi	s						4/1	8/2013
	٩	†	~	*	Ŧ	~	*	+	•	۶	-	1
Movement	围	EBI	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	ŧ			'n	*	*	41		5	4	
Volume (vph)	134	e	39	88	29	173	28	311	14	84	604	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3,0	
Lane Util. Factor	0.95	0.95			1.00	1 00	1.00	0.95		1.00	1 00	
Frpb, ped/bikes	1.00	0.99			1.00	1 00	1.00	1.00		1.00	0.99	
Fipb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	100	
Fri Fri	1.00	0.93			1.00	0.85	1.00	66.0		1.00	0.97	
Fit Protected	0.95	0.98			0.97	1,00	0.95	1.00		0.95	1 00	
Satd Flow (prot)	1477	1401			1588	1391	1829	3634		1829	1848	
Fit Permilled	C6.0	0.98			16.0	1,00	0.08	1.00		0.50	1 00	
Sato Flow (perm)	14//	1401			1588	1391	159	3634		<u> 369</u>	1848	
Peak-hour factor, PHF	0.87	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0,85	0.85	0.85
Adj. Flow (vph)	154	4	46	104	69	204	33	366	16	66	711	201
RTOR Reduction (vph)	0	34	0	0	0	104	0	en	0	0	6	0
Lane Group Flow (vph)	105	65	0	0	173	100	33	379	0	66	E06	0
Confl. Peds. (#/hr)			en	ŝ			4					4
Parking (#/hr)	10	10	10	10	10	10						
Turn Type	Split			Split		Perm	Perm			Perm		
Protected Phases	4	4		ო	9			2			9	
Permitted Phases						m	2			9		
Actuated Green, G (s)	13.1	13.1			14.1	14.1	46.5	46.5		46.5	46.5	
Effective Green, g (s)	15.1	15.1			16,1	16.1	48.5	48.5		48.5	48.5	
Actuated g/C Ratio	0.17	0.17			0.18	0.18	0.55	0.55		0.55	0.55	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	l	l	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	251	239			288	252	87	1987		530	1010	
v/s Ralio Prot	c0.07	0.05			c0.11			0.10			c0.49	
v/s Ratio Perm						0,07	0.21			0,10		
v/c Ratio	0.42	0.27			0.60	0,40	0.38	0.19		0.19	0.89	
Uniform Delay, d1	32.9	32.0			33.3	32.0	11.5	10.2		10.1	17.8	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1_00		1.00	1.00	
Incremental Delay, d2	F.	0.6			3.5	1.0	2.8	0"0		0.2	10.2	
Delay (s)	34.0	32.6			36.9	33.0	14.2	10.2		10.3	28.0	
Level of Service	o	o				U	8	B		80	U	
Approach Delay (s)		33.3			34.8			10.5			26.3	
Approach LOS		U			U			ß			U	
Intersection Summary						011						
HCM Average Control Delay			25.3	H	lava M.	of Servic			c			
HCM Volume to Capacity ratio			0.74	1			,		>			
Actuated Cycle Length (s)			88.7	SL	m of lost	time (s)			9.0			
Intersection Capacity Utilization			71 9%	0	U Level o	if Service			o			
Analysis Period (min)			15									
c Critical Lane Group												

Kollinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

HCM Signalized Intersection Capacity Analysis

Movement EBL EBL EBT EDT EBT EDT EDT <thedt< th=""> EDT <thedt< th=""> <thedt< <="" th=""><th>WBL 138 1900 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000</th><th>WB1 216 1900 3.00 1.00 1.00 1.00 1.00 1.00 1.00 2.40 2.40 2.40 2.40 3.00 2.40 3.00</th><th>WBR 1900 3.0 11.00 0.99 0.99 0.99 0.99 0.99 0.99 0</th><th>51 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</th><th>MBT 433 433 433 433 433 433 560 0.99 0.99 0.99 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.000000</th><th>NBR 64</th><th>188 · • •</th><th>SBT</th><th>CRD</th></thedt<></thedt<></thedt<>	WBL 138 1900 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000	WB1 216 1900 3.00 1.00 1.00 1.00 1.00 1.00 1.00 2.40 2.40 2.40 2.40 3.00 2.40 3.00	WBR 1900 3.0 11.00 0.99 0.99 0.99 0.99 0.99 0.99 0	51 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MBT 433 433 433 433 433 433 560 0.99 0.99 0.99 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.99 0.90 0.000000	NBR 64	188 · • •	SBT	CRD
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s Ratio Poet (1701) 0.01 0.06 1.01 1.006 1.01 1.006 1.01 1.01	306	377	020	130	1709		113	1704	735
//s Ratio Perm 0.01 //c Ratio 0.09 0.41 0.06	0.10	c0 15		0.03	0.15		c0.03	c0.31	
Vc Ratio 0.09 0.41 0.06			0.03						0.06
	0.50	0.75	0.15	0.37	0.32		0.42	0.66	0.13
Jniform Delay, d1 37.4 39.2 37.2	35.8	37.8	33.2	43.9	16.0		45.2	20.6	15.2
Progression Factor 1.00 1.00 1.00	1.00	1.00	1.00	1 39	0.65		1.48	0.46	0.45
ncremental Delay, d2 0.2 1.0 0.1	1.3	9.0	0.3	2 1 2	4.0		2.0	11	0.4
Jelay (s) 3/ 3 40 2 3/ 3	0.75	0.0 1	2.00	1 70	0.01		р. Ц		
	2	44.6	c	u	14.0			100	c
Approach LOS D		2 0			4 8			2 60	
otersection Summery				ł					
HCM Average Control Delav 20.6	H	M Level o	f Service			U			ľ
HCM Volume to Capacity ratio 0.61		5							
Actuated Cycle Length (s) 100.0	Sur	m of lost li	me (s)			12.0			
ntersection Capacity Utilization 60.5% Analysis Period (min) 15	<u>o</u>	J Level of	Service			80			
critical Lane Group									

Canacity Analysis HCM Signalized Inters

Movement Edit	94: Kottinger-Spring	& First										4/1	8/2013
Network Ed.		٩	1	٢	\$	ŧ	4	4	+	٩	۶	-	¥
	Movement	EBL	E81	EBR	MBL	WBT	WBR	NBL	NBT	NBR	SBL	S B1	SBR
Norume (vp) 2 9 1 23 80 100 <td>Lane Configurations</td> <td></td> <td>4</td> <td></td> <td></td> <td>*7</td> <td>*</td> <td>J-</td> <td>.±</td> <td></td> <td>*</td> <td>.1</td> <td></td>	Lane Configurations		4			*7	*	J -	. ±		*	.1	
Teal Earl Free Teal Trans Tea	Volume (vph)	3	6	-	23	80	60	25	491	51	64	1064	108
Term J	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fib. Prediction 100 <th< td=""><td>I otal Lost time (s)</td><td></td><td>0.5</td><td></td><td></td><td>3,0</td><td>3.0</td><td>0.5</td><td>3,0</td><td></td><td>3.0</td><td>3.0</td><td></td></th<>	I otal Lost time (s)		0.5			3,0	3.0	0.5	3,0		3.0	3.0	
	Lane Util Factor						00 L	00 +	00 0			00.0	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Frps, pea/olkes		86.0			0000	0.90		66.0		B0 0	00 F	
	Fipo, pea/bikes		2000			00.1					0.0		
	FIL Ell Destastad		000			0000	1 00	1.00	1 00		20 0	1 00	
Filter from provide Constrained Constrained <thconstrained< td="" th<=""><td>Catal Elour (prof)</td><td></td><td>1585</td><td></td><td></td><td>1505</td><td>1202</td><td>1554</td><td>1505</td><td></td><td>1500</td><td>1506</td><td></td></thconstrained<>	Catal Elour (prof)		1585			1505	1202	1554	1505		1500	1506	
Satur. Flow (perm) 1ár 157 125 149 156 622 1566 1031 031	Elt Permitted		16.0			0.94	1 00	60 0	1 00		0.40	1.00	
Peek-hour factor, PHF 031	Satd. Flow (perm)		1547			1517	1292	149	1595		632	1596	
Adj Flow (vp1) 2 10 1 25 88 66 27 540 56 70 165 10 ATOR Reduction (vp1) 0 1 0 0 0 2 2 0 2 0 2 0 2 0 2 0 2 0 0 2 0 0 2 0 2 0 0 2 0 0 2 0 0 2 0 0 0 0 2 0 </td <td>Peak-hour factor, PHF</td> <td>0.91</td>	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
RTOR Reduction (vph) 0 1 0 0 5 0 2 0 2 0 2 0 2 0 2 0 2 0 10<	Adi Flow (vph)	2	10	-	25	88	99	27	540	56	20	1169	119
Lare Group Flow (rph) 0 12 0 13 9 27 54 0 70 1266 0 Turn Type Permit 10 <	RTOR Reduction (vph)	0	-	0	0	0	57	0	2	0	0	2	0
Cont. Peds. (#hr) 36 24 24 36	Lane Group Flow (vph)	0	12	0	0	113	6	27	594	0	02	1286	0
Parking (#hr) 10	Confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
	Parking (#/hr)	10	10	10	10	10	10	10	10	ę	10	9	9
Perilected Phases 4 8 2 2 6 Perilected Phases 4 33 73 787 781 781 781 781 781 781 781 781 781	Turn Type	Perm			Perm		Perm	Perm			Perm		
Advalled Phases 4 9 3 13 13 13 13 787 781 787 781 781 781 727 781 717 717 713 </td <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>80</td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td>	Protected Phases		4			80			2			9	
Advaled Green (s) 13.3 13.7 <td>Permilled Phases</td> <td>4</td> <td></td> <td></td> <td>80</td> <td></td> <td>80</td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td> <td></td>	Permilled Phases	4			80		80	2			9		
Clearche Green, g(s) 14.3 14.3 14.3 14.3 73.7 73.1 11.1 10.1<	Acluated Green, G (s)		13.3			13.3	13.3	78.7	78.7		78.7	78.7	
Addition 0.14 0.14 0.14 0.14 0.160 0.80	Effective Green, g (s)		14.3			14.3	14.3	79.7	1.61		79.7	79.7	
Clearance Time (s) 4.0	Actuated g/C Ratio		0.14			0.14	0.14	0.80	0.80		0.80	0.80	
Windle Extension (s) 3.0	Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Rate Ford Diff 11 156 119 1271 564 1272 vis Rate Pert 0.01	Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	-
No No<	Lane Grp Cap (vph)		221			217	185	119	1271		504	1272	
No No<	v/s Ratio Prot								0.37			c0.81	
vic Ratio 0.05 0.05 0.52 0.47 0.14 101 Uniform Delay (1 37.0 39.7 30.6 0.32 0.47 0.14 101 Progression Factor 1.00 1.00 1.00 1.00 1.03 2.3 1.01 Progression Factor 1.00 1.00 1.00 1.00 1.03 2.3 1.01 Progression Factor 0.1 2.2 0.1 4.1 1.1 0.5 2.54 Delay (s) 37.1 4.0 37.1 8.2 7.3 0.60 2.54 Approach Delay (s) 37.1 4.0 0.1 7.2 4.55 4.75 Approach Delay (s) 37.1 4.01 7.2 4.55 4.55 4.55 Approach Delay (s) 37.1 4.01 7.2 4.55 4.55 4.55 Approach Delay (s) 37.1 4.01 7.2 4.55 4.55 4.55 Approach Delay (s) 0.0 0.0 0.04	v/s Ratio Perm		0.01			c0_07	0.01	0.18			0.11		
Uniform Delay, d1 37.0 33.7 37.0 25 33 23 10.1 Progression Factor 1.00 1.00 1.00 1.00 1.00 2.22 1.1 1.6 47.9 Progression Factor 1.00 1.00 1.00 1.00 1.60 2.22 1.1 1.6 47.9 Delay (s) 37.1 8.2 7.1 1.6 47.9 2.7 1.6 47.9 Approach Delay (s) 37.1 8.2 7.1 1.6 47.9 2.7 1.6 47.9 Approach Delay (s) 37.1 8.2 7.1 1.6 47.9 2.7 45.5 Approach Delay (s) 37.1 8.2 7.1 1.6 47.9 Approach Delay (s) 37.1 8.2 7.1 1.6 47.9 Approach Delay (s) 37.1 8.2 7.1 1.6 47.9 Approach Delay (s) 37.1 8.2 7.1 1.6 47.5 Approach Delay (s)	v/c Ralio		0.05			0.52	0.05	0.23	0.47		0.14	1.01	
Progression Factor 1.00 1.00 1.00 1.00 1.00 1.03 1.22 0.50 2.22 Delay (s) 37 1 4.1 1.1 0.5 2.54 0.5 2.54 Delay (s) 37 1 4.1 1.1 0.5 2.54 0.5 2.54 Delay (s) 37 4.01 0.1 8.2 7.1 0.5 2.54 0.5 Approach Delay (s) 37 1 4.01 7.2 A. A </td <td>Uniform Delay, d1</td> <td></td> <td>37.0</td> <td></td> <td></td> <td>39.7</td> <td>37.0</td> <td>2.5</td> <td>3.3</td> <td></td> <td>23</td> <td>10.1</td> <td></td>	Uniform Delay, d1		37.0			39.7	37.0	2.5	3.3		23	10.1	
Discriminate Delay, d2 0.1 2.2 0.1 4.1 1.1 0.5 2.54 Disp(s) 37.1 4.9 37.1 8.2 7.1 1.6 47.9 Level of Service 37.1 4.0 37.1 8.2 7.1 1.6 47.9 Approach Delay (s) 37.1 0.1 0.1 7.2 4.55 Approach Delay (s) 37.1 0.1 7.2 4.55 Approach Delay (s) 37.0 MCM Level of Service 7 4.5 Attracted of Service 0 0 4.0 7 4.5 Attracted Cycle Length (s) 10.0 5.0 HCM Value (s) 6.0 Mersaction Capacity utilic 0.34 Sum of tength (s) 6.0 6.0 Analysis Period (min) 7.5 6.1 6.0 6.0 6.0	Progression Factor		1 00			1.00	1 00	1.63	1 82		0.50	2.22	
Delety(s) 371 419 37.1 8.2 7.1 1.6 4.9 Level of Service D D A A A A A D A A B A D A D D A A D D A A D D A A D D A D D D A D	Incremental Delay, d2		01			22	0.1	4.1	2;		0.5	25.4	
Approach Delay (s) 3/1 401 7.2 455 Approach Delay (s) 3/1 401 7.2 455 Approach Delay 34.0 HCM Level of Service C HCM Average Control Delay 34.0 HCM Level of Service C HCM Volume to Capacity ratio 0.94 HCM Volume to Capacity ratio 0.94 Metated Cyde Capacity ratio 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 24% ICU Level of Service E Analysis Period (min) 15 C Critical Lane Group	Delay (s)		3/ 7			61.4 6	1.15	7.8	5		9.	6/14	
Approach Delay (s) 3/1 4U1 1/2 4/3 4/3 Approach Delay (s) 3/1 4/3 4/3 Approach Delay 1/3 2/3 4/3 1/3 2/3 4/3 2/3 4/3 2/3 4/3 2/3 4/3 2/3 4/3 2/3 4/3 2/3 2/3 4/3 2/3 2/3 2/3 2/3 2/3 2/3 2/3 2/3 2/3 2	Level of Service		-					<	4		×		
Approach LOS D D A D Intersection Summary Intersection Summary 34.0 HCM Level of Service C HCM Average Control Delay 34.0 HCM Level of Service C Actuated Cycle Level (s) 0.94 Sum of lost time (s) 6.0 Intersection Capacity fullization 82.4% ICU Level of Service E Analysis Period (min) 15 Critical Lane Group	Approach Delay (s)		37.1			40.1			1.2			45.5	
Intersection Summary 34.0 HCM Level of Service C HCM Average Control Delay 34.0 HCM Notime to Capacity retio 0.94 HCM Volume to Capacity retio 0.94 Actuated Cyte Lenghi (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 82.4% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	Approach LOS								A			۵	
HCM Average Control Delay 34.0 HCM Level of Service C HCM Volume Capacity ratio 0.94 HCM Level of Service C Actuated Cycle Lenghi (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 82.4% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	Intersection Summary	111				1.00		Tropic I	100			l	
HCM Volume to Capacity ratio 0.94 Actuated Cyte Length (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 24.4% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	HCM Average Control Delay			34.0	Ŧ	CM Level	of Servic	e		U			
Actualed Cyole Length (s) 100.0 Sum of lost time (s) 6.0 Mersection Capacity Unitization 82.4% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	HCM Volume to Capacity rati	0		0.94									
Intersection Capacity Utilization 82.4% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	Actuated Cycle Length (s)			100.0	ŝ	um of lost	time (s)			6.0			
Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilizati	lon		82.4%	0	U Level o	f Service	k		ш			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

Motorement EBL EBI EBR WBI Lane Configurations 11 237 24 392 Lane Configurations 11 237 24 392 Ideal Flow (sphel) 1900 1900 1900 1900 1900 Total Lost time (s) 3.0 <th>WBL WB 392 77 3.0 3 3.0 3 1.00 0.1</th> <th>'</th> <th>~</th> <th>-</th> <th></th> <th>۶</th> <th>→</th> <th>¥</th>	WBL WB 392 77 3.0 3 3.0 3 1.00 0.1	'	~	-		۶	→	¥
Lare Configurations ++<	392 392 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	BT WBR	NBL	NBT	NBR	SBL	58T	SBR
Volume (vph) 164 237 214 392 Ideal Flow (vph) 1900 1900 1900 1900 Fipb, pedbikes 100 100 100 100 Fipb, pedbikes 100 100 100 100 Fipb, pedbikes 100 100 100 100 Fipb, pedbikes 100 100 100 100 100 Fip, pedbikes 100 100 100 100 035 100 Fib-pedbikes 100 100 100 035 100 035 Fib-pedbikes 0.3547 3657 1452 1829 182 Fib-pedbikes 0.3547 3657 1452 1829 1431 Fib-pedbikes 0.36 037 3647 3547 3547 355 1431 Fib-pedbikes 0.31 037 3647 3547 3547 3547 3547 3547 3547 3547 3547 3547 3547	392 7. 1900 191 3.0 3 1.00 0.1	4	14	4	*	5	4	
Ideal Flow (vprib) 1900 <td>1900 19 3.0 3 1.00 0.1</td> <td>37 48</td> <td>147</td> <td>494</td> <td>68</td> <td>18</td> <td>668</td> <td>233</td>	1900 19 3.0 3 1.00 0.1	37 48	147	494	68	18	668	233
Iolal Lost time (s) 3.0 1.00	3.0 1.00 0.1	00 1900	1900	1900	1900	1900	1900	1900
Larred U.97 U.95 U.95 U.00 100 Fipb, pedibkes 1.00 1.00 1.00 1.00 1.00 Fipb, pedibkes 1.00 1.00 1.00 1.00 1.00 1.00 Fipb, pedibkes 1.00 1.00 1.00 1.00 1.00 1.00 Fitb 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Salat, Fibw (prot) 354.7 3657 1.452 182 0.95 1.00 0.95 Rest-tour factor 0.91 0.91 0.91 0.91 0.91 0.91 0.91 Add Rest-tour factor 0.91	1.00 0.1	0.0	3.0	3.0	3.0	3.0	3.0	
Frip. peronkes 1.00 <th1.00< th=""> 1.00 1.00</th1.00<>		95	0.97	1.00	1.00	1.00	0.95	
Tripp, Perotrikes 1.00 <th1.00< th=""> 1.00 1.00</th1.00<>	.1 00.1	00	1.00	1.00	0.82	1.00	0.99	
Fin Condition Condition <thcondition< th=""> <thcondit< td=""><td>00.1</td><td>00</td><td>00.1</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td></td></thcondit<></thcondition<>	00.1	00	00.1	1.00	1.00	1.00	1.00	
Turn france Usb Sadi. Flow (perm) Usb Usb <thusb< th=""> <thusb< td="" thu<=""><td>1.00</td><td>88</td><td>00°L</td><td>00.1</td><td>0.85</td><td>00.1</td><td>16.0</td><td></td></thusb<></thusb<>	1.00	88	00°L	00.1	0.85	00.1	16.0	
Statt, Flow (perm) 3541 3657 1452 1829 Reak frow (par) 3547 3657 1452 1829 Reak frow (par) 3547 3657 1452 1829 Reak frow (par) 3547 3657 1452 1829 Reak frow (par) 180 260 235 431 Rediction (par) 180 260 51 431 Carren Flow (par) 180 260 51 431 Carren Flow (par) 180 260 51 431 Proticide Phases 7 4 4 3 Proticide Phases 7 4 4 3 Actualed Strent, G (s) 114 163 246 40 Vin Type 7 4 4 3 30 Actualed Strent, G (s) 114 163 246 40 Vin Type 7 4 4 3 30 Clearance Time (s) 010 017 017	1.1 0.95	00	0.95	1.00	1.00	0.95	1.00	
Anti-Free (perm) 0.33 3547 0.35 1.00 0.35 Radit Flew (perm) 180 260 51 431 431 Conf. Peets (#hr) 180 260 51 431 33 Protocled Phases 7 4 4 3 34 34 Actualed Stream (G e) 111.4 16.9 14.9 236 450 460 450 460 460 450 460 450	1829 36	16	3547	1925	1345	1554	3250	
Sature Sature<	1.1 68.0		66.0	1.00	1.00	0.95	1.00	
Preserver Desil 0.91 0.91 0.91 0.91 RTOR Reduction (vph) 160 260 351 431 Carrel Scrupt Plaw (vph) 180 260 51 431 Larrel Scrupt Plaw (vph) 180 260 51 431 Larrel Scrupt Plaw (vph) 180 260 51 431 Larrel Scrupt Plaw (vph) 180 260 51 431 Protricted Phases 7 4 3 3 Protroted Steen, G (s) 114 15 54 450 Actuated Steen, G (s) 114 15 55 450 Vick Fallo 011 017 017 025 450 Vick Fallo 011 017 017 025 450 024 60 451 450 450 450 450 450 450 450 450 450 450 450 450 450 450 450 450 450 450 450	0E 8291	9	3547	1925	1345	1554	3250	
Addition Teal 253 431 Addition Teal (Wph) 180 260 51 431 Conting #fm1) 180 260 51 43 Turn Type Protein Perm Prot 3 Protected Phases 7 4 4 3 Protected Phases 7 4 4 3 Actualed Strem 5(s) 111.4 16.9 16.9 3.0 Actualed Strem 5(s) 111.4 16.9 3.0 3.0 3.0 Actualed Strem 7 4.0 6.7 3.0 3.0 3.0 Actualed Strem 7 4.0 6.7 3.0 3.0 3.0 Laree Charge Charp Charge Charg	0.91 0.9	91 0.91	0.91	0.91	0.91	0.91	0.91	0.91
KI LOR Keeuction (vph) 180 0 184 0 Conf. Pets, (#hr) 180 260 51 431 Conf. Pets, (#hr) 180 260 51 431 Conf. Pets, (#hr) 72 7 4 7 3 Parking (#hr) 7 4 7 3 3 Parking (#hr) 7 4 4 3 3 Parking (#hr) 7 4 4 3 3 Parking (#hr) 7 4 4 4 3 3 Actualed Prases 7 4 4 4 4 3	431 8	10 53	162	543	8	30	988	256
Latre enough Pow (pp) 180 260 31 431 Cardi, Peak, (#hh) 7 2 7 4 7 3 Parking (#hh) 7 4 7 4 7 3 Parking (#hh) 7 4 4 3 <t< td=""><td>0</td><td>0</td><td>•</td><td>•</td><td>25</td><td>0</td><td>3</td><td>0</td></t<>	0	0	•	•	25	0	3	0
Community 72 Turn Type 7 4 3 Proticied Phases 7 4 3 3 Effective Creen; g (s) 114 153 159 3:6 3:0 <td>431 8</td> <td>8</td> <td>162</td> <td>213</td> <td>4</td> <td>20</td> <td>1223</td> <td>•</td>	431 8	8	162	213	4	20	1223	•
Caternal Priori Priori Priori Protected Phases 7 4 3 3 Protected Phases 7 4 3 3 Protected Phases 7 4 3 3 Protected Phases 7 4 4 3 Protected Phases 7 4 4 3 3 Actualed Green, G(s) 111.4 16.9 16.9 24.6 4 0 25 4 3		12			8			24
Untry Appendix Point	100					2	1	2
Tronded Phases 7 4 3 Promitied Phases 7 4 4 3 Actuated Green, G (s) 114 159 159 25.6 54.6 Effective Green, G (s) 114 159 159 159 25.6 54.6 Actuated Green, G (s) 111 0.17 0.17 0.25 54.6 24.6 Catalated Green, G (s) 10.1 0.17 0.17 0.25 54.6 4.0 25.6 5.0 3.0 4.4 50.4 0.4 4.4 50.4 0.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.4 4.4 4.4 50.4 0.2 50.4 0.2 10.4 14.4 <td>Prot</td> <td></td> <td>Prot</td> <td>8</td> <td>Perm</td> <td>Prot</td> <td></td> <td></td>	Prot		Prot	8	Perm	Prot		
Permentance 4 4 23.6 Actualed Green, g (s) 11.4 16.9 14.9 23.6 Actualed Green, g (s) 11.4 16.9 16.9 24.6 Actualed Green, g (s) 11.4 16.9 16.9 24.6 Actualed Green, g (s) 11.4 16.9 16.9 24.6 Actualed Green, g (s) 3.0 0.0	m	00	ŝ	~	,	-	9	
Actualed Steering (s) 114 4 143 144 23.36 Actualed Of Ratio 0.111 0.17 0.17 0.25 Clearance Time (s) 4.0 5.0 5.0 4.0 Vanish (s) 4.0 5.0 5.0 4.0 Clearance Time (s) 4.0 5.0 5.0 4.0 Vanish (s) 4.0 5.0 5.0 5.0 1.00 Normenial Delay, d1 4.1 4.3 3.1 3.5 8.5 6.1 4.0 Normenial Delay, d2 0.1 0.0 1.00 1.00 Normenial Delay, d2 0.1 0.0 1.00 Normenial Delay, d3 0.0 5.0 4.0 1.00 Normenial Delay (s) 0.0 0.0 0.0 Approach Delay (s) 0.0 0.0 Approach Delay (s) 0.0 Approach Unit Analysis Period (min) 1.0 Nalysis Period (min) 1.0 Naly					N			
Addition Creation of Ceenty of Signed S	RZ 9.97	5	82	40.2	40.2	E P	er B	
Actuation (a) (24.6 30	5	10.2	42.2	42.2	4.3	36.3	
Contraction (s) 3.0	0.25 0.	30	0.10	0.42	0.42	0.04	0.36	
verticity 3.1 3.1 3.1 verticity 2.1 3.1 3.1 3.1 verticity 2.1 3.1 3.1 3.1 verticity 2.1 3.1 3.1 3.1 verticity 2.0 3.1 3.1 3.1 verticity 2.0 3.1 3.1 3.1 3.1 verticity 0.45 0.42 0.21 0.96 0.1 0.0 verticity 0.45 0.42 0.21 0.96 0.100 1.00<	0,0	0.1	4	2.0	2:0	4.0	2.0	
Lare Gro Cap (Verb) 404 618 245 450 vs Raulo Prot C0 05 007 2024 0 vs Raulo Prot C0 06 007 2024 0 vs Raulo Prot C1 100 100 100 100 100 100 100 100 100	3.0	3	3.0	3.0	3.0	3.0	3.0	
vis Ratio Prod vis Ratio Prod vis Ratio Perm Vis Ratio Perm Progression Factor Progression Play (s) Approach Delay (s) Approach Delay (s) Progression Play (s) Adproach Delay (s) Progression Play (s) Adproach Delay (s) Progression Play (s) Adproach Delay (s) Adproach De	450 108	38	362	812	568	67	1180	
vis Ratio Perm Vis Ratio Perm Uniform Belay, d1 41, 37, 23, 0, 096 Uniform Belay, d1 41, 37, 23, 36, 37, 2 Progression Factor 1, 00 1, 00 1, 00 Incremental Delay, d2 0, 3, 0, 4, 31, 4 Belay (5) 7, 3, 6, 36, 2, 86, 6 Level of Service D 2, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4, 4,	c0.24 c0.2	24	c0.05	0.28		0.01	c0,38	
vic Ratio 0.45 0.42 0.29 0.96 Progression Tackor 100 1.00 1.00 1.00 Incremental Delay, d2 0.8 0.5 0.4 31.4 Delay, d2 0.8 0.5 0.4 31.4 Delay, d2 0.8 0.5 0.4 31.4 Evel of Service 1.0 1.0 1.00 1.00 Approach Delay (s) 33.3 Approach Delay (s) 38.3 Approach Delay (s) 38.3 Approach Delay (s) 38.3 Approach Delay (s) 38.3 Approach Delay (s) 38.3 Anthreade Confer Delay 47.4 HCh HCM Notume to Capacity ratio Autovate Cycle Length (s) 0.86 Autovate Cycle Length (s) 100.0 Sur Martysis Period (min) 15 Martysis Period (min) 15					0.03			
Uniform Delay, d1 414 372 358 372 Progression Factor 100 1.00 1.00 1.00 Incremental Delay, d2 42, 1 37, 5 36, 37, 4 Delay (s) 5 0, 42, 1 37, 5 36, 2 68, 6 Aproach Delay (s) 0, 0 0 E Aproach Delay (s) 33, 3 3 Intersector Summary 47, 4 HCM HCM Volume to Capacity ratio 0, 86 Antimary 47, 4 HCM HCM Volume to Capacity ratio 0, 86 Antimary 100, 85 0, 100 Autabactor Capacity Utilization 15, 5 0, 100 Analysis Period (min) 15	0.96 0.1	6/	0.45	0.67	0.07	0.30	1.04	
Progression Factor 100 100 100 100 Incremental Delay (2) 0.8 0.5 0.4 31.4 Delay (5) 0.8 0.5 0.4 31.4 Approach Delay (5) 0.8 0.5 0.4 31.4 Approach Delay (5) 0.8 0.5 0.4 31.4 Approach Delay (5) 0.8 38.3 0.4 31.4 Approach Delay (5) 0.8 38.3 0.4 31.4 Approach Delay (5) 38.3 3.3 0.4 31.4 Approach Delay (5) 0.8 33.3 0.4 41.4 HCh Anterede Control Delay 1 0.8 0.8 McH McH McH McH HCM Volume to Capacity ratio 0.8 0.8 0.8 McH McH McH Actual Cycle Length (15) 100.0 0.8 0.8 McH McH Actual Cycle Length (15) 140.0 0.8 0.8 McH McH McH McH	37.2 32	0	42.2	23.3	17.2	46.4	31.9	
Incornental Delay, 02 0.8 0.5 0.4 31.4 Delay (s) 1.4 0.5 0.4 0.14 0.5 0.4 0.14 0.5 0.4 0.14 0.5 0.4 0.14 0.5 0.5 0.4 0.14 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	1.00 1.0	8	0.81	0.74	1.13	1.00	1.00	
Usersy (s) 42.1 3/.6 56.5 Level of Service D D E Approach Delay (s) 33.3 E E Approach Delay (s) 33.3 D E Approach Delay 47.4 HCA HCM Average Control Delay 47.4 HCA HCM Verrage Control Delay 10.0 Sum Analysis Period Unitization 935% ICU	31.4 3	5	0.9	4.3	0.2	2.5	36.1	
Leven or service U U U E Approach Delay (s) 33.3 Approach LOS 20 Intersection Summary 47.4 HCM HCM Volume to Capacity ratio 0.86 Actuated Cycle Length (s) 100.0 Sur Aralysis Period (min) 15	68.6 35		35.3	21.5	19.7	48.9	619	
Approach Deary (s) 0.0 Approach LOS 0.0 Intersector Summary 1.4 HCM HCM Average Control Delay 47.4 HCM HCM Volume to Capacity ratio 0.86 Acutated Cycle Length (s) 100.0 Sur Analysis Period (min) 15	п		c	2	n	2	с Į	
Argeneration of the second sec	40	9.0		- 7 4-7				
Intersection Summary HCM Notume to Captol Delay 47.4 HCM HCM Volume to Capacity ratio 0.86 10.0 Microsoftin Capacity ratio 100.0 Sum Intersection Capacity Utilization 88.3% ICU Analysis Period (min) 15		c		c			u	
HCM Average Control Delay 47.4 HCM HCM Volume to Capacity ratio 0.86 10.0 HCM Colume to Capacity ratio 0.86 10.0 20.0 Analysis Period (min) 15 15 10.0	State State							
HCM Volume to Capacity ratio 0.86 Actuated Cycle Length (s) 100.0 Sum Intersection Capacity Utilization 85.5% ICU Analysis Period (min) 15	HCML	evel of Service	0		٥			
Actuated Lydie Length (s) 100.0 Sum Intersection Capacity Utilization 88.5% ICU Analysis Period (min) 15								
Analysis Period (min) 15 15		lost time (s)			15.0			
r Pritical I and Group					u			

95: Neal St & First											4/1	3/2013
	٩	t	۴	6	ł	4	•	-	٩.	٠		•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	587	SBR
Lane Configurations	*	2 4		*	4		*	4		*	¢\$	
Volume (vph)	39	5	80	50	134	22	42	506	33	e,	1008	81
Teel Flow (vpnpl)	0.01	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane UUI, Factor	00.1	1.00		8	1,00		1 00	8		1.00	1.00	
Frpb, pea/bikes	00.1	0.96		001	1 00		00"	001		1.00	1.00	
ripa, pearaikes	0.33	1.0U		66.0	001		00 1			0.99	1.00	
Ell District	1.00	1.9.1		1,00	96'n		001	0,99		1.00	0.99	
Cate Claus (and)	0.33	1.00		26.7			0.93	D0'L		0.95	1.00	
Satu Flow (prot) Elt Permitted	0.43	1459		0.50	1094		1004	100		1546	1614	
Satd Flow (nerm)	CU2	1459		00°0	1594		230	1617		RAB	1.00	
Deak-hour factor DHF	0.05	A DF	0.05	0 OF	D OF	0.06	0.05	100	0.05	0.00	101	100
Adi Flow (voh)	41	57		200	144	25.0	02.0	0.93	200	020	0510	0.20
RTOR Reduction (voh)	F =	, ra	5 =	3 0	ŧ	3 0	‡	••••	3 -	• •	1001	6
and Crown Flow (veb)	1	92	0	2	150			122		> c	4444	
Confi Pade (#/hr)	+ u	2	5 V	3 "	001	o u	‡ "	100	. .	o u	144	. .
Derking (#/hr)	° ç	10	n ç	n ç	10	n ç	n ç	07	n ç	n ç		n ç
	2	2	2	2	2	2	2	2	2	2	2	2
rurn Type	Perm			Perm	¢		Perm	¢		Perm		
Protected Phases	ŀ	4		•	20		•	2		1	æ	
Permitted Phases	4			80 .			2	1		9		
Actualed Green, G (s)	15.1	15.1		15.1	15.1		76.9	76.9		76.9	76.9	
Effective Green, g (s)	16_1	16.1		16.1	16,1		6 11	17.9		517,9	6 //	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0_78	0.78		0.78	0.78	
Clearance Time (s)	4 0	4 0		4 0	4 0		4 0	4 0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	Ì	3.0	3.0		3.0	3.0	1
Lane Grp Cap (vph)	113	235		129	257		181	1260		519	1257	
v/s Ratio Prot		0.05			c0.10			0.35			c0.71	
v/s Ratio Perm	90 0			0.07			0.19			00 0		
v/c Ratio	0.36	0.32		0.41	0.61		0.24	0.45		0.01	0.91	
Uniform Delay, d1	37.4	37.1		37.7	39.0		3.0	3.8		2.5	8.4	
Progression Factor	1 00	1.00		1.00	1.00		1.00	1 00		06.0	1.55	
Incremental Delay, d2	2.0	0 8		21	4 0		3.2	12		0.0	3.2	
Delay (s)	39.4	37.9		39.8	43.1		6.2	4 9		2.2	16.2	
	2			-	<u>و</u>		<	¥ i		A	200	
Approach Lelay (s)		ZRE			42.3			9.0			16.1	
Approach LOS		0			٥			A			æ	
Intersection Summary			1000					2000			P	4
HCM Average Control Delay			17.5	Ŧ	M Level	of Service			8			
HCM Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0	Su	m of lost	lime (s)			6.0			
Intersection Capacity Utilization			81.4%	Ö	J Level o	Service			0			
Analysis Period (min)			15									
c Critical Lane Group												

Synchro 7 - Report W-Trans

Kotlinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

	t	1	6	ŧ	•	4	
lovement	EBT	EBR	WBL	WBT	NBL	NBR	The second second second
ane Configurations	**			+7	×		
(olume (veh/h)	105	98	23	26	97	86	
Sign Control	Free			Free	Stop		
Grade	%0			%0	%0		
Peak Hour Factor	0.64	0.64	0.64	0.64	0.64	0,64	
Hourty flow rate (vph)	164	134	36	152	152	134	
aedestrians	20			20	20		
ane Width (ft)	13.0			13.0	13.0		
Nalking Speed (ft/s)	4.0			4.0	4.0		
Percent Blockage	2			2	2		
Right turn flare (veh)							
Median type	None			None			
Median storage veh)							
Upstream signal (ft)							
X, platoon unblocked							
C, conflicting volume			318		495	271	
rC1, stage 1 conf vol							
rC2, stage 2 conf vol							
/Cu, unblocked vol			318		495	271	
C, single (s)			4.1		6.4	6.2	
C, 2 stage (s)							
F (s)			2.2		3.5	3.3	
ot queue free %			67		02	82	
cM capacity (veh/h)			1219		500	740	
Orection, Lane #	581	WBI	NB 1		ų		County of the second
Volume Total	298	188	286				
Volume Left	0	36	152				
Volume Right	134	0	134				
cSH	1700	1219	590				
Volume to Capacity	0.18	0.03	0.48				
Queue Length 95th (ft)	0	2	99				
Control Delay (s)	0.0	1.8	16.7				
Lane LOS		۷	U				
Approach Delay (s)	0.0	1.8	16.7				
Approach LOS			O				
Intersection Summerv		ĺ					ALL SUPPORT DATA DATA DA
Average Delay			9 [.] 9				
Intersection Capacity Utiliza	tion		41.3%	5	1 aval 1	f Sarvina	A
				2		1 001 1100	

HCM Unsignalized In 597: Kottinger & Adal	tersec ms	tion C	apacity	/ Anal	/sis						4/1	3/2013
	٩	t	1	\$	Ŧ	~	•	•	*	٨	->	7
Movement	EBL	E81	EBR	WBL	18M	WBR	NBL	LEN	NBR	.BL	周	SBR
Lane Configurations		4			4			÷			¢	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	83	32	14	22	97	87	22	54	16	12	63	32
Peak Hour Factor	0.60	09.0	09.0	09.0	0.60	09.0	0.60	09.0	0.60	09:0	0.60	0.60
Hourly flow rate (vph)	138	53	23	37	162	145	37	06	27	20	105	53
Direction, Lane #	181	WB 1	NB.1	SB-1		(A B B B B B B B B B B B B B B B B B B						
Volume Total (voh)	215	343	153	178								ľ
Volume Left (vph)	138	37	37	20								
Volume Right (vph)	23	145	27	53								
Hadj (s)	0.10	-0.17	-0.02	-0.12								
Departure Headway (s)	5.5	5.0	5.7	5.6								
Degree Utilization, x	0.33	0.48	0.24	0.27								
Capacity (veh/h)	605	673	557	579								
Control Delay (s)	111	12.6	10.5	10.6								
Approach Delay (s)	11.1	12.6	10.5	10.6								
Approach LOS	8	80	8	8								
Intersection Summary			1000	3			100					
Delay			11.5			4			i.			
HCM Level of Service			•									
Intersection Capacity Utilization Analysis Period (min)	-		44.5%	<u>0</u>	U Level o	of Service			<			

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kattinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Project Conditions-No Project

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Movement EBL Lane Configurations 209 Volume (vph) 209 Ideal Dial Lost time (s) 300 Ideal Ext time (s) 300 FPb, pedbikes 1,00 Flb, pedbikes 1,00 Flb, pedbikes 0,037 Statt Flow (prof) 390 Statt Flow (prof) 3547 Ext Flow (prof) 3547 Ext Flow (prof) 3547 Ext Flow (prof) 3547 Ext Flow (prof) 3547 Could Ext three (prof) 3547	↑ 🗃 🛊 11	EBR	ARI	Ŧ	4	1	•	*	۶	-	¥
Movement EBL Lane Configurations 1 Volume (vph) 209 Volume (vph) 300 Total Lost time (s) 30 Total Lost time (s) 300 Frab, pedbikes 1,00 Frab, pedbikes 1,00 Frab, pedbikes 1,00 Frab, pedbikes 0,035 Stat From (prot) 3547 Stat From (prot) 3547 Ceak-hour factor, PHF 0,94	EBT 444 1117	EBR	WRI								
Lane Configurations 1 Volume (vph) 209 Volume (vph) 300 Total Lost Ume (s) 300 Total Lost Ume (s) 300 Total Lost Ume (s) 300 Erpb, pedbikes 1,00 Frpb, pedbikes 1,00 F	1117		10111	WBT	WBR	NBL	TBN	NBR	SBL	SBT	SBR
Volume (vph) 209 least Prov (vph2) 30 least Prov (vph2) 30 Lane Utit, Factor (vp) 30 Lane Utit, Factor (vp) 30 FPb, pedbikes 100 FIb, pedbikes 100 FIP, pedbikes 100 FIP, protected 0.95 Satt Frow (prot) 3547 CH Permited 0.95 East Frow (prot) 3547 CH Permited 0.95 Fit Permited 0.95 F	1117		14	1	*	*	\$	*	-	4	
lead Flow (tynip) 1900 Total Lost time (s) 3,0 Frap. pedbikes 1,00 Flob. pedbikes 1,00 Flob. pedbikes 1,00 Fl Protected 0,95 Stati. Flow (proi) 3,47 Fl Permited 0,95 Fl Permite		96	123	329	319	84	390	590	981	710	183
Total Lost time (s) 30 Lane Uti, Factor 0.97 Fhop pedblikes 1.00 Fri pedblikes 1.00 Fri Protected 0.95 Staff Flow (prot) 0.95 Saff Flow (perm) 0.95 Saff Flow (perm) 0.95 Freak-hour factor, PHF 0.94	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util: Factor 097 Frpb, pedbikes 1,00 Frl protobikes 1,00 Frl Printeded 095 Satd Flow (prot) 3547 Satd Flow (prot) 3547 Creak-hour factor, PHF 0.94	3.0		3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	
Frpb, pedbikes 100 Flob, pedbikes 1,00 Flu Protected 0,05 Stati Flow (prot) 3547 Stati Flow (prot) 3547 Stati Flow (prot) 3547 Permitted 0,95 Flew (prot) 3547 Permitted 0,95 Flew (prot) 3547	0.91		16.0	0.95	1 00	1.00	0.95	1.00	0.97	0.95	
Flub. ped/bites 1.00 Fri 1.00 Fri 1.00 Sati / Flow (prov) 3.47 Sati / Flow (prov) 3.47 Sati / Flow (prov) 3.47 Peak-hour factor, PHF 0.95	1 00		1 00	1.00	0.98	100	1.00	0.98	1 00	1.00	
Frd 1,00 FIL Protected 0,95 Stat Flow (prot) 3547 Satd Flow (perm) 0,95 Satd Flow (perm) 3547 Peak-hour factor, PHF 0,94	1 00		1.00	1,00	1 00	1.00	1.00	1 00	1 00	1 00	
FI Protected 0.95 Stad. Flow (prot) 3547 TP Permitted 0.95 Satd. Flow (perm) 3547 Peak-nour factor, PHF 0.94	66 0		1.00	1.00	0.85	1.00	1.00	0.85	1 00	10.97	
Satd. Flow (prot) 3547 Fit Permitted 0.95 Satd. Flow (perm) 3547 Peak-hour factor, PHF 0.94	1.00		0.95	1,00	1.00	0.95	1.00	1.00	0.95	1.00	
Fit Permitted 0.95 Satd. Flow (perm) 3547 Peak-hour factor, PHF 0.94	5180		3547	3657	1599	1829	3657	1599	3547	3545	
Satd. Flow (perm) 3547 Peak-hour factor, PHF 0.94	1_00		0.95	1.00	1 00	0.95	1.00	1.00	0.95	1.00	
Peak-hour factor, PHF 0.94	5180		3547	3657	1599	1829	3657	1599	3547	3545	
	0.94	0.94	0.94	0,94	0.94	0 94	0.94	0.94	0.94	0.94	0.94
Adj Flow (vph) 222	1188	102	131	350	339	89	415	628	1044	755	195
RTOR Reduction (vph) 0	6	0	0	0	0	0	0	0	0	19	0
Lane Group Flow (vph) 222	1282	0	131	350	339	68	415	628	1044	931	0
Confl. Peds. (#/hr)		12			36			36			
Turn Type Prol			Prot		Free	Prol		Free	Prot		
Protected Phases 1	9		S	2		en	80		7	4	
Permitted Phases					Free			Free			
Actuated Green, G (s) 10.7	31.0		7.0	27.3	120.0	9.9	14.8	120.0	46.2	51.1	
Effective Green, g (s) 11.7	35.0		8.0	31.3	120.0	10.9	17.8	120.0	47.2	54.1	
Actuated g/C Ratio 0.10	0.29		0.07	0.26	1.00	0.09	0.15	1.00	0.39	0.45	
Clearance Time (s) 4.0	1.0		4.0	2.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s) 3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph) 346	1511		236	954	1599	166	542	1599	1395	1598	
v/s Ratio Prot c0.06	c0,25		0.04	0,10		0.05	c0.11		c0.29	0.26	
//s Ratio Perm					0.21			0.39			
v/c Ratio 0.64	0.85		0.56	0.37	0.21	0.54	0.77	0.39	0.75	0.58	
Jniform Delay, d1 52.1	40.0		54.3	36.3	0.0	52.1	49.1	0.0	31.3	24.5	
Progression Factor 1.00	1,00		1.00	1.00	1.00	1.00	1.00	1.00	0.68	09.0	
Incremental Delay, d2 4.0	6.1		2.8	0.2	0.3	3.3	6.4	0.7	2.7	0.4	
Delay (s) 56.2	46,1		57.1	36.5	0.3	55.4	55.5	0.7	24.1	15.1	
evel of Service E	0		ш	0	×	ш	ш	A	0	80	
Approach Delay (s)	47.6			24.8			25.1			19.8	
Approach LOS	۵			o			o			•	
ntersection Summary		10									
ICM Average Control Detay		29.4	HC	M Level	of Service			U			
HCM Volume to Capacity ratio		0.77									
Actuated Cycle Length (s)		120.0	Sul	m of lost	time (s)			9.0			
nlersection Capacity Utilization		81.9%	ы С	Level o	Service			0			
Analysis Period (min)		15									

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

	1	Ť	r	۶	ŧ	4	ŕ	+	٩	۶	→	¥
Movement	EBL	E81	EBR	WBL	TBW	WBR	NBL	NBT	NBR	SBI	SBT	SBR
Lane Configurations	*	4			•7	*	*	4		٢	+2	
Volume (vph)	98	52	22	32	36	17	27	922	83	02	234	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util Factor	0.95	0.95			1 00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1 00	1.00	1.00	1.00		1.00	1.00	
Ert	1.00	0.96			1.00	0.85	1.00	0.99		1.00	0.95	
Fit Protected	0.95	0.99			0.98	1.00	0.95	1 00		0.95	1.00	
Satd. Flow (prot)	1477	1479			1599	1391	1823	3612		1829	1819	
Flt Permitted	0.95	0.99			0.98	1.00	0.47	1.00		0.20	1.00	
Satd. Flow (perm)	1477	1479			1599	1391	969	3612		377	1819	
Peak-hour factor, PHF	0.96	96.0	96.0	0.96	0.96	0.96	0.96	0.96	0.96	0.96	96.0	0.96
Adj. Flow (vph)	06	5	23	33	38	90	28	960	98	73	244	112
RTOR Reduction (vph)	0	18	0	0	0	69	0	5	0	0	23	0
Lane Group Flow (vph)	81	68	0	0	11	1	28	1037	0	73	333	0
Confl Peds (#/hr)			e	e			4					4
Parking (#/hr)	10	10	10	10	10	10						
Turn Type	Split			Split		Perm	Perm			Perm		
Protected Phases	4	4		e	e			2			9	
Permitted Phases						e	2			9		
Actuated Green, G (s)	7.2	7.2			4.2	4.2	18.4	18.4		18.4	18.4	
Effective Green, g (s)	9.2	9.2			6.2	6.2	20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.21	0.21			0.14	0 14	0.46	0.46		0.46	0.46	
Clearance Time (s)	5.0	5.0			5,0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	l	1	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	303	304			221	193	408	1645		172	828	
v/s Ratio Prol	c0.05	0.05			c0.04			c0.29			0.18	
v/s Ratio Perm						0.01	0.03			0.19		
v/c Ratio	0.27	0.22			0.32	90.06	0.07	0.63		0.42	0.40	
Uniform Delay, d1	15.0	14.8			17,4	16.8	6.9	9.3		8.2	8.1	
Progression Factor	1.00	1.00			1.00	1_00	1.00	1.00		1.00	1,00	
Incremental Delay, d2	0.5	0.4			0.8	0.1	0.1	0.8		1.7	0.3	
Delay (s)	15.4	15.2			18.2	16.9	6.9	10.1		6.6	8.5	
Level of Service	80	60			80	8	A	æ		A	A	
Approach Delay (s)		15.3			17.5			10.0			8.7	
Approach LOS		æ			æ			œ			۲	
Intersection: Summary					Ì			10.00		Ē		
HCM Average Control Delav			10.8	OH	M Loval	of Sarrier			ď			
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			44 8	Su	m of lost	lime (s)			9.0			
Intersection Capacity Utilization			58.1%	Ð	J Level o	Service			-			
Analysis Period (min)			15									

Synchro 7 - Report W-Trans

Kotinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions with Planned TIF Improvements-No Project

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

Momenti Edit Edit Mediant Edit Edit Edit Edit Edit Mediant	33: Vinevard-Ray St &	First		1								4/1	9/2013
Material Edit Fail Wait		1	1	1	1	ŧ	~	4	+	٩	۶	->	¥
are Configurations 1	Aovement	EB	E81	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	ane Configurations	*	+	*	-	+	ĸ	*	4		F	\$	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	folume (vph)	23	111	72	101	6	41	72	1125	117	39	493	49
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Table From (a) Table From (b) Table From (b) <thtable (b)<="" from="" th=""> Table Fr</thtable>	olal Lost time (s)	30	3.0	3.0	3.0	3.0	3,0	30	3.0		3.0	3.0	3.0
(h) (h) <td>ane Util, Factor</td> <td>1 00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1 00</td> <td>1 00</td> <td>0.95</td> <td></td> <td>1.00</td> <td>0.95</td> <td>1.00</td>	ane Util, Factor	1 00	1.00	1.00	1.00	1.00	1 00	1 00	0.95		1.00	0.95	1.00
(h) (h) <td>rpb, ped/bikes</td> <td>1 00</td> <td>1.00</td> <td>0.99</td> <td>1.00</td> <td>1.00</td> <td>0 99</td> <td>100</td> <td>0.99</td> <td></td> <td>1.00</td> <td>1.00</td> <td>0.96</td>	rpb, ped/bikes	1 00	1.00	0.99	1.00	1.00	0 99	100	0.99		1.00	1.00	0.96
riand free from the field of th	Ipb, ped/bikes	1_00	1,00	1.00	1.00	1.00	1 00	1 00	1 00		1.00	1.00	1.00
$ \label{eq:constraints} \equal three for the form of the form of$	in the second	1 00	1.00	0.85	1.00	1.00	0.85	1_00	0.99		1.00	1.00	0.85
Baid: Flow (port) 1229 1525 1531 1534 1535 1311 1829 3664 1879 3657 1517 Terrentiand 0.36 100 100 0.35 100 100 0.35 100 100 0.35 100 100 0.35 100 100 0.35 100 100 0.35 0.36 0.36 0.36 0.36 0.35	It Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1 00		0.95	1.00	1.00
	Satd. Flow (prot)	1829	1925	1613	1554	1636	1371	1829	3584		1829	3657	1571
Bark Flow (perm) 1829 1925 153 1534 1829 3564 1829 3567 151 Verk hour factor, PHF 0.39 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30	It Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Teak-hour factor, PHF 0.98 0.99 0.98 0.98 0.98 0.99	Satd. Flow (perm)	1829	1925	1613	1554	1636	1371	1829	3584		1829	3657	1571
ugi Flow (vph) 58 113 73 103 92 42 73 148 119 40 503 20 are Reduction (vph) 58 13 17 11 13 27 15 73 156 0	Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Trick Reduction (vph) 0 0 5 1 1 1 1 1 1 1 0	(voh) (voh)	58	113	23	103	92	42	73	1148	119	40	503	50
are Group Flow (ph) 56 113 17 103 92 5 73 1262 0 40 503 23 arking (#hh) 1 10 11	TOR Reduction (vph)	0	0	56	0	0	37	0	S	0	0	0	21
	ane Group Flow (vph)	58	113	17	103	92	S	73	1262	0	40	503	29
arking (#hr) 10	Confl Peds (#/hr)			-			-			6			4
	Parking (#/hr)				10	10	10	9				1	1
Protectici Phases 4 4 3 3 1 6 5 2 2 Indectici Phases 137 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130	furn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
emilled Phases 4 3 3 137 130 13	Protected Phases	4	4		9	9		-	9		2	5	
cutualed Green, G(s) 137 130 030	^b ermitted Phases			4			e						2
Effective Green, g (s) 147 147 151 151 151 151 151 151 706 705 700	Actuated Green, G (s)	13.7	13.7	13.7	14 1	14.1	14 1	7.2	68.6		6.6	68.0	68.0
Cutated g(C Ratio 0.12 0.12 0.12 0.13 0.13 0.03 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.58 0.06 0.59 0.06 0.59 0.06 0.50 0.50 0.06 0.58 0.06 0.59 0.06 0.58 0.07 0.59 0.06 0.58 0.06 0.59 0.06 0.50 0.03 0.01 <td>Effective Green, g (s)</td> <td>14.7</td> <td>14.7</td> <td>14.7</td> <td>15.1</td> <td>15,1</td> <td>15,1</td> <td>8.2</td> <td>70.6</td> <td></td> <td>7.6</td> <td>20.07</td> <td>70.0</td>	Effective Green, g (s)	14.7	14.7	14.7	15.1	15,1	15,1	8.2	70.6		7.6	20.07	70.0
Detarance Time (s) 4.0 4.0 4.0 4.0 4.0 5.0 4.0 5.0 3.0	Actuated g/C Ratio	0.12	0.12	0.12	0.13	0.13	0 13	0.07	0.59		0.06	0.58	0.58
ehride Extension (s) 30 <td>Clearance Time (s)</td> <td>4.0</td> <td>4,0</td> <td>4.0</td> <td>4.0</td> <td>4.0</td> <td>4.0</td> <td>40</td> <td>5.0</td> <td></td> <td>4.0</td> <td>5.0</td> <td>5.0</td>	Clearance Time (s)	4.0	4,0	4.0	4.0	4.0	4.0	40	5.0		4.0	5.0	5.0
are Crip Cap (wh) 224 236 198 196 206 173 125 2109 116 2133 916 (s Ratio Prem 0.03 d.0.06 0.04 d.35 d.0.02 0.14 0.35 (s Ratio Prem 0.03 d.0.06 0.04 d.35 d.0.02 0.14 0.02 0.14 0.03 0.00 100 1.00 1.00 1.00 1.00 1.00	/ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
(8 Ratio Prati 0.03 0.016 0.017 0.066 0.04 0.035 0.002 0.14 <i>(R Ratio</i> 0.01 0.01 0.01 0.01 0.03 0.02 0.14 0.03 <i>(R Ratio</i> 0.26 0.48 0.09 53 0.45 0.03 0.34 0.24 0.03 <i>(R Ratio</i> 0.26 0.48 0.09 53 0.45 0.03 53 121 106 <i>(R Ratio</i> 0.61 4.77 491 4.67 491 4.67 542 157 538 121 106 <i>(R Ratio</i> 1.00 1.01 1.01 1.01 </td <td>ane Grp Cap (vph)</td> <td>224</td> <td>236</td> <td>198</td> <td>196</td> <td>206</td> <td>173</td> <td>125</td> <td>2109</td> <td></td> <td>116</td> <td>2133</td> <td>916</td>	ane Grp Cap (vph)	224	236	198	196	206	173	125	2109		116	2133	916
Ratio 0.01 0.00 0.01 0.01 0.02 0.03 0.58 0.60 0.34 0.24 0.03 <th0.03< th=""> 0.03 0.03 <th< td=""><td>//s Ratio Prot</td><td>0.03</td><td>c0.06</td><td></td><td>c0_07</td><td>90"0</td><td></td><td>0.04</td><td>c0.35</td><td></td><td>c0.02</td><td>0,14</td><td></td></th<></th0.03<>	//s Ratio Prot	0.03	c0.06		c0_07	90"0		0.04	c0.35		c0.02	0,14	
(ic Ratio 0.26 0.48 0.09 0.53 0.45 0.03 0.58 0.60 0.34 0.24 0.33 0.34 0.31 10.6 100 <	//s Ratio Perm			0.01			0 00						0.02
Inform Delay, of the method 477 491 467 491 486 46.0 54.0 54.2 15.7 53.8 12.1 106 noremental Delay, of the method 100	I/c Ratio	0 26	0.48	0.09	0.53	0.45	0.03	0.58	0.60		0.34	0.24	0.03
Progression Factor 100	Jniform Delay, d1	47.7	49.1	46.7	49.1	48.6	46.0	54.2	15.7		53.8	12.1	10.6
noremental Delay, d2 06 15 02 25 15 01 19 03 18 03 01 evel 13 50.6 46.9 51.6 50.1 46.1 63.6 23 107 90.7	Progression Factor	1.00	1.00	1.00	1.00	1 00	1.00	1 14	1.36		1.00	1.00	1.00
Delay (s) 48.3 50.6 46.9 51.6 50.1 46.1 63.6 21.8 55.6 12.3 10.7 evel of Service D D D D D D E C E B B Approach LOS D D D D D C E B B Approach LOS D D D D D C E B B Approach LOS D D HCM Level of Service C C B B Ansection Standary 0.55 HCM Level of Service C B B Ansection Capacity Utilization 0.55 Num (fost tume (s)) 12.0 B B A Ansection Capacity Utilization 61.5% ICU Level of Service B B A	ncremental Delay, d2	90	1.5	0,2	2,5	1.5 C	0.1	1.9	0.3		1.8	0.3	0.1
And Markan D D D D E C E B B Approach Delay (s) 90 501 240 151 <td>Delay (s)</td> <td>48.3</td> <td>50.6</td> <td>46.9</td> <td>51.6</td> <td>50.1</td> <td>46.1</td> <td>63.6</td> <td>21.8</td> <td></td> <td>55.6</td> <td>12.3</td> <td>10.7</td>	Delay (s)	48.3	50.6	46.9	51.6	50.1	46.1	63.6	21.8		55.6	12.3	10.7
Approach Delay (s) 49.0 50.1 24.0 15.1 Approach Delay (s) D D C B Approach LOS D C C B Contraction of the second process of the second proces of the second proces of the second	evel of Service	۵		0	۵		۵	ш	0		ц		B
Approach LOS D D C B Approach LOS D C B Approach LOS Approach LOS D D C B Approach LOS Approach LOS Approach C A Average Control Delay 26 9 HCM Level of Service C C Approach ratio 0.55 Los B Actuated Cycle Lengh (s) 12.0 and ersection Capacity Utilization 61.5% ICU Level of Service B Average Ferrica (mn) 15 Critical Lane Group C C C C C C C C C C C C C C C C C C C	Approach Delay (s)		49.0			50.1			24.0			15.1	
Messencian Summary 269 HCM Level of Service C C HCM Average Control Delay 269 HCM Level of Service C C C C C C C C C C C C C C C C C C C	Approach LOS		Δ			۵			υ			8	
TCM Average Control Delay 26.9 HCM Level of Service C CM Volume to Spacify ratio 0.55 Usin of fost time (s) 12.0 Acutator (application 12.00 Sum of fost time (s) 12.0 Arenseded Capacity Utilization 61.5% ICU Level of Service B Averages Period (inn) 15 Cilical Lane Group	Intersection Summary											1	i o h
ACM Volume to Capacity ratio 0.55 Cum of lost time (s) 12.0 Naterad Cyale Length (s) 12.0 Sum of lost time (s) 12.0 Alersection Capacity Utilization 61.5% ICU Level of Service B Analysis Period (mn) 15 Chitral Lane Group 5 Chitral Lane Group	HCM Average Control Delay			26.9	Ĥ	CM Level	of Servic	a		o			
Actuated Cycle Length (s) 120.0 Sum of lost time (s) 12.0 Actuated Cycle Length (s) 12.0 Actuated Cycle Level of Service B Analysis Period (mr) 15 15 Chilcal Lane Group 15 Chilcal Lane Group	HCM Volume to Capacity ratio			0.55		;	1						
Analysis Period (min) 15 IOU Level of Service 5 Analysis Period (min) 15 3. Critical Lane Group	Actuated Cycle Length (s)			120.0	ี่ภี ⊆	UT Of IOSI	t Convisor			0.21			
c Critical Lane Group	Analysis Period (min)			15	2	O LEVEL				2			
	critical Lane Group												

HCM Signalized Inte 94: Kottinger-Spring	& Firs	n Cap	acity A	nalysi	s						4/1	9/2013
	٩	t	1	4	ŧ	4	4	+	٩	۶	→	¥
Movement	EBI	E81	EBR	WBL	TBW	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	l, i		4	*	*	4		r	\$	1
Volume (vph)	87	43	99	17	35	37	39	1211	22	24	620	38
Ideal Flow (vphpl) Total Loot time (c)	1900	1900	1900	0061	300	1900	0061	0 E	0061	0 E	3.0	1200
tiotal cost unite (s)		1.00			1.00	1.00	1.00	1.00		1 00	1 00	
Frob. ped/bikes		0.97			1.00	0.92	1.00	1.00		1 00	66 0	
Flpb, ped/bikes		0.97			0.99	1.00	0.97	1.00		1.00	1.00	
Fri		0.95			1.00	0.85	1.00	1.00		1 00	66 0	
FII Protected		0 98			0.98	1.00	0.95	1.00		0.95	1.00	
Sald Flow (prot)		1433			1589	1276	1511	1628		1554	1609	
Fit Permitted		0.84			0.88	1.00	0.34	1.00		90-0	1.00	
Satd Flow (perm)		1227			1420	1276	546	1628		106	1609	1
Peak-hour factor, PHF	0.97	0.97	0.97	16.0	26.0	19.0	76.0	0.97	10.97	0.97	0.97	0.97
Adi Flow (vph)	90	44	68	18	36	38	40	1248	23	25	639	39
RTOR Reduction (vph)	0	16	Q	0	0	31	0	0	0	0	2	0
Lane Group Flow (vph)	0	186	0	0	54	2	40	1271	0	25	919	0
Confl. Peds. (#/hr)	36		52	24		36	8		36	36		36
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	2
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			00			2			9	
Permitted Phases	4			00		8	3	1411		40	1	
Actuated Green, G (s)		21.7			21.7	21.7	90.3	80.3		80.3	80.3	
Effective Green, g (s)		22.7			22.7	22.1	91.3	81.3		913	813	
Actualed g/C Ratio		0.19			0.19	0.19	0.76	0.76		0.76	0.76	
Clearance Time (s)		4			4	40	9	4.0		40	4	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		232			269	241	415	1239		81	1224	
v/s Ratio Prol								c0.78			0.42	
v/s Ratio Perm		c0.15			0.04	0.01	0.07			0.24		
v/c Ratio		0.80			0.20	0.03	0.10	1.03		0.31	0.55	
Uniform Delay, d1		46.5			41.0	39.7	3.7	14.4		4.5	5.9	
Progression Factor		1.00			1.00	1.00	0.63	1.25		2.44	2.53	
Incremental Delay, d2		17.7			0.4	0.1	0.1	21.4		9.5	1.8	
Delay (s)		64.2			41.4	39.7	2.5	39.3		20.4	16.8	
Level of Service		ш					A			U	æ	
Approach Delay (s)		64.2			40.7			38.2			16.9	
Approach LOS		ш			٥			0			æ	
Intersection Summary		l									Į.	
HCM Average Control Delav			34.1	Ī	CM Level	of Servic	e		U		C.	
HCM Volume to Capacity rati	0		86'0									
Actuated Cycle Lenglh (s)			120.0	ເຮ	um of lost	time (s)			9			
Intersection Capacity Utilizati	ы		100.8%	0	U Level o	f Service			G			
Analysis Period (min)			6									
C CUINCAL FAILS CLOUD												

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

95: Neal St & First											4/19/20	013 96: Bernal & Fir	rst St		Ż								4/19/	2013
	٩	t	*	\$	ŧ	~	*	+	•	۔ بر	• 		٩	t	۴	6	Ŧ	~	4	+	4	٨		1
Movement	EBL	EB1	EBR	WBL	WBT A	WBR	NBL	NBT N	BR S	BL S	BT S	8R Movement	EBL	EBT	EBR	WBL	WBT	WBR	NHI	NBT	NBR	SRI	SRT	CRR
Lane Configurations	*	4		r	.1		*	+ 1		*	4	Lane Configurations	14	:	*	۴	44		**	*	×	*	4	A NOT
Volume (vph)	98	121	66	37	58	23	48	166	36	9	005	69 Volume (vph)	599	519	152	116	234	27	303	921	517	68	566	212
Ideal Flow (vpnpl)	nost	1900	1900	1900	1900	1300	006	900 1	900 15	100 15	900 15	900 Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
I DIZI LOSI UME (S)	3.0	3.0		3,0	0° 7		1.U	3.0		3.0	3.0	Total Lost time (s)	30	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
	00.1	00.1		00.1	00 0		00.1	00		B	00.1	Lane Uli Factor	0.97	0.95	1.00	1 00	0.95		0.97	1.00	1.00	1.00	0.95	
ripp, ped/bikes	1.00	0.98		8	88.0		1.00	1.00	-	.00	00	Frpb, ped/bikes	1 00	1 00	0.87	1.00	1.00		1 00	1.00	0.79	1 00	0.99	
Flpb, ped/bikes	0.98	1.00		66 0	1 00		1.00	1 00	-	00	00	Flpb, ped/bikes	1.00	1,00	1 00	1.00	1.00		1 00	1,00	1.00	1.00	1.00	
E4	1.00	0.93		1.00	96		1.00	100	÷	00	88	Frt	1.00	1.00	0.85	1.00	0,98		1 00	1.00	0.85	1 00	0.96	
Fit Protected	0.95	1.00		0.95	1 00		0.95	1 00	0	95 1.	00.	Flt Protected	0.95	1,00	1.00	0.95	1.00		0.95	1,00	1,00	0.95	1.00	
Satd Flow (prot)	1530	1504		1540	1550		548 1	627	1	54 1£	504	Satd Flow (prot)	3547	3657	1419	1829	3585		3547	1925	1291	1554	3201	
Fit Permitted Satd Flow (nerm)	1030	1.00		0.30 480	1.00		0.33	1.00	0 1	08 1 20 20	00.00	Fit Permitted	0.95	1.00	1,00	0.95	1,00		0.95	1.00	1.00	0.95	1.00	
Doot have frates DUC	0 DE	200	100	200	200	0 DE	200	100					1100	1000		870	2000		1400	0761	128.1	1004	3201	1
Peak-rour lactor, PDF	5.0	CR 0	220	0.8D	66.0	0.95	CR D	0 56 0	0 00	90 0	0 66	Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0,78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vpn)	5	171	8	P) o	5	54	10	177	RS -	5	22	(3 Ad Flow (vph)	768	665	195	149	300	35	388	1181	663	87	726	272
KI UK Keduction (vpn)		07	-		71	э о						U RTOR Reduction (vph)	0	0	118	0	æ	0	0	0	175	0	31	0
Carle Group Flow (vpn)	5	200	Б 1	50 1	13		51	264		6	02	D Lane Group Flow (vph)) 768	665	11	149	327	0	388	1181	488	87	967	0
Conil Peds (#/nr)	n :		n :	n :		n :	<u>م</u>		2	L.C.		5 Confl. Peds. (#/hr)			72			12			96			24
Parking (#/hr)	9	9	9	9	10	10	10	10	10	10	10	10 Parking (#/hr)										10	10	9
Turn Type	Perm		L.	perm -		ı ل	erm		Pe	E		Turn Type	Prol		Perm	Prol			Prol		Perm	Prol		Ĩ
Protected Phases		4			~			2			9	Protected Phases	7	4		e	60		5	2		-	w	
Permitted Phases	4			80			5			9		Permitted Phases		4	4						2			
Actuated Green, G (s)	20.3	20.3		20.3	20.3		91.7	91.7	сл Г	1.7 9	1.7	Actuated Green, G (s)	23.0	25.3	25.3	13.9	16.2		19.0	52.8	52.8	10.0	43.8	
Effective Green, g (s)	21,3	21.3		21.3	21.3		92.7	92.7	6	2.7 9.	2.7	Effective Green, g (s)	24.0	27.3	27.3	14.9	18.2		20.0	54.8	54.8	11.0	45.8	
Actuated g/C Ratio	0 18	0.18		0.18	0.18		0.77	11.0	.0	0 11	11	Actuated g/C Ratio	0.20	0.23	0.23	0.12	0.15		0.17	0.46	0.46	0.09	0.38	
Clearance Time (s)	4,0	4 0		4.0	4.0		4.0	4.0		1.0	4.0	Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	Í	3.0	3.0	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	183	267		85	275		421 1	257	-	00 12	66,	Lane Grp Cap (vph)	502	832	323	227	544		591	879	590	142	1222	ľ
v/s Ratio Prot	0	0.13			0.05		U	0.78		.0	4	v/s Ralio Prot	c0.22	0.18		c0.08	c0.09		0.11	c0.61		0.06	0.30	
v/s Ratio Perm	0 0		-	0.08			0.09		0.	07		v/s Ratio Perm			0.05						0.38			
v/c Ratio	0.50	0.75		0.46	0.26	1	0.12	1.01	0	0 60	57	v/c Ratio	1.08	0.80	0.24	0.66	09.0		0.66	1.34	0.83	0.61	0.79	
Uniform Delay, d1	44.5	46.8		44.2	42.6		3.4	13,6		3.3	5.5	Uniform Delay, d1	48.0	43.8	37.9	50.1	47.5		46.8	32.6	28.5	52.4	32.9	
Progression Factor	1 00	1 00		1.00	1.00		1 00	1 00	2	08 2.	30	Progression Factor	1.00	1.00	1.00	1.00	1.00		0.71	0.63	0.38	1 00	1.00	
Incremental Delay, d2	2,1	112		3.9	0.5		9.0	26.8		2	1.6	Incremental Delay, d2	58.6	5.4	0.4	6.7	1.9		2.1	160.8	10.4	7.6	5.3	
Delay (s)	46.6	58 1	Ì	48.1	43.1		4.0	40.5		3.4 14	£.4	Delay (s)	106.6	49.2	38.2	56.8	49.4		35.5	181.4	21.1	60.1	38.2	
Level of Service	0	ш		٥	9		A	0		A	8	Level of Service	Ŀ		٥	ш	0		٥	ц.	U	ш	0	
Approach Delay (s)		54.8		ĺ	44.7			39.0		14	1.2	Approach Delay (s)		74.9			51.7			108.4			39.9	
Approach LOS					٥			٥			8	Approach LOS		щ			٥			ш			D	
Intersection Summany		1000							1		1011	Induse condition Commences				Ì								1
HCM Average Control Delav		ĺ	C VE	HCM	I aval of	Carvina			L			I Indian Contraction	Dolour		9 U2		The Level	of Caning			ļ			1
HCM Volume to Canacity ratio			900	2					2			HCM Molume to Cener	Uelay vity matio		1 1 1	ć	IN LEVEL		22		ų.			
Actuated Cycle Length (s)		÷	20.0	Sum	of lost tim	(s) et			50			Achisted Cycle Length	(c)		120.0	Ū	taof Joef	time (c)			100			
Intersection Canacity Utilization		06	12%		Pvpl of S	Antice			<u>,</u> ц			Intersection Canacity II	(J)		20 50	5 ⊆		f Contion						
Analysis Period (min)		5	15	2		-			1			Analysis Period (min)	Internet		15	2		ו מבו אורם			-			
c Critical Lane Group												c Critical Lane Group												

Intersection Summary HCM Average Control Delay HCM Volume to Capacity ratio Actuated Cyte Length (s) Intersection Capacity Utilization Analysis Period (min) c Oritical Lane Group

Delay (s) Level of Service Approach Delay (s) Approach LOS

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

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Synchro 7 - Report W-Trans

HCM Unsignalized Intersection Capacity Analysis 595: Vineyard & Adams

Accrete EB WBL NBL NBL Admentions 16 2 13 146 2 3 Admentions 166 2 13 146 2 3 Admentions 166 2 13 146 2 3 Sign Control Free 0.91 0.91 0.91 0.91 0.91 Sign Control 7 3 0.91 0.91 0.91 0.91 0.91 Sign Control 0.91 0		t	۴	5	ŧ	*	٩	
are Configurations 1	Movement	EBT	EBR	WBI	WBT	NBL	NBR	Call and the Call of the Call
Rume (eein) 186 22 13 146 26 32 Sign Control Free 500 031 031 031 031 Sign Control Free 500 033 031 031 031 Tark Hour Factor 031 031 031 031 031 031 Tark Hour Factor 031 031 031 031 031 031 Tare With(1) 13.0 13.0 13.0 13.0 13.0 13.0 Tare With(1) 13.0 13.0 13.0 13.0 13.0 13.0 Percent Blocks(1) 2.0 2 2 2 2 2 Sitem mitrat (reit) None None 2 2 2 2 Sitem mitrat (reit) Xitem mitrat (reit) None 2 2 2 2 Sitem mitrat (reit) Xitem mitrat (reit) Xitem mitrat (reit) 2 2 2 2 Xitem mitrat (reit) X	ane Configurations	**			* 3	¥		
Sign Control Free Stop State 0% 0% 0% State 130 130 130 130 Making Spead (fiel) 4.0 4.0 4.0 4.0 Atting Spead (fiel) 0.0 4.0 4.0 4.0 4.0 Atting Spead (fiel) None 2.2 2 2 2 2 Atting Spead (fiel) 0.0 4.1 6.4 5.56 5.56 5.56 5.56 5.56 5.56 5.56 5.56	/olume (veh/h)	186	22	13	146	26	32	
State 0% 0% 0% 0% eak Hour factor 031 031 031 031 031 eak Hour factor 201 231 031 031 031 eak Hour factor 201 231 031 031 031 eak Hour factor 201 13.0 13.0 13.0 13.0 13.0 eakertans 201 13.0 13.0 13.0 13.0 13.0 13.0 eakertans 201 13.0 13.0 13.0 13.0 13.0 13.0 13.0 eakertans None None None None 14.0 24.0 25.6 C. staget C. staget 14.1 6.4 5.2 5.6 </td <td>Sign Control</td> <td>Free</td> <td></td> <td></td> <td>Free</td> <td>Stop</td> <td></td> <td></td>	Sign Control	Free			Free	Stop		
ask hour fedor 031 031 031 031 031 doub watek (ph) 24 24 14 60 33 ane With (f) 130 130 130 130 130 are With (f) 2 2 2 2 2 gight lum fare (reh) An 40 40 40 A platem signel (f) An 249 445 266 C1 stage 1 cont vol C1 stage 1 cont vol 21 23 33 C1 stage 1 cont vol 2 4 45 266 C1 stage 1 cont vol C2 stage (s) 54 754 C2 stage (s) C3 33 54 754 C3 stage 1 cont vol C3 33 54 754 <	Grade	%0			%0	%0		
Joury flow rate (rph) 204 24 14 160 29 35 Joury flow rate (rph) 20 20 20 35 35 Jestifizans 20 20 30 130 130 Raiking Speed (lts) 4.0 4.0 4.0 4.0 4.0 Raiking Speed (lts) 4.0 4.0 4.0 4.0 4.0 Raiking Speed (lts) 4.0 4.0 4.0 4.0 4.0 Redian type None None None None None None X, platon unblocked 249 445 256 2.5 3.3 3.3 C.1 stage tom vol 22 3.5 3.3 3.3 3.3 3.3 C.1 stage tom vol 22 14.1 6.4 6.2 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
addestrians 20 20 20 Parler witht 13.0 13.0 13.0 13.0 Alking Speid 4.0 13.0 13.0 13.0 Ansing Watht 4.0 13.0 13.0 13.0 Percent Blockage 2 2 2 2 Sight um fare (with) None 10.0 13.0 13.0 Vector type None 20 26 26 C. Stage 1 conf uo 249 445 266 26 C. Stage 1 conf uo 249 445 266 26 C. Stage (s) 2 3 33 33 33 C. Stage (s) 2 3 33 33 33 C. Stage (s) 2 3 33 33 33 33 C. Stage (s) 2 3 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 <	Hourly flow rate (vph)	204	24	14	160	29	35	
ane Width (1) 13.0 13.0 13.0 13.0 13.0 Astiral Speed (1s) 2 2 2 2 2 Astiral Speed (1s) 4.0 4.0 4.0 4.0	Pedestrians	20			20	20		
Raking Speci (its) 4.0 4.0 4.0 Recent Blockege 2 2 2 2 Right mage ver) None 2 2 2 Right mage ver) None None 2 2 Right mage ver) None None 249 445 256 C. confiction 249 445 256 55 55 C. single (s) 2,19 445 256 55 55 C. single (s) 2,19 445 256 55	Lane Width (ft)	13.0			13.0	13.0		
Accerte Blockage 2 2 2 Occerte Blockage 2 2 2 Wellan Kype None None None Wellan Kype None 445 266 Constant woldsced 249 445 266 Constant woldsced 233 544 764 Macpacity (wehr)h) 1703 1703 56 95 One work woldsced 229 445 764 764 Macpacity (wehr)h) 229 445 764 764 One work woldsced 239 643 764 764	Walking Speed (fl/s)	4.0			4.0	4.0		
Right turn flare (reft) None Redien type None Vectora signal (ft) Anne Upstream signal (ft) 445 X, platoon unbooked 249 C, stage 1 onri vol 249 C, stage 2 onri vol 210 C, stage 1 onri vol 23 C, stage 1 onri vol 23 G, stage 1 onri vol 23 Magnechy (vehh) 23 Moute field 23 Moute fi	Percent Blockage	2			2	2		
Median type None None Vectian storage ver) Destan storage ver) Vectian storage ver) Distant storage ver) Destant storage ver) Vectian storage ver) Distant storage ver) Destant storage ver) Vectian storage ver) X, palson unblocked 249 445 256 C1, staget conf vol 243 445 266 C2, staget (s) 243 445 266 C2, staget (s) 223 44 564 764 C, staget (s) 223 175 64 764 Discton Lane EF (s) 223 175 64 764 Outwee Left 0 1 233 54 76 55 C, staget (s) 0 0 1 233 54 76 55 F (s) 0 0 1 233 54 76 55 F (s) 0 0 1 233 54 76 55 55 56 56 56	Right turn flare (veh)							
Wetlan storage ver) Upstream storage ver) Upstream storage ver) Upstream storage ver) C. conflicting volume C. conflicting volume C. stage 1 cont vol C. stage 2 cont vol C. stage 3 C. stage 4 C. stage 5 C. stage 6 C. stage 7 D. stage 7	Median type	None			None			
Upstream signal (1), 24,9 445 256 C, conficting volume 249 445 256 CJ, stage 2 contrival 2,19 445 256 CJ, stage (s) 4,1 6,4 6,2 CJ, stage (s) 2,2 3,5 3,3 M capacity (veh/h) 2,3 44 764 Obtion For text 1293 6,4 764 M capacity (veh/h) 2,3 4,3 764 Oction Lane 2,1 5,6 764 Outline Loft 2,1 764 764 Outline Loft 2,1 5,6 764 Outline Loft 2,1 5,6 764 Outline Loft 2,1 2,1 2,6 Outline Loft 2,3 6,3 3,5 S, S, S, H 1,10 0,0 0,1 Outline Loft	Median storage veh)							
X, platon unblocked 249 445 256 Cr, snager owne 249 445 256 Cr, stager contrivol 249 445 256 Cr, stager control 249 445 256 Cr, stager control 249 445 256 Cr, stager control 249 445 256 Cr, stager (s) 2,11 6,4 6,2 C, stager (s) 2,33 3,3 3,3 C, stager (s) 2,3 3,5 3,3 C, stager (s) 2,2 3,5 3,3 Directon, Lane 29 1293 5,4 7,4 Moume Left 0 1,4 2,3 4,4 Moume Left 0,1 0,1 0,1 1,1 Moume Left 0,1 0,0 0,1 1,1 Moume Left 0,0 0,1 1,1 2,2 Control Delay (s) 0,0 0,1 1,1 2,3	Upstream signal (ft)							
C. conflicting volume 249 445 256 C. 1, stage 1 cont vol C. 1, stage 1 cont vol 2.43 2.55 C. 1, stage 2 cont vol C. 1, stage 1 cont vol 2.43 2.55 C. 1, stage 1 cont vol C. 1, stage 1 cont vol 2.43 2.55 C. 1, stage 2 cont vol 2.19 4.1 6.4 6.2 C. 1, stage (s) 2.2 3.5 3.3 3.3 C. 2, stage (s) 2.2 3.5 3.3 5.4 7.64 M capacity (verhh) 1.293 5.44 7.64 5.5 5.4 7.64 M capacity (verhh) 1.293 5.44 7.64 5.5 5.4 7.64 Monter Total 2.2 3.5 5.4 7.64 5.5 5.4 7.64 Monter Total 2.1 1.70 1.23 6.4 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 5.64 <	oX, platoon unblocked							
CCI, stage 1 conf vol CC, stage 2 conf vol CC, stage 2 conf vol CC, stage 2 conf vol CC, stage (s) CL, stage (s)	vC, conflicting volume			249		445	256	
CCJ, stage 2 conf vol CCJ, stage 2 conf vol C, unblocked vol 249 445 256 C, stage (s) 4.1 6.4 6.2 C, stage (s) 4.1 6.4 6.2 C, stage (s) 2.3 3.5 3.3 C, stage (s) 2.2 3.5 3.3 C, stage (s) 2.2 3.5 3.3 C, stage (s) 2.2 3.5 3.3 S, Maperity (veh(h) 2.29 175 6.4 Oncount fait 2.29 175 6.4 Volume fait 2.29 175 6.4 Volume fait 2.3 6.4 7.64 Volume fait 2.9 6.4 7.64 Volume fait 2.9 6.4 7.64 Volume fait 2.0 0.3 6.1 2.0 Outcon Lane 2.29 175 6.4 7.64 Volume fait 2.0 0.3 0.1 2.0 Controt lane 2.3 6.4	vC1, stage 1 conf vol							
Cu, unblocked vol 249 445 256 C, single (s) 4,1 6,4 6,2 C, 2 single (s) 2,2 3,5 3,3 C, 2 single (s) 2,2 3,5 3,3 C, 2 single (s) 2,2 3,5 3,3 S noucle free % 99 95 95 S noucle free % 99 95 95 S Maperity (veh(h)) 1293 544 764 S Moutie Right 2,0 14 2,2 Outime Lotal 2,1 14 2,4 Outime Right 2,1 0 1,4 S H 7,4 2,4 2,4 Outime Right 2,1 0 1,4 Outime Right 0,1 1,2 2,4 Outime Right 0,1 1,8 2,44 Outime Right 0,1 1,8 2,44 Outime Right 0,1 1,1 2,54 Outime Right 0,1 1,8 2,54	/C2, stage 2 conf vol							
C, single (s) 4.1 6.4 6.2 (2. 2. 3 age (s) 2.	/Cu, unblocked vol			249		445	256	
C. 2 stage (s) C. 2 stage (s) 1 (s)	C, single (s)			4.1		6.4	6.2	
F(s) 2.2 3.5 3.3 0 queue free % 99 95 95 0 caure free % 99 95 95 0 caure free % 129 95 95 0 caure free % 129 95 95 0 course free % 129 175 64 0 course free % 0 14 29 0 course free % 0.1 0.1 203 643 54 1700 1233 643 56 6 down Bof % 0.1 0.1 0.1 112 6 down Bof % 0.0 0.1 112 5 ane LOS 0.0 0.1 112 5 ane LOS 0.0 0.1 112 5 Approach Delay (s) 0.0 0.1 112 5	C, 2 stage (s)							
0 queue free % 99 95 95 All capacity (vel/h) 1293 544 754 All capacity (vel/h) 1293 544 754 Outwine Total 229 175 64 Outwine Total 229 175 64 Outwine Total 223 64 64 Outwine Total 223 64 64 Outwine Total 223 64 64 Outwine Total 233 643 64 Outwine Total 201 14 28 64 Outwine Total 213 643 64 64 Outwine Total 01 0 7112 64 Outwine Total 01 01 11 64 Outwine Total 01 11 8	F (s)			2.2		3.5	3.3	
M capacity (veh/h) 1293 544 754 754 756 756 756 756 756 756 756 756 756 756	o0 queue free %			66		95	96	
Onection. Lane EB WB NB ND No ND	cM capacity (veh/h)			1293		544	754	
Advine Total 229 175 64 Advine 0 14 29 175 64 Advine 0 14 29 35 64 Advine 170 123 63 63 64 Advine 1700 123 63 63 64 Advine 1700 123 63 63 63 63 Advine 0.13 0.13 0.13 63 63 63 64<	Direction Lane #	58.1	VIB 1	NB 1		6		POWLOA STORAGE ST
Admine Left 0 14 29 Admine Right 24 0 35 Admine Right 24 0 35 Admine Right 1700 133 643 Admine Right 0.10 0.01 0.01 Dure Length SGrin (1) 0 1 8 Control Delay (s) 0.0 0.7 11.2 Control Delay (s) 0.0 0.7 11.2 Approach LOS B 8 6 Moreaden LOS B 11.2 11.2 Approach LOS 0.0 0.7 11.2 Antracestion Stantary 1 1 1 Antracestion Classify Utilization 3.9% ICU Level of Service A	Volume Total	229	175	64	ľ	Į		
volume Right 24 0 35 SH 1700 1293 643 Sch 1700 1293 643 Cubre Kopacity 0.1 0.1 0.1 Detect Length S5h 0 1 9 Control Delay (s) 0.0 0.7 1.2 Anne LOS A B Approach LOS B Mensacht CS A B Approach LOS B Mensacht CS A 13 Approach LOS A Mensacht Cost A B Approach LOS A	Volume Left	0	4	29				
SH 1700 1233 643 Adome to Expective 0.13 0.01 0.10 Adome to Expective 0.13 0.10 0.10 Adome to Expective 0.13 0.01 0.10 Adome to Expective 0.13 0.11 1.12 Ame LOS 0.0 0.7 1.12 Approach Delay (s) 0.0 0.7 1.12 Approach Delay (s) 0.0 0.7 1.12 Approach Delay (s) 0.0 0.7 1.2 Approach Delay (minary) 1.3 1.4 Anetrast Delay 1.3 1.4 1.4 Anetrast Delay 1.3 1.4 1.4	Volume Right	24	0	35				
Volume to Capacity 0.13 0.01 0.10 Outroe Length 55h (1) 0 1 8 Outroe Length 55h (1) 0 1 1.2 Outroe Length 55h (1) 0 0 1 11.2 Approach Delay (s) 0.0 0.7 11.2 Approach Delay (s) 0.0 0.7 11.2 Approach CS Merrice Charles (s) 0.0 0.7 11.2 Approach Delay (s) 0.7 11.2 Appr	SH	1700	1293	643				
Control Delay (s) 0 1 8 Control Delay (s) 0.0 0.7 11.2 Control Delay (s) 0.0 0.7 11.2 Approach Delay (s) 0.0 0.7 11.2 Approach LOS A B Approach Delay (s) 0.0 0.7 11.2 Approach LOS B B Approach Delay (s) 0.0 0.7 11.2 Anterschon Caperly Utilization 3.9% ICU Level of Service A A	Volume to Capacity	0.13	0.01	0.10				
Controt Delay (s) 0.0 0.7 1.2 Jame LOS A B Approach Delay (s) 0.0 0.7 1.1.2 Approach LOS A 1 2 Approach LOS 1.2 Approach LOS 1.4 Approach LOS 3.3.9% ICU Level of Service A A A A A A A A A B A A B A A B A <	Queue Length 95th (ft)	0	-	80				
Lane LOS A B Approach Delay (s) 0.0 0.7 11.2 Approach LOS B Average Delay Verange Delay Utilization 33.9% ICU Level of Service A Arakasis Period (min) 16	Control Delay (s)	0.0	0.7	11.2				
Approach Delay (s) 0.0 0.7 11.2 Approach LOS B Interescient Summary 1.8 Arense Delay Utilization 3.9% ICU Level of Service A Araktes Period (min) 13.9% ICU Level of Service A	Lane LOS		4	æ				
Approach LOS B Approach LOS B Antersection Summery 1 8 Average Delayary 1 8 Intersection Saperty Utilization 3.9% ICU Level of Service A Analysis Period (min) 13.9%	Approach Delay (s)	0.0	0.7	11.2				
httrisection Summary 18 Vereage Delay 18 Interestorin 23.9% ICU Level of Service A Aratistis Period (min) 13.9%	Approach LOS			8				
Verage Delay 18 Intersection Capacity Utilization 33.9% ICU Level of Service A Analysis Period (min) 15	Intersection Summary		ł					
Intersection Capacity Utilization 33.9% ICU Level of Service A Analysis Period (min) 15 15	Average Delay			1.8				
Analysis Period (min) 15	Intersection Capacity Utilization			33.9%	2	U Level o	d Service	A
	Analysis Period (min)			15				

HCM Unsignalized 597: Kottinger & A	d Interse dams	ction C	apacit	y Anal	ysis					
	٩	t	~	1	+	1	•	-	•	
Movement	EBL	EBT	EBR	NBL	WBT	WBR	NBL	181	NBR	
Lane Configurations		đ			4			4		
Sign Control		Stop			Stop			Stop		
Volume (vph)	20	20	15	L	36	10	17	35	13	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0
Hourly flow rate (vph)	25	62	19	9	44	12	21	43	16	
Direction, Lane #	EB1	WB 1	NB 1	SB 1					1000	101
Volume Total (vph)	105	<u>8</u> 8	80	51						
Volume Left (vph)	25	6	21	6						
Volume Right (voh)	đ	12	46	10						

4/19/2013

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tovement	EBI	EBT	EBR	MBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		÷			4			4			4	
ign Control		Stop			Stop			Stop			Stop	
(olume (vph)	2	20	15	L	36	10	17	35	13	1	24	10
eak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
lourly flow rate (vph)	25	62	19	9	44	12	21	43	16	o	30	12
irection, Lane #	EB 1	WB 1	NB 1	SB1								
'olume Total (vph)	105	65	80	51								Î
(olume Left (vph)	25	6	21	60								
(olume Right (vph)	19	12	16	12								
ladj (s)	-0.02	-0.01	0.00	-0.08								
leparture Headway (s)	4.2	4.3	4,3	4.3								
legree Utilization, x	0.12	0.08	0.10	0.06								
apacity (veh/h)	818	804	789	799								
control Delay (s)	7.8	7.7	8.7	9.2								
pproach Delay (s)	7.8	1.7	7,8	2.6								
pproach LOS	A	A	A	A								
Itersection Summary				1	An Liber					144		
Jelay	1		7,8			1						
ICM Level of Service			A									
ntersection Capacity Utilizati	Ion		26.9%	2	U Level o	of Service			A			
malvsis Period (min)			15									

Synchro 7 - Report W-Trans

Kotlinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects Conditions-No Project

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Morement EBR EBI E Lane Configurations Morement (vph)	1900 191 1900 191 1900 191 1900 191 1900 191 1900 191 1900 191 191	MBL 1100 3.0 3.0 3.0 3.0 3.0 1.00 1.00 1.00000000	1900 1900 30	A Name and	VIII VIII	↓ IBN	A NBR	<u>,</u> ₩	+ SBT	➤ S
Movement EBL EBT EB	EBR 70 1900 1900 1900 1900 1900 1900 1900 1	WBL 287 287 287 3.0 3.0 3.0 3.0 1.00 1.100 1.100 0.97 0.95 0.95 0.95 0.95 0.95 0.95 0.95	WBT 1137 1900 3.0	NBR 1	NBL	18N	NBR	SBL	SBT	SBR
Lane Configurations Yh +++ Lane Configurations 261 273 Ideal Flow (wph) 300 300 1300 Ideal Lost time (s) 3.0 3.0 3.0 Total Lost time (s) 3.0 3.0 3.0 Total Lost time (s) 3.0 3.0 3.0 Flane Uit Factor 0.97 0.91 0.97 Flane Uit Factor 0.97 0.97 0.97 Flane Uit Factor 0.93 0.96 0.97 Flane Lost time (s) 3.0 3.0 3.0 3.0 Flane Lost time (s) 0.0 0.95 1.00 0.97 Flane Lost time (s) 0.95 1.00 0.97 0.10 Flane Viction 0.95 1.00 0.95 1.00 0.95 Flane Viction 0.95 1.00 35.47 5055 0.00 0.05 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 2.87	1900 1900 17 12 12	287 287 3.0 3.0 3.0 3.0 3.6 1.00 1.00 1.00 3.5 47 0.95 0.95 0.95 0.95 0.95 0.95 0.95	1137 1900 3.0	1 0011	*	**	*	-		
Volume (vph) 261 273 Volume (vph) 261 273 Total frow (vph) 190 1900 1900 Total Loss time (s) 3.0 3.0 3.0 Lame Uil Factor 0.91 3.0 3.0 3.0 Fipb, pedbrikes 1.00 0.93 5.1 2.73 5.6 Fipb, pedbrikes 1.00 0.93 5.1 0.0 3.6 5.6	1900 1900 10 12 12	287 3.0 3.0 0.97 1.00 1.00 1.00 3547 0.95 0.95 0.95 0.95 0.95 0.95	1137 1900 3.0	0011		EL.	-		44	
ldeal Flow (vphp) 1900 1900 11 Land Last time (s) 3.0 3.0 Land Last time (s) 3.0 3.0 Frb, pedbikes 1.00 0.99 Flb, pedbikes 1.00 1.00 Flb, pedbikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1900 77 12 12	1900 3.0 0.97 1.00 1.00 0.95 3547 0.95 0.95 0.95 0.95 0.95 0.95	3.0	0711	154	384	133	210	316	177
Total Lost time (s) 3.0 3.0 3.0 Fipb. perchikes 0.91 0.91 Fipb. perchikes 1.00 0.97 Fipb. perchikes 1.00 0.97 Fipb. perchikes 1.00 0.97 Fip . 1.00 0.97 Fip . 1.00 0.97 Fip . 1.00 0.97 Fip . 1.00 0.97 Stat. Flow (prot) 35.47 5065 Fip . 0.95 1.00 Satd. Flow (prot) 35.47 5065 Pathermited 0.95 1.00 AdJ. Flow (prot) 35.47 5065 Pathermited 0.95 1.00 AdJ. Flow (prot) 2.87 307 Add. Flow (prot) 2.87 307 Add. Flow (prot) 2.87 307 Confl. Pets. (if/n) Prot 7 Turn Type Prot Prot Protected Phases 1 6	0.01 17 12 12	3.0 0.97 1.00 1.00 1.00 3547 0.95 0.95 0.95 0.95 0.95	3.0	1900	1900	1900	1900	1900	1900	1900
Lare Uk Factor 0 97 0 91 Fipt, pedbiskes 1 00 0 99 Fipt, pedbiskes 1 00 0 99 Fipt, pedbiskes 1 00 0 99 Fipt, pedbiskes 1 00 0 97 Fipt Protected 0 95 1 00 Sald, Flow (pm) 3547 5065 Sald, Flow (pm) 3547 5065 Sald, Flow (pm) 3547 5065 Sald, Flow (pm) 3547 5065 Call Peter, Peter 0 99 0 91 0 Adj, Flow (pm) 287 300 Adj, Flow (pm) 287 300 Call Peter (fint) 287 300 Adj, Flow (pm) 287 307 Call Peter (fint) Prot Protected Phases 1 6 Protected Phases 1 6 Protected Phases 1 6 Protected Phases 1 6 Adj, Adj (g) 8.0 36.0	0.01 17 12 12	0.97 1.00 1.00 0.95 0.95 0.95 0.95 0.95 0.95		0.0	3.0	3.0	3.0	3.0	3.0	
Frips, peot/bikes 1.00 0.99 Fips, peot/bikes 1.00 1.00 Fip Protected 0.95 1.00 Said, Flow (prot) 3547 5065 Said, Flow (prot) 3547 5065 Peak-hour factor, PHF 0.91 0.91 Adj, Flow (prot) 3547 5065 Peak-hour factor, PHF 0.91 0.91 Adj, Flow (wph) 287 5065 Pask-hour factor, PHF 0.91 0.91 Adj, Flow (wph) 287 5065 Pask-hour factor, PHF 0.91 0.40 Adj, Flow (wph) 287 5065 Post factor for (wph) 287 307 Confl. Peds (#Inr) 287 307 Turn Type Prot Prot Protucted Phrases 1 6	0 12 12 0 12	1.00 1.00 1.00 3547 3547 0.95 0.95 0.95	0.95	1.00	1.00	96.0	1.00	0.97	0.95	
Flpb. pectones 1.00 1.00 Fit Protected 0.93 1.00 Satut, Flow (pont) 3547 3065 Fit Protected 0.95 1.00 Satut, Flow (pont) 3547 3065 Fit Protected 0.95 1.00 Satut, Flow (perm) 3547 3065 Peak-hour factor 0.95 1.00 Adj, Flow (vpn) 287 300 Adj, Flow (vpn) 287 300 Adj, Flow (vpn) 287 300 Adj, Flow (vpn) 287 307 Confl. Peck, Jenny 287 307 Protected 287 307 Protected 287 307 Confl. Peck, Jenny 287 337 Confl. Peck, Jenny 287 337 Turn Type Protected 1 6 Protected Protected 36.0 36.0	0 0 12 0 12	1.00 1.00 0.95 3547 3547 0.95 0.95	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
Fit Protected 0.99 Fit Protected 0.99 Sald, Flow (prot) 3547 5065 Fit Permitted 0.95 100 Sald, Flow (prot) 3547 5065 Satd, Flow (prot) 3547 5065 Satd Flow (prot) 287 300 RTOR Reduction (prot) 287 307 Conf. Pets. (#hr) 287 307 Co	0 0 12 0 12	1.00 0.95 0.95 0.95 0.95 0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
FIF Protected 0.95 1.00 Statut Flow (pnot) 3547 5065 Statut Flow (pnot) 3547 5065 Zatut Flow (perm) 3547 5065 Peak-hour factor: PHF 0.91 0.91 Adj, Flow (perm) 3547 5065 Adj, Flow (vph) 287 5065 Adj, Flow (vph) 287 5065 Adj, Flow (wph) 287 337 Confit Peds (#hr) 287 337 Cunfit Peds (#hr) 287 337 Actuated Chreases 1 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.95 3547 0.95 3547 0.91	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Sald. Flow (prot) 3547 5065 Fit Permitted 055 Sald. Flow (prem) 055 100 Sald. Flow (prem) 055 100 Adj. Flow (vph) 287 300 Adj. Flow (vph) 287 307 Lane Group Flow (vph) 287 337 Confl. Peds. (#hr) 287 337 Turn Type 7 Protech Phases 1 6 Protech Phases 1 6 Advuated Green, G (s) 8.0 36.0	0 0 0 12 0 0 12	3547 0.95 3547 0.91	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
FI Permitted 0.95 1.00 Satid Chew (perm) 3.547 5066 Adi, Flow (prp) 3.547 5066 Adi, Flow (wph) 3.547 5066 Adi, Flow (wph) 2.87 300 Adi, Flow (wph) 2.87 307 Conf. Peta. 0 40 Lane Group Flow (wph) 2.87 337 Conf. Peta. 2.87 3.37 Turn Type Protected Phases 1 Protected Phases 1 6 Actuated Green, G (s) 8.0 36.0	0.91 77 0 12	0.95 3547 0.91	3657	1599	1829	3657	1599	3547	3460	
Satur Elew (perm) 3547 5065 Peak hour factor, PHF 0.31 0.91 0 Adj, Flow (vph) 287 300 Adj, Flow (vph) 287 337 Lame Group Flow (vph) 287 337 Confl. Peds. (#hr) 287 337 Tum Group Flow (vph) 287 337 Actuated Phases 1 6 Pertilited Phases 1 6 Actuated Green, G (s) 8.0 36.0	0.91 77 0 12	3547	1.00	1,00	0.95	1.00	1.00	0.95	1.00	
Peak-hour factor. PHF 0.91 0.91 0 Adi, Flow (tybh) 287 300 Adi, Flow (tych) 287 300 Larro Freduction (tych) 287 337 Confl. Peds. (#hr) 287 337 Turn Type Protected Phases 1 6 Protected Phases 1 6 Actuated Green, G (s) 8.0 36.0	091 77 0 12	16.0	3657	1599	1829	3657	1599	3547	3460	
Adj, Flow (vpn) 287 300 R TOR Reduction (vph) 0 40 Lane Group Flow (vph) 287 337 Confl. Peds. ((i/m) 287 337 Turn Type Protect Phases 1 6 Protect Phases 1 6 Actuated Green, G (s) 8.0 36.0	2 ⁰ 0		0.91	16.0	0.91	0.91	0.91	0.91	0.91	0.91
RTOR Reduction (vph) 0 40 Lane Group Flow (vph) 287 337 Lane Group Flow (vph) 287 337 Turn Type Protein Flow (vph) 287 337 Protected Phases 1 6 6 Protected Phases 1 6 6 Actuated Green, G (s) 8.0 36.0 36.0	002	315	1249	1240	169	422	146	231	347	195
Lane Group Flow (vph) 287 337 Conf. Peds. (#/hr) 287 337 Tum Type Protect Phases 1 6 Protected Phases 1 6 Actuated Green. G (s) 8.0 36.0	12	0	0	0	0	0	0	0	98	0
Confl. Peds. (#hr) Tum Type Prot Protected Phases 1 6 Actuated Green. G (s) 8.0 36.0	12	315	1249	1240	169	422	146	231	456	0
Turn Type Prot Protacted Phases 1 6 Permitted Phases 3.0 36.0 Actuated Green, G (s) 8.0 36.0				36			36			
Protected Phases 1 6 Permitted Phases 8.0 36.0 Actuated Green, G (s) 8.0 36.0		Prot		Free	Prot	1	Free	Prot		
Permitted Phases Actuated Green, G (s) 8.0 36.0		S	2		e	00		Ł	4	
Actuated Green, G (s) 8.0 36.0				Free			Free			
		12.4	40.4	100.0	10.0	20.9	100.0	9.7	20.6	
Effective Green, g (s) 9.0 40.0		13.4	44.4	100.0	11.0	23.9	100.0	10.7	23.6	
Actuated g/C Ratio 0.09 0.40		0.13	0.44	1.00	0.11	0.24	1.00	0.11	0.24	
Clearance Time (s) 4.0 7.0		4.0	2.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s) 3.0 3.0		3.0	3.0		3.0	3.0		3.0	3.0	0
Lane Grp Cap (vph) 319 2026		475	1624	1599	201	874	1599	380	817	
v/s Ratio Prot 0.08 0.07		0.09	0.34		0.09	0.12		0.07	0.13	
v/s Ratio Perm				c0.78			0.09			
v/c Ratio 0.90 0.17		0.66	0.77	0.78	0.84	0.48	0 0	0.61	0.56	
Uniform Delay, d1 45.1 19.3		41.2	23.5	0.0	43.6	32.7	0.0	42.6	33.6	
Progression Factor 0.91 1.04		1.00	1.00	1.00	1.00	1.00	1 00	1 00	1.00	
Incremental Delay, d2 26.2 0.2		3.5	3.6	3.7	25.9	0.4	0.1	2.7	0.8	
Delay (s) 67.0 20.2		44.6	27.0	3.7	69.5	33.2	0.1	45.4	34.4	
Level of Service E C			U	A	ш	U	A		o	
Approach Delay (s) 40.4			18.7			34.9			37.7	
Approach LOS D			89			U			0	
Intersection Summary										
HCM Average Control Delav	27.0	HC	M Level o	of Service			C			1
HCM Volume to Capacity ratio	0.78						,			
Actuated Cycle Length (s) 10	100.0	Sur	n of lost I	ime (s)			0.0			
Intersection Capacity Utilization 75.	5 1%	ICU	Level of	Service			۵			
Analysis Period (min)	15									
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

30: Vineyard-Tawny 8	& Berr	a									4/1	9/2013
	٩	t	r	4	ŧ	~	1	+	Ł	۶	→	¥
Movement	Ē	183	EBR	WBL	18M	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4			د ا	R	*	44		*	<u>ب</u>	
Volume (vph)	135	e	39	88	69	173	28	311	14	84	604	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3,0	3.0	
Lane Util. Factor	0.95	0,95			1,00	1.00	1.00	0.95		1 00	1 00	
Frpb, ped/bikes	1.00	0,99			1.00	1 00	1.00	1 00		1.00	0.99	
Flpb, ped/bikes	1 00	1.00			1.00	1.00	1 00	1.00		1.00	1.00	
Fil	1 00	0,93			1.00	0.85	1.00	0.99		1.00	0.97	
Fit Protected	0.95	0,98			0,97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prol)	1477	1401			1588	1391	1829	3634		1829	1848	
FIt Permitted	0.95	0.98			0.97	1.00	0.08	1.00		0.50	1.00	
Sald. Flow (perm)	1477	1401			1588	1391	159	3634		696	1848	
Peak-hour factor, PHF	0.87	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	155	4	46	104	69	204	33	366	16	66	142	202
RTOR Reduction (vph)	0	33	0	0	0	104	0	m	0	0	0	0
Lane Group Flow (vph)	105	67	0	0	173	100	33	379	0	66	904	0
Canil Peds (#/hr)			e	e			4					4
Parking (#/hr)	10	10	10	10	10	10						
Turn Type	Split			Split		Perm	Perm			Perm		ľ
Protected Phases	4	4		en	e			2			9	
Permitted Phases						с	2			9		
Actuated Green, G (s)	13.1	13.1			14.1	14.1	46.5	46.5		46.5	46.5	
Effective Green, g (s)	15,1	15.1			16.1	16.1	48.5	48.5		48.5	48.5	
Actuated g/C Ratio	0.17	0.17			0.18	0,18	0.55	0.55		0.55	0.55	
Clearance Time (s)	5.0	5.0			5,0	5,0	5.0	5.0		5,0	5.0	
Vehicle Extension (s)	3.0	3.0	ł		3.0	3.0	3.0	3.0		3.0	3.0	ł
Lane Grp Cap (vph)	251	239			288	252	87	1987		530	1010	
v/s Ratio Prot	c0.07	0.05			c0.11			0.10			c0.49	
v/s Ratio Perm						0.07	0,21			0.10		
v/c Ratio	0.42	0.28			0.60	0.40	0.38	0.19		0.19	0.89	
Uniform Delay, d1	32.9	32.1			33,3	32.0	11.5	10.2		10.1	17.8	
Progression Factor	1.00	1.00			1.00	1.00	1 00	1 00		1.00	1.00	
Incremental Delay, d2	1,1	0.6			3.5	10	2.8	0.0		0,2	10.3	
Delay (s)	34.0	32.7			36.9	33.0	14.2	10.2		10.3	28.1	
Level of Service	o	o				o	æ	80		8	ပ	
Approach Delay (s)		33.4			34.8			10.5			26.4	
Approach LOS		U			o			89			υ	
Intersection Summary			0.000			1	2	l				F
HCM Average Control Delay			25.4	Ħ	M Level	of Servic	0		υ			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			88,7	Su	m of last	lime (s)			9.0			
Intersection Capacity Utilization			72.0%	G	J Level o	f Service			C			
Analysis Period (min)			5									
c ofilitial taria aroup												

Kotlinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

> Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects with Planned TIF Improvements plus Project Conditions

Acvement ane Configurations	٩				,	•						•
Accement ane Configurations		t	p	1	ţ	1	*	•	•	٠	-	¥
ane Configurations	183	EBT	FBR	WBI	WBT	WBR	NBI	18N	NBR	SBL	SBT	SBR
		+		*	4	*	F	4			\$	*
(olume (vph)	22	102	91	141	218	62	46	434	99	42	1013	160
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
ane Util, Factor	1.00	1.00	1.00	1 00	1 00	1 00	1.00	0.95		1.00	0.95	1 00
rpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1 00	0.96
Ipb, ped/bikes	1.00	1.00	1.00	1.00	1 00	1.00	1.00	1.00		1.00	1 00	1.00
h	1.00	1.00	0.85	1.00	1 00	0.85	1.00	0.98		1.00	1.00	0,85
It Protected	0.95	1.00	1.00	0.95	1 00	1 00	0,95	1.00		0.95	1 00	1.00
atd Flow (prot)	1829	1925	1614	1554	1636	1372	1829	3558		1829	3657	1577
It Permitted	0.95	1.00	1.00	0.95	1 00	1 00	0,95	1.00		0.95	1 00	1 00
satd. Flow (perm)	1829	1925	1614	1554	1636	1372	1829	3558		1829	3657	1577
eak-hour factor, PHF	06.0	0 90	06.0	06'0	06.0	0.90	0.90	0:00	06.0	06'0	0.90	0.90
vdj Flow (vph)	24	113	101	157	242	69	51	482	73	47	1126	178
TOR Reduction (vph)	0	0	87	0	0	28	0	σ	0	0	0	83
ane Group Flow (vph)	24	113	14	157	242	41	51	546	0	47	1126	96
Confl Peds (#/hr)			-			-			6			4
Parking (#/hr)				10	10	10				1		
urn Type	Split		Perm	Splil		Регт	Prot			Prot		Perm
Protected Phases	4	4		en	e0		-	9		S	2	
Permitted Phases			4			e						2
ctuated Green, G (s)	13.1	13.1	13.1	18.7	18.7	18.7	6.6	46.0		5.2	44.6	44.6
(ffective Green, g (s)	14.1	14.1	14.1	19.7	19.7	19.7	2.6	48.0		6.2	46.6	46.6
Actuated g/C Ratio	0.14	0.14	0.14	0.20	0.20	0.20	0.08	0.48		90.06	0.47	0.47
Clearance Time (s)	4 0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4 0	50	5,0
(ehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1	3.0	3.0	3.0
ane Grp Cap (vph)	258	271	228	306	322	270	139	1708		113	1704	735
/s Ratio Prot	0.01	c0.06		0.10	c0 15		0.03	0 15		c0.03	c0.31	
/s Ratio Perm			0.01			0.03						0.06
/c Ratio	0.09	0.42	0.06	0.51	0.75	0.15	0.37	0.32		0.42	0.66	0.13
Jniform Delay, d1	37.4	39.2	37.2	35.9	37,8	33.2	43.9	16.0		45.2	20.6	15.2
Progression Factor	1.00	1_00	1.00	1.00	1.00	1.00	1.39	0.65		1.48	0.46	0.45
ncremental Delay, d2	0.2	1.0	0.1	1.5	9.5	0.3	1.5	0.5		2.0	1.7	0.3
Jelay (s)	37.5	40.2	37.3	37.3	47.4	33.5	62.5	10.8		0.69	11.2	
evel of Service		0				o	ш	B :		ш	8	A
Approach Delay (s)		38.7			41.9			15.1			12.6	
Approach LOS		٥			٥			æ			æ	
nlesection Summary							11 T			No.		
HCM Average Control Delay			20.7	¥	M Level	of Servic			U			
HCM Volume to Capacity ratio			0.61									
Actualed Cycle Length (s)			100.0	N.S.	m of last	time (s)			12.0			
ntersection Capacity Utilization			60.5%	<u>כ</u>	U Level (of Service			D			
Vnalysis Period (min)			2									
Critical Larie Group												

HCM Signalized Intersection Capacity Analysis

Momentari Els Els Mai	94. Nouiriger-Spring	N L N											
Momentation EBI EBI <t< th=""><th></th><th>٩</th><th>t</th><th>۴</th><th>۶</th><th>ţ</th><th>4</th><th>4</th><th>+</th><th>•</th><th>۶</th><th>-+</th><th>7</th></t<>		٩	t	۴	۶	ţ	4	4	+	•	۶	-+	7
Lare Configurations Image Image </th <th>Movement</th> <th>田田</th> <th>EBT</th> <th>EBR</th> <th>WBL</th> <th>NBT</th> <th>WBR</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th>	Movement	田田	EBT	EBR	WBL	NBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movume (vpi) 2 11 26 83 61 56 106 100 </td <td>Lane Configurations</td> <td></td> <td>4</td> <td></td> <td></td> <td>tr.</td> <td>*-</td> <td>K.</td> <td>et</td> <td></td> <td>*</td> <td>,±</td> <td></td>	Lane Configurations		4			tr.	*-	K.	et		*	,±	
Teal File Teal File <thteal file<="" th=""> <thteal file<="" th=""> <tht< td=""><td>Volume (vph)</td><td>2</td><td>11</td><td>-</td><td>26</td><td>83</td><td>61</td><td>25</td><td>492</td><td>53</td><td>64</td><td>1066</td><td>109</td></tht<></thteal></thteal>	Volume (vph)	2	11	-	26	83	61	25	492	53	64	1066	109
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	Total Lost time (s)		3.0			30	3.0	3.0	3.0		3.0	3.0	
	Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
	Frpb, ped/bikes		66.0			1.00	0.93	1.00	66 0		1.00	0.99	
Find 039 100 036 100 101 101 101 101 101 101 101 101 101 101 <td>Flpb, ped/bikes</td> <td></td> <td>0.99</td> <td></td> <td></td> <td>0,98</td> <td>1.00</td> <td>1.00</td> <td>1_00</td> <td></td> <td>0.97</td> <td>1.00</td> <td></td>	Flpb, ped/bikes		0.99			0,98	1.00	1.00	1_00		0.97	1.00	
Fit Protected 039 100 035 100 035 100 035 100 1352 141 1554 1500 <th< td=""><td>Fri</td><td></td><td>0.99</td><td></td><td></td><td>1 00</td><td>0.85</td><td>1.00</td><td>0,99</td><td></td><td>1.00</td><td>0.99</td><td></td></th<>	Fri		0.99			1 00	0.85	1.00	0,99		1.00	0.99	
Said Flow (prof) 1592 1591 1292 1554 1594 1500 <th1500< th=""> 1500 1500</th1500<>	FIt Protected		0.99			0.99	1.00	0.95	1 00		0.95	1.00	
Fit Permitted 097 109 109 100 <	Satd Flow (prot)		1592			1591	1292	1554	1594		1500	1596	
Salet Flow (perm) 158 1502 1292 141 1594 051 031	FIL Permitted		0.97			0.93	1.00	0.09	1_00		0.40	1.00	
Peak-hour factor, PHF 031	Satd. Flow (perm)		1558			1502	1292	141	1594		628	1596	
Adj. Few (rph) 2 12 1 29 91 67 27 54 56 70 1171 120 Lane Group (rph) 0 1 0 0 0 27 0 2 0 2 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 2 0 0 10 <	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
RTOR Reduction (vph) 0 1 0 1 0 1 0 2 0 2 0 2 0 2 0 2 0 10	Adj. Flow (vph)	2	12	-	29	91	67	27	541	58	20	1171	120
Lane Group Flow (vph) 0 14 0 120 10 <td>RTOR Reduction (vph)</td> <td>0</td> <td>-</td> <td>0</td> <td>0</td> <td>0</td> <td>22</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> <td>2</td> <td>0</td>	RTOR Reduction (vph)	0	-	0	0	0	22	0	2	0	0	2	0
Confl. Peds. (#hr) 36 24 24 36	Lane Group Flow (vph)	0	14	0	0	120	10	27	265	0	10	1289	0
Parking (#hr) 10	Confl Peds (#/hr)	36		24	24		36	36		36	36		36
	Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Actualed Green, G (s) 4 8 2 6 6 Permitted Plases 4 13.7 13.7 13.7 73.3 78.3	Turn Type	Perm			Perm		Perm	Perm			Perm		
Permitter Phases 4 8 2 783	Protected Phases		4			80			2			9	
Actualed Green, G (s) 13.7 13.7 13.7 13.7 13.7 13.7 13.3 78.3	Permitted Phases	4			80		80	2			9		
Filterine Green, g(s) 14.7 10.7 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7	Actuated Green, G (s)		13.7			13.7	13.7	78.3	78.3		78.3	78.3	
Actualed gC Ratio 0.15 0.15 0.19 0.71 0.71 0.71 0.71 0.71 0.74 1.02 0.71 0.73 0.73 20 0.73 20 0.73 20 0.71 1.02 20 0.73 20 0.71 1.02 20 1.02 217 71 74 1.0	Effective Green, g (s)		14.7			14.7	14.7	79.3	79.3		79.3	19.3	
Vehicle Extension (s) 4.0	Actualed g/C Ratio		0.15			0.15	0.15	0.79	0.79		0.79	0.79	
Vehicle Extension (s) 3.0 <th3.0< th=""> 3.0 <th3.0< th=""></th3.0<></th3.0<>	Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4 0	40	
Lane Gr, Cap (vph) 229 221 130 112 1264 498 1266 vs Railo Port 0.01 0.31 0.31 0.31 0.31 0.01 vs Railo Perm 0.01 0.35 0.54 0.05 0.44 1.02 vs Railo Perm 0.01 0.05 0.54 0.05 0.4 0.11 0.01 vs Railo Perm 0.01 0.05 0.54 0.05 0.24 0.14 1.02 Vc Railo 0.06 0.54 0.05 0.24 0.14 1.02 Incremental Deay, ct 0.1 2.7 0.1 4.7 0.14 1.02 Delay (s) 36.8 4.2 36.8 9.0 7.4 1.7 49.8 Approach Delay 35 36.7 26 3.4 0.5 2.17 Approach Delay 36.8 4.03 7.4 1.7 49.8 0.5 Approach Delay 36.8 4.7 7.4 1.7 49.8	Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
vis Ratio Prot 0.37 0.081 0.081 vis Ratio Prot 0.01 0.19 0.03 0.01 0.19 0.01 0.14 102 Vic Ratio 0.01 0.01 0.19 0.03 0.11 0.14 102 Vic Ratio 0.01 0.01 0.19 103 0.14 102 Uniform Delay, d1 36.7 26 34 0.24 047 0.14 102 Uniform Delay, d1 36.7 26 34 24 104 104 Incremental Delay, d2 36.8 36.7 26 34 24 104 Delay (s) 36.8 4.22 36.8 9.0 7.4 1.7 49.9 Approach Delay 0.3 4.0 0.3 7.4 1.7 49.3 Approach Delay 0.3 50.6 0.3 6.0 7.4 1.7 49.3 Approach Delay 0.3 0.3 7.4 1.7 49.3 7.4 7.3 <td>Lane Grp Cap (vph)</td> <td></td> <td>229</td> <td></td> <td></td> <td>221</td> <td>190</td> <td>112</td> <td>1264</td> <td></td> <td>498</td> <td>1266</td> <td></td>	Lane Grp Cap (vph)		229			221	190	112	1264		498	1266	
vis Ratio Not Ratio 0.01 0.03 0.01 0.19 0.11 Vis Ratio 0.06 0.54 0.47 0.11 1.02 Uniform Delay, d1 36.7 39.5 36.7 26 4.47 1.02 Uniform Delay, d2 0.1 4.7 1.2 0.51 2.17 Progression Factor 1.00 1.00 1.00 1.01 0.51 2.17 Incremental Delay, d2 0.1 4.7 1.2 0.5 2.73 Incremental Delay, d2 0.1 4.7 1.2 0.5 2.73 Incremental Delay, d2 36.8 40.3 7.4 1.7 49.8 Approach Delay (s) 36.8 40.3 7.4 1.7 49.8 Approach Delay (s) 36.8 40.3 7.4 4.73 4.73 Approach Delay (s) 0 7.4 1.7 4.9 D Approach Delay (s) 0 7.4 1.7 4.73 Approach Delay (s) 0.9 <	v/s Ratio Prot								0.37			c0.81	
vic Ratio 0.06 0.54 0.74 0.14 1.02 Progression Factor 1.00 100 100 103 181 0.51 2/14 Progression Factor 1.00 100 100 103 181 0.51 2/17 Progression Factor 0.01 2.7 0.1 4/7 1.2 0.5 2/3 Incremental Delay, d2 0.3 36.8 9.0 7.4 1.7 49.8 Deley(s) 36.8 4.0.3 7.4 1.7 49.8 7.4 4.7 Approach Delay 0.5 36.6 4.0.3 7.4 4.7 3.5 Approach LOS 0.7 4.7 1.2 0.5 2.73 4.7 Approach LOS 36.8 4.0.3 7.4 4.7 3.5 4.7 4.7 3.5 Approach LOS 0.7 4.7 1.2 4.7 4.7 3.5 Approach LOS 0.7 4.7 1.7 4.7 3.5 <td>v/s Ratio Perm</td> <td></td> <td>0.01</td> <td></td> <td></td> <td>c0_08</td> <td>0.01</td> <td>0_19</td> <td></td> <td></td> <td>0.11</td> <td></td> <td></td>	v/s Ratio Perm		0.01			c0_08	0.01	0_19			0.11		
Uniform Delay, (t) 36.7 36.7 2.6 3.4 2.4 10.4 Incremental Delay, (z) 1.00 1.00 1.00 1.00 1.51 2.17 Incremental Delay, (z) 36.8 9.0 7.4 1.7 49.8 Delay (s) 36.8 4.22 36.8 9.0 7.4 1.7 49.8 Approach Delay (s) 36.8 4.03 7.4 1.7 49.8 Approach Delay (s) 36.8 4.03 7.4 1.7 49.8 Approach Delay (s) 0 0 5.7 4 7.4 7.3 Approach Delay (s) 0 0 3.6 4.03 7.4 7.3 7.4 7.3 Approach Delay (solid) 0 0 3.4 0 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 7.4 7.3 </td <td>v/c Ratio</td> <td></td> <td>0.06</td> <td></td> <td></td> <td>0.54</td> <td>0.05</td> <td>0 24</td> <td>0.47</td> <td></td> <td>0.14</td> <td>1.02</td> <td></td>	v/c Ratio		0.06			0.54	0.05	0 24	0.47		0.14	1.02	
Progression Factor 1.00 1.00 1.00 1.01 0.51 2.17 Incremental Delay (a) 0.1 2.7 0.1 4.7 1.2 0.51 2.17 Delay (s) 0.1 2.7 0.1 4.7 1.2 0.5 2.73 Delay (s) 0.1 2.7 0.1 4.7 1.2 0.5 2.73 Delay (s) 0.0 1.2 36.8 4.0.3 7.4 1.7 4.9 4.73 Approach Delay (s) 0.5 0.1 4.0.3 7.4 4.73 4.73 Approach Delay (s) 0.5 0.1 0.3 0.1 A.473 4.73 4.73 Approach Delay 0.3 0.3 0.1 0.3 0.1 4.73 4.73 4.73 4.73 Actuated Control Delay 0.3 0.4 0.3 0.43 4.73 4.73 4.73 4.73 4.73 4.73 4.73 4.73 4.73 4.73 4.73 4.73 <td< td=""><td>Uniform Delay, d1</td><td></td><td>36.7</td><td></td><td></td><td>39.5</td><td>36.7</td><td>2.6</td><td>3.4</td><td></td><td>24</td><td>10.4</td><td></td></td<>	Uniform Delay, d1		36.7			39.5	36.7	2.6	3.4		24	10.4	
Incremental Delay, d2 0.1 0.1 0.1 4.7 1.2 0.5 27.3 Delay (s) 0.6 0.1 4.7 1.2 0.5 27.3 Delay (s) 0.6 0.7 4 1.7 4.9 Level of Service 0.6 0.7 4 1.7 4.9 A A A A A A A A A A A A A A A A A A A	Progression Factor		1.00			1.00	1.00	1.63	1.81		0.51	2.17	
Delay (s) 36.8 4.2 36.8 9.0 7.4 1.7 49.8 Level of Service D D A	Incremental Delay, d2		0.1			2.7	0	4.7	12		50	27.3	
Level of Service D A A A D Approach Delay 36.8 40.3 7.4 47.3 Approach LOS 36.8 40.3 7.4 47.3 Approach LOS 0 0 A 47.3 Approach Cost 0 0 10 47.3 Approach LOS 0.9 0 A 47.3 Metsscion Summary 35.2 HCM Level of Service D Actuated Cynel Length (3) 100.0 Sum of lost time (s) 6.0 Metsscion Capacity ratio 0.034 Low of lost time (s) 6.0 Metsscion Capacity ratio 30.% ICU Level of Service E Actuated Cynel Length (3) 15 Collocal Low Control 5.0	Delay (s)		36.8			42.2	36.8	06	7.4		17	49.8	
Approach Delay (s) 36.8 40.3 7.4 47.3 Approach LOS D D A D A D Approach LOS D D C A D A D Approach LOS D D A D A D A D A D A D A D A D A D A	Level of Service		0					A	A		A		
Approach LOS D D A D Intersection Summary 35 2 HCM Level of Service D A D Intersection Summary 35 2 HCM Level of Service D A D A Intersection Capacity ratio 0.34 0.034 D <	Approach Delay (s)		36.8			40.3			74			47.3	
Intersection Summary 35 2 HCM Level of Service D HCM Average Control Delay 35 2 HCM Level of Service D HCM Volume to Capacity ratio 0.94 Actuated CypeL englin (3) 100.0 Sum of lost time (3) 6.0 Intersection Capacity Utilization 83 0% ICU Level of Service E Cational name Centron 15 Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service E Cational name Centron 2000 Cut Level of Service 2000 Cut Level 2000 Cut Level of Service 2000 Cut Level 2000 Cut Leve	Approach LOS					٥			A			۵	
HCM Average Control Delay 35.2 HCM Level of Service D Actuated Synaet ratio 0.34 Unit of Service 50 Actuated Synaet Length (3) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Utilization 83.0% ICU Level of Service E Activity Service C Activity Lance Control C Activity Lance Control C Activity Lance C Ac	Intersection Summary						12						R
Actuated Synde tength (s) 0.94 Cum of lost time (s) 6.0 Motione tength (s) 10.0 Sum of lost time (s) 6.0 Motionesclion Capacity Utilization 83.0% ICU Level of Service E Activity 15 Activity and Parages Period (min) 15 Activity and Parages Period P	HCM Average Control Delay			35.2	Ŧ	CM Leve	l of Servic	8					ĺ
Actuated Cycle Lengtin (s) 100 J Sum of lost time (s) bu Intersection Capacity Utilization 83.0% ICU Level of Service E Analysis Period (min) 15 or Artiscal Loss Porture	HCM Volume to Capacity rate	0		5.0		:							
Intersection capacity UnitZation 6.0.0% ICU Level of Service E 15 ICU Level of Service E 2. Ordiscul 1.5.00 District Activity Control 1.5.00 District Activity Contro	Actuated Cycle Length (s)			100.0	S S	um of los	t time (s)			0.1			
	Intersection Capacity Utilization	ou		83 U%	2	U Level	DI SEIVICE			u			
	Critical Long Critical			2									

Koliinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

Synchro 7 - Report W-Trans

Kollinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

HCM Signalized Intersection Capacity Analysis 95: Neal St & First

Meximical EBI E	20. NGAI OL A I I 31												
Wearrer Els Els Els Mel		٩	Ť	1	4	ŧ	~	•	-	*	۶	→	7
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	Lane Configurations	*	<u>ب</u>		*	4		F	<u>ب</u> ت		*	.1	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Volume (vph)	39	25	80	50	134	22	42	509	33	9	1013	81
	Ideat Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Feature 1.00 <th1.00< th=""> 1.00 1.00</th1.00<>	Total Lost time (s)	3.0	3.0		3.0	3.0		3,0	3,0		3.0	3.0	
	Lane Util, Factor	1.00	1.00		1.00	1 00		1 00	1,00		1.00	1.00	
	Frpb, ped/bikes	1.00	0.98		1.00	1.00		1 00	1.00		1.00	1.00	
Fr 100 031 100 036 100 039 100 031 100 100 100 100 100 100 100 100 <td>Flpb, ped/bikes</td> <td>0.99</td> <td>1.00</td> <td></td> <td>0.99</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>0.99</td> <td>1.00</td> <td></td>	Flpb, ped/bikes	0.99	1.00		0.99	1.00		1.00	1.00		0.99	1.00	
Ell Primeted 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.94 1.00 0.95	Frt	1.00	0.91		1.00	96-0		1.00	0.99		1.00	0,99	
Satir Tew (prof) 1538 1459 1537 1534 1544 1544 1544 1614 Satir Thew (prof) 723 100 0.350 100 0.43 100 0.44 100 Satir Thew (prof) 7 145 0.55 <	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Satd. Flow (prot)	1538	1459		1537	1594		1554	1618		1546	1614	
Safet, Flow (perm) 702 1459 602 1554 229 1618 663 1614 Rear, Num, Verp) 41 76 0 3 135 35 3 166 5 5 155 0 3 149 RU, New (vph) 41 76 0 3 149 0 3 149 2 3 149 2 3 149 2 3 149 2 3 149 2 3 149 2 3 149 2 3 149 2 5	Fit Permitted	0.43	1.00		0.50	1-00		0_14	1.00		0.41	1,00	
Peak-iour factor, PHF 035	Satd. Flow (perm)	702	1459		802	1594		229	1618		663	1614	
Adi, Fow (rph) 41 57 84 53 141 23 44 55 3 166 3 141 23 14 55 3 156 3 150 3 160 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 3 143 <td>Peak-hour factor, PHF</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0,95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td>	Peak-hour factor, PHF	0.95	0.95	0.95	0,95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
	Adj. Flow (vph)	41	57	8	53	141	23	44	536	35	99	1066	85
	RTOR Reduction (vph)	0	65	0	0	80	0	0	-	0	0	2	0
Count Desc, (#m) 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Lane Group Flow (vph)	41	76	0	53	156	0	4	570	0	3	1149	0
Parking (#hr) 10	Confl. Peds. (#/hr)	2		S	2 2		ι,	S		ß	Ω		ŝ
Turn Type Perm	Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
	Turn Type	Perm			Perm			Perm			Perm		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Protected Phases		4			80			2			9	
Actuated Green. C (s) 151 151 151 151 151 769 769 769 769 769 769 769 769 769 769 769 769 769 769 769 769 779	Permitted Phases	4			80			2			9		
Effective Green, g(s) 161 161 161 161 779 771 790 771 710 711	Actuated Green, G (s)	15,1	15.1		15.1	15.1		76.9	76.9		76.9	76.9	
Actuated grC Ratio 016 0.16 0.16 0.78 0.79 0.78 0.79 0.78 0.78 0.78 0.78 0.79 0.78 0.79 0.79 0.79 0.78 0.78 0.78 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.75 0.75 0.75 0.75 0.75 0.71 0.71 0.71 0.73 0.76 0.71 0.77 0.70 0.71 0.73 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 <td>Effective Green, g (s)</td> <td>16.1</td> <td>16.1</td> <td></td> <td>16.1</td> <td>16.1</td> <td></td> <td>77.9</td> <td>77.9</td> <td></td> <td>17.9</td> <td>17.9</td> <td></td>	Effective Green, g (s)	16.1	16.1		16.1	16.1		77.9	77.9		17.9	17.9	
Chearance Time (s) 4.0	Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.78	0.78		0.78	0.78	
Vehicle Extension (s) 3.0 <th3.0< th=""> 3.0 <th3.0< th=""></th3.0<></th3.0<>	Clearance Time (s)	4.0	40		4,0	4.0		40	4,0		4 0	4.0	
Lane Grp Cap (vpr) 113 235 129 257 118 1260 516 1257 vs Ratio Perrit 0.05 0.05 0.01 0.35 0.01 0.01 vs Ratio Perrit 0.06 0.05 0.01 0.35 0.01 0.91 vs Ratio Perrit 0.06 0.32 0.41 0.61 0.35 0.01 0.91 vs Ratio Perrit 0.06 0.36 0.32 0.41 0.61 0.25 0.61 0.01 vic Ratio 0.36 0.32 0.41 0.61 0.25 0.64 0.01 0.91 Uniform Delay, cli 1.00 1.00 1.00 1.00 1.00 0.00 0.86 5.3 8.5 Incrementableus/ cli 37.4 37.1 37.7 39.0 3.1 2.5 8.5 Incrementableus/ cli 37.4 37.1 4.3 1.6 1.6 1.6 Incrementableus/ cli 37.9 38.8 4.3 1.6 3.7 <td>Vehicle Extension (s)</td> <td>3.0</td> <td>3.0</td> <td>1</td> <td>3.0</td> <td>3.0</td> <td>j</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td>Ī</td>	Vehicle Extension (s)	3.0	3.0	1	3.0	3.0	j	3.0	3.0		3.0	3.0	Ī
vis Ratio Prot 0.05 0.01 0.35 0.07 0.01 vis Ratio Perm 0.06 0.07 0.19 0.09 0.01	Lane Grp Cap (vph)	113	235		129	257	I	178	1260		516	1257	
vis Ratio Perim 0.06 0.01 0.01 0.01 0.00 0.00 vis Ratio Perim 0.06 0.02 0.45 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0	v/s Ratio Prot		0.05			c0.10			0.35			c0.71	
vir Ratio 0.33 0.32 0.41 0.61 0.25 0.45 0.01 0.91 Virinom belay, d1 37.4 37.9 38.5 2.5 8.5 Progressin Fador 100 100 100 100 100 100 32 32 32 32 21 4.5 0.01 03 32 Incremental Delay, d2 2.0 0.8 2.1 4.0 3.3 1.2 0.0 32 16 16 32	v/s Ratio Perm	0.06			0.07			0,19			00 0		
Unline Delay, cl 37.4 37.1 37.7 39.0 3.0 3.8 2.5 8.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 0.86 1.53 Incremental Delay, (s) 39.4 37.9 39.8 4.31 6.3 4.9 2.1 16.2 Delay (s) 39.4 37.9 39.8 4.31 6.3 4.9 2.1 16.2 Delay (s) 39.4 37.9 39.8 4.31 6.3 4.9 2.1 16.2 Approach Delay (s) 39.2 4.2.3 5.0 4.6 16.1 Approach Delay (s) 39.2 4.2.3 5.0 46.1 16.1 Approach Delay 17.5 HCM Level of Service B A cluaded Cycle Length (s) 10.0 0.86 5.0 46.1 Hessector Summary 1.00.0 Sum of lost time (s) 6.0 Hessector Sum of lost time (s) 6.0 Hessector Control Delay 1.00.0 Sum of lost time (s) 6.0	v/c Ratio	0.36	0.32		0.41	0.61		0.25	0.45		0.01	0.91	
Progression Factor 1.00 1.00 1.00 0.06 1.33 Incremental Deley, d2 2.0 0.8 2.1 4.0 3.3 1.2 0.0 3.2 Deley(s) 3.9 3.9 3.4 3.3 1.2 0.0 3.2 Deley(s) 3.9 7.9 3.8 4.3 7.9 2.1 4.0 3.3 1.2 0.0 3.2 Approach Delay(s) 3.9 7.3 4.3 6.3 4.9 2.1 4.0 3.2 Approach Delay(s) 3.9 2 4.2 5.0 4.6 B Approach LOS 0 0.5 7.5 HCM Level of Service B HCM Volume to Capacity value 0.36 Model B HCM Volume to Capacity Valization 0.36 Sum of lost time (s) 6.0 A B B Actualed Cycle Length (s) 100.0 Sum of lost time (s) 6.0 A A B Actualed Cycle Length (s) 10.0 Sum of lost tim	Uniform Delay, d1	37.4	37.1		37.7	39.0		3.0	3.8		2.5	8.5	
Incremental Delay, 02 2.0 0.8 2.1 4.0 3.3 1.2 0.0 3.3 Incremental Delay (s) 33.4 31.9 39.8 4.31 6.3 4.9 2.1 16.2 Level of Service D D D D D A A A A A A B B Approach LOS 38.2 4.23 5.0 4.9 2.1 16.1 Approach LOS D A A A A B B Approach LOS D A A A A B B Approach LOS D A A A A B B HEXESCION TO Sammary 17.5 HCM Level of Service B B A A B B HEXESCION TO Capacity Unitzation 0.36 Sum of Iost time (s) 6.0 Intersection of Capacity Unitzation B B Intersection Capacity Unitzation 1.6 <td< td=""><td>Progression Factor</td><td>1.00</td><td>1 00</td><td></td><td>1.00</td><td>1.00</td><td></td><td>1.00</td><td>1 00</td><td></td><td>0.86</td><td>1 53</td><td></td></td<>	Progression Factor	1.00	1 00		1.00	1.00		1.00	1 00		0.86	1 53	
Delety (s) 334 379 338 431 6.3 4,9 21 162 Revel of Service D D D D A A B Approach Delay (s) 382 2.3 4.9 5.0 161 Approach Delay (s) 382 2.3 A A B Approach Delay (s) 382 2.3 A B B Approach LoS D D A A B Acutade Control Delay 17.5 HCM Level of Service B Acutade Control Delay 17.5 HCM Volume to capacity valic 0.06 Sum of lost time (s) 6.0 B Intersection Capacity Unitization 100.0 Sum of lost time (s) 6.0 Analysis Period (min) D	Incremental Delay, d2	2.0	80		2,1	40		3.3	1.2		0 0	3.2	
Level of Service D D D D A A A B Approach LOS 33.2 42.3 5.0 16.1 Approach LOS 33.2 42.3 5.0 16.1 Approach LOS 33.2 42.3 5.0 16.1 Approach LOS 0 0 A A B HCM Average Control Delay 17.5 HCM Level of Service B HCM Volume to Capacity valic 0.86 Sum of lost time (s) 6.0 Intersection 81.6% ICU Level of Service D	Delay (s)	39.4	37.9		39.8	43.1		6.3	4,9		21	16.2	
Approach Delay (s) 38.2 42.3 5.0 16.1 Approach LOS D D A B Intersection commany HCM Volume to Capacity ratio 0.86 HCM Level of Service B HCM Volume to Capacity Valication 0.86 Sum of lost time (s) 6.0 Intersection 0.86 Cut level of Service B Analysis Period (min) 100.0 Sum of lost time (s) 6.0	Level of Service				0			A	A		A	80	
Approach LOS D D A B Approach LOS D T A B Intersection Summary 17.5 HCM Level of Service B HCM Advance Capacity ratio 0.66 Non of lost time (s) 6.0 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 Analysis Period (min) 15 ICU Level of Service D	Approach Delay (s)		38.2			42.3			5.0			16.1	
Intersection Summary 17.5 HCM Level of Service B HCM Average Control Delay 17.5 HCM Level of Service B HCM Volume to Capacity ratio 0.86 0.86 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 Intersection Capacity Unitization 91.6% ICU Level of Service D Analysis Period (mni) D	Approach LOS		Q			٥			A			æ	
HCM Average Control Delay 17.5 HCM Level of Service B HCM Volume to Capacity ratio 0.86 Advated Cycle Length (s) 100.0 Sum of last time (s) 6.0 Intersection Capacity Utilization 91.6% ICU Level of Service D Analysis Period (mni) 1	Intersection Summary	H	P										
HCM Volume to Capacity ratio 0.86 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 Intersection 20 activity Utilization 81.6% ICU Level of Service D Analysis Period (mni) 15	HCM Average Control Delay			17.5	Ŧ	CM Level	of Service			8			
Actuated Cycle Length (s) 100.0 Sum of lost time (s) 6.0 httersection Capacity Utilization 81.6% ICU Level of Service D Analysis Period (min) 15	HCM Volume to Capacity ratio			0.86									
Intersection Capacity Utilization B1.6% ICU Level of Service D Analysis Period (min) 15 15	Actuated Cycle Length (s)			100.0	Su	im of lost	time (s)			6.0			
Analysis Period (min) 15	Intersection Capacity Utilizatio.			81.6%	0	U Level o	f Service			۵			
	Analysis Period (min)			15									

HCM Signalized Inter 96: Bernal & First St	sectio	n Cap	acity A	nalysi	s						4/1	9/2013
	٩	t	۴	6	ŧ	4	4	+	٩	٨	->	¥
Movement	EBL	E81	EBR	WBI	18M	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	:	*	*	4		5	+	r	F	44	ľ
Volume (vph)	165	237	214	392	737	48	147	496	89	18	902	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	Э.0 Г	3.0	
Lane Util. Factor	1.9/	0.95	1.00	1.00	0.95		0.97	1.00	1.00	1.00	0.95	
Finh nodihikas	00.1	0.1	1.03	8.4	00.1		1.00	1.00	1.00	00.1	0.99	
ripu, pewance	8.1	001	0.85	8.1	000		0.1	0.1	0.02	00.1	0.01	
Fit Protected	26 U	1 00	8.0	20.1	1 00		0.05	001	100	0.05	1.00	
Sald Flow (prol)	3547	3657	1452	1829	3616		3547	1925	1345	1554	3249	
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (petm)	3547	3657	1452	1829	3616		3547	1925	1345	1554	3249	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	16.0	0.91
Adj Flow (vph)	181	260	235	431	810	53	162	545	96	20	991	258
RTOR Reduction (vph)	0	0	184	0	ŝ	0	0	0	57	0	21	0
Lane Group Flow (vph)	181	260	51	431	858	0	162	545	41	20	1228	•
Confl Peds (#/hr)			72			12			96			24
Parking (#/hr)									Ń	10	10	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		ĺ
Protected Phases	2	4		m	æ		s	2		-	9	
Permitted Phases		4	4						2			
Actuated Green, G (s)	10.4	14.9	14.9	23.6	28,1		9.2	40.2	40.2	3.3	34.3	
Effective Green, g (s)	11.4	16.9	16.9	24.6	30,1		10.2	42.2	42.2	4.3	36.3	
Actuated g/C Ratio	0.11	0.17	0.17	0.25	0.30		0.10	0.42	0.42	0.04	0.36	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	404	618	245	450	1088		362	812	568	67	1179	
v/s Ratio Prot	c0.05	0.07		c0.24	c0.24		c0_05	0.28		0.01	c0 38	
v/s Ratio Perm			0.03						0.03			
v/c Ralio	0.45	0.42	0.21	0.96	0.79		0.45	0.67	0.07	0.30	1.04	
Unitorm Delay, d1	41.4	31.2	35.8	31.2	32.0		42.2	53.3	17.2	46.4	31.9	
Progression Factor	00.1	00.1	D0-L	1.0U	001		78-0	1 /4	1.13	00.1	1.00	
Delay (c)	0.0	37.6	C 36	5 89	35.0		25.2	310	101		202	
Level of Service	10			р. Ц.	2				2		р ц	
Annmach Delav (s)		38.3		1	46.9		2	1 10	1	3	40 J	
Approach LOS								5			ų LL	
the states of the second s					1						\$	
Intersection Summary			0 1 1						d			
HCM Average Control Delay			47,4 20 C	Ę	M Level		-		2			
Actuated Cycle Lendth (s)			100.0	Ű	m of lost	imo (c)			15.0			
Intersection Capacity Utilization			88.7%	30	Level of	Service			2			
Analysis Period (min)			15									
c Critical Lane Group												
									7			

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

HCM Unsignalized Int 597: Kottinger & Adar	tersec	tion C	apacit	y Anal)	/sis						4/1	1/2013
	٦	t	1	5	Ŧ	~	*	+	٩	٨	-	¥
Movement	Ē	EBT	EBH	WBL	WBT	WBR	NBL	18N	NBR	SB	SBT	SBR
Lane Configurations		÷			4			ŧ			÷	Ì
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	84	32	14	22	97	87	22	54	16	12	63	32
Peak Hour Factor	0.60	09.0	0.60	09.0	09.0	09.0	0.60	09.0	0.60	09.0	0.60	0.60
Hourly flow rate (vph)	140	53	23	37	162	145	37	90	27	20	105	53
Direction, Lane #	E8-1	WB 1	NB-1	SB 1								
Volume Total (vph)	217	343	153	178								Ĺ
Volume Left (vph)	140	37	37	20								
Volume Right (vph)	23	145	27	53								
Hadj (s)	0.10	-0.17	-0.02	-0.12								
Departure Headway (s)	5.5	5.0	5.7	5.6								
Degree Utilization, x	0.33	0.48	0.24	0.28								
Capacity (veh/h)	605	672	556	579								
Control Delay (s)	11.2	12.6	10.5	10.7								
Approach Delay (s)	11.2	12.6	10.5	10.7								
Approach LOS	80	8	8	æ								
Intersection Summary	ł		,	100			1000					
Delay			11.5						9		l	
HCM Level of Service			æ									
Intersection Capacity Utilization			44.5%	₽	U Level c	of Service			A			
Analysis Period (min)			15									

Movement EB Lane Configurations (1 Volume (veh/h) 1(Sign Control Fr Grade 0	ŧ	~	\$	ŧ	•	•		
Lane Configurations Volume (veh/h) 10 Sign Control Fre Grade 0	81	EBR	WBF	WBT	NBL	NBR	TOP OF	THE PLACE
Volume (veh/h) 10 Sign Control Fre Grade 0	.1			ŧ¢	¥			
Sign Control Fre Grade 0	90	86	23	67	97	87		
Grade	ee			Free	Stop			
	%(%0	%0			
Peak Hour Factor 0.6	64	0.64	0,64	0.64	0.64	0.64		
Hourly flow rate (vph) 16	99	134	36	152	152	136		
Pedestrians	20			20	20			
Lane Width (ft) 13	3.0			13.0	13.0			
Walking Speed (ft/s) 4	0.4			4.0	4,0			
Percent Blockage	2			2	3			
Right turn flare (veh)								
Median type Not	B			None				
Median storage veh)								
Upstream signal (ft)								
pX. platoon unblocked								
vC. conflicting volume			320		496	273		
vC1 state 1 conf vol								
vC2 stare 2 conf vol								
vCir unblocked vol			320		496	273		
the single (s)			4.1		64	63		
to, angle (a)						-		
(C, Z sidge (s)					30	00		
ur (s)			777		2.5	5.0		
bu dueue %			10.01		2 007	70		
cM capacity (veh/h)			1218		499	/38		
Direction, Lane # E8	-	WB 1	NB 1		4	A DA DA DA		and the set
Volume Total 3	00	188	288					
Volume Left	0	36	152					
Volume Right 1	34	0	136					
cSH 17(00	1218	589					
Volume to Capacity 0.	18	0.03	0.49					
Oueue Length 95th (11)	0	2	67					
Control Delav (s) 0	0.0	1.8	16.8					
Lane LOS		۷	U					
Approach Delay (s) 0	0.0	1.8	16.8					
Approach LOS			U					
Interaction Summary						A DOLLAR		16 Not Street
Arrent Dalar			5.3					
Average Deray Intersection Capacity Utilization			41.3%	0	J Level o	f Service	A	
Analysis Period (min)			15					

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kollinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

Kotlinger Drive Senior Housing Project AM Peak Hour Existing plus Approved Projects plus Project Conditions

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Vallev

	1	t	۴	6	ŧ	1	*	•	4	۶	-	¥
Movement	EBL	EBI	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBI	SBR
ane Configurations	-			-	ŧ	R	*	\$	*	-	14	
Volume (vph)	209	1118	96	124	330	319	84	390	591	981	710	183
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fotal Lost time (s)	3.0	3.0		3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	
ane Util Factor	16 0	0.91		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
rpb, ped/bikes	1.00	1 00		1.00	1 00	86.0	1 00	1.00	0.98	1.00	1.00	
⁻ lpb, ped/bikes	1 00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
h	1_00	66"0		1.00	1.00	0.85	1 00	1.00	0.85	1.00	0.97	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd Flow (prot)	3547	5180		3547	3657	1599	1829	3657	1599	3547	3545	
It Permitted	0.95	1.00		0.95	1 00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	5180	1000	3547	3657	1599	1829	3657	1599	3547	3545	
^b eak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0,94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	222	1189	102	132	351	339	68	415	629	1044	755	195
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	0	0	19	0
ane Group Flow (vph)	222	1283	0	132	351	339	68	415	629	1044	931	0
Confl. Peds. (#/hr)			12			36			36			
Turn Type	Prot			Prot	ĥ	Free	Prot		Free	Prot		
Protected Phases	1	9		ŝ	2		e	60		2	1	
^b ermitted Phases						Free			Free			
(ctuated Green, G (s)	10.7	31.0		7.0	27.3	120.0	9.9	14.8	120.0	46.2	51.1	
Effective Green, g (s)	117	35.0		8.0	31.3	120.0	10.9	17.8	120.0	47.2	54.1	
Actuated g/C Ratio	0,10	0.29		0.07	0.26	1.00	0.09	0.15	1.00	0.39	0.45	
Clearance Time (s)	4.0	1.0		4.0	1.0		4.0	6.0		4.0	6.0	
(ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	346	1511		236	954	1599	166	542	1599	1395	1598	f
Is Ratio Prot	c0.06	c0.25		0.04	0.10		0.05	c0.11		c0.29	0.26	
/s Ratio Perm						0.21			0.39			
/c Ratio	0.64	0.85		0.56	0.37	0.21	0.54	277	0.39	0.75	0.58	
Iniform Delay, d1	52,1	40.0		54.3	36.3	0.0	52.1	49.1	0.0	31.3	24.5	
Progression Factor	1.00	1 00		1.00	1.00	1.00	1,00	1 00	1.00	0.68	0.60	
ncremental Delay, d2	4.0	6.1		2.9	0.2	0.3	3.3	6.4	0.7	2.7	0.4	
telay (s)	56,2	46.1		57.2	36.5	0.3	55.4	55.5	0.7	24.1	15.1	
evel of Service	ш	٥		ш	0	A	ш	ш	A	o	8	
<pre>vpproach Delay (s)</pre>		47.6			24.9			25,1			19.8	
pproach LOS		٥			υ			o			8	
Itersection Summary				100								
ICM Average Control Delay			29.4	오	M Level	of Service			0	E		P
ICM Volume to Capacity ratio			11.0									
ctualed Cycle Length (s)			120.0	Su	m of lost	time (s)			9.0			
ntersection Capacity Utilization malysis Period (min)			81,9% 15	ਹੁ	J Level o	Service			0			
Critical Lane Group												

Modelinetic Eint Mol Mol <t< th=""><th>Movement EBL EBL EBL Larre Configurations 37 52 22 Volume (vph) 900 1900 1900 1900 Volume (vph) 1900 1900 1900 1900 1900 Volume (vph) 1900 1900 1900 1900 1900 1900 Volume (vph) 1900 1900 1000 100</th><th>№ №</th><th>→ → → → 36 17 36 17 36 17 36 10 100</th><th>NHL 27 3.0 1.000 1.000 1.000 1.000 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.95000 0.95000 0.950000000000</th><th>← <mark>181</mark> ‡ 52</th><th>NBR N</th><th>> SBL</th><th>-></th><th>7</th></t<>	Movement EBL EBL EBL Larre Configurations 37 52 22 Volume (vph) 900 1900 1900 1900 Volume (vph) 1900 1900 1900 1900 1900 Volume (vph) 1900 1900 1900 1900 1900 1900 Volume (vph) 1900 1900 1000 100	№ №	→ → → → 36 17 36 17 36 17 36 10 100	NHL 27 3.0 1.000 1.000 1.000 1.000 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.9500 0.95000 0.95000 0.950000000000	← <mark>181</mark> ‡ 52	NBR N	> SBL	->	7
	Movement EBL E	weit w 32 32 33 50 50 50 50 50 50 50 50 50 50	IBT WBR -4 -7 -3 -6 -3 -7 -3 -6 -3 -7 <tr tr=""> -3<</tr>	NBL 27 27 3.0 1.00 1.00 1.00 1.00 0.46 891 891	922 *	NBR	SBL		
	Lane Configurations + + Volume (vpl) 1300 1300 1300 Iceal Flow (vplp) 1300 1300 1300 Total Lost time (s) 3.0 3.0 3.0 300 Total Lost time (s) 3.0 3.0 3.0 300 1300 Total Lost time (s) 0.95 0.95 0.95 0.95 0.95 Flpb, ped/bites 1.00 1.00 1.00 1.00 1.00 Flph ped/bites 1.00 1.00 1.00 1.00 1.00 Flph ped/bites 0.100 0.95 0.99 0.96 0.96 Sald Flow (proh) 0.1477 1477 1477 1477 1479 Sald Flow (proh) 0.1477 1477 1477 0.95 0.95 Sald Flow (proh) 0.15 0.95 0.96 0.96 0.96 Addi, Flow (proh) 0.16 0.96 0.96 0.96 0.95 0 0.95 0 0.95 0 0.	500 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 7 7 9 30 1900 1900 1900 1000 1000 1000 1000 10	27 2900 3.0 1.00 1.00 1.00 1.00 0.95 0.46 0.95 0.46 0.95 0.46 0.95	922			SBT	SBR
	Volume (wpl) B7 52 22 Volume (wpl) 1900 1000 1000	Signal 2000 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	77 36 77 900 1900 900 1900 100 100 100 100 100 005 559 1991 100 005 559 1991 100 005 559 1991 100 005 559 1991 100 005 559 1991 101 10 71 11 71 11 711	27 3.0 3.0 1.00 1.00 1.00 0.95 1823 891	922		F	4±	
Ideal Legitime (s) 1900 <td>Ideal Flow (vphp) 1900 100</td> <td>2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>900 1900 1900 3.0 3.0 3.0 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.</td> <td>1900 3.0 1.00 1.00 1.00 0.95 1823 1823 1823</td> <td>1000</td> <td>83</td> <td>20</td> <td>234</td> <td>109</td>	Ideal Flow (vphp) 1900 100	2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	900 1900 1900 3.0 3.0 3.0 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.	1900 3.0 1.00 1.00 1.00 0.95 1823 1823 1823	1000	83	20	234	109
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Adj. Flow (vp), Define (vp), Standardsin (vp), Earlier (vp), Conf. Reduction (vp), Earlier (vp), Standardsin (vp), Conf. Reduction (vp), Conf. Reds. (vfn), Standardsin (vp), Conf. Reds. (vfn), Standardsin (vp), Conf. Reds. (vfn), Conf. Reds. (vfn), Conf. Reds. (vfn), Conf. Reds. (vfn), Standardsin (vp), Conf. Reds. (vfn), Standardsin (vp), Standardsin (vp), Standards, St	Adj, Flow (vph) 91 54 23 RTOR Reduction (vph) 0 18 0 Lane Group Flow (vph) 0 18 0 Contil Peaking (#hrt) 10 10 10 Turn Type Shiti 4 4 Protected Phases 4 4 4 Protected Phases 53 3 3 Fifterive Green, G (s) 7,3 7,3 3 Actuated Green, G (s) 3,3 3,3 3 Actuated Green, G (s) 3,0 3,3 3 Actuated Green, G (s) 3,0 3,0 3 Actuated Orent, G (s) 3,0 3 3 3 Lane Gr Car (vpl) 306 3,0 5 0 Vehicide Pretrision (s) 3,0 3,0 5 0 Vehicide Pretrision (s) 3,0 3,0 5 0 Vehicide Pretrision (s) 3,0 0,0 0 0 0	Split 50 0 0 0 3 3	38 80 0 69 71 11 10 10	0,96	0.96	0.96	0.96	0.96	0.96
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vis Ratio Prot c0.06 0.05 c0.04 0.03 0.19 vis Ratio Perm 0.27 0.27 0.27 0.33 0.13 vis Ratio Perm 0.27 0.26 0.07 0.03 0.13 Uniform Delay, d1 14.9 14.8 17.3 16.6 6.9 36.3 0.13 Uniform Delay, d1 14.9 14.8 17.3 16.6 6.9 36.4 8.3 Progression Factor 1.00	v/s Ratio Prot c0.06 0.05 v/s Ratio Perm		221 192	405	1641		171	826	
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Uniform Delay, d1 (1,9) (1,8) (1,1) (1,0)	v/c Ratio 0.27 0.22	0	32 0.06	0.07	0.63		0.43	0.41	
Progression Factor 1.00 1.01 1.00 1.01 <td>Uniform Delay, d1 14.9 14.8</td> <td>-</td> <td>7.5 16.8</td> <td>6.9</td> <td>9.4</td> <td></td> <td>83</td> <td>82</td> <td></td>	Uniform Delay, d1 14.9 14.8	-	7.5 16.8	6.9	9.4		83	82	
Incremental Delay, d2 0,5 0,4 0,8 0,1 0,1 0,8 1,7 0,0 0,2 1,0 0,0 0,1 0,1 0,0 0,0 0,0 0,0 0,0 0,0	Progression Factor 1.00 1.00	-	00 1.00	1.00	1.00		1.00	1.00	
Delay (s) 15.4 15.2 18.3 16.9 7.0 10.2 10.0 Level of Service B B B B B A B B Level of Service B B B A B B B B Approach Delay (s) 15.3 17.6 10.1 B B B B B B B B B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B B A B B A B B A B B A B B A B B A B B A B	Incremental Delay, d2 0.5 0.4		0.8 0.1	0.1	0.8		1.7	0.3	
Level of Service B B B A B B A B Approach Delay (s) 15.3 17.6 10.1 Approach LOS B 17.6 10.1 Approach Delay B B 10.1 Approach Delay B B 10.1 Antared Control Delay 10.9 HCM Level of Service B Actuated Cycle Length (s) 0.48 Sum of lost time (s) 90 Actuated Unication 51.% ICU Level of Service B	Delay (s) 15.4 15.2	+	8.3 16.9	7.0	10.2		10.0	8.5	
Approach Delay (s) 15.3 17.6 10.1 Approach Delay (s) 15.3 17.6 10.1 Approach LOS B B B Intersection Summary 10.9 HCM Level of Service B HCM Volume (Capacity Table 0.48 Unit of Service B Actualed Cycle Length (s) 44.9 Sum of lost time (s) 9.0 Analysis Period Utilization 56.1% (CU Level of Service B Analysis Period (min) 15	Level of Service B B		8	A	80		60	A	
Approach LOS B B Approach LOS B Measured of Service B Measured Control Delay 10.9 HCM Level of Service B HCM Volume to Capacity ratio 0.48 Vended Cycle Length (s) 9.0 Actualed Cycle Length (s) 44.9 Sum of lost time (s) 9.0 Analysis color capacity traition 56.1% ICU Level of Service B	Approach Delay (s) 15.3	-	7.6		10.1			8.8	
Interaction Summary Interaction Summary B HCM Average Control Delay 10.9 HCM Level of Service B HCM Volume to Capacity ratio 0.48 0.48 B Actualed Cycle Length (s) 4.4 9 9.0 Intersection Capacity Unlitization 56.1% ICU Level of Service B	Approach LOS B		8		80			A	
HCM Average Control Delay 10.9 HCM Level of Service 8 HCM Volume to Capacity ratio 0.48 HCM Level of Service 8 Actualed Cycle Length (s) 44.9 Sum of lost time (s) 9.0 Actualed Cycle Level of Service 9 Analysis Period (min) 15	Intersection Summary		A LODA						
HCM You'me to capacity U.3 mount even of service b HCM You'me to capacity that the capacity fraction 0.48 mount of tost time (s) 9.0 Actualed Cycle Length (s) 44,9 Sum of lost time (s) 9.0 Araysis Pendo (min) 15 ICU Level of Service B Analysis Pendo (min)	HOM Austral Palau	THUE				R			1
Actualed Cycle Length (3) 44.9 Sum of lost time (s) 9.0 Intersection Capacity Utilization 58.1% ICU Level of Service B Analysis Period (min) 15	HCM Volume to Capacity ratio 0.48		Level DI Servic	ņ		n			
Intersection Capacity (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	Actuated Cycle english (s)	L HIS	of last time (c)			00			
Analysis Period (min) 15	Intersection Capacity Utilization 58.1%		evel of Service			2. 6			
	Analysis Period (min) 15					3			
c Critical Lane Group	c Critical Lane Group								

Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects plus Project Conditions

Synchro 7 - Report W-Trans

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Kottinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects with Planned TIF Improvements plus Project Conditions

	٩	t	1	\$	ŧ	~	*	+	4	٨	-	7
Anversed	EBL	183	EBR	WBL	WBT	WBR	NBL	TBN	NBR	SBL	SBT	SBR
ane Conflourations	*	4	*	*	*	*	*	4		*	#	*-
(olume (vph)	57	113	72	104	92	42	72	1126	120	40	494	49
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
ane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	66.0		1.00	1.00	96.0
⁻ lpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	001	1.00
H	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.8
II Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Said Flow (prot)	1829	1925	1613	1554	1636	1371	1829	3582		1829	3657	157-
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1925	1613	1554	1636	1371	1829	3582		1829	3657	1571
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adi. Flow (vph)	58	115	73	106	8	43	73	1149	122	41	504	99
RTOR Reduction (voh)	0	0	55	0	0	38	0	ŝ	0	0	0	2
ane Group Flow (vph)	88	115	18	106	64	2	13	1266	0	41	504	Ň
Confl. Peds. (#/hr)			+-			-			8			
Parking (#/hr)				10	10	10	1	ł		ľ		
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Pern
Protected Phases	4	ग		e	e		-	9		S	2	
Permitted Phases			4			e						
Achtated Green, G (s)	13.8	13.8	13.8	14.1	14.1	14.1	7.2	68.5		6.6	61.9	67
Effective Green, g (s)	14.8	14.8	14.8	15.1	15.1	15.1	8.2	70.5		7.6	66.69	69
Actuated o/C Ratio	0.12	0.12	0.12	0.13	0.13	0.13	0.07	0.59		0.06	0.58	0.5
Clearance Time (s)	4.0	4.0	4.0	4.0	4,0	4,0	4.0	5.0		4.0	5.0	ŝ
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3,0	3.0		3.0	3.0	3.6
Lane Grp Cap (vph)	226	237	199	196	206	173	125	2104		116	2130	55
v/s Rabo Prot	0.03	c0.06		c0.07	0.06		0.04	c0.35		c0.02	10	
v/s Ratio Perm			0.01			0.00						0 0
v/c Ratio	0.26	0.49	0.09	0.54	0.46	0.03	0.58	0.60		0.35	0.24	0.0
Uniform Delay, d1	47.6	49.0	46.6	49.2	48.6	46.0	54.2	15.8		53.8	12.1	9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.14	1.36		1 00	1.00	0
Incremental Delay, d2	9.0	16	0.2	3.0	1.6	0.1	1.7	0.3		6	0.3	0
Delay (s)	48.2	50.6	46.8	52.2	50.2	46.1	63.6	21.9		55.7	12.4	10.
Level of Service		0	0	0			ш	0		ш	8	-
Approach Delay (s)		48.9			50.4			24.1			15.2	
Approach LOS		٥			٥			υ			m	
Intersection Summary						144		Mar and	1	N. N		8
HCM Average Control Delay			27.1	Ĭ	CM Level	of Servic	e		o			
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			120.0	S	um of lost	time (s)			12.0			
Intersection Capacity Utilization			61.7%	2	U Level o	of Service	9		80			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

Movement Lane Configurations Volume (vph) Ideal Flow (vphpl)		t	-	*	ŀ	1	1	L		۶	•	¥
Lane Configurations Volume (vph) Ideal Flow (vohpl)	EBI	E81	EBR	WBI	WBT	WBR	NBL	18N	NBR	SBL	188	SBR
Volume (vph) Ideal Flow (vphpl)		÷			4	-	*	et.		*	£1	
Ideal Flow (vphpl)	88	46	99	20	38	38	39	1213	25	25	622	39
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util Factor		1.00			1.00	1.00	1 00	1 00		1.00	1.00	
Frpb, ped/bikes		0.97			1.00	0.92	18	1.00		1.00	66'0	
Flpb, ped/bikes		0.97			0.99	1,00	0.97	1.00		1,00	1 00	
Fri		0.96			1.00	0.85	1.00	100		1.00	0.99	
Fit Protected		0.98			0,98	1,00	0.95	1.00		0.95	1.00	
Satd Flow (prot)		1437			1587	1276	1511	1627		1554	1609	
Fit Permitted		0.84			0.86	1.00	0.34	1 00		0.06	1.00	
Sald. Flow (perm)		1228			1391	12/6	542	1971		16	190A	
Peak-hour factor, PHF	0.97	0.97	0.97	16.0	0.97	0.97	16.0	0.97	0.97	0.97	0.97	0.97
Adj Flow (vph)	91	47	68	21	39	99	40	1251	26	26	641	40
RTOR Reduction (vph)	0	15	0	0	0	32	0	0	0	0	2	0
Lane Group Flow (vph)	0	191	0	0	09	2	40	1277	0	26	619	•
Confl. Peds. (#/hr)	36		24	24		36	36		36	36		8
Parking (#/hr)	₽	9	9	9	9	2	2	10	₽	9	₽	9
Turn Type	Perm			Perm		Perm	Регт			Perm		
Protected Phases		4			8			2			9	
Permitted Phases	4			80		88	2			œ		
Actuated Green, G (s)		22.0			22.0	22.0	90.06	0.06		90.0	90.0	
Effective Green, g (s)		23.0			23.0	23.0	91.0	91.0		91.0	910	
Actuated g/C Ratio		0.19			0.19	0.19	0.76	0.76		0.76	0.76	
Clearance Time (s)		4.0			4 0	4	4	0 4		4	0 4	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		235			267	245	411	1234		74	1220	
v/s Ratio Prot								c0 78		1	0.42	
v/s Ratio Perm		c0,16			0.04	0.01	0.07			0.27		
v/c Ratio		0.81			0.22	0.03	0.10	1.03		0.35	0.56	
Uniform Delay, d1		46.4			410	39.4	3.8	14.5		4.8	5	
Progression Factor		1.00			1.00	1.00	0.64	971		2.38	197	
Incremental Delay, d2		10.0			4 0 4	1.00		C.42		4.71	17.0	
Uelay (s)		7 00			† C	C.80	α. <	4, 7 4		0.02		
A approach Defender		an c			900	c	c	410		>	47.3	
Approach Letay (s)		7 60			P C			1 0				
Approact: LOO		u			2			د			2	
Intersection Semmary												
HCM Average Control Delay			36.0	Í	CM Level	of Servic	e					
Actuated Cycle Length (s)			120.0	S	um of lost	t time (s)			6.0			
Intersection Capacity Utilizatio Analysis Period (min)	c		101.2%	0	U Level	of Service			U			
c Critical Lane Group												

Kattinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects plus Project Conditions

Synchro 7 - Report W-Trans

Kattinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects plus Project Conditions

HCM Signalized Inter 96: Bernal & First St	sectic	n Cap	acity /	Analysi	s						4/1	9/2013
	1	t	~	5	Ŧ	~	r	-	•	1	-	1
Movement	B	E81	EBR	WBL	WBT	WBR	NBL	18N	NBR	SBL	SBT	SBR
Lane Configurations	F	:	×	*	44		**	*		5-	14	
Volume (vph)	601	519	152	116	234	27	303	924	517	68	569	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
I otal Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Util Factor	19.0	0.95	1.00	1 00	0.95		0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	00.1	00.1	0.87	1 00	1.00		1.00	1.00	0.79	1.00	0.99	
ripu, peurukes	00.1		1.00		00 0		00.1	001	1.00	00.1	00.1	
Fit Protected	00-1 10-1	8.1	0.00	100	0.30		00.1	0.1	0.80	1.00	0.90	
Satd Flow (prot)	3547	3657	1419	1829	3585		3547	1925	1291	1554	3201	
Flt Permitted	0.95	1.00	1.00	0.95	1 00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1419	1829	3585		3547	1925	1291	1554	3201	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	111	665	195	149	300	35	388	1185	663	87	729	274
RTOR Reduction (vph)	0	0	118	0	80	0	0	0	174	0	31	0
Lane Group Flow (vph)	11	665	12	149	327	0	388	1185	489	87	972	0
Confl. Peds. (#/hr)			72			5			96			24
Parking (#/hr)									l	10	10	9
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	7		e	80		10	2		-	9	
Permitted Phases	(ASSA)	4	4	Contra Contra	10000		020245	- Canalo	2			
Actuated Green, G (s)	23.0	25.3	25.3	13.9	16.2		19.0	52.8	52.8	10.0	43.8	
Effective Green, g (s)	24.0	27.3	27.3	14.9	18.2		20.0	87 57 80	24.8	11.0	45.8	
Actuated g/C Ratio	0.20	0.23	0.23	0.12	0.15		0.17	0.46	0.46	0.09	0.38	
Clearance Time (s)	4.0	2:0	5.0	40	2.0		4.0	5,0	5.0	4.0	20	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	1
Lane Grp Cap (vph)	601	832	323	227	Sta		591	879	280	142	1222	
vis Ratio Prot	c0.22	0.18		c0.08	c0.09		0.11	c0.62		0.06	c0.30	
v/s Ratio Perm	N.C.	1,1960.0	0.05	1975					0.38			
v/c Ratio	1.09	0.80	0.24	99.0	09.0		0.66	1.35	0.83	0.61	0.80	
Uniform Delay, d1	48.0	43.8	37.9	50.1	47.5		46.8	32.6	28.5	52.4	32.9	
Progression Factor	1.00	18	1.00	1.00	1.00		0.72	0.63	0.37	1.00	1.00	
Incremental Delay, d2	60.0	5.4	0.4	6.7	1,9		2.1	162.8	10.4	7.6	5.4	
Delay (s)	108.0	49.2	38.2	56.8	49.4		35.6	183.5	21.0	60.1	38.4	
Level of Service	u.	0	0	w	0		0	u,	U	ш	0	
Approach Delay (s)		75.7			51.7			109.7			40.1	
Approach LOS		ш			0			u.			۵	
Intersection Summary	Ĩ					No. 1			8	j	10	
HCM Average Control Delay			80.4	Ŧ	CM Level	of Service	0		њ.			
HCM Volume to Capacity ratio			1,12									
Actuated Cycle Length (s)			120.0	SL	im of lost	time (s)			12,0			
Intersection Capacity Utilization			92 7%	9	U Level o	of Service			ц.			
Analysis Period (min)			15									
c Critical Lane Group												

95: Neal St & First											4/19	9/2013
	•	t	۴	5	ŧ	~	*	4	٠	٨	-	7
Movement	EBL	EBT	EBR	WBL	WBT	NBR	NBL	TBN	NBR	THS:	SBI	SBR
Lare Configurations	*	+±		*	42		F	42		-	ب ع	1
Volume (vph)	98	121	93	37	58	23	48	1171	36	6	605	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Util Factor	1 00	1.00		1.00	1 00		1.00	1 00		1.00	1.00	
Frpb, ped/bikes	00	96.0		1.00	66 0		1.00	1 00		1.00	1.00	
Hpb, ped/bikes	86.0	1.00		0.99	1.00		1.00	1 00		1.00	1.00	
Friend	1 00	0.93		1.00	0.96		1.00	1.00		1.00	96'0	
FIt Protected	0.95	1.00		0.95	1.00		0.95	1 00		0.95	1.00	
Satd Flow (prot)	1530	1504		1540	1550		1548	1627		1554	1605	
Flt Permitted	0.64	1.00		0.30	1.00		0.33	1.00		0.08	1.00	
Sald. Flow (perm)	1030	1504	1	480	1550		541	1627	1	124	1605	ľ
Peak-hour factor, PHF	0,95	0.95	0,95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj Flow (vph)	91	127	86	39	61	24	51	1233	38	0)	637	73
RTOR Reduction (vph)	0	25	0	0	12	0	0		0	0	m	0
Lane Group Flow (vph)	91	200	0	39	73	0	51	1270	0	6	101	0
Confl. Peds. (#/hr)	ç		5	S		S	2		S	vo		5
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm			Perm			Perm		1
Protected Phases		4			80			2			9	
Permitted Phases	4			80			2			9		
Actuated Green, G (s)	20.3	20.3		20.3	20.3		91.7	91.7		91.7	91.7	
Effective Green, g (s)	21.3	21.3		21.3	21.3		92.7	92.7		92.7	92.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.77	0.77		0.77	0.77	
Clearance Time (s)	4.0	4,0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	Ì	3.0	3.0		3.0	3.0	F
Lane Grp Cap (vph)	183	267		85	275		418	1257		96	1240	ĺ
v/s Ratio Prot		c0.13			0.05			c0.78			0.44	
v/s Ratio Perm	0.09			0.08			0.09			0.07		
v/c Ratio	0.50	0.75		0.46	0.26		0.12	1.01		0.09	0.57	
Uniform Delay, d1	44.5	46.8		44.2	42.6		3.4	13.6		3.3	5.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		211	2.30	
Incremental Delay, d2	2.1	11.2		3,9	0.5		0.6	28.0		1.6	1.6	
Delay (s)	46.6	58.1		48.1	43.1		4.0	41.7		8.7	14.3	
Level of Service	0	u I					A			×	æ	
Approach Delay (s)		54.8			44.7			40.2			14.3	
Approach LOS											æ	
Intersection Summary				Mar Da		THE P						
HCM Average Control Delay			34.8	H	M Level	of Service			U			ſ
HCM Volume to Capacity ratio			0.96									
Actuated Cycle Length (s)			120.0	Su	m of lost	ime (s)			6.0			
Intersection Capacity Utilization			90.4%	D	J Level of	Service			ш			
Anatysis Period (min)			15									
c Critical Lane Group												

Synchro 7 - Report W-Trans

Kotlinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects plus Project Conditions

Synchro 7 - Report W-Trans

Koltinger Drive Senior Housing Project PM Peak Hour Existing plus Approved Projects plus Project Conditions

HCM Signalized Intersection Capacity Analysis 95: Neal St & First

Contract Delay (s) 7.9 7.7 7.8 7.6 Approach Delay (s) 7.9 7.7 7.8 7.6 Approach Delay (s) 7.9 7.7 7.8 7.6 Approach Delay 7.8 7.6 HCM Level of Service Delay 7.1 7.8 7.6 HCM Level of Service 7.1.1% ICU Level of Servic Analysis Period (min) 7.1.1% ICU Level of Servic	
Z	
0 268 4 6.2 5 3.3 8 95 8 95 8 95 8 95 8 10 763 A	
450 258 450 268 64 62 35 33 95 95 540 753 540 753 CU Level of Service A	
60 450 258 61 450 258 61 64 62 83 33 95 95 95 96 753 88 88 88 88 88 88 88 88 88 88 88 88 88	
250 450 258 250 450 268 4.1 6.4 6.2 22 3.5 3.3 29 95 95 95 95 96 65 10 0.1 1 8 1 2 1 8 1 2 1 8 1 2 1 8 1 2 1 8 1 2 1 8 1 8 1 2 1 8 1 8 1 2 1 8 1 8 1 2 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8	

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13 0.81 16

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Covernment EBL Advacament EBL Anne Configurations 1 Advacament 2 Advacament 2 Advacament 1 Advacament 3 ane UUL Ector 2 3 3 3 2 4 2 4 2 3 3 3 3 4 2 4 2 3 3 3 3 3 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 4 4 <td< th=""><th>83</th><th></th><th></th><th></th><th>,</th><th>r</th><th>-</th><th>L</th><th>•</th><th>+</th><th>¥</th></td<>	83				,	r	-	L	•	+	¥
are Configurations 240 colume (vph) 240 deal Flow (vpha) 1900 deal Flow (vpha) 300 are Util, Factor 0.970 irpb, ped/bikes 1.000		EBR	WBI	18W	WBR	NBI	NBT	NBR	SBL	SBI	SBR
/olume (vph) 240 deal Flow (vpha) 1900 dia Last lime (s) 3.0 ane Util, Factor 0.9 ripb, ped/bikes 1.00 Plob, ped/bikes 1.00			-	:	n	*	#	*	14	44	
deal Flow (vphpl) 1900 fotal Lost time (s) 3.0 ane Util Factor 0.37 rpb, ped/bikes 1.00 Flob, ped/bikes 1.00	57:	3 104	372	1395	606	186	308	229	226	250	142
otal Lost lime (s) 3.0 ane Ulli, Factor 0.97 rpb, ped/bikes 1.00	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
are Util Factor 0,97 Trpb, ped/bikes 1,00	3.0	0	3.0	3.0	0.0	3.0	3.0	3,0	3.0	3.0	
rpb, ped/bikes 1.00	6.0 7		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
Ipb, ped/bikes 1.00	1 1 00		1,00	1.00	0.98	1.00	1,00	0.98	1.00	1.00	
	1 1 D(0	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1,00	
00'L U	16.0		1.00	1 00	0.85	1.00	1.00	0.85	1 00	0.95	
It Protected 0.95	1 00	_	0.95	1 00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd Flow (prot) 3547	5113		3547	3657	1599	1829	3657	1599	3547	3459	
It Permitted 0.95	1 1 00	0	0.95	1_00	1.00	0.95	1.00	1_00	0.95	1.00	
satd. Flow (perm) 3547	511	~	3547	3657	1599	1829	3657	1599	3547	3459	1
Peak-hour factor, PHF 0.91	6.0	1 0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
vdj Flow (vph) 264	63(114	409	1533	666	204	338	252	248	275	156
RTOR Reduction (vph) 0	1 22	0	0	0	0	0	0	0	0	6	0
ane Group Flow (vph) 264	122	0	409	1533	666	204	338	252	248	341	0
Confl. Peds. (#/hr)		12			36			36			1
um Type Prot			Prot		Free	Prot		Free	Prol		-
Protected Phases	÷	"	9	~		e	80		2	4	
^b ermitted Phases					Free			Free			
vctuated Green, G (s) 7.0	34.6	-	15.1	42.9	100.0	10.0	18.5	100.0	10.6	19.1	
Effective Green, g (s) 8.0	38.6		16.1	46.9	100.0	11.0	21.5	100.0	11.6	22.1	
vcluated g/C Ratio 0.08	0 36	æ	0.16	0.47	1.00	0.11	0.22	1.00	0.12	0.22	
Clearance Time (s) 4.0	1 10		4.0	7.0		4.0	6.0		4.0	6.0	
(ehicle Extension (s) 3.0	3.(_	3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph) 284	1987		571	1715	1599	201	786	1599	411	764	i.
/s Ratio Prot c0.07	0.14		c0.12	c0.42		c0.11	0.09		0.07	0.10	
/s Ratio Perm					c0.62			0.16			
/c Ratio 0.93	0.36		0.72	0.89	0.62	1.01	0.43	0.16	0.60	0.45	
Iniform Delay, d1 45.7	21.8		39.8	24.3	0.0	44.5	34.0	0'0	42.0	33.7	
^a rogression Factor 0.82	1.3		1.00	1.00	1 00	1 00	1.00	1.00	1.00	1.00	
ncremental Delay, d2 33.6	0.5		4.3	7.6	1.9	67.4	0.4	0.2	2.5	0.4	
Jelay (s) 70.9	29.		44.1	31.9	1,9	111.9	34.3	0.2	44.5	34.1	
evel of Service E	0		٥	o	A	ш	0	A		0	
Approach Delay (s)	40.4			23.4			43.4			37.9	
pproach LOS	-			v			٥			٥	
densection Summary		1.242									
ICM Average Control Delav		312	Í	CM Level	of Servic	9		U			
ICM Volume to Capacity ratio		0.82									
vctuated Cycle Length (s)		100.0	S	um of lost	time (s)			6.0			
ntersection Capacity Utilization		80.5%	Q	U Level o	f Service						
vnalysis Period (min)		5									

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

Movement EBI Larve Configurations FBI Volume (vph) 1900 Ideal Elow (vphp) 1900 Ideal Lost finne (s) 0.05 Fripb, pedibikes 1.00 Fripb, pedibikes 0.05 Fripb, pedibikes 1.00 Fripb, pedibikes 0.035 Fripb, pedibikes 0.035 Fripb, pedibikes 1.00 Fripb, pedibikes 1.00 Fripb, pedibikes 1.00 Fripb, pedibikes 1.00 Fripb, pedibikes 0.035 Fripperdibikes 0.045 Fripperdibikes 0.045 Fripperdibikes 0.045	↑ 🔠 🕈	r 88	1	Ŧ	4	4	•	•	٨	-	¥
Movement Ett. Lane Configurations 1 Volume (xph) 1900 Total Lost time (xph) 1900 Total Lost time (xph) 3.0 Farbo Volume (xph) 1.00 Farboreced 0.55 Farboreced 0.55 Farboreced 0.55 Farboreced 0.55	8 4	EBR	ALC: N							,	
Lane Configurations Lane Configurations (vpl) 1900 Volume (vpl) 1900 Total Lost firme (s) 3.00 Lane Util. Factor 0.95 Frip, ped/bikes 1.00 Fri pp. ped/bikes 1.00 Fri Pp. Protected 0.95 Start Elev (prot) 0.9	ŧ		MAR	WBT	WBR	NBL	NBI	NBR	SBL	SBT	SBR
Volume (vph) 169 leat Fow (vph) 1900 leat Fow (vph) 1900 Chal Lost fime (s) 3.0 Erpb, pedrbikes 1.00 Fiph, pedrbikes 1.00 Fiph, pedrbikes 1.00 Fith Protected 0.95 State (per 2000) 0.95 State (per 2000) 0.95 State (per 2000) 0.95				4	*	*	44		*	4	
ldeal Flow (vphp) 1900 Tatal Lost time (s) 3.0 Lane Ult. Factor 0.95 Fipb. ped/bikes 1.00 Fipb. ped/bikes 1.00 Filt Protected 0.95 Stat Protected 0.95 Stat Protected 0.95 Stat Protected 0.95	2	35	88	26	220	23	452	10	82	763	236
Total Lost time (s) 0.30 Lare Uhi Factor 0.35 Fipb, pedbikes 1.00 Fit 0.005 Fit Protected 0.35 Fit Protected 0.35 Fit Permitted 0.35	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane UNI-Factor 0.55 Fipb, ped/bikes 1.00 Fipb, ped/bikes 1.00 Fit Protected 0.55 Stat Protected 0.55 Stat Permitted 0.55	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Fript, peufblikes 1.00 Fript, peufblikes 1.00 Fri Pronected 0.95 Fall Friow (prot) 1477 Fril Permitted 0.35	0.95			1.00	1.00	1.00	0.95		1.00	1.00	
Flipb, ped/blkes 1.00 Fri 1.00 Fit Prilected 0.95 Satut Flow (prot) 1477 Fit Permitted 0.95	0.99			1.00	1.00	1.00	1.00		1.00	0.99	
Frt 1.00 Fill Protected 0.95 Satu Flow (prot) 1477 Fill Permitted 0.95	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Fit Protected 0.95 Satd. Flow (prot) 1477 Fit Permitted 0.95	0.95			1.00	0.85	1.00	1.00		1.00	0.96	
Satd Flow (prot) 1477 Fit Permited 0.95	0.97			0.96	1.00	0.95	1.00		0.95	1.00	
Fit Permitted 0.95	1419			1575	1391	1829	3645		1829	1842	
	0.97			0.96	1.00	0.06	1.00		0.42	1.00	
Sald. Flow (perm) 1477	1419			1575	1391	116	3645		810	1842	
Peak-hour factor, PHF 0.87	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj Flow (vph) 194	2	41	104	31	259	27	532	12	96	898	278
RTOR Reduction (vph) 0	19	0	0	0	150	0	-	0	0	თ	0
Lane Group Flow (vph) 120	86	0	0	135	109	27	543	0	96	1167	0
Confi, Peds. (#/hr)		6	en			4					4
Parking (#fhr) 10	10	10	10	10	10						
Turn Type Split			Split		Perm	Perm			Perm		
Protected Phases 4	4		e	0			2			6	
Permitted Phases					ŝ	2	6		9	e I	
Actuated Green, G (s) 14.4	14.4			10.6	10.6	64.2	64.2		64.2	64.2	
Effective Green, g (s) 16.4	16.4			12.6	12.6	66.2	66.2		66.2	66.2	
Actuated g/C Ratio 0.16	0.16			0.12	0.12	0.64	0.64		0.64	0.64	
Clearance Time (s) 5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s) 3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph) 232	223			190	168	74	2316		515	1170	
v/s Ratio Prot c0.08	0.07			c0.09			0.15			c0.63	
v/s Ratio Perm					0.08	0.23			0.12		
v/c Ratio 0.52	0.44			0.71	0.65	0.36	0.23		0.19	1.00	
Uniform Delay, d1 40.3	39.8			44.0	43.7	9.0	8.1		2.9	18.9	
Progression Factor 1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2 1.9	1.4			11.8	8.3	3.0	0.1		0.2	25.5	
Delay (s) 42.2	41.1			55.9	52.0	12.1	8.2		8.0	44.4	
Level of Service D	0			ш		8	A		A	٥	
Approach Delay (s)	41.7			53.3			8.4			41.6	
Approach LOS	٥			۵			A			٥	
Intersection Summary	11.11		No. 30		8						
HCM Average Control Delay		35,8	H	M Level	of Service	0					
HCM Volume to Capacity ratio		0.88									
Actuated Cycle Length (s)		104.2	Su	m of lost	time (s)			9.0			
Intersection Capacity Utilization		82.5%	D	U Level o	f Service			ш			
Analysis Period (min)		15									
c Critical Lane Group											

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project

Synchro 7 - Reporl W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions with Planned TIF Improvements-No Project

(fourant)	`	t	۴	6	ţ	1	•	-	٩.	٠	+	¥
	181	185	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBL	SBI	SBS
l ane Configurations	*	*		*	*	*	*	414		*	\$	*
Volume (vph)	82	85	86	108	182	65	88	682	99	\$	1178	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	1.00	1.00	1:00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0,99	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.96
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1,00	1.00
Fit	1.00	1.00	0.85	1.00	1.00	0.85	1.00	66.0		1.00	1,00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd Flow (prot)	1829	1925	1614	1554	1636	1372	1829	3591		1829	3657	1211
Fit Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1829	1925	1614	1554	1636	1372	1829	3591		1829	3657	1577
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	06.0	06'0	0.90	0.80	0.90	0.90
Adi. Flow (vph)	31	g	96	120	202	72	3	758	73	49	1309	224
RTOR Reduction (vph)	0	0	83	0	0	35	0	6	0	0	0	87
Lane Group Flow (vph)	31	46	13	120	202	37	3	825	0	64	1309	137
Confl. Peds. (#/hr)			-			-			0			4
Parking (#/hr)	þ	1		10	10	10						
Turn Type	Split		Perm	Split		Perm	Prot			Prot		Perm
Protected Phases	4	4		9	e0		-	9		S	2	
Permitted Phases			4			e						~
Actuated Green, G (s)	12.6	12.6	12.6	17.1	17.1	17.1	6.9	46.7		9"9	46.4	46.4
Effective Green, g (s)	13.6	13.6	13.6	18,1	18.1	18.1	7.9	48.7		7.6	484	484
Actuated g/C Ratio	0,14	0.14	0.14	0_18	0.18	0.18	0.08	0.49		0.08	0.48	0.48
Clearance Time (s)	4 0	4 0	4 0	4.0	4.0	4.0	4 0	50		4 0	5.0	5 0
Vehicle Extension (s)	3.0	3.0	3.0	30	3.0	3.0	30	30		3.0	3.0	3.0
Lane Grp Cap (vph)	249	262	220	281	296	248	144	1749		139	1770	763
v/s Ratio Prot	0.02	c0 05		0.08	c0.12		c0 03	0.23		0.03	c0.36	
v/s Ratio Perm			0.01			0.03		1				0.09
v/c Ratio	0.12	0.36	0.06	0.43	0.68	0.15	0.44	0.47		0.35	0.74	0.18
Uniform Delay, d1	38.0	39.2	37.6	36.3	38.3	34.5	44.0	171		43.9	20.7	14.6
Progression Factor	1 00	1.00	1.00	1.00	1.00	1.00	1.29	0.83		1.44	0.44	0.51
Incremental Delay, d2	0.2	0.8	0.1	10	6.4	0.3	1.7	20		1.1	2.0	9.1
Delay (s)	38.2	40 1	37.7	37.4	44.6	34.7	5.83	14.8		64.4	211.2	D. /
Level of Service	0					с С	u			ц	80 9	<
Approach Delay (s)		38.8			40.6			17.9			12.3	
Approach LOS					٥			8			æ	
Intersection Summary				AM.	S		1	10	R.		ļ	
HCM Average Control Delay			19.5	Ŧ	CM Level	of Servic	a		8			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			100.0	้ง	um of lost	time (s)			12.0			
Intersection Capacity Utilization			64.0%	2	U Level c	f Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

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Aovement	EBL	183	EBR	WBL	WBT	WER	NBL	NBT	NBR	SBL	SBI	SBR
ane Configurations		4			*T	*	*	.±		*	4	
(olume (vph)	4	1	-	16	02	74	26	735	52	19	1145	139
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
ane Utit, Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
rpb, ped/bikes		0.99			1.00	0.93	1.00	0.99		1.00	0.99	
Ipb, ped/bikes		0.99			0.99	1.00	00.1	1.00		0.98	00.1	
Ľ		0.99			1.00	0.85	1.00	0.99		1.00	86.0	
It Protected		0.99			0.99	1.00	0.95	1.00		0.95	1.00	
atd. Flow (prot)		1/191			1091	7671	1004	1091		1791	1269	
It Permitled		0.95			0.95	1.00	0.05	1.00		0.28	1.00	
ald Flow (perm)		1514			1538	1292	81	160/		440	1569	
eak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
dj. Flow (vph)	4	12	-	18	11	81	29	808	57	87	1258	153
(TOR Reduction (vph)	0	-	0	0	0	02	0	2	0	0	e	0
ane Group Flow (vph)	0	16	0	0	92	11	29	863	0	87	1408	0
confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
arking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
urn Type	Perm			Perm		Perm	Perm			Perm		
Irotected Phases		4			80			2			9	
ermitted Phases	7			00		80	2			9		
<pre>ctuated Green, G (s)</pre>		12.7			127	12.7	79.3	79.3		79.3	79.3	
ffective Green, g (s)		13.7			13.7	13.7	80.3	80.3		80.3	80.3	
ctuated g/C Ratio		0 14			0.14	0.14	0.80	0.80		0.80	0.80	
tlearance Time (s)		4 0			4 0	4 0	4.0	4 0		4.0	4,0	
ehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	Í
ane Grp Cap (vph)		207			211	177	65	1290		358	1276	
/s Ratio Prot								0.54			c0 89	
/s Ratio Perm		0.01			c0.06	0.01	0.36			0.20		
/c Ratio		80.0			0.45	0.06	0.45	0.67		0.24	110	
Iniform Delay, d1		37.6			39.7	37.6	3.0	4.2		2.4	66	
rogression Factor		1.00			1.00	1.00	1.48	1.76		0.30	2 16	
ncremental Delay, d2		0.2			1.5	0.1	16.9	2.3		1.2	56.0	
telay (s)		37.8			41.2	37.7	21.4	9.6		1.9	77.3	
evel of Service		0			0	Δ	U	A		A	ш	
vpproach Delay (s)		37.8			39.6			10.0			72.9	
Approach LOS		٥			Q			æ			ш	
ntersection Summary		100	1.1	10.61		0.10	1000		1			
ICM Average Control Dela			48.7	Ħ	CM Leve	of Servic	a		0			
ICM Volume to Capacity rs	tio		1.01									
ctuated Cycle Length (s)			100.0	S	um of los	l time (s)			6.0			
ntersection Capacity Utiliza	lion		87.9%	<u> </u>	0/10	A Controo						
				2	ה רבאבו	טן טכו עועפ			u			

Kotlinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project I

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project

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Movement	EBL	EBT	EBR	WBI	TBW	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	#	K	**	44		**	+	*	*	4	
Volume (vph)	178	233	209	455	714	62	174	2175	127	đ	944	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Ubl. Factor	0.97	0,95	1.00	16.0	0,95		0.97	1.00	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	8	0.89	1.00	1.00		100	1.00	0.82	1.00	0.99	
Fipb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3547	3657	1452	3547	3604		3547	1925	1345	1654	3268	
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1452	3547	3604		3547	1925	1345	1554	3268	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	16.0	0.91	0.91	0.91	0.91	0.91	0.81
Adj. Flow (vph)	196	256	230	200	785	68	161	852	140	21	1037	224
RTOR Reduction (vph)	0	0	130	0	L	0	0	0	09	0	18	0
Lane Group Flow (vph)	196	256	100	200	846	0	191	852	80	21	1243	0
Confl. Peds. (#/hr)			72			12			96			24
Parking (#/hr)	2							2		10	10	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prol		
Protected Phases	7	4		с0	8		S	2		-	9	
Permitled Phases		4	4						2			
Actuated Green, G (s)	7.0	14.9	14.9	17.6	25.5		7.0	46.7	46.7	2.8	42.5	
Effective Green, g (s)	8.0	16.9	16,9	18.6	27.5		8.0	48.7	48.7	3.8	44.5	
Actualed g/C Ratio	0.08	0.17	0,17	0.19	0.28		0.08	0.49	0.49	0.04	0.44	
Clearance Time (s)	4.0	5.0	5,0	4.0	5,0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	ľ
Lane Grp Cap (vph)	284	618	245	660	991		284	937	655	59	1454	
v/s Ratio Prot	c0.06	0.07		0.14	c0 23		c0.05	c0.44		0.01	0.38	
v/s Ratio Perm			0.07						0.06			
v/c Ralio	0.69	0.41	0.41	0.76	0.85		0.67	0.91	0.12	0.36	0.85	
Uniform Delay, d1	44.8	37.1	37.1	38.6	34.3		44 7	23.6	14.0	46.9	24,9	
Progression Factor	1 00	1.00	1.00	1.00	1.00		1 13	0.64	0.37	1 00	1 00	
Incremental Delay, d2		0.5		0.1	1.3		5.8	13.7	0 4	3.7	6,6	
Delay (s)	51.8	37.6	38.2	43.5	41.6		56.4	28.8	5.5	50.6	31.5	
Level of Service	-		0	0	0		ш	o	A	0	o	
Approach Delay (s)		41.9			42.3			30.5			31.8	
Approach LOS					٥			U			o	
Intersection Summary	11			and and and	1.100		1		1000			
HCM Average Control Delay			36,1	Ŧ	CM Level	of Service			0			
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			100.0	้อ	im of lost	time (s)			9.0			
Intersection Capacity Utilization			87.8%	2	U Level o	f Service			щ			
Critical Lano Contra			2									

HCM Signalized Inter 95: Neal St & First	sectio	n Cap	acity A	nalysi	s						4/2	3/2013
	1	t	~	1	Į+	1	-	←	•	1	-	1
Movement	EBL	183	EBR	WBL	WBT	WBR	NBI	181	NBR	B S	IBS	SBR
Lane Configurations	F	¢.)	*	¢£		F	+2		F	4	
Volume (vph)	43	46	80	52	136	25	56	744	38	3	1079	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
I and Hill Factor		3°0		3.U	4 00 F		3.0	3.0		3.0	3.0	
Frih ned/hikes	8	0 dB		1 00			1 00			8 6	001	
Flah ned/hikes	0.99	1 00		00.1	100		00 +	8 0		100	1 00	
Fit	1.00	06.0		1.00	0.98		1 00	0.99		80	000	
Fit Protected	0.95	1 00		0.95	1 00		0.95	1 00		0.95	1 00	
Satd Flow (prol)	1538	1447		1536	1590		1554	1621		1550	1614	
Fit Permitted	0.43	1.00		0.52	1.00		0.10	1.00		0.28	1.00	
Satd. Flow (perm)	690	1447		848	1590		169	1621		462	1614	
Peak-hour factor, PHF	0.95	0.95	0,95	0,95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj Flow (vph)	45	48	84	55	143	26	59	783	40	e	1136	89
RTOR Reduction (vph)	0	20	0	0	80	0	0	-	0	0	2	0
Lane Group Flow (vph)	45	62	0	55	161	0	59	822	0	3	1223	0
Confl. Peds. (#/hr)	ŝ		S	2		ц	S		ç	5		ŝ
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm			Perm	6		Perm		
Prolected Phases		4			00			2			9	
Permitted Phases	4			æ			2			9		
Actuated Green, G (s)	15.4	15.4		15.4	15.4		76.6	76.6		76.6	76.6	
Effective Green, g (s)	16.4	16.4		16.4	16.4		77.6	17.6		77.6	77.6	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.78	0.78		0.78	0.78	
Clearance Time (s)	4	4 0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3,0	3.0		3.0	3.0		3.0	3.0	l	3.0	3.0	ľ
Lane Grp Cap (vph)	113	237		139	261		131	1258		359	1252	
v/s Ratio Prot	l	0.04			c0.10			0.51			c0.76	
v/s Ratio Perm	0.07			0.06			0.35			0.01		
v/c Ratio	0.40	0.26		0.40	0.62		0.45	0.65		0.01	0.98	
Uniform Delay, d1	37.4	36.5		37.4	38.9		3.9	5.1		2.5	10.4	
Progression Factor	1.00	1.00		1 00	1 00		100	1.00		0.89	1.56	
Incremental Delay, d2	5.2	9.0		1 9	4.3		10.8	2.7		0.0	4.0	
Uelay (s)	39.7	37.1		39.2	43.1		14.6	1.7		2.3	20.2	
Level of Service	0						-	×		A	o	
Approach Delay (s)		37.8			42.2			8.2			20.2	
Approach LOS		0			٥			A			U	
Intersection Summary			and the									I
HCM Average Control Delay			19.2	Ŧ	M Level	of Service			80			
HCM Volume to Capacity ratio			0.91	ľ	1							
Actuated Cycle Length (s)			100.0	ng c	m of lost	time (s)			0,9			
Analysis Period (min)			15	2	n revei u	anivies			L			
c Critical Lane Group			2									

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kotinger Drive Senior Housing Project AM Peak Hour Buildout Conditions with Planned TIF Improvements-No Project

							ŀ		,	•						-		1 a -
	t	~	6	ţ	1		1	t	~	4	Ļ	/	~	-		→	*	
Movement	E8T E	AR W	BL N	A 181	ABL N	NBR	EBL	EBI	EBR	WBL	WBT	VBR	VBI N	BT NB	R SB	L SB	I SBR	
Lane Configurations	+1			•=	*	Lane Configurations		4			4			4		4		
Volume (veh/h)	115	95	30	120	107	95 Sign Control		Stop			Stop		S	top		Sto		
Sign Control	Free		4	ree S	top	Volume (vph)	06	37	20	25	88	90	25	60	20 1	5 7	35	
Grade	%0			%0	%0	Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0 09 0	.60 0.6	90 0.6	0 0.6	09.0	_
Peak Hour Factor	0.64 0.	64 0	64 C	1.64 0	1.64 G	0.64 Hourly flow rate (vph)	150	62	33	42	163	150	42	00	33 2	5 11	7 58	_
Houmer Show cate (with)	180	4R	47	188	167	148			1000	100								١.,
Podorbing tow rate (vpit)	00	2	F	8	20	Direction, Lane #	199	184	NB 1	281						ĺ	1	
	0 4		4	10.0		Volume Total (vph)	245	355	175	200								
Lane Width (II)	13.0			13.0	3.0	Volume Left (vph)	150	42	42	25								
Walking Speed (ft/s)	4.0			4.0	4.0	Volume Right (von)	33	150	33	89								
Percent Blockage	2			2	2		0.02	0.47	0.02	0 13								
Right turn flare (veh)							10.0	1.0	20.0	21.0-								
Median type	None		Ň	one		challing readway (s)	1.0	0.0	0.0	0.0								
Modian storage wahl						Degree Utilization, x	65.0	797	6Z.0	0.32								
						Capacity (veh/h)	581	639	533	552								
upsueam signal (II)						Control Delay (s)	12.3	13.9	11.3	11.5								
pX, platoon unblocked						Approach Delay (s)	12.3	13.9	11.3	11.5								
vC, conflicting volume			348		2/2	294 Annmach I OS	60	~	æ	-								
vC1, stage 1 conf vol							ı	•	•						l			
vC2, stage 2 conf vol						Intersection Summary	ALC: NOT A					1					1000	_
vCu, unblocked vol			348		575	294 Delav			12.6									
tC. single (s)			4.1		6.4	6.2 HCM Level of Service			8									
tC 2 stane (s)						Intersection Canacity 1 Mitz	ation	1	45.7%	ICI	Level of :	ervice			A			
(c) 5 2 4 4 (c) 4			00		3.5	3.3 Analogie Captoria Cart			15						:			
(e) n			1 0		200				2									
pu queue tree %			5		70													
cM capacity (veh/h)		-	189		444	119												
Disetton I and d	CR 1 W	N 1 2	8.1															
	000		0.00															
Volume Lotal	328	5	310															
Volume Left	0	41	16/															
Volume Right	148	0	148			,												
cSH	1700 1	89	541															
Volume to Capacity	0.19 0	04 0	58															
Olialia anoth Q5th (#)	0		63															
Control Dolor (c)		10 2	2 10															
COILIN DELEY (a)	0.0		2															
Lane LUS		¥	د															
Approach Delay (s)	0.0	19	0.5															
Approach LOS			o															
6																		
Intersection Summary																		
Average Delay			1 9															
Intersection Capacity Utilizatic	-	4	%0	1 DQ	evel of S.	Service A												
Analysis Period (min)			15															

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions-No Project

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Movement EBN E Lane Configurations 1 1 Volume (ypta) 160 12 Volume (ypta) 160 12 Volume (ypta) 160 12 Volume (ypta) 130 130 Lane Util, Factor 330 0 Lane Util, Factor 0.97 0 Fipb, ped/bikes 1.000 1 Filt Protected 0.35 1 Satd, Flow (port) 3547 51 Peak-hour factor, PHF 0.34 0 Apj, Flow (perm) 3547 51 Pack Aour factor, PHF 0.34 0 Apj, Flow (perm) 355 1 Pack Aour factor, PHF 0.34 0 Pack Aour factor, PHF 0.34 0 Pack Aour factor, PHF 0.34 0 Comp Eask (#hht) 170 13	224 224 330 330 330 300 500 500 500 500 500 500	143 1900	WBL 254	WBT 141	WBR	NBL	18N	NBR	SBL	185	SBR
Lane Conigurations Molecular Lane Conigurations 12 Volume (vph) 180 12 Lease Fow (vphp) 190 19 Lease Low (vphp) 190 19 Lease Util, Factor 30 3 Fipb, ped/bikes 100 1 Fipb, ped/bikes 100 1 Fit Protected 0.35 1 Sadd, Flow (perm) 3547 51 Peak-hour factor, PHF 0.35 1 Adj, Flow (perm) 3547 51 Pack four (phh) 170 13 RTOR Reauction (ph) 0 1 Com Peck (#hhr) 170 14	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	143	254	141	-	-	1	*	TOO	100	500
Care Componentis 10 Volume (vph) 160 12 Volume (vph) 1900 19 Ical Los (vphp) 300 3 Lane UIL, Factor 37 0 Fipb, ped/bikes 1000 1 Fip, ped/bikes 1000 1 Fit Protected 0.95 1 Sati, Fiow (perm) 3547 51 Pask-hour factor, PHF 0.94 0 AD, Flow (perm) 3547 51 Pask-hour factor, PHF 0.94 0 AD, Flow (perm) 3547 51 Pask-hour factor, PHF 0.94 0 AD, Flow (perm) 170 13 ComP Edge (#hr) 170 14 Comp Edge (#hr) 170 14	524 330 391 300 300 302 302 302 302 302 302 302 302	143	254	741		-	-	-		-	
Ideal (Pay (pp)) 100 10 Ideal (Lost time (s) 3.0 3 Total Lost time (s) 3.0 3 Tane Ull Factor 0.97 0.1 Fip, pedbikes 1.00 1. Fin 1.00 1. Fit 1.00 1. Sald. Flow (port) 35.47 51 Peak-hour factor, PHF 0.95 1. R10 Recurction (vpi) 1.00 1. R10 Recurction (vpi) 1.01 1. Adj, Flow (vph) 1.01 1. Adj, Flow (vph) 1.00 1.	93 00 19 91 91 92 9	006	5	1	263	140	340	CAA	200	11	104
Total Low (rpl) 30 3 Total Low (rpl) 30 3 Total Lost time (s) 30 3 Lare Util Factor 0.97 0 Fip, ped/bikes 1.00 1. Fip, ped/bikes 1.00 0. Fip, ped/bikes 1.00 0. Fit Protected 0.95 1. Sald. Flow (port) 354.7 51 Peak-hour factor, PHF 0.94 0. Abj Flow (wph) 170 13 RTOR Restruction (vph) 170 14 Comit Pesk (#hr) 170 14 Com Feek (#hr) 170 14	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	200	1000	1000	0001				1000	000+	001
Lane UIL, Factor 0.97 0.71 Lane UIL, Factor 0.97 0.71 Fipb, ped/bikes 1.00 1. Fiph, ped/bikes 1.00 1. Fith 2.84 1.00 1. Fith 2.84 Four 0.95 1. Stad, Flow (perm) 3.547 51 51 Peak-hour factor, PHF 0.94 0. 3.547 51 Peak-hour factor, PHF 0.94 0. 1.01 17 13 RTOR Resultion (pph) 0.70 1.70 13 1.70 13 Four distribution (pph) 0 1.70 13 1.70 13 Conff Peds(#hht) 1.70 1.70 1.4 1.70 1.4	00 00 00 00 00 00 00 00 00 00 00 00 00		1900	0081	000	1900	100	006	1900	1900	1901
Eps. ped/bikes 0.97 0.97 Fipb, ped/bikes 0.00 1. Fip, ped/bikes 1.00 1. Fit Pitected 0.95 1. Satid, Flow (port) 3547 51 51 Pesek-hour (perim) 3547 51 51 Satid, Flow (port) 0.955 1. 103 1. RTOR Reduction (perim) 3547 51 51 54 51 RTOR Reduction (perim) 3547 51 71 73 74 <	000 000 000 000 000 000 000 000 000 00		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	
Tipp, peorbikes 1.00 1. Filpn, peorbikes 1.00 0. Filpn, peorbikes 1.00 0. Filpn, peorbikes 1.00 0. Filpn, peorbikes 1.00 0. Filpn, peorbikes 0.35 1. Filpn, peorbikes 0.355 1. Satd, Flow (perm) 3547 51 Peak-hour factor, PHF 0.94 0. Adj, Flow (pph) 170 13 RTOR Recuction (vph) 170 14 ComP Reduction (vph) 170 14 ComP Reduction 0 140 140	900 900 902 902 94 12 956 900 94 94 94 94 94 94 94 94 94 94 94 94 94		18.0	0.83	00.1	00.1	CR.U	00.1	190	CR.U	
The, peadones 1.00 0. Fri Padones 1.00 0. Fri Paunited 0.95 1. Sadi Flow (prort) 3547 51 51 Path Protected 0.95 1. 54 51 Path Protected 0.95 1. 54 51 Path Protected 0.95 3547 51 54 51 Path Protected 0.95 3547 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 51 54 54 51 54 54 54 54 51 54 54 54 54 54 54 54 51 54 54 54 54 54 54 54 54 54 54 54 54 54 54 54<	00 556 302 302 442 302		00.1	00.1	98.0	1.00	1.00	R6:0	1.00	1.00	
FL 1.00 0. FL Protected 0.35 1. Sald, Flow (prot) 35.47 51 Sald, Flow (prot) 35.47 51 Sald, Flow (prot) 35.47 51 Peak-hour factor, PHF 0.95 1. Adj, Flow (prim) 170 13 RTOR Reduction (wpit) 170 13 RTOR Reduction (wpit) 170 13 Confl Peaks (#Ihh) 170 14 Confl Peaks (#Ihh) 170 14	98 156 11 12 11 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 1		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Fill Protected 0.55 1. Satd. Flow (prot) 354.7 51 Ett Permitted 0.35 1. Satd. Flow (perm) 354.7 51 Pask-hour factor, PHF 0.34 0. Adj Flow (pph) 170 13 RTOR Recution (pph) 170 14 ComP Flow (pph) 170 14 ComP Flow (pph) 170 14 ComP Flow (pph) 170 14 Toom Flow (pph) 170 14	00 00 302 442 442		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Satd. Flow (prot) 3547 51 Fit Permitted 0.959 1. Fauld. Flow (perm) 3547 51 Peak-hour factor. PHF 0.94 0. Adj. Flow (yph) 170 13 RTOR Reduction (yph) 0 Lane Group Flow (yph) 170 14 Confl. Beds (#hn) 500	56 00 302 442 6		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Fit Permitted 0.95 1. Satú Flow (perm) 3547 51 Peak-hour factor. PHF 0.94 0. Adj, Flow (vph) 170 13 RTOR Reduction (vph) 170 14 Lane Group Flow (vph) 170 14 Confl Peaks (#hhr) 0 14	00 56 302 12 12 6		3547	3657	1599	1829	3657	1599	3547	3551	
Satu, Flow (perm) 3547 51 Peak-hour factor, PHF 0.34 0. Adj, Flow (sph) 170 13 RTOR Reduction (vph) 170 13 Lane Group Flow (vph) 170 14 Confl Peeks 170 14 Lane Group Flow (vph) 170 14 Lane Group Flow (vph) 170 14 Lane Group Flow (vph) 170 14	56 302 12 12 142		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Peak-hour factor, PHF 0.94 0. Adj. Flow (vph) 170 13 RTOR Reduction (vph) 0 Lane Group Flow (vph) 170 14 Confl. Peds (#hrl) Prod	98 302 42 42 6		3547	3657	1599	1829	3657	1599	3547	3551	
Adj. Flow (yph) 13 RTOR Reduction (yph) 0 Lane Group Flow (yph) 170 14 Confl. Peds (#hn) 770 14	802 112 6	0.94	0.94	0.94	0.94	0 94	0.94	0 Q4	76 0	0 04	0 04
RTGY Reduction (vph) 0 14 Lane Group Flow (vph) 170 14 Confl Peds (#/hr) 770 14	42	152	270	788	386	140	36.9	686	2002	764	180
Confl. Peds. (#hr) 170 14 Confl. Peds. (#hr) 170 14 Turn Turn. Prov	6 17	2		8	0	2 0	8	200	0	101	3 0
Confl Peds (#/hr) 170 17 Tum Tum	9		010	200	200	140	036	0 100	002	110	
Turn Tuno (mini) Drol	Q	¢	710	1 00	and all	P+	000	36	£0.7	<u>0</u>	>
	9	2	110		8	-			c		
	D		μų.		Free	IOI V		Free	ID1	ł	
Protected Phases			n	7		e.	20		-	4	
Permitted Phases					Free			Free			
Actuated Green, G (s) 8.8 3t	5.3		11.7	38.2	120.0	12.9	16.3	120.0	35.7	39.1	
Effective Green, g (s) 9.8 35	9.3		12.7	42.2	120.0	13.9	19.3	120.0	36.7	42.1	
Actuated g/C Ratio 0.08 0.	33		0.11	0.35	1 00	0.12	0.16	1.00	0.31	0.35	
Clearance Time (s) 4.0 7	0 2		4.0	0.7		4.0	6.0		4.0	6.0	
Vehicle Extension (s) 3.0 3	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
l ane Grn Can (vnh) 290 16	88		375	1286	1599	212	588	1500	1085	S24R	
v/s Ratio Prol	28		CO 08	0.22	222	CO OB	c0 10		0.20	c0.26	
v/s Ratio Perm				,	0.24	22.22		c0 43			
v/c Ratio 0.59 0.	85		0.72	0.61	1 24	0.70	0.63	0.43	0.65	0.73	
Illniform Delay d1 53 1 37	2 7		51 0	32.1	00		47.0		36.1	0 72	
	00			1.00	0.0					010	
Progression radio 1.00 1.	00.2		00'1	00.1	00.1	001	001	00.1	0.80	8/0	
incremental velay, oz 3.0 5			0.0	R.U	4.0	10.1	71	P.0	2.8	1.7	
Delay (s) 56.2 45	3.4		58.4	33.0	0.4	61.1	49.1	8.0	31.6	28.6	
Level of Service E			ш	o	A	ш	0	A	0	o	
Approach Delay (s) 44	4.7			29.0			23.1			29.9	
Approach LOS	0			υ			U			υ	
Intersection Summary					100		1 Total				
HCM Average Control Delav		32.4	HC	M Level	of Service			U			
HCM Volume to Capacity ratio		0.76									
Actualed Cycle Length (s)	1	20.0	Sur	n of lost	time (s)			9.0			
Intersection Capacity Utilization	80	2%	ICU	Level oi	Service			۵			
Analysis Period (min)		15									
c Critical Lane Group											

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

Memoria Eli	Memorial EN Mei	30: Vineyard-Tawny	/ & Ber	nal									4/2	9/2013
Moreneerie EI ET EM MBI	Monement EI ET EM MBI MBI </th <th></th> <th>٦</th> <th>t</th> <th>۲</th> <th>\$</th> <th>Ŧ</th> <th>~</th> <th>•</th> <th>+</th> <th>٩</th> <th>۶</th> <th>-</th> <th>7</th>		٦	t	۲	\$	Ŧ	~	•	+	٩	۶	-	7
		Movement	EBL	EBT	EBR	WBI	W8T	WBR	NBI.	NBT	NBP	185	SBT	語
Moume (vph) 32 43 31 30 300	Molime (vp) 32 43 13 31 30 30 300 </td <td>Lane Configurations</td> <td>*</td> <td>¢</td> <td></td> <td></td> <td>¢Ţ</td> <td>*</td> <td>*</td> <td>44</td> <td></td> <td>*</td> <td>4</td> <td></td>	Lane Configurations	*	¢			¢Ţ	*	*	44		*	4	
Ideal Flow (pri) 300	Index Flow (privity) 310 3100 1300 </td <td>Volume (vph)</td> <td>92</td> <td>49</td> <td>13</td> <td>31</td> <td>30</td> <td>76</td> <td>36</td> <td>1015</td> <td>66</td> <td>112</td> <td>399</td> <td>168</td>	Volume (vph)	92	49	13	31	30	76	36	1015	66	112	399	168
Lare UL, Extended 30	$ \ \ \ \ \ \ \ \ \ \ \ \ \ $	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fully Factor 035 035 100 </td <td>Fully leader 0.36 0.39 1.00</td> <td>Total Lost time (s)</td> <td>3.0</td> <td>3.0</td> <td></td> <td></td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td></td>	Fully leader 0.36 0.39 1.00	Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Filth pendbles 100		Lane Util, Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	
Floh Prodibies 100	Hole 1.00 <th< td=""><td>Frpb, ped/bikes</td><td>1.00</td><td>1.00</td><td></td><td></td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td></td><td>1.00</td><td>0.99</td><td></td></th<>	Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	0.99	
France 100 037 100 036 100 101 101 101 101 101<	FI 100 037 100 036 100 101 101 101	Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1,00	1.00	
If Promitted 035 039 036 100 035 100 035 100 Staft Flow (poit) 1477 1496 1391 636 1391 636 1301 635 1301 635 1301 635 1301 635 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636 1301 636	II: Promitted 035 039 039 100 035 100 035 100 Rid Flow (prot) 1477 1495 5191 025 3101 322 811 323 825 825 825 825 825 825 825 825 825 825 825 825 825 825 825 825 825 825<	Fri	1.00	0.97			1.00	0.85	1.00	0.99		1.00	0.96	
Sald Flow (not) 1477 1496 1566 1391 1825 3611 1825 1815 181 100 0.25 0.95	Sald Flow (prot) 147 1496 1556 1391 162 1825 1825 1825 1825 1825 1825 1825 1825 1825 1825 1825 1836 1391 1636 1391 1636 1391 1636 1391 1636 1391 1636 1391 1636 1395 1395 1395 1391 1491 1391	FII Protected	0.95	0.99			0.98	1.00	0.95	1.00		0.95	1.00	
If Permitted 035 039 030 030 030 030 031 030 031 030 031 030 031 030 035 <	Hermitted 035 038 038 100 026 100 036 100 036 100 036 100 036 100 036 100 036 100 036 100 036 100 036	Satd Flow (prot)	1477	1496			1596	1391	1825	3611		1829	1825	
Sald Flow (perm) 1477 1496 1596 1391 504 361 342 1252 336 345 342 125 347 345 347	Sald Flow (perm) 1477 1496 1596 1391 504 381 32 1825 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 0 182 182 0 182 0 182 0 182 182 0 182	Fil Permitted	0.95	0.99			0.98	1.00	0.26	1.00		0.18	1.00	
Peak-hour factor, PHF 036	Peak-hour factor, PHF 0.96	Sald. Flow (perm)	1477	1496	Ì		1596	1391	504	3611		342	1825	
Adj. Fow (rph) 56 51 14 32 31 79 711 46 735 Lane Group Flow (rph) 0 11 0 11 38 145 0 110 571 0 Lane Group Flow (rph) 0 11 0 10	Adj. Fow (rph) 56 51 14 32 31 79 81 75 71 715 715 715 715 715 715 715 715 715 715 715 715 715 715 715 715 715 715 7111 711 711 711<	Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
RTOR Reduction (wph) 0 11 0 0 6 9 0 9 0 20 20 0 20	RTOR Reduction (vph) 0 11 0 10 11 10	Adj. Flow (vph)	96	51	14	32	31	62	38	1057	67	117	416	175
Lane Group Flow (ph) B0 70 0 6 11 31 3 4 571 0 Perform 10 10 10 10 10 11 571 0 11 571 0 Perform 10 10 10 10 10 10 10 11 571 0 11 571 0 Perform 5011 10	Lane Group Flow (vph) B0 70 0 6 11 38 144 37 4 Pointing Peters 10 10 10 10 10 10 11 571 14 Printing Peters Split 10 10 10 10 10 10 11 571 4 Printing Presses 4 3 3 2 2 2 6	RTOR Reduction (vph)	0	11	0	0	0	68	0	6	0	0	20	0
Condition 1 3 3 3 4 3 3 3 4 7 7 4 Protected Phases Salit 7 7 3 3 3 3 3 3 2 2 5	Conflicted Flasses 3 3 4 Parking (#hr) 10	Lane Group Flow (vph)	80	02	0	0	63	11	38	1145	0	117	571	0
Parking (#hh) 10	Parking (#hr) 10	Confl. Peds. (#/hr)			en	e			4					4
	Turn Type Split Perm Perm Perm Perm Ferm Ferm Ferm 6 Permitted Preses 4 4 3 3 2 2 6 6 Permitted Preses 7.5 7.5 7.5 2.5 2.05<	Parking (#/hr)	10	10	10	10	10	10						
Protected Phases 4 4 3 3 2 2 5 6 Protected Phases 1 7 7 3 2 2 5 <t< td=""><td>Protocled Phases 4 4 3 3 3 2 2 6 6 Actualide Phases 15 75 75 75 205<!--</td--><td>Turn Type</td><td>Split</td><td></td><td></td><td>Split</td><td></td><td>Perm</td><td>Perm</td><td></td><td></td><td>Perm</td><td></td><td></td></td></t<>	Protocled Phases 4 4 3 3 3 2 2 6 6 Actualide Phases 15 75 75 75 205 </td <td>Turn Type</td> <td>Split</td> <td></td> <td></td> <td>Split</td> <td></td> <td>Perm</td> <td>Perm</td> <td></td> <td></td> <td>Perm</td> <td></td> <td></td>	Turn Type	Split			Split		Perm	Perm			Perm		
Permitted Prases 3 2 3 2 3 2 5	Permitted Phases 3 2 3 2 6 3 4 2 5	Protected Phases	4	4		3	e			2			9	
Actualed Green, G(s) 7.5 7.5 4.3 20.5 20.3 30.0 <td>Actualed Green, G (s) 7.5 7.5 4.3 20.5 20.6<td>Permitted Phases</td><td></td><td></td><td></td><td></td><td></td><td>e</td><td>2</td><td></td><td></td><td>9</td><td></td><td></td></td>	Actualed Green, G (s) 7.5 7.5 4.3 20.5 20.6 <td>Permitted Phases</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>e</td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td> <td></td>	Permitted Phases						e	2			9		
File-cline Criecing (s) 95 95 95 95 95 95 95 225 225 225 225 Actuated GYC Ratio 0.20 0.20 0.20 0.20 0.20 0.20 0.30 0.48	File-cline Green, g(s) 95 95 95 95 95 95 95 225 225 225 225 Actuated of Kratio 0.20 0.20 0.20 0.20 0.20 0.20 0.30 0.48	Actuated Green, G (s)	1.5	15			4.3	4.3	20.5	20.5		20.5	20.5	
Autained of Ratio 0.20 0.20 0.23 0.13 0.13 0.14 0.48 <td>Actualed GC Ratio 0.20 0.20 0.20 0.20 0.20 0.20 0.48<td>Effective Green, g (s)</td><td>9.5</td><td>9.5</td><td></td><td></td><td>6.3</td><td>6.3</td><td>22.5</td><td>22.5</td><td></td><td>22.5</td><td>22.5</td><td></td></td>	Actualed GC Ratio 0.20 0.20 0.20 0.20 0.20 0.20 0.48 <td>Effective Green, g (s)</td> <td>9.5</td> <td>9.5</td> <td></td> <td></td> <td>6.3</td> <td>6.3</td> <td>22.5</td> <td>22.5</td> <td></td> <td>22.5</td> <td>22.5</td> <td></td>	Effective Green, g (s)	9.5	9.5			6.3	6.3	22.5	22.5		22.5	22.5	
Clearance Time (s) 5.0 3.0	Clearance Time (s) 5.0	Acluated g/C Ratio	0.20	0.20			0.13	0.13	0.48	0.48		0.48	0.48	
Vehicle Extension (s) 3.0	Archicle Extension (s) 3.0	Clearance Time (s)	5,0	5.0			5.0	5.0	5,0	5.0		5.0	5.0	
Lare Cro Cap (wh) 237 300 213 185 240 1718 163 666 Vic Ratio Perrit c.0.05 0.05 c.0.04 0.32 0.31 0.	Lane Cry Cap (wh) 297 300 213 155 240 1718 153 568 0.31	Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	ĺ
vis Ratio Preti c0.05 0.05 c0.04 0.32 0.31 Vis Ratio Perm 0.1 0.08 0.32 0.31 0.33 0.31 Vis Ratio Perm 0.27 0.36 0.16 0.17 0.08 0.072 0.56 Uniform Delay, d1 16.0 1.23 0.30 0.10 1.00 1.00 1.00 Progression Factor 1.00	Kalaio Peri c0.05 0.05 c0.04 0.32 0.31 0.31 Vic Ratio 0.22 0.23 0.01 0.08 0.72 0.69 0.72 0.69 0.72 0.69 0.72 0.69 0.72 0.69 0.72 0.66 0.72	Lane Grp Cap (vph)	297	300			213	185	240	1718		163	968	
vik Ratio Perm 0.01 0.08 0.03	vis Ratio Perm 0.01 0.08 0.04 0.09 0.03	v/s Ratio Prot	c0.05	0.05			c0.04			0.32			0.31	
Microsoft 0.27 0.23 0.30 0.66 0.67 0.72 0.66 Uniform Delay, cl1 16.0 15.8 17.9 7.0 95.5 9.9 95.5 Progression Factor 10.0 1.00	Microaction 0.27 0.23 0.30 0.06 015 067 0.72 0.66 Uniform Delay, d1 16.0 15.8 113 100 1.00 <td>v/s Ratio Perm</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.01</td> <td>0.08</td> <td></td> <td></td> <td>c0.34</td> <td></td> <td></td>	v/s Ratio Perm						0.01	0.08			c0.34		
Progression Teal	Uniform Delay, d1 15.0 15.8 17.9 7.0 9.5 9.9 9.5 Uniform Delay, d1 15.0 15.8 17.9 7.0 9.5 9.9 9.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	0.27	0.23			0:30	90.06	0.16	0.67		0.72	0.66	
Progression Factor 1.00 <td>Progression Factor 1.00<td>Uniform Delay, d1</td><td>16.0</td><td>15.8</td><td></td><td></td><td>18.5</td><td>17.9</td><td>7,0</td><td>9.5</td><td></td><td>9.9</td><td>9.5</td><td></td></td>	Progression Factor 1.00 <td>Uniform Delay, d1</td> <td>16.0</td> <td>15.8</td> <td></td> <td></td> <td>18.5</td> <td>17.9</td> <td>7,0</td> <td>9.5</td> <td></td> <td>9.9</td> <td>9.5</td> <td></td>	Uniform Delay, d1	16.0	15.8			18.5	17.9	7,0	9.5		9.9	9.5	
Incremental Delay, d2 05 04 08 01 03 10 140 18 Incremental Delay, d2 165 162 193 180 7.3 105 239 113 Level of Service 16 B B A 10.4 23 13.4 Approach Delay (s) 16.4 18.6 10.4 13.4 Approach Delay (s) 17.3 10.5 10.4 13.4 Approach Delay (s) 16.4 13.3 Num of lost time (s) 10.4 Approach Delay (s) 17.3 Sum of lost time (s) 10.4 Approach Delay (s) 17.3 Sum of lost time (s) 10.4 Aratysis Period (min) 15 c Ortical Lane Group	Incremental Delay, d2 05 04 08 01 03 10 14.0 18 Incremental Delay (s) 16.5 16.2 19.3 18.0 7.3 10.5 2.3 11.3 Level of Services 16.4 18.6 10.4 13.4 Approach Delay (s) 16.4 18.6 10.4 13.4 Approach Delay (s) 16.4 18.6 10.4 13.4 Approach Delay (s) 12.3 HCM Level of Service 18 Interection Sommary 12.3 HCM Level of Service 18 HCM Volume to Capacity Tation 0.34 Actuated Cycle Length (s) 13.3 Sum of lost time (s) 9.0 Intersection Capacity Utilization 60.8% (CU Level of Service 18 Araysis Period (min) 15 Cutical Lane Group	Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Delay(s) 165 162 193 180 7.3 10.5 23.9 11.3 Level of Service B B B B A B C B Approach LOS B B B B A B C B Approach LOS B B B B A B C B Approach LOS B B A B C B B Approach LOS B B A B C B B Approach LOS B B HCM Level of Service B B B Antalet Cycle Length (s) 47.3 Sum of lost time (s) 0.0 47.3 Sum of lost time (s) 9.0 Actuated Cycle Length (s) 47.3 Sum of lost time (s) 9.0 0.0 A Actuated Cycle Length (s) 47.3 Sum of lost time (s) 9.0 0.0 0.0 0.0 0.0 0.0 0.0 <t< td=""><td>Delet (s) 165 162 193 180 7.3 105 239 113 Level of Service B B B B B C B Approach Desk B B B B B C B Approach Desk B B B B C B Approach Desk B B B B C B Approach Desk B B B B B B B Approach Desk 12.3 HCM Level of Service B B A A Acutated Cytel Length (s) 0.54 C/U Level of Service B B A Acutated Cytel Length (s) 0.54 C/U Level of Service B A A Acutated Cytel Length (s) 15 Sum of lost time (s) 9.0 A Acutated Cytel Length (s) 15 Sum of lost time (s) B A Acutated Cyton 60.8% ICU Level of</td><td>Incremental Delay, d2</td><td>0.5</td><td>0.4</td><td></td><td></td><td>0.8</td><td>0.1</td><td>0,3</td><td>10</td><td></td><td>14.0</td><td>1.8</td><td></td></t<>	Delet (s) 165 162 193 180 7.3 105 239 113 Level of Service B B B B B C B Approach Desk B B B B B C B Approach Desk B B B B C B Approach Desk B B B B C B Approach Desk B B B B B B B Approach Desk 12.3 HCM Level of Service B B A A Acutated Cytel Length (s) 0.54 C/U Level of Service B B A Acutated Cytel Length (s) 0.54 C/U Level of Service B A A Acutated Cytel Length (s) 15 Sum of lost time (s) 9.0 A Acutated Cytel Length (s) 15 Sum of lost time (s) B A Acutated Cyton 60.8% ICU Level of	Incremental Delay, d2	0.5	0.4			0.8	0.1	0,3	10		14.0	1.8	
Level of Service B B B A B C B Approach Delay (s) 16.4 18.6 10.4 13.4 Approach Delay 16.4 18.6 10.4 13.4 Approach Delay 12.3 HCM Level of Service B 10.4 Approach Delay 12.3 HCM Level of Service B 10.4 HCM Average Control Delay 12.3 HCM Level of Service B Acuated Cycle Length (s) 0.54 Sum of lost time (s) 9.0 Inferencial Capacity ratio 0.8% ICU Level of Service B Analysis Period (min) 15 C critical Lane Group C	Level of Service B B B A B C B A A B C B A A A B C C B A A A A	Delay (s)	16.5	16.2			19.3	18.0	7,3	10.5		23.9	11,3	
Approach Deley (s) 16.4 18.6 10.4 13.4 Approach Deley (s) B B B B B Approach LOS B Contract B B B B Approach LOS B Contract B B B B B Approach LOS B Contract B Contract B B HCM Average Controllosity 12.3 HCM Level of Service B B Actualed Cycle Length (s) 0.54 Sum of lost time (s) 9.0 B Actualet Cycle Length (s) 47.3 Sum of lost time (s) 9.0 B Analysis Period (min) 15 Colifical Lane Group B Childral Lane Group Contract B	Approach Delay (s) 16.4 18.6 10.4 13.4 Approach Delay (s) 16.4 13.4 13.4 Approach LOS B B B Aproach LOS B B Approach LOS B Approach LOS 17.3 A CM Level of Service B Analed Cycle Length (s) 47.3 Sum of lost time (s) 9.0 Intersection Capacity Utilization 60.8% (CU Level of Service B Analysis Period (min) 15 Cuffical Lane Group	Level of Service	æ	80			8	8	A	æ		U	80	
Approach LOS B B B Approach LOS B B B Approach LOS Summary 12,3 HCM Level of Service B A HCM Notime to Capacity Table 12,3 HCM Level of Service B A Actuated Cycle Length (s) 0,3 HCM Level of Service B Analysis Period (min) 15 CO Hickel Lane Group c Ortical Lane Group 12	Approach LOS B B B B Interection Summary 12.3 HCM Level of Service B HCM Volverage Control Delay 12.3 HCM Level of Service B HCM Volverage Control Delay 0.34 HCM Level of Service B Actuated Cycle Length (s) 0.34 Sum of lost time (s) 90 Intersection Capacity Unlitization 60.8% ICU Level of Service B Analysis Period (min) 15 Critical Lane Group	Approach Delay (s)		16.4			18.6			10.4			13.4	
Interaction Summary HCM Average Control Delay 12.3 HCM Level of Service B HCM Nolume to Capacity ratio 0.54 Actuated Cycle Length (s) 47.3 Sum of lost time (s) 9.0 Intersection Capacity Unitization 60.8% (CU Level of Service B Analysis Period (min) 15 c Orticcal Lane Group	Interaction Summary 12.3 HCM Level of Service B HCM Average Control Delay 12.3 HCM Level of Service B HCM Average Control Delay 12.3 Sum of lost time (s) 9.0 Actuated Cycle Length (s) 47.3 Sum of lost time (s) 9.0 Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 Critical Lane Group	Approach LOS		œ			ß			æ			8	
HCM Average Control Delay 12.3 HCM Level of Service B HCM Volume to Capacity ratio 0.54 2.47.3 Sum of lost time (s) 9.0 Acutated Cycle Length (s) 4.7.3 Sum of lost time (s) 9.0 Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 C Critical Lane Group	HCM Average Control Delay 12.3 HCM Level of Service B B 12.3 HCM Level of Service B Acutated Volume lo capacity ratio 0.54 4.3 Sum of lost time (s) 9.0 Acutated Cycle Length (s) 4.7 Sum of lost time (s) 9.0 Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 Critical Lane Group 15	Intersection Summary						Ì		100			l	
HCM Volume to Capacity ratio 0.54 0.54 Acuated Cycle Length (s) 0.54 0.54 Interestion Capacity Utilization 0.08% ICU Level of Service B Analysis Period (min) 15 Contical Lane Group	HCM Volume to Capacity ratio 0.54	HCM Average Control Delav			12.3	Ŧ	M Level	of Service	0		en			Ĩ
Actuated Cycle Length (s) 47.3 Sum of lost time (s) 9.0 Artisection Capabily Utilization 90.8% ICU Level of Service B Analysis Period (min) 15 ICU Level of Service Critical Lane Group	Actuated Cycle Length (s) 47.3 Sum of lost time (s) 90 Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	HCM Volume to Capacity rati	0		0.54									
Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilization 60.8% ICU Level of Service B Analysis Period (min) 15 Culture of Culture of Culture Group c Critical Lane Group	Actuated Cycle Length (s)			47.3	Su	m of lost	time (s)			9,0			
Anabysis Period (min) 15 c Critical Lane Group	Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utilizati	IOI		60.8%	⊇	U Level a	f Service			60			
c Critical Lane Group	c Critical Lare Group	Analysis Period (min)			15									
		c Critical Lane Group												

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

> Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions with Planned TIF Improvements-No Project

Accordinations Edit		•				,	•		•	ľ	-	-	-
Konnent EBL		٩	t	r	6	ł	/	•	-	•	•	+	¥
Lare Configurations T	Movement	EBL	E81	EBR	WBI	WBT	WBR	NBI	NBT	NBR	SBL	SBT	SBR
Volume (wh) 78 103 911 910 1900 <	Lane Configurations	*	+	*	r	+	k	5	4		F	\$	-
Total Last function 1900 </td <td>Volume (vph)</td> <td>62</td> <td>103</td> <td>91</td> <td>103</td> <td>81</td> <td>45</td> <td>63</td> <td>1213</td> <td>84</td> <td>46</td> <td>622</td> <td>69</td>	Volume (vph)	62	103	91	103	81	45	63	1213	84	46	622	69
Lare Luli Factor 100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Flag 100 <td>Total Lost time (s)</td> <td>3,0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td>3.0</td>	Total Lost time (s)	3,0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Filt Time 100 </td <td>Lane Uil Factor</td> <td>1.00</td> <td>1 00</td> <td>1 00</td> <td>1 00</td> <td>1 00</td> <td>1 00</td> <td>1 00</td> <td>0.95</td> <td></td> <td>1.00</td> <td>0.95</td> <td>1.00</td>	Lane Uil Factor	1.00	1 00	1 00	1 00	1 00	1 00	1 00	0.95		1.00	0.95	1.00
Find 100 </td <td>Frpb, ped/bikes</td> <td>1_00</td> <td>1.00</td> <td>0.99</td> <td>1.00</td> <td>1.00</td> <td>66 0</td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td>0.96</td>	Frpb, ped/bikes	1_00	1.00	0.99	1.00	1.00	66 0	1.00	1.00		1.00	1.00	0.96
Fri 100 <td>Flpb, ped/bikes</td> <td>1 00</td> <td>1 00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1 00</td> <td>1.00</td> <td>1 00</td> <td></td> <td>1 00</td> <td>1.00</td> <td>1.00</td>	Flpb, ped/bikes	1 00	1 00	1.00	1.00	1.00	1 00	1.00	1 00		1 00	1.00	1.00
RI Protected 0.95 1.00 0.95 0.96 0.98 <th0.98< th=""> 0.98 0.98 <</th0.98<>	Fit	1,00	1.00	0.85	1.00	1.00	0.85	1.00	66 0		1.00	1.00	0,85
Sald. Flow (prol) 1229 1325 1534 1554 1554 1554 1554 1554 1554 1554 1555 1517 1829 3565 1209 1293 1555 1517 1829 3666 1229 355 1517 1525 1513 1555 1517 1529 3556 150 0.98 0.77 0 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.71 70 0.79 0.71 70 0.79 0.71 70 0.71 70 0.71 70 0	FIL Protected	0,95	1,00	1 00	0.95	1 00	1.00	0.95	1.00		0.95	1_00	1.00
Fit Permitted 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.96 0.96 0.98 0.96 0.98 0.96 0.98 0.96 0.98 0.96 0.98 0.98 0.96 0.97 0.05 0.95 0.05 0.95 0.95 0.96 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.97 0.99 0.99 0.98 0.7 0 <th0< th=""> 0 0 <</th0<>	Satd Flow (prol)	1829	1925	1613	1554	1636	1371	1829	3606		1829	3657	1571
Satur Flow (perm) 1829 1925 1613 1554 1555 1517 1829 3506 1829 3506 1829 3556 1829 3556 1829 3556 1829 3556 1829 3556 1829 3556 1829 3556 1829 3566 1829 3569 0 0 3 0 0 7 79 0 3 0 0 77 79 0 27 0 3 6 64 1731 0 17 79 0 0 77 0 17 9 177 70 0 71 73 105 131	Flt Permilted	0.95	1 00	1 00	0.95	1 00	1.00	0.95	1.00		0.95	1 00	1_00
Peak-hour factor, PHF 0.98 0.98 0.98 0.98 0.98 0.98 0.99 0.99 0.99 0.99 0.99 0.98 0.99 0.99 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.91 0.73 0 0 70 0 1 70 1 70 1 71 73 0 47 73 0 47 73 0 47 73 0 47 73 0 47 73 0 47 73 0 47 73 0 47 73 14 73 14 73 14 73 14 73 14 73 14 73 14 14 14 17 73 70 70 73 70 70 73 73 70 70 73 70 70 70 70 70 70 70 70 70 70 70	Satd. Flow (perm)	1829	1925	1613	1554	1636	1371	1829	3606		1829	3657	1571
Adj Flow (vph) 81 105 83 105 83 46 41 233 86 47 73 Lane Clore Reduction (vph) 1 10 10 1 10 10 3 6 1233 86 47 73 Dare Clore Reduction (vph) 81 10 10 10 10 3 6 47 73 Dentified Phases Split 10 10 10 10 10 7 9 77 70 Privating (#hr) Split 73 13 13 14 14 14 73 17 70 Privated Green, G(s) 13.5 13.5 13.5 13 13 13 14 14 14 77 70 Actuated Green, G(s) 13.5 13.5 13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13	Peak-hour factor, PHF	0.98	0.98	96 0	0.98	0.98	0.98	0,98	0,98	0,98	0.98	0.98	0.98
RTOR Reduction (vm) 0 7 0 0 3 0 0 7 7 Confl Pesk (#m) 81 105 6 6 4 1231 0 47 79 Confl Pesk (#m) 10 10 10 10 10 10 11 9 47 79 Parking (#m) 2011 213 135 135 135 135 135 135 135 13 70 6 6 4 70 6 5	Adj Flow (vph)	81	105	93	105	83	46	64	1238	98	47	262	20
Lane Group Flow (vph) B1 105 16 105 83 6 64 1321 0 47 73 Parking (#m) 1 10 10 10 10 10 9 73 Parking (#m) 11 10 10 10 10 9 5 Parking (#m) 5 3 3 3 1 6 5 5 Permitted Phases 4 3 3 3 1 72 66/t 67 68 Actuated Green (5) 145 145 145 145 141 172 66/t 67 68 Actuated Green (5) 145 145 145 141 141 72 68 7 70 Actuated Green (5) 145 145 145 143 143 172 617 617 617 617 617 617 610 60 5 6 70 70 70 70	RTOR Reduction (vph)	0	0	17	0	0	40	0	ო	0	0	0	23
Confl Peds, (#hr) 1 10	Lane Group Flow (vph)	81	105	16	105	83	9	64	1321	0	47	262	41
Parking (#hr) 10	Confl Peds (#/hr)			-			-			6			4
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Parking (#/hr)				10	10	10						
Protection Phases 4 4 3 3 1 6 5 Actuated Prases (4) 135 135 141 141 72 881 67 68 Actuated PC Reen, G(s) 135 135 145 145 145 145 67 68 Effective Green, g(s) 145 145 145 145 145 67 68 Effective Green, g(s) 145 145 151 151 151 151 67 68 Clearance Time (s) 30	Turn Type	Split		Perm	Split		Perm	Prof			Prot		Perm
Permitted Phases 4 3 5 141 143 72 63 63 63 Effectivated Green (5 (s) 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 14.5	Protected Phases	4	4		3	с,		-	9		S	2	
Actuated Green, G (s) 135 135 135 141 141 72 687 67 68. Actuated Green, g (s) 145 145 151 151 151 152 70 77 70 68. Actuated Green, g (s) 145 145 151 151 151 70 77 70 70 68. Actuated Green, g (s) 142 012 012 013 013 013 013 013 013 013 013 013 013	Permitted Phases			4			e						~
Effective Green, g(s) 145 140 0.05 0.05 0.05 0.06 0.5 Acaratree Time (s) 3.0	Actuated Green, G (s)	13.5	13.5	13.5	14.1	14.1	141	72	2 89		6.7	68.2	68.2
Actuated gC Ratio 0.12 0.12 0.12 0.13 0.13 0.13 0.07 0.59 0.06 0.5 Clearance Time (s) 4.0 4.0 4.0 4.0 4.0 5.0 6.05 0.06 0.5 Vehicle Extension (s) 3.0	Effective Green, g (s)	14.5	14.5	14.5	15.1	15.1	15.1	8.2	7.07		7.7	70.2	70.2
Clearance Time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 5.0 3.0	Actuated g/C Ratio	0.12	0.12	0.12	0.13	0.13	0.13	20.0	0.59		90.06	0.59	0.59
Vehicle Extension (s) 30 </td <td>Clearance Time (s)</td> <td>4.0</td> <td>4.0</td> <td>4.0</td> <td>4.0</td> <td>4,0</td> <td>4.0</td> <td>4 0</td> <td>5.0</td> <td></td> <td>4,0</td> <td>5.0</td> <td>5.0</td>	Clearance Time (s)	4.0	4.0	4.0	4.0	4,0	4.0	4 0	5.0		4,0	5.0	5.0
Lane Grp Cap (prh) 221 233 195 196 206 173 125 2125 117 213 vic Ratio Perr 0.04 c0.05 c0.07 0.03 c51 c6.037 c0.03 c31 c0.03 c31 c0.03 c33 c0.03 c33 c0.03 c33 c0.03	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	l.	3.0	3.0	3.0
vis Ratio Proi vis Ratio Proi vis Ratio Proi vis Ratio Prom Version 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	Lane Grp Cap (vph)	221	233	195	196	206	173	125	2125		117	2139	919
vic Ratio Perm vic Ratio Perm Uniform Deay eff. 0.01 Progression Factor 0.07 Progression Factor 1.00 Progression Progression P	v/s Ratio Prot	0.04	c0.05		c0.07	0.05		0.03	c0.37		c0.03	0.22	
vic Ratio 0.37 0.45 0.08 0.54 0.40 0.03 0.51 0.82 0.40 0.33 Projemseling Fadior 1.00	v/s Ratio Perm			0.01			0.00						0.03
Uniform Delay, ct 48.5 49.0 46.8 49.2 48.3 46.0 54.0 16.0 53.9 13 Incremental Delay, (s) 1.00	v/c Ratio	0.37	0.45	0.08	0.54	0.40	0.03	0.51	0.62		0.40	0.37	40.0
Progression Factor 1.00 <td>Uniform Delay, d1</td> <td>48.5</td> <td>49.0</td> <td>46.8</td> <td>49.2</td> <td>48.3</td> <td>46.0</td> <td>54.0</td> <td>16.0</td> <td></td> <td>53.9</td> <td>13.2</td> <td>10.6</td>	Uniform Delay, d1	48.5	49.0	46.8	49.2	48.3	46.0	54.0	16.0		53.9	13.2	10.6
Incremental Delay, d2 10 14 02 28 13 0.1 13 0.5 23 0. Level of Sevice D D D D E 2.26 50.4 47.0 52.0 49.6 46.1 60.2 20.6 56.2 15. Level of Sevice D D D D E 2.25 15. Approach Delay (s) D D D D E 2.25 15. Approach Delay (s) D C D E 2.25 15. Approach Delay (s) D C D E 2.25 15. Address D E 2.5 15. Ad	Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.26		1.00	1.00	1 00
Delay (s) 49.6 50.4 47.0 52.0 49.5 46.1 60.2 20.6 56.2 13. Approach Delay (s) D D D D D D E 56.2 13. Approach Delay (s) 49.0 50.0 2.5 15. 15. Approach Delay (s) 49.0 50.0 2.5 15. 15. Approach Delay D D D D E 15. 15. Approach Delay 2.5 HCM Ivereige Control Delay 2.5.2 HCM Ivereige Control Delay 2.5.4 HCM Ivereige Control Delay 1.2.0 Acualed Cycle Lengin (s) 12.0 12.0 12.0 12.0 12.0 13.0 12.0 12.0 12.0 12.0 12.0 13.0 13.0 13.0 12.0 13.0 12.0 13.0 12.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 14.0 14.0 14.0	Incremental Delay, d2	1.0	1.4	0.2	2.8	د .	0.1	.	0.5		2.3	0.5	0
Approach Delay (s) D D D D E C E C E C E 15 Approach Delay (s) 49.0 50.0 22.5 15 15 Approach Delay (s) 49.0 50.0 22.5 15 Approach Delay D D C 5 15 Approach Delay 25.2 HCM Level of Service C 12 HCM Volume to Capacity ratio 0.57 Sum of text time (s) 12.0 Actualed Cycle Length (s) 120.0 Sum of text time (s) 12.0 Advalues for during (min) 15.0 Num of text time (s) 12.0	Delay (s)	49.6	50.4	47.0	52.0	49.6	46.1	60.2	20.6		56.2	13.7	10.7
Approach Delay (s) 49.0 50.0 22.5 15. Approach LOS D D C To 15. Approach LOS D D C C 15. Approach LOS D C C C 15. Abar Average Control Delay 25.2 HCM Isevel of Service C C Actualed Cycle Length (s) 0.57 Sum of lost time (s) 12.0 Actualed Cycle Length (s) 12.0 Actualed Cycle Length (s) 120.0 Sum of lost time (s) 12.0 Actualed Cycle Length (s) 12.0 Actuales Protor 0.57 Level of Service B 13.0 15.0	Level of Service			0	0	0	0	u	0		ш	20	п
Aptroach LOS D D D C C Intersection Summary 25.2 HCM Level of Service C HCM Average Control Delay 25.2 HCM Level of Service C Actualed Cycle Length (s) 12.0 Sum of lost time (s) 12.0 Actualed Cycle Level of Service B Analysis Petod (min) 15 Analysis Petod (min)	Approach Delay (s)		49.0			50.0			22.5			15.7	
Intersection Summary 25.2 HCM Level of Service C HCM Average Control Delay 25.2 HCM Level of Service C Actualed Cycle Length (s) 1200 Sum of lost time (s) 12.0 Actualed Cycle Length (s) 12.0 Sum of lost time (s) 12.0 Analysis Period	Approach LOS								ပ			80	
HCM Average Control Delay 25.2 HCM Level of Service C HCM Volume lo Capacity ratio 0.57 HCM Level of Service C Actualed Cycle Length (s) 120.0 Sum of lost time (s) 12.0 Availated Cycle Level of Service B Analysis Period (min) 15 15	Intersection Summary								11				2
HCM Volume to Capacity ratio 0.57 0.51 Actualed Cyde Length (s) 120.0 Sum of lost time (s) 12.0 Aravise Period (min) 15 15 15 15 15 15 15 15 15 15 15 15 15	HCM Average Control Delay			25.2	Ŧ	CM Level	of Servic	a		U			
Actualed Cycle Length (s) 120.0 Sum of fost time (s) 12.0 Interestion Cascillon 22.9% ICU Level of Service B Analysis Period (min) 15	HCM Volume to Capacity ratio			0.57									
Intersection Capacity Utilization 62.9% ICU Level of Service B Analysis Period (min) 15	Actualed Cycle Length (s)			120.0	SL	um of lost	time (s)			12.0			
Analysis Period (min) 15	Intersection Capacity Utilization	E		62.9%	2	U Level o	f Service			8			
	Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis 94: Kottlinger-Spring & First

14: Kottinger-Spring &	L First										4/2	9/2013
	1	1	1	5	ŧ	4	¥	+	٩	۶	→	¥
lovement	EBC	in the	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		ŧ			Ŧ	*-	*	2,		۴	4	1
olume (vph)	60	22	19	10	38	54	30	1263	18	28	832	91
(cal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
otal Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
ane Util, Factor		1.00			1.00	1.00	1.00	1 00		1.00	1,00	
rpb, ped/bikes		0.98			1.00	0.92	1.00	1.00		1 00	0.99	
lpb, ped/bikes		0.96			0.99	1.00	1,00	1 00		1 00	1,00	
L		0.97			1.00	0.85	1,00	1.00		1.00	66'0	
It Protected		0.97			0.99	1.00	0.95	1.00		0.95	1.00	
atd. Flow (prot)		1459			1602	1276	1554	1629		1554	1590	
It Permitted		0.80			0.96	1.00	0.25	1.00		60 0	1,00	
atd Flow (perm)	1	1203			1546	1276	403	1629		152	1590	
eak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	19.0	16.0	19.0	0.97	10.97	0.97	0.97
dj. Flaw (vph)	62	23	20	10	39	56	31	1302	19	60	858	26
(TOR Reduction (vph)	0	80	0	0	0	49	0	0	0	0	2	0
ane Group Flow (vph)	0	67	0	0	49	7	31	1321	0	60	950	0
confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
arking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	9
urn Type I	Perm			Perm		Perm	Perm			Perm		
Irotected Phases		4			80			2			9	
ermitted Phases	4			ao		80	2			9		
ctuated Green, G (s)		14.8			14.8	14.8	97.2	97.2		97.2	97.2	
ffective Green, g (s)		15.8			15.8	15.8	98.2	98.2		98.2	98.2	
ctuated g/C Ratio		0.13			0.13	0.13	0.82	0.82		0.82	0.82	
clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
(ehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	ġ
ane Grp Cap (vph)		158			204	168	330	1333		124	1301	
/s Ratio Prot								c0.81			0.60	
/s Ratio Perm		c0.08			0.03	0.01	0.08			0.39		
/c Ratio		0.62			0.24	0.04	0.09	0.99		0.48	0.73	
Iniform Delay, d1		49.2			46.7	45.5	2.1	10.5		3.3	4.9	
rogression Factor		1.00			1.00	1.00	0.52	1.36		2,83	3.29	
Icremental Delay, d2		6.9			0.6	0.1	0.1	5.6		12.3	3.5	
telay (s)		56.2			47.3	45.6	1.2	19.8		21.6	19.7	
evel of Service		ш			0		A	80		U	89	
pproach Delay (s)		56.2			46.4			19.4			19.8	
pproach LOS		ш						œ			æ	
Itersection Summary		100				Constant of		1000	1000			n th
ICM Average Control Delay			22.1	H	CM Level	of Servic	e		υ			
ICM Volume to Capacity ratio			0.94									
ictuated Cycle Length (s)			120.0	S	um of losi	time (s)			6.0			
ntersection Capacity Utilization			101.0%	0	U Level (of Service			U			
nalysis Period (min)			2									
Critical Lane Group												

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

Synchro 7 - Report W-Trans

Synchro 7 - Report W-Trans

Kotlinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

Movement Earl Configurations Movement Earl Configurations Movement S76 S76		~	*	ļ	4	•	•	•	۶	-	¥
Lane Configurations 74 Volume (vph) 576 detal Flow (vphp) 1900 1004L Lost time (s) 300 Lane Util Factor 0.97 Frpb, ped/bikes 1.00 Filp, ped/bikes 1.00 Filp, ped/bikes 1.00 Filp, ped/bikes 1.00 Filp, protected 0.95 Said Flow (prot) 3547	E81	EBR	WBI	WBT	WBR	NBL	NB3	NBR	88	TRS	SAR
Volume (vph) 576 deal Flow (vphp) 1900 talal Lost time (s) 3,0 10al Lost time (s) 0,97 Frpb, ped/bikes 1,00 Frpb, ped/bikes 1,00 Filt Protected 0,95 and Flow (prot) 3547	\$	*		44		54	+	*	*	44	1
deal Flow (vphp) 1900 Total Lost time (s) 3.0 ano Ult Factor 0.97 Frpb, ped/bikes 1.00 Flop, ped/bikes 1.00 Fl Protected 0.95 and Flow (prot) 3547 247	498	170	121	188	24	293	989	554	11	740	215
Total Lost time (s) 30 Lane Ull, Factor 0.97 Fip, ped/bikes 1.00 Filp, ped/bikes 1.00 Filp 0.91 Filp 0.92 Filp 0.92 Filp 0.92 Filp 0.92 Filp 0.92 Filp 0.92 Filp 0.93 Filp 0.93 Sadd Flow (prot) 3547	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Ull, Factor 0.97 Frpb, ped/bikes 1.00 Fripb, ped/bikes 1.00 Fripb, ped/bikes 1.00 Fripb, ped/bikes 0.95 Satat Flow (prot) 3.547	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Fript, ped/bikes 1.00 Fipt, ped/bikes 1.00 Fri Protected 0.95 Satd Flow (prot) 3547	0.95	1 00	0.97	0,95		0.97	1.00	1.00	1.00	0.95	
Fipo, ped/bikes 1.00 Frt 1.00 Filt Protected 0.95 Satd Flow (prot) 3547	1.00	0.87	1.00	1.00		1.00	1.00	0.79	1.00	66.0	
Frt 1.00 Filt Protected 0.95 Satd Flow (prot) 3547	1.00	1 00	1 00	1,00		1.00	1.00	1.00	1.00	1.00	
Fit Protected 0.95 Satd Flow (prot) 3547	1.00	0.85	1 00	0.98		1.00	1.00	0.85	1.00	0.97	
Satd Flow (prot) 3547	1 00	1 00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
	3657	1419	3547	3579		3547	1925	1291	1554	3233	
FIL Permitted	1.00	1.00	0.95	1,00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm) 3547	3657	1419	3547	3579	1	3547	1925	1291	1554	3233	
Peak-hour factor, PHF 0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj Flow (vph) 738	638	218	155	241	31	376	1268	710	66	949	276
KIUK Keduction (vpn) 0	-	140	0	6	0	0	0	114	0	8	•
Lane Group Flow (vpn) / 38	638	6/	155	263	•	376	1268	2965	8	1203	0
Conii, Peas. (#/nr)		21			12			98	10.01	000	24
(11)#) buxer									2	9	2
Turn Type Prot		Perm	Prot			Prol		Perm	Prot		
Protected Phases	9 -		643	80		2 2	2	ľ	-	60	
Activitied Priases	4 0 10	4	0 1	0.04		0	0.00	200			
Effective Cross a fot	0.02	0.62	0.0	13.8		15.0	03.0	03.0	0.7	0.00	
Actualed of Datio	0.00	0.75	20.0	0.00		10.0	0.00	0.00	0.0	0.10	
Clearance Time (c)	177	77'0	/0'n	0.13		0.13	40'.0	40 D	0.0/	0.48	
Vehicle Extension (s) 3.0	0.0	0.0	5 C	0.0		4 6	0.0		4 c	0.0	
Land Gran (unh) 600	0.00	240	200	474		0.0	1010	0.0	1.0	0.0	
uke Ratin Prol	C7 17	20	007	4/1		410	0.66	RRD	104	0561 76 0	
v/s Ratio Perm	-	0.06	1000	0.00		5	200	0.46	00'00	10-0	
v/c Ratio 1.30	0.78	0.25	0.66	0.56		0.79	1 22	0.85	0 95	0.78	
Uniform Delay, d1 50.4	43.7	38.1	54.7	48.8		50.4	27.5	23.4	22.0	26.30	
Progression Factor 1.00	1.00	1.00	1.00	1.00		0.73	0.54	0.26	1.00	1.00	
Incremental Delay, d2 147.3	4.6	0.4	6.4	1.4		7.0	104.0	9.9	72.5	4.1	
Delay (s) 197.7	48.3	38.6	61.1	50.3		43.9	118.8	15.9	128.3	30.4	
Level of Service F	٥	٩	ш	٥		٥	ш	80	L	U	
Approach Delay (s)	116.1			54.2			75.8			37.7	
Approach LOS	LL.			0			ш			٥	
Intersection Summary						l				6	
HCM Average Control Delay		76.6	우	M Level of	of Service			ш			
HCM Volume to Capacity ratio		1.15	ł								
Actuated Cycle Length (s)		120.0	ns i	m of lost I	ime (s)			15.0			
Analysis Period (min) c Critical Lane Group		15	3	n revei oi	Service			-			
											Ĩ

Movement EBI. Lane Configurations FBI. Lane Configurations 67 Volume (vphb) 67 Lane UL. Factor 1,09 Lane UL. Factor 1,09 FIPD, pedibises 0,098 F1	1	r	4	ŧ	4	4	-	٩.	٨	→	7
Lane Configurations 1 Volume (vph) 67 Ideal Thew (vphp) 1900 Ideal The VII. Factor 100 Frpb, pedibikes 1.00 Frpb, pedibikes 1.00 Fr	EBI	EBR	MBL	WBI	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Kolume (vph) 67 Ideal (vww (vphp)) 1900 Ideal (vww (vphp)) 1900 Tane Uki. Factor 1,00 Fripo, ped/bikes 1,00 Filpo, ped/bikes 0,08 Fil 2014	4±		*	4		F	e2			¢±	
Ideal (Soft (vphp)) 1900 Total Lost time (s) 3.0 Table Lane UN. Factor 1.00 Frpb. ped/bikes 1.00 Frpb. ped/bikes 0.08 Fr 1.00	107	105	42	8	8	57	1219	42	6	760	68
Total Lost time (s) 30 Lane UN: Factor 1.00 Frpb, pedbixes 1.00 Flpb, pedbixes 0.98 FI Protected 0.95	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane UN. Factor 1.00 Fipb. ped/bikes 1.00 Fipb. ped/bikes 0.38 Fit Protected 0.95	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Frpb. ped/bikes 1.00 Flpb. ped/bikes 0.98 Frt Protected 0.95	100		1.00	1.00		1.00	1.00		1.00	1,00	
Fipb, ped/bikes 0.98 Frt 1.00 Fit Protected 0.95	86.0		1.00	0.99		8	100		1.00	1.00	
Fit Protected 0.95	1 00		0.99	1.00		1.00	1.00		1.00	1.00	
Fit Protected 0.95	0.93		1.00	96.0		1.00	1.00		1,00	0.99	
The second se	1.60		0.95	1.00		0.95	1.00		96.0	1.00	
Satd. Flow (prot) 1529	1486		1540	1559		1554	1626		1554	1611	
Fit Permitted 0.66	1.00		0.29	1.00		0.26	1.00		0.05	1.00	
Satd. Flow (perm) 1069	1486		471	1559		423	1626		80	1611	
Peak-hour factor, PHF 0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph) 71	113	111	4	8	6	89	1283	4	0)	800	72
RTOR Reduction (vph) 0	31	0	0	11	0	0	**	0	0	~	0
Lane Group Flow (vph) 71	193	0	4	z	0	09	1326	0	6	870	0
Confi. Peds. (#/hr) 5		S	un.		un.	9		9	5		40
Parking (#/hr) 10	10	10	10	10	10	10	10	10	10	10	9
Turn Type Perm			Perm			Perm			Perm		
Protected Phases	4			80			2			9	
Permitted Phases 4			œ			2			9		
Actuated Green, G (s) 19.9	19.9		19.9	19.9		92.1	92.1		92.1	92.1	
Effective Green, g (s) 20.9	20.9		20.9	20.9		93.1	93,1		93.1	93.1	
Actuated g/C Ratio 0.17	0.17		0.17	0.17		0.78	0.78		0.78	0.78	
Clearance Time (s) 4.0	4.0		4.0	4.0		4,0	4.0		4.0	4.0	
Vehicle Extension (s) 3.0	3.0		3.0	3.0	Į	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph) 186	259		82	272		328	1262		62	1250	
v/s Ratio Prot	c0.13			0.04			c0.82			0.54	
v/s Ratio Perm 0.07			60 0			0.14			0,11		
v/c Ratio 0.38	0.74		0.54	0.24		0.18	1.05		0.15	0.70	
Uniform Delay, d1 43.8	47.0		45.1	42.7		3.5	13.5		3.4	9.9	
Progression Factor 1.00	100		1 00	1 00		1.00	1.00		1.65	1.96	
Incremental Delay, d2 1.3	11.0		9 9	0 4		1.2	39.8		33	22	
Uelay (s) 45.1	28.0		51.7	43.1		47	53.3		8.9	15.0	
Level of Service D	ш :		0	0		A	0		×	60	
Approach Delay (s)	54.9			46.3			51.2			15.0	
Approach LOS	٥			۵			٥			80	
Intersection Summary							2				
HCM Average Control Delay		30 F	H	M I aval	of Samira			c			
HCM Volume to Capacity ratio		66 0	-					د			
Actuated Cycle Length (s)		120.0	Su	m of last (ime (s)			6.0			
Intersection Capacity Utilization		93.4%	D	J Level of	Service			u			
Analysis Period (min)		15									
c Critical Lane Group											

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

HCM Unsignalized Intersection Capacity Analysis 595: Vineyard & Adams

Westment EET EBN WEL WEL NEL ame Configurations 1 1 1 1 1 1 ame Configurations 1	WEI WEI 4 4 4 1 6 4 1 0.05 0.03 0.03 0.03 0.03 0.03 0.03 13.0 13.0 22 22 23.5 20 4.0 4.0 4.0 4.0 4.0 4.0 6.4 6.4 6.3 3.5	NBR 0.91 35 263 263 38 6.2 6.2		
ame Configurations +	4 4 4 1 150 30 30 30 30 30 30 31 03 03 03 10 31 10 31 03 10 31 10 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 4.0 <th>35 0.91 263 263 6.2 6.2</th> <th></th> <th></th>	35 0.91 263 263 6.2 6.2		
Volume (verifin) 190 25 15 150 30 Sign Control Free 0.9 0.9 0.9 0.9 Sign Control Free 0.9 0.9 0.9 0.9 0.9 Pack Hour Factor 0.31 0.91 <td>150 30 Free Support Free Support 0.91 0.91 0.91 0.91 165 33 145 33 130 130 131 130 140 4.0 4.0 4.0 <td< td=""><td>0.91 35 0.93 38 6.63 263 38 6.63 38</td><td></td><td></td></td<></td>	150 30 Free Support Free Support 0.91 0.91 0.91 0.91 165 33 145 33 130 130 131 130 140 4.0 4.0 4.0 <td< td=""><td>0.91 35 0.93 38 6.63 263 38 6.63 38</td><td></td><td></td></td<>	0.91 35 0.93 38 6.63 263 38 6.63 38		
Sign Control Free Sign Control Free Sign Control Grade 0%	Free Stop 03 03 03 03 03 165 33 165 33 20 22 20 20 4.0 4.0 4.0 4.0 4.0 4.0 4.0 6.4 6.4 6.4 6.4 6.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5	0.91 38 263 263 6.2		
Cracted 0% <t< td=""><td>0% 0% 0% 0% 0% 0% 0% 0% 031 031 031 031 1310 1313.0 1313.0 1310.0</td><td>0 38 263 263 263 263 263 263 263 263 263 263</td><td></td><td></td></t<>	0% 0% 0% 0% 0% 0% 0% 0% 031 031 031 031 1310 1313.0 1313.0 1310.0	0 38 263 263 263 263 263 263 263 263 263 263		
Peak Hour Factor 0.31 0.31 0.31 0.31 0.31 Peutin Fox rate (rph) 209 27 16 53 Peterbil Bockage 209 27 16 13.0 13.0 Alling Speed (ths) 4.0 4.0 4.0 4.0 4.0 Walking Speed (ths) 4.0 4.0 4.0 4.0 4.0 Walking Speed (ths) 4.0 4.0 4.0 4.0 4.0 Waldian type None None None 2 2 2 Acting storage with weilan st	0.91 0.91 0.91 0.91 1.65 2.32 2.02 2.02 2.02 2.02 2.02 2.02 2.02	0.91 38 263 263 6.63		
Hourly flow rate (vph) 209 27 16 155 33 Anouny flow rate (vph) 130 13.0 <	165 33 20 220 22 20 4.0.0 2 2 2 2 2 2 2 460 4.0 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4	38 263 263 38 6.2		
Pedestrians 20 20 20 Parter Width (ft) 13.0 13.0 13.0 13.0 Natine Width (ft) 4.0 4.0 4.0 4.0 Natine Width (ft) 2.0 2.0 2 2 Percent Blockage 2 2 2 2 Main Type None None 4.0 4.0 Median Type None None 4.0 4.0 Median Type None None 4.0 4.0 Visition Unlocked C. stage 1 conf vol 2.56 460 C. stage 1 conf vol 2.56 460 450 C. stage 1 conf vol 2.56 460 450 C. stage 1 conf vol 2.56 460 450 C. stage 1 conf vol 2.1 3.5 3.5 F (s is stage (s) 2.2 3.5 3.5 D queue free % 1.81 1.1 6.4 Median type 2.35 3.5 3.5 D queue free %<	20 20 13.0 12.0 4.0 4.0 13.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 3.2 2 4.0 6.4 460 6.4 4.0 2 2 3.5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	263 263 6.2		
Lane Width (ft) 13.0 <th1.0< th=""> <th1.0< th=""> 13.0</th1.0<></th1.0<>	13.0 13.0 13.0 13.0 13.0 13.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14	263 263 6.2		
Walking Speed (flus) 4.0 4.0 4.0 4.0 Person Blockage 2 2 2 2 Person Blockage None None 2 460 Median type None 256 460 460 VC, staget contrivol 256 460 410	4.0 4.0 2 2 2. 2 2 460 6.4 6 6.4 6.3 3.5	263 6.2 6.2		
Percent Bhockage 2 2 2 2 Regintum fare (veh) Majan type Majan type Majan type Majan songe veh) Upstream signal (t) Upstream signal (t) Upst	2 2 2 Vone 460 6.4	263 263 6.2		
Right turn flare (veh) Median type Mone None Median type with Mone Signal (17) Dy participation unbiocked volume 256 460 C, confricting volume 256 460 CC, stage 2 contr vol CC, unbiocked vol 256 460 CC, unbiocked vol 256 460 CC, unbiocked vol 256 460 CC, stage 2 contr vol 256 35 C, stage 2 contr vol 256 35 C, stage 2 contr vol 256 35 C, stage 2 contr vol 256 450 CC, unbiocked vol 256 460 CC, stage 2 contr vol 256 35 C, stage 2 contr vol 256 35 C, stage 2 contr vol 256 35 C, stage 2 contr vol 226 460 CC, unbiocked vol 256 450 CC, stage 2 contr vol 256 141 C, stage 10 17 C, stage 10 17	Vone 460 6.4 6.3 3.5	263 263 6.2		
Median type None None Median surage vet) Median surage vet) 460 Mc, confricting volume 256 460 Mc, staget conf vol 256 460 VC, staget (s) 4.1 6.4 C, single (s) 2.2 3.5 C, staget (s) 2.2 3.5 C, staget (s) 2.2 3.5 D queue free % 1285 532 Outeme Total 0 161 71	Vone 460 6.4 8.3 3.5	263 6.2 6.2		
Median siorage veh) Upstream siorage veh) Upstream siorage veh) Upstream siorage (t) VC, conflicting volume vC1, stage 1 conf vol vC1, stage 1 conf vol vC1, stage 2 conf vol vC2, stage 2 conf vol vC2, stage 2 conf vol vC2, stage 2 conf vol vC3, stage (s) C, stage (s) D dueue free % Outeue free % D meton Lance D for total D for total <td>460 6.4 6.3 3.5</td> <td>263 263 6.2</td> <td></td> <td></td>	460 6.4 6.3 3.5	263 263 6.2		
Upstream signal (t) Upstream signal (t) C, confiniting volume C, confiniting volume C, stage 1 conf vol CU, stage 2 conf vol CU, stage 2 conf vol CU, stage 2 conf vol C, stage 5 C, stage	460 6.4 3.5 2.5	263 263 6.2		
pX, platoon unblocked 256 460 co, conflicting volume 256 460 cC, conflicting volume 256 460 vC3, stage 1 conr vol 256 460 vC1, stage 2 conr vol 256 460 vC3, stage 2 conr vol 256 460 vC1, unblocked vol 256 460 vC1, stage (s) 4.1 6.4 LC, stage (s) 2.2 3.5 D queue free % 99 94 Advance E1 MB1 NB1 Outerne Total 2.6 11 71 Volume Total 0 161 71	460 6.4 6.4	263 263 6.2		
vC, conflicting volume 256 460 vC1, stage 1 conf vol 256 460 vC1, stage 1 conf vol 256 460 vC1, stage 1 conf vol 256 460 vC1, stage 2 conf vol 256 460 vC1, stage 2 conf vol 256 460 vC1, stage 2 conf vol 256 460 LC, stage 2 2.2 3.5 P (2, 2 stage 3) 2.2 3.5 P (2, 2 stage 4) 2.2 3.5 P (2, 3 stage 5) 2.2 3.5 P (2, 3 stage 5) 2.2 3.5 P (4 stape) (verbrh) 1285 532 Denotor Lance EB1 WB1 NB1 Volume Total 2.6 181 71	460 6.4 6.4	263 263 6.2		
vCt, stage t conf vol 256 460 vCz, stage 2 conf vol 256 460 vCz, stage (s) 4.1 6.4 LC, single (s) 4.1 6.4 LC, stage (s) 2.2 3.5 F(s) 2.2 3.5 P(s) 2.2 3.5 P(s) 2.2 3.5 Di queue free % 99 94 Advance 2.2 3.5 Di queue free % 93 94 Outer free % 1286 5.32 Direction Lance* 2.61 WD1 ND1 Volume Total 2.3 161 71	460 6.4	263 6.2		
vC2. stage 2 conf vol vC3. unblocked vol 256 460 vC4. unblocked vol 256 460 vC. single (s) 4.1 6.4 vC. 2 single (s) 2.2 3.5 p0 queue free % 99 94 eM capacity (veh/h) 2.2 99 94 eM capacity (veh/h) 1285 532 Otherne Total 236 181 11 Volume Total 236 161 71	460 6.4 3.5	263 6.2		
wCu, unblocked vol 256 460 C, single (s) 4.1 6.4 C, single (s) 2.2 3.5 C, single (s) 2.2 3.5 F (s) 2.2 3.5 P (s) 2.2 3.5 P (s) 2.2 3.5 P (s) 2.2 3.5 Oncenter free % 99 94 On cueue free % 12.85 532 Oncenter free 2.6 14 71 Volume Total 2.6 16 71	460 6.4 3.5	263 6.2		
CC, single (s) 4.1 6.4 FC, Stage (s) 2.2 3.5 FC, Stage (s) 2.2 3.5 PC, Stage (s) 2.2 3.5 PC, Stage (s) 2.2 3.5 PC, Stage (s) 2.2 3.5 PO queue free % 99 94 Add capacity (verbrh) 1285 532 Direction Lance EB1 WB1 NB1 Volume Total 2.3 161 71 Volume Total 0 163 33	6.4 3.5	6.2		
IC, 2 stage (s) F (s) 2.2 3.5 p0 queue free % 99 cM capacity (vel/h) 1285 532 cM capacity (vel/h) 1285 532 Churchon Láne E E N WB 1 NB 1 Volume Total 235 181 71 Volume Total 0 16 73	3.5	:		
FF (s) 2.2 3.5 p0 queue free % 99 94 cdrapacity (reh/h) 1285 532 Direction Lane # EB 1 11 Volume Total 236 181 11	3.5			
00 queue free % 99 94 cM caractry (veh/h) 1285 532 Direction Lane EB1 WB1 NB1 53 Volume Total 236 161 71	2	6. E		
CM capacity (HeV/h) 1285 532 Direction Lance EB1 WD1 NB1 Volume Total 236 181 71 Volume Left 0 16 33	84	95		
Direction Lance EB1 WD1 ND1 Volume Total 236 181 71 Volume Left 0 16 33	532	748		
Volume Total 236 181 71 Volume Left 0 16 33	a statement			
Volume Left 0 16 33				
Volume Right 27 0 38				
cSH 1700 1285 630				
Volume to Capacity 0.14 0.01 0.11				
Queue Length 95th (ft) 0 1 10				
Control Delay (s) 0.0 0.8 11.4				
Lane LOS A B				
Approach Delay (s) 0.0 0.8 11.4				
Approach LOS B				
Intersection Summary		No. 14 I		State In the state of the state
Average Delay 2.0				
Intersection Capacity Utilization 36.0% ICU Level of 5	ICU Leve	I of Service	A	
Analysis Period (min) 15				

Synchro 7 - Report W-Trans

Kotlinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions-No Project

HCM Unsignalized Intersection Capacity Analysis 597: Kottinger & Adams

597: Kottinger & Adan	SU										4/2	9/2013
	*	t	*	5	Ŧ	~	*	+	٩	۶	->	¥
Movement	Ē	E81	EBR	MBL	WBT	WBR	NBL	181	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			¢	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	22	60	17	9	20	12	20	4	15	6	27	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	27	74	21	12	62	ť;	25	49	19	11	33	15
Dvection, Late #	E8 1	WB:1	NB 1	SB 1		2123		11 11	0			
Volume Totai (vph)	122	68	69	59								Ì
Volume Left (vph)	27	12	25	ŧ								
Volume Right (vph)	21	15	19	15								
Hadj (s)	-0.02	0.01	0.01	-0.08								
Departure Headway (s)	4.3	4.4	4.5	4.4								
Degree Utilization, x	0.15	0.11	0.11	0.07								
Capacity (veh/h)	798	775	764	763								
Control Delay (s)	8.1	6.7	8.0	7.8								
Approach Delay (s)	8.1	7.9	8.0	7.8								
Approach LOS	4	A	4	×								
Intersection Summary								ALC: NO				3
Delay			8.0									
HCM Level of Service Intersection Capacity Utilization			27.7%	2	U Level c	of Service			A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis 28: Stanley Blvd & Valley

Covernent E ane Configurations 19 Volume (vph) 19 Valence (vph) 19 Call Flow (vph) 19 Call (vph) 10 Call (vph) 11 Protected 0	BI			Þ		,	~	-	-	•	•	,
ane Configurations and Configurations (vph) (olume (vph)) 13 (olume (vph)) 19 (olal Lost une (s) 2, and Ull Factor 1. and Ull Factor 1. inp. ped/bikes 1. interp. ped/bikes 1. interp. end. 1. interpreted 0. interprete		EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	18S	SBR
(olume (vph) 2 Jeal Flow (vph) 19 Jeal Lost time (s) 2 are Uni Factor 0. Fipb, ped/bikes 1. Are 1. A	11	-		-	*	×	*	\$	*	F	44	
Jaal Flow (vphpl) 19 Jaal Lost time (s) 3 arre UNL Factor 0. rpb. ped/bikes 1. rit Prodected 0.	240	574	104	373	1396	606	186	308	230	226	250	142
olal Lost time (s) 23 ane Ull Factor 0: ripb, ped/bikes 1. rin 1. Protected 0.	1 006	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
ane Util. Factor 0. irpb, ped/bikes 1. irpb, ped/bikes 1. it Protected 0.	3.0	3.0		3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	
irpb, ped/bikes 1. Ipb, ped/bikes 1. In rolected 0.	- 61	0.91		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
ilpb, ped/bikes 1. rt 1. ilt Protected 0.	00.	1.00		1.00	1.00	86.0	1.00	1.00	96.0	1.00	1.00	
it 1. It Protected 0.	00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
It Protected 0.	00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
	35	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot) 35	547 5	5113		3547	3657	1599	1829	3657	1599	3547	3459	
It Permitted 0.	.95	1.00		0.95	1,00	1 00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm) 35	547 5	5113	1	3547	3657	1599	1829	3657	1599	3547	3459	ľ
Peak-hour factor, PHF 0.	.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0,91	0.91	0.91
vdj Flow (vph) 2	64	631	114	410	1534	666	204	338	253	248	275	156
TOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	6	0
ane Group Flow (vph) 2	904	723	0	410	1534	666	204	338	253	248	341	0
Confl Peds (#/hr)			12			36			36			
um Type P.	rot		5	Prol		Free	Prol		Free	Prot		
Protected Phases	-	9		5	~		e	80		7	4	
Permitted Phases						Free			Free			
Acluated Green, G (s)	2.0	34.8		15.1	42.9	100.0	10.0	18.5	100.0	10.6	19,1	
Effective Green, g (s) E	8.0	38.8	•	16.1	46.9	100.0	11.0	21.5	100.0	11.6	22.1	
Actuated g/C Ratio 0.	.08	0.39		0.16	0.47	1.00	0.11	0.22	1.00	0.12	0 22	
Clearance Time (s) 4	4.0	7.0		4.0	0.7		4.0	6.0		4.0	6.0	
/ehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
ane Grp Cap (vph) 2	284 1	984		571	1715	1599	201	786	1599	411	764	
/s Ratio Prot c0.	07	0.14		c0.12	c0.42		c0.11	0.09		0.07	0.10	
/s Ratio Perm						c0.62			0.16			
/c Ralio 0;	93	0.36		0.72	0.89	0.62	1.01	0.43	0,16	09.0	0.45	
Jniform Delay, d1 45	2.7	21.8		39.8	24.3	0.0	44.5	34.0	0'0	42.0	33.7	
Progression Factor 0.	82	1.31		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
ncremental Delay, d2 33	3.6	0.5		4.3	17	1.9	67.4	0.4	0.2	2.5	0.4	
Delay (s) 71	10	29.1		44.1	31.9	1,9	1119	34.3	0.2	44.5	34.1	
evel of Service	ш	o		0	o	A	u.	C	A	0	o	
Approach Delay (s)		40.0			23.4			43.4			37.9	
Approach LOS					C			۵			0	
otersection Summary							100				122	
HCM Average Control Delay			31.2	H	M Level	of Servic	9		Ö			
ICM Volume to Capacity ratio			0.82									
Actualed Cycle Length (s)			100.0	Su	m of lost	time (s)			6.0			
ntersection Capacity Utilization		-	80.5%	Ū	J Level c	of Service			٥			
C-F-11 C			2									

HCM Signalized Intersection Capacity Analysis 30: Vineyard-Tawny & Bernal

Manhanak		t	-	4	ł	1	*	•	ł,	٨	+	¥
MUVEUICHA	EBL	E81	EBR	WBI	WBT	WBR	NBI	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4			4	×	*	44		*	**	
Volume (vph)	170	2	35	88	26	220	23	452	10	82	763	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util, Factor	0.95	0.95			1.00	1.00	1.00	0.95		1.00	1.00	
Frpb, ped/bikes	1.00	0.99			1.00	1.00	1,00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1,00	1.00		1.00	1.00	
Fri	1.00	0.95			1.00	0.85	1,00	1 00		1.00	0.96	
FIt Protected	0.95	0.97			0.96	1.00	0,95	1.00		0.95	1.00	
Satd. Flow (prot)	1477	1419			1575	1391	1829	3645		1829	1842	
Fit Permitted	0.95	0.97			0.96	1.00	0.06	1 00		0.42	1.00	
Sald. Flow (perm)	1477	1419		ł	1575	1391	116	3645	A LOUGH	810	1842	1
Peak-hour factor, PHF	0.87	0.85	0.85	0.85	0.85	0.85	0,85	0.85	0,85	0.85	0.85	0.85
Adj. Flow (vph)	195	2	41	104	31	259	27	532	12	96	868	279
RTOR Reduction (vph)	0	19	0	0	0	150	0	-	0	0	6	0
Lane Group Flow (vph)	121	86	0	0	135	109	27	543	•	96	1168	0
Confl. Peds. (#/hr)			e	e			4					4
Parking (#/hr)	10	10	10	10	10	10						Ĩ
Turn Type	Split			Split		Perm	Perm			Perm		
Prolected Phases	4	4		e	9			2			9	
Permitted Phases						e	2			9		
Actuated Green, G (s)	14.4	14.4			10,6	10.6	64.2	64.2		64.2	64.2	
Effective Green, g (s)	16.4	16.4			12,6	12.6	66.2	66.2		66.2	66.2	
Actuated g/C Ratio	0.16	0.16			0.12	0.12	0.64	0.64		0.64	0.64	
Clearance Time (s)	5.0	5.0			5,0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	- 6
Lane Grp Cap (vph)	232	223			190	168	74	2316		515	1170	
v/s Ratio Prot	c0.08	0.07			c0.09			0.15			c0.63	
v/s Ratio Perm						0.08	0.23			0.12		
v/c Ratio	0.52	0.44			0.71	0.65	0.36	0.23		0.19	1.00	
Uniform Delay, d1	40.3	39.8			44.0	43.7	9.0	8.1		1,9	18.9	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1 00	1.00	
Incremental Delay, d2	21	1 4			11.8	8.3 8	3.0	0		0.2	25.7	
Delay (s)	42.4	411			55.9	52.0	12.1	8.2		8.0	44.6	
Level of Service		٥			ш	٥	8	A		¥	٥	
Approach Delay (s)		41.8			53.3			8.4			41.9	
Approach LOS								A			٥	
Intersection Summary	100					1000			100	1	8	
HCM Average Control Delay			35.9	Ŧ	CM Level	of Servic	9					1
HCM Volume to Capacity ration	.0		0.88									
Actualed Cycle Length (s)			104.2	SL	um of lost	time (s)			9.0			
Intersection Capacity Utilizati	u		82.6%	õ	U Level o	f Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

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Kollinger Drive Senior Housing Project AM Peak Hour Buildout Conditions with Planned TIF Improvements plus Project

Kotlinger Drive Senior Housing Project AM Peak Hour Buildout Conditions plus Project

	`	t	1	6	ŀ	/	•	-	4	٠	•	¥
Movement	EBL	E81	EBR	WBI	VBT	WBR	NBL	IBN	NBR	BB	SBT	SBR
Lane Configurations	*	*		*	*	2	*	44		•	\$	-
Volume (vph)	28	98	86	111	184	99	58	683	69	44	1178	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3,0	3,0	3.0
Lane Util, Factor	1.00	1.00	1 00	1 00	1 00	1 00	1.00	0.95		1 00	0 95	1 00
Frpb, ped/bikes	1.00	1.00	0.99	1 00	1 00	66 0	1.00	0.99		1.00	1 00	0.96
Flpb, ped/bikes	1.00	1.00	1,00	1 00	1.00	1.00	1.00	1 00		1 00	1 00	100
Fri	1.00	1.00	0.85	1 00	1 00	0.85	1.00	66 0		1.00	1.00	0.85
Fit Prolected	0.95	1.00	1 00	0.95	1 00	1 00	0.95	1 00		0.95	1 00	1 00
Satd Flow (prot)	1829	1925	1614	1554	1636	1372	1829	3589		1829	3657	1577
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1 00		0.95	1 00	100
Satd Flow (perm)	1829	1925	1614	1554	1636	1372	1829	3589		1829	3657	1577
Peak-hour factor, PHF	0.90	06.0	0 90	0 00	06 0	06 0	06 0	06'0	06'0	06 0	06'0	06.0
Adj Fłow (vph)	31	96	96	123	204	13	64	759	16	49	1309	224
RTOR Reduction (vph)	0	0	83	0	0	35	0	9	0	0	0	88
Lane Group Flow (vph)	31	96	13	123	204	38	2	829	0	49	1309	136
Confl. Peds. (#/hr)			-			-			თ			4
Parking (#/hr)				10	10	10	1			ł	1	
Turn Type	Split		Perm	Splil		Perm	Prot			Prol		Perm
Protected Phases	7	4		3	e		÷	9		ŝ	2	
Permitted Phases			4			ę						2
Actuated Green, G (s)	12.7	12.7	12.7	17.2	17.2	17.2	6.9	46.5		99	46.2	46.2
Effective Green, g (s)	13.7	13.7	13.7	18.2	18.2	18.2	7.9	48.5		7.6	48.2	48.2
Actuated g/C Ratio	0.14	0.14	0.14	0.18	0,18	0.18	0.08	0.48		80.0	0.48	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4 0	4.0	4.0	5.0		4,0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	ų	3.0	3.0	3.0
Lane Grp Cap (vph)	251	264	221	283	298	250	144	1741		139	1763	760
v/s Ratio Prot	0.02	c0.05		0.08	c0.12		c0.03	0.23		0.03	c0.36	
v/s Ratio Perm			0.01			0.03						0.09
v/c Ratio	0.12	0.36	0.06	0.43	0.68	0.15	044	0.48		0.35	0.74	0.18
Uniform Delay, d1	37.9	39.2	37.5	36.3	38.2	34.4	44.0	17.2		43.9	20.9	14.7
Progression Factor	1.00	1.00	1.00	1 00	1.00	1.00	1 29	0 83		1.45	0.44	0.51
Incremental Delay, d2	0.2	6.0	0.1	1.1	6.4	0.3	17	10		1.1	2.0	4,0
Delay (s)	38.1	40.0	37.7	37.4	44.6	24.7	583	15.0		64.5	5.11.3	6.)
Level of Service			-	0		C	ш	8		ш	20.0	<
Approach Delay (s)		38.7			40.6			18.1			12.4	
Approach LOS					۵			œ			œ	
Intersection Summary											k	
HCM Average Control Delay			19.6	H	CM Level	of Servic	a		80			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			100.0	SL	ım of lost	time (s)			12.0			
Intersection Capacity Utilization			64.1%	₽	U Level c	f Service			C			
Analysis Period (min)			2									
c Unitcal Lane Group												

HCM Signalized Intersection Capacity Analysis

Momentations Els Els Mol Weil Weil Meil													
Womenent Eist Stat		٩	t	۲	4	ŧ	~	•	+	•	۶	→	Y
Lare Carligrations + 1	Movement	EBL	EBT	EBR	WBL	WB1	WBR	NBL	181	NBR	SBL	SBT	SBR
Moulman (ypi) 4 13 73 75 75 75 75 75 71 147 149 100 <td>Lane Configurations</td> <td></td> <td>+</td> <td></td> <td></td> <td>17</td> <td>*</td> <td>*</td> <td>4</td> <td></td> <td>*</td> <td>.2</td> <td></td>	Lane Configurations		+			17	*	*	4		*	.2	
Teal Relations Total Large (r) 1900	Volume (vph)	4	13	1	19	73	22	26	736	54	6/	1147	140
Tarlal Los Inter(s) 30 <td>Ideal Flow (vphpl)</td> <td>1900</td>	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Ull Factor 1.00	Total Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Filth, peditikes 1.00	Lane Util, Factor		1.00			1.00	1.00	1.00	1 00		1.00	1,00	
Flap, pediolises 0.99 1.00 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.95 <th1.05< th=""> 0.95 0.95</th1.05<>	Frpb, ped/bikes		1.00			1 00	0.93	1.00	0.99		1.00	0.99	
Find 099 100 050 100 050 100 <td>Flpb, ped/bikes</td> <td></td> <td>0.99</td> <td></td> <td></td> <td>0.99</td> <td>1.00</td> <td>1.00</td> <td>1 00</td> <td></td> <td>0.98</td> <td>1 00</td> <td></td>	Flpb, ped/bikes		0.99			0.99	1.00	1.00	1 00		0.98	1 00	
Il Preneted 038 100 035 100 037 100 <th< td=""><td>F</td><td></td><td>0.99</td><td></td><td></td><td>1.00</td><td>0.85</td><td>1.00</td><td>66 0</td><td></td><td>1.00</td><td>96.0</td><td></td></th<>	F		0.99			1.00	0.85	1.00	66 0		1.00	96.0	
Sadf Flow (prot) 1584 1597 1202 1524 1606 1528 1599 1291 1201	FII Protected		0.99			0.99	1.00	0.95	1 00		0.95	1.00	
	Satd Flow (prot)		1584			1597	1292	1554	1606		1528	1589	
Safet Flow (perm) 1225 1225 1225 1225 1225 1231 031	FII Permitted		0.95			0.94	1.00	0,05	1 00		0.27	1,00	
Peak-hour factor, PHF 0.31	Satd. Flow (perm)		1525			1525	1292	82	1606		442	1589	
Adj. Flow (rph) 4 14 1 21 80 82 29 809 59 87 1260 15 Fart Group Flow (rph) 0 1 0 0 11 12 0 2 0 0 1 <t< td=""><td>Peak-hour factor, PHF</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td></t<>	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
RTOR Reduction (vph) 0 1 0 1 0 1 0 1 0 1 0 3 111 2 0 8 111 2 0 111 12 2 0 111	Adj Flow (vph)	4	14	-	21	80	82	29	808	59	87	1260	154
Lane Group Flow (vph) 0 18 0 101 11 29 866 0 87 1411 Turn Type 36 24 36 <	RTOR Reduction (vph)	0	-	0	0	0	71	0	2	0	0	e	0
Conflicted Phases Canflight 36 24 24 36 3	Lane Group Flow (vph)	0	18	0	0	101	11	29	998	0	87	1411	0
Parking (#hr) 10	Confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Parking (#/hr)	10	10	10	9	10	10	10	10	10	10	10	9
Protected Phases 4 8 2 2 6 Termited Phases 12.9	Turn Type	Perm	2		Perm		Perm	Perm	1		Perm		
Permitted Phases 4 B 2 6 Actuated Green, (5) 12.9 12.9 12.9 12.9 179.1 70.1 70.1 <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>80</td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td>9</td> <td></td>	Protected Phases		4			80			2			9	
Actualed Green, G (s) 12.9 12.0 13.9 13.9 13.0	Permitled Phases	4			80		8	2			9		
Effective Caen. g(s) 139 139 139 139 139 139 139 130 B01 B14 B12	Acluated Green, G (s)		12.9			12.9	12.9	1.67	79.1		79.1	79.1	
Actualed g/C Ratio 0.14 0.14 0.14 0.14 0.16 0.80 <td>Effective Green, g (s)</td> <td></td> <td>13.9</td> <td></td> <td></td> <td>13.9</td> <td>13.9</td> <td>80.1</td> <td>80.1</td> <td></td> <td>80.1</td> <td>80.1</td> <td></td>	Effective Green, g (s)		13.9			13.9	13.9	80.1	80.1		80.1	80.1	
Clearance (s) 4.0 <	Actuated g/C Ratio		0.14			0.14	0.14	0.80	0,80		0.80	0.80	
Vehicle Extension (s) 3.0	Clearance Time (s)		4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lare Gro Cap (vph) 212 121 180 166 1266 354 1273 vis Ratio Frett 0.01 0.05 0.44 0.67 0.26 0.09 vis Ratio Frett 0.01 0.35 0.34 0.67 0.25 0.11 vis Ratio Frett 0.01 0.36 0.44 0.67 0.25 1.11 vis Ratio Frett 0.01 0.35 0.37 0.01 0.35 0.25 1.11 Vic Ratio 0.03 0.14 1.75 0.14 0.25 1.11 Vic Ratio 0.02 0.1 1.01 1.16 0.25 1.11 Progression Factor 0.02 0.1 1.17 0.1 1.16 2.14 Incremental Delay, d2 0.2 0.2 1.17 0.1 1.12 5.14 Repertor 0.2 0.1 1.16 2.0 7.14 2.0 7.14 Approach Delay (s) 0.7 0.1 1.17 0.1 1.12	Vehicle Extension (s)		3.0	1		3.0	3.0	3.0	3.0		3.0	3.0	
vis Ratio Prot vis Ratio Prot vis Ratio Prot Vic Ratio Uniform Delay, d1 37,5 0,01 0,53 0,20 Uniform Delay, d1 37,5 0,01 0,50 0,44 0,67 0,25 Progression Factor 1,00 1,00 1,00 1,48 1,75 0,31 2,14 Progression Factor 1,00 1,00 1,44 1,75 0,1 2,57 1,00 Progression Factor 1,00 1,00 1,44 1,47 2,52 1,12 5,79 Peter of Service 0,00 Progression Factor 1,00 1,00 1,44 3,75 2,01 1,62 2,33 1,2 5,79 Progression Factor 1,00 1,00 1,00 1,44 3,75 2,01 1,02 1,2 5,79 Progression Factor 1,02 1,02 1,02 1,02 1,02 1,02 1,02 1,02	Lane Grp Cap (vph)		212			212	180	99	1286		354	1273	
vis Ratio Perim 0.01 0.00 0.01 0.35 0.220 vis Ratio Perim 0.03 0.09 0.04 0.67 0.220 Uninom Delay d1 37.5 0.31 2.14 Progression Factor 1.00 1.00 1.48 1.75 0.31 2.14 Approach Delay (s) 37.7 4.14 37.5 0.7 9.8 7.48 Approach Delay (s) 37.7 4.14 37.5 0.7 9.8 7.48 Approach Delay (s) 1.00 2.00 for the tend of Service D Actualet Cycle Length (s) 1.00 S.um of Institume (s) 6.0 Actualet Cycle Length (s) 1.00 S.um of Institume (s) 6.0 Actualet Cycle Length (s) 1.00 S.um of Institume (s) 6.0 Actualet Cycle Length (s) 1.5 c Critical Lane Group	v/s Ratio Prot								0.54			c0,89	
vic Ratio 0.03 0.48 0.67 0.25 1/1 Uniform Delay (1) 37.5 37.4 0.67 0.25 1/1 Incremental Delay (1) 37.5 37.4 37.4 37.4 37.4 Progressin Factor 1.00 1.00 1.48 1.75 0.31 2.5 100 Delay (2) 0.2 1.7 0.1 1.62 2.3 1.2 57.9 Incremental Delay, d2 0.2 1.7 0.1 1.62 2.3 12 57.9 Delay (3) 37.7 41.4 37.5 2.07 9.8 2.0 74.8 Approach Delay (3) 37.7 41.4 37.5 2.07 9.8 2.0 74.8 Approach Delay (3) 37.7 9.8 D C A A E F Approach Delay (3) 37.7 9.8 D D C A B E F Approach Delay (5) 37.7 9.8 D </td <td>v/s Ratio Perm</td> <td></td> <td>0.01</td> <td></td> <td></td> <td>c0.07</td> <td>0.01</td> <td>0.35</td> <td></td> <td></td> <td>0.20</td> <td></td> <td></td>	v/s Ratio Perm		0.01			c0.07	0.01	0.35			0.20		
Uniform Delay, d1 37.5 39.7 37.4 3.1 4.3 2.5 100 Progression Factor 1.00 1.00 1.00 1.00 1.01 2.5 100 Progression Factor 1.00 1.00 1.00 1.01 2.5 100 Incremental Delay, d2 37.7 4.14 37.5 20.7 9.8 2.0 7.3 2.14 Delay (s) 37.7 4.14 37.5 20.7 9.8 2.0 7.93 Level of Service D C A A E 7.4 Approach LOS D D C A A E Hittoper Cost 1.02 Sum for the order of the order of the order of the order orderore order order order order order orderore order order o	v/c Ratio		0.09			0.48	0.06	0.44	0.67		0.25	111	
Progression Factor 1.00 1.00 1.48 1.75 0.31 2.14 Incremental belay, d2 0.2 1.1 0.1 16.2 2.3 12 5/9 Delay (s) 37.7 4.4 7.5 0.1 16.2 2.3 12 5/9 Delay (s) 37.7 4.1 7.1 6.1 6.2 3.7 7.4 Aproach Delay (s) 37.7 39.7 10.2 7.4 7.4 Aproach Delay (s) 37.7 39.7 10.2 7.4 7.4 Aproach Delay (s) 0 7 9.8 HCM Level of Service 0 7.4 Approach Delay (s) 0 0 0 0 0 7.4 8 Activated Cycle Long (s) 1.02 Sum first time (s) 0 0 7.4 8 Actuated Cycle Length (s) 1.00 Sum first time (s) 6.0 0 0 0 0 Actuated Cycle Length (s) 1.00 Sum first time (s) 6.	Uniform Delay, d1		37.5			39.7	37.4	3.1	4.3		2.5	10.0	
Incremental Delay, d2 0.2 1.7 0.1 16.2 2.3 12 579 Delay (s) 37.7 41.4 37.5 20.7 9.8 2.0 793 Level of Service 37.7 41.4 37.5 20.7 9.8 2.0 793 Aproach Delay (s) 37.7 49.8 HCM 10.2 7 74.8 Aproach Delay (s) 37.7 9.9 0 0.2 7 74.8 Aproach Delay (s) 37.7 39.7 0.7 9.8 2.0 74.8 Aproach Delay (s) 37.7 9.9 D 10.2 4.4 8 Activities 0 1.0 0 1.0 8 6.0 74.8 Actuated Cycle Length (s) 1.00 Sum of Iost line (s) 6.0 0 0 1.16 Actuated Cycle Length (s) 100.0 Sum of Iost line (s) 6.0 0 0 0 0 0 0 0 0 0 0	Progression Factor		1.00			1.00	100	1.48	1.75		0.31	2.14	
Deley (s) 37.7 414 37.5 20.7 9.8 2.0 79.3 Approach Delay (s) D D C A E A E A A E A A E A A E A <td>Incremental Delay, d2</td> <td></td> <td>0.2</td> <td></td> <td></td> <td>1.7</td> <td>0.1</td> <td>16.2</td> <td>2.3</td> <td></td> <td>1.2</td> <td>57.9</td> <td></td>	Incremental Delay, d2		0.2			1.7	0.1	16.2	2.3		1.2	57.9	
Level of Service D D C A A E E Aproach Delay (s) 37.7 39.7 10.2 74.8 Aproach Delay (s) 37.7 39.7 10.2 74.8 Aproach Delay (s) D D C A A A E E Aproach Delay (s) B A HCM Level of Service D HCM Average Control Delay 43.8 HCM Level of Service D Acualed Cycle Length (s) 10.0 Sum of lost time (s) 6.0 Acualed Cycle Length (s) 100.0 Sum of Service E Analysis Period Capacity Utilization 88.3% (CU Level of Service E Analysis Period Capacity Utilization 88.3% (CU Level of Service E Critical Lane Group	Delay (s)		37.7			41.4	37.5	20.7	9.8		2.0	79.3	
Approach Delay (s) 37.7 39.7 10.2 74.8 Approach Delay (s) D D D E Approach LOS D D B E Messection Summary 49.8 HCM Level of Service D HCM Availing to Compare Mark 43.8 HCM Level of Service D Actualed Cycle Length (s) 1.02 Sum of Isst Lime (s) 6.0 Intersection Sapecity Utilization 83.3% ICU Level of Service E Analysis Period (min) 15 Critical Lane Group E	Level of Service		0			0	0	o	A		A	ш	
Approach LOS D D B E Intersection summary Intersection summary 49.8 HCM Level of Service D HCM Avealing to Capacity Utilization 1.02 Num (is section capacity Utilization 8.3.% CU Level of Service D Actualed Cycle Length (s) 1.00.0 Sum of lost time (s) 6.0 Analysis For of (nin) 5 Analysis For of (nin) 15 CU Level of Service E E	Approach Delay (s)		37.7			39.7			10.2			74.8	
Messection Summary HCM Average Control Delay 49.8 HCM Level of Service D HCM Volume to Capacity ratio 1.02 1.02 Actuated Capacity ratio 1.02 Sum of lost time (s) 6.0 Intersection 28.3% ICU Level of Service E Analysis Period (min) 15 CU Level of Service E Critical Lane Group	Approach LOS		0			٥			æ			ш	
HCM Average Control Delay 49.8 HCM Level of Service D HCM Vourne to Capacity ratio 1.02 1.02 Sum of lost time (s) 6.0 Intersection 28.3% ICU Level of Service E Analysis Period (min) 15 CU Level of Service Critical Lane Group	Intersection Summary		1							2			
HCM Volume to Capacity ratio 1.02 Actualed Cycle Length (s) 1.00 Sum of lost lime (s) 6.0 Intersection 28.3% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	HCM Average Control Dela	ay		49.8	Ŧ	CM Level	of Servic	ø		۵			
Actualed Cycle Length (s) 100.0 Sum of lost Lime (s) 6.0 Intersection Capacity Unlitation 88.3% ICU Level of Service E Analysis Period (min) c Critical Lane Group	HCM Volume to Capacity r	atio		1.02									
Intersection Capacity Utilization 88.3% ICU Level of Service E Analysis Period (min) 15 c Critical Lane Group	Actualed Cycle Length (s)			100.0	S	um of last	lime (s)			6.0			
Analysis Period (min) 15 c Critical Lane Group	Intersection Capacity Utiliz	ation		88.3%	0	U Level o	of Service			ω			
c Critical Lane Group	Analysis Period (min)			5									
	c Untical Lane Group												

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Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions plus Project

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions plus Project

HCM Signalized Intersection Capacity Analysis 95: Neal St & First

Movement EBL EB	100 0.52 1.00 0.99 0.95 0.52 0.52 0.52	WBT 136 1900	WBR	NBL	TBI 4	NBR	SBL	SBI	SBR
Lane Configurations + + + + + + + + + + + + + + + + + + +	52 1900 3.0 1.00 0.99 0.95 0.95 0.52	136 1900		*	£,				
Volume (vph) 43 46 80 43 Volume (vph) 100 100 100 100 100 100 100 100 100 100 100 114 Frbi, pedbikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.01 <td< td=""><td>52 1900 3.0 1.00 0.99 0.99 1536 1536 0.52</td><td>136 1900</td><td></td><td>-</td><td></td><td></td><td></td><td>+1</td><td></td></td<>	52 1900 3.0 1.00 0.99 0.99 1536 1536 0.52	136 1900		-				+1	
Ideal Flow (vphp) 1900 100 101<	1900 3.0 1.00 0.99 0.99 1536 0.52	1900	25	29	747	38	e	1084	85
Total Lost lime (s) 3.0 3.0 3.0 3.1 Land Uull, Factor 1.00 1.00 1.00 1.01 Flbb, pedbikes 0.99 1.00 0.99 1.01 Flbb, pedbikes 0.99 1.00 0.90 1.01 Flbb, pedbikes 0.99 1.00 0.93 1.01 Flbb, pedbikes 0.93 1.00 0.93 1.01 0.03 Sald, Flow (prot) 1.58 1.447 9.0 0.1 1.01 0.03 0.01 Flt Permitted 0.94 1.00 0.93 1.00 0.03 0.01 0.01 Flt Permitted 0.93 1.447 9.5 0.05 0.01	3.0 1.00 0.99 1.00 0.95 0.95 0.52		1900	1900	1900	1900	1900	1900	1900
Lane Ult, Factor 1.00 1.00 1.1 Lane Ult, Factor 1.00 1.00 1.1 Fbb, pedbikes 1.00 0.99 1.10 Fr Protected 0.95 1.00 0.91 Sald, Fbw (pro) 153 1.417 155 Sald, Fbw (pro) 153 1.417 155 Sald, Fbw (pro) 153 1.417 155 Sald, Fbw (pro) 1.51 1.51 155 Sald, Fbw (pro) 1.51 154 155 Formitied Prases 4 4 154 155 Formitied Prases 4 4 154 155 Actuated Green, G (s) 154 154 155 Actu	1.00 1.00 0.99 0.95 0.95 0.52	0.6		3.0	3.0		3.0	3.0	
Frbn. peedbikes 1.00 0.98 1.10 Fibn. peedbikes 0.99 1.00 0.98 1.00 Fit Protected 0.95 1.00 0.96 1.01 Fit Protected 0.95 1.00 0.95 1.00 0.95 Fit Protected 0.95 1.00 0.95 1.00 0.15 Satu Flow (perm) 538 1447 155 8.4 1.00 0.15 Peak-hour factor 0.43 0.95 0.147 0.55 0.147 8.0 Peak-hour factor 0.447 0.55 0.147 6.9 0.147 8.0 Peak-hour factor 0.45 6.2 0.147 6.9 0.1 0.0 0.	1.00 0.99 0.95 0.536 0.52	1.00		1 00	1 00		1.00	1 00	
FI-bh ped/bikes 0.99 1.00 0.93 R1 Protected 1.00 0.99 1.00 0.91 Stall, Flow (prot) 1.33 1.447 1.55 1.55 Stall, Flow (prot) 0.35 1.00 0.31 1.55 Stall, Flow (prot) 0.33 1.00 0.35 0.1 Stall, Flow (prot) 0.34 1.00 0.35 0.1 Stall, Flow (prot) 0.34 1.00 0.35 0.1 4.0 8.0 Peak-hour factor, PHF 0.95 0.95 0.1 4.0 8.0 1.00 0.1 0.1 0.1 0.0 0.1 0.1 0.0 0.1	0.99 1.00 1536 0.52	66 0		1.00	1.00		1.00	1,00	
Fr 1,00 0,90 1,10 Sald, Flow (prot) 1,33 1,447 1,55 Sald, Flow (prot) 1,33 1,447 1,55 Sald, Flow (prot) 0,33 1,447 1,55 Sald, Flow (prot) 0,33 1,447 1,55 Sald, Flow (prot) 0,33 1,00 0,4 Sald, Flow (prot) 0,33 1,00 0,5 0,1 Sald, Flow (prot) 0,33 1,00 0,5 0,1 Adj, Flow (prot) 0,35 0,5 0,1 0,7 0 Adj, Flow (prot) 0,7 0,7 0 0 0 0 Adj, Flow (prot) 0,7 0,7 0 <td>1 00 0 95 1536 0 52</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1 00</td> <td></td>	1 00 0 95 1536 0 52	1.00		1.00	1.00		1.00	1 00	
FIT Protected 0.95 1.00 0.15 FIT Protected 0.95 1.00 0.15 Stath Flow (perm) 530 1447 153 APack Nov reform) 0.95 1.00 0.15 APack Nov reform) 0.95 0.95 0.95 0.16 APack Nov reform) 0.93 0.95 0.95 0.14 0.84 APack Nov reform 0.95 0.95 0.95 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.15 0.1	0.95 1536 0.52	0.98		1 00	66 0		1.00	66"0	
Sald, Flow (prot) 1538 1447 155 Sald, Flow (prot) 1338 1447 155 Sald, Flow (perm) 0.43 1.00 0.1 Sald, Flow (perm) 0.95 0.95 0.95 0.95 Peak-hour factor, PHF 0.95 0.95 0.95 0.95 0.95 R10, Reduction (wph) 45 48 84 1 0.0 0.0 1 0.0 0.1 0.0 1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.1 0.0 0.1 0.0 0.1 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1<	1536 0.52	1.00		0.95	1.00		0.95	1.00	
FIT Permitted 0.43 1.00 0.13 Peak-hour factor, PHF 690 1447 89 Peak-hour factor, PHF 690 1447 89 Adj. Flow (uph) 690 1447 89 Adj. Flow (uph) 67 035 018 Adj. Flow (uph) 67 48 84 19 Adj. Flow (uph) 67 62 0 10 10 Conft. Pres. (#hr) 10 10 10 10 10 Turn Type Permited Phases 4 4 Per factor of the	0.52	1590		1554	1621		1550	1614	
Statt. Flow (perm) 690 1447 8 Adj. Flow (pp) 0.90 0.95 0.95 0.95 Adj. Flow (pp) 0.95 <		1 00		0.10	1.00		0.28	1.00	
Peak-hour fractor, PHF 0.35 0.95 0.95 0.1 Peak-hour fractor, PHF 0.35 0.95 0.1 RTOR Reduction (vph) 45 62 0 1 Lane Group Flow (vph) 45 62 0 0 Lane Group Flow (vph) 5 62 0 0 Turn Type Perm 4 4 Perm Permitted Prases 4 15,4 15,4 15 Reflective Green, G (s) 15,4 15,4 15 Reflective Green, G (s) 15,4 15,4 15 Reflective Green, G (s) 16,4 16,4 16 Charance Time (s) 3,0 3,0 3,0 3,0 4,0 10,0 10,0 10,0 10,0 10,0 10,0 10,	848	1590		165	1621		460	1614	1
Adi, Few (uph) 45 48 84 54 Adi, Few (uph) 45 48 84 5 Tri OR Reduction (uph) 0 70 0 0 Lane Group Few (uph) 5 62 0 0 Confl. Peets. (#In/) 10 10 10 10 Perking (#In/) 5 5 5 5 Perking (#In/) 10 10 10 10 Floated Creen, G (s) 15,4 15 15 15 Actuated Green, G (s) 15,4 16 4 4 Actuated Green, G (s) 16,4 16 6 0 5 Actuated Creen, g (s) 16,4 16 0 6 0 4 6 6 6	0.95	0.95	0.95	0.95	56.0	0.95	0.95	0.95	0.95
Reference (wph) 0 70 0 Conf. Pecs. (#hr) 5 62 0 Conf. Pecs. (#hr) 5 5 5 Parking (#hr) 5 62 0 Turn Type Perm 4 Per Turn Type Perm 4 Per Permited Prases 4 4 15 Actuated Green. G (s) 15.4 15.4 15 Actuated Green. G (s) 16.4 16 0 Actuated Green. G (s) 15.4 16 4 Actuated Green. G (s) 15.4 16 16 Actuated Green. G (s) 16.4 16 0 Vehicle Extension (s) 3.0 3.0 3 3 Valued Option (vph) 113 237 1 1	22	143	59	28	786	40	3	1141	68
Lame Group Flow (rph) 45 62 0 Lame Group Flow (rph) 5 62 0 Turn Pess 70 10 10 10 Turn Type Perim 4 Perim Perim Turn Type Perim 4 Perim Perim Perimeter of Frases 4 15 15 15 Perimeter Green. G (s) 15.4 15.4 15 16 Actuated Green. G (s) 16.4 16 4 6 Clearance Time (s) 3.0 3.0 3	0	80	0	0		0	0	2	0
Confl. Peds. (#hr) 5 5 Parking (#hr) 10 10 10 Parking (#hr) 10 10 10 Protected Phases Permitted Phases 4 Permitted Phases Actualed Green, G (s) 15.4 15 15 Actualed Green, G (s) 16.4 16 4 Actualed Creen, G (s) 16.4 16 0.6 Actualed Creen, G (s) 16.4 16 4 Vehicle Extension (s) 3.0 3.0 3 </td <td>55</td> <td>161</td> <td>•</td> <td>65</td> <td>825</td> <td>0</td> <td>3</td> <td>1228</td> <td>0</td>	55	161	•	65	825	0	3	1228	0
Parking (#hr/) 10 10 10 10 Protected Prases Perm Perm Perm Perm Protected Prases A 4 Perm Perm Actuated Green, G (s) 15,4 15 15 15 Actuated Green, G (s) 15,4 16 Actuated Crean, g (s) 16,4 16 Actuated Crean, g (s) 0,16 0,16 0,16 0,6 6 Actuated Crean, g (s) 13 3,0 3,0 3 <td>s</td> <td></td> <td>2</td> <td>\$</td> <td></td> <td>'n</td> <td>\$</td> <td></td> <td>S</td>	s		2	\$		'n	\$		S
Turn Type Perm	10	10	10	10	10	10	10	10	9
Protected Phases 4 Permitted Phases 4 Fernitted Phases 4 Actuated Green, G (s) 15,4 15,4 16 Effective Green, G (s) 16,4 16,4 16 Actuated g/C Ratio 0.16 0.16 0.16 Clearance Time (s) 4,0 4,0 4 Vehicle Extension (s) 3,0 3,0 3,0 3,0 3,0 4 Vehicle Extension (s) 3,0 3,0 3,0 3,0 4 Vehicle Extension (s) 0,04 11	Perm			Perm			Perm		
Permitted Phases 4 Actuated Green, G (s) 15,4 15,4 15, Actuated Green, G (s) 16,4 16,4 16,4 Actuated Creen, g (s) 16,4 16,4 16,4 Actuated Creen, g (s) 16,4 16,4 0, Clearance Time (s) 4,0 4,0 4,0 3, Vehicle Extension (s) 3,0 3,0 3,1 13 Vehicle Extension (s) 13 237 11 Vis Ratio Prop (vph) 113 237 11		80			2			9	
Actuated Green. G (s) 15.4 15.4 15 Filtective Green. g (s) 16.4 16.4 16 Actuated Green. g (s) 16.4 16.4 16 Actuated Green. g (s) 16.4 16 Actuated Green (s) 3.0 3.0 3.1 Vehicle Extension (s) 3.1 Vehicle Extension (s) 3.0 3.1 Vehicle Extension (s) 3.1 Vehicle Extens	æ			2			9		
Effective Green, g (s) 16.4 16.4 16. Actualed g/C Ratio 0.16 0.16 0.1 Crearance Time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	15.4	15.4		76.6	76.6		76.6	76.6	
Actuated g/C Ratio 0.16 0.16 0. Clearance Time (s) 4.0 4.0 4 Vehicle Extension (s) 3.0 3.0 3 Lustan Grp Cap (vph) 113 237 11: Lust Ratio Prop	16.4	16.4		77.6	77.6		77.6	77.6	
Clearance Time (s) 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	0.16	0.16		0.78	0.78		0.78	0.78	
Vehicle Extension (s) 3.0 3.0 3 Lane Grp Cap (vph) 113 237 1: vis Ratio Prot 0.04 1: 1:	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph) 113 237 11 v/s Ratio Prot 0.04	3.0	3.0		3.0	3.0		3.0	3.0	
v/s Ratio Prot 0.04	139	261		128	1258		357	1252	
		c0.10			0.51			c0_76	
v/s Ratio Perm 0.07 0.0	0.06			0.36			0.01		
v/c Ratio 0.40 0.26 0.4	0,40	0.62		0.46	0.66		0.01	96.0	
Uniform Delay, d1 37.4 36.5 37	37.4	38.9		3.9	5.1		2.5	10.5	
Progression Factor 1.00 1.00 1.0	1.00	1.00		1.00	1.00		0.89	1.56	
Incremental Delay, d2 2.3 0.6 1	1.9	4.3		11.5	2.7		0.0	4.4	
Delay (s) 39.7 37.1 39	39.2	43.1		15.4	7.8		2.3	20.9	
Level of Service D D	۵	0		æ	A		×	J	
Approach Delay (s) 37.8		42.2			8.3			20.8	
Approach LOS D		٥			A			U	
Intersection Summary		AL MAN							
HCM Average Control Delay 19.5	H	M Level o	f Service			8			
HCM Volume to Capacity ratio 0.92									
Actuated Cycle Length (s) 100.0	Su	m of lost ti	me (s)			6.0			
Intersection Capacity Utilization 85.9%	ICI	J Level of	Service			ш			
Analysis Period (min) 15									
c Critical Lane Group									

Synchro 7 - Report W-Trans

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions plus Project

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions with Planned TIF Improvements plus Project

4/29/2013

HCM Signalized Inte 96: Bernal & First St	rsectic	n Cap	acity A	nalysi	s						4/2	9/2013
	1	t	~	1	Ŧ	1	•	←	•	1	→	12
Movement	EBL	EBT	EBR	WBL	WBI	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	ŧ		5	44		\$	+	*	*	44	
Volume (vph)	179	233	209	455	714	62	174	2222	127	19	947	206
ideal Flow (vpnpi) Total Lost time (s)	3.0	1906	3.0	3.0	3.0	1900	1900	1900	1900	1900	1900	1900
Lane Util Factor	19.0	0.05	1.00	76.0	0.95		79.0	1 00	100	1.00	3,0	
Frpb, ped/bikes	1 00	1 00	0.89	1 00	1.00		100	1.00	0.82	100	66 U	
Flpb, ped/bikes	1 00	1.00	1.00	1.00	1 00		1 00	1.00	1 00	1 00	1 00	
Fil	1 00	1.00	0.85	1_00	0.99		1.00	1.00	0.85	1.00	16.0	
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1 00	1 00	0.95	1.00	
Satd Flow (prot)	3547	3657	1452	3547	3604		3547	1925	1345	1554	3267	
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3547	3657	1452	3547	3604		3547	1925	1345	1554	3267	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj Flow (vph)	197	256	230	200	785	68	191	854	140	21	1041	226
RTOR Reduction (vph)	0	0	129	0	2	0	0	0	60	0	18	0
Lane Group Flow (vph)	197	256	101	500	846	0	191	854	8	21	1249	0
Contl. Peds. (#/hr) Darking (#/hr)			12			12			96	4	4	24
	l			l			4				2	2
Turn Type Districted Discon			нега	ю,	.0		hrot	e	Herm	Liot		
Protected Priases	-	4 <		2	0		n	×	¢	4	ø	
Aduated Proce C (a)	0 4	1 1 1	t C	17 0	2 20		0 -	10.7	2 08	000	101	
		10	0 0 1 1	10.0	C.02		n	104	1 04	2 0	0.74	
Effective Greeft, g (s)	0.0	242	0 1 2		C'17		0.0	1.84	1 0 10	3.0	C. 44	
	0.00		10		07.0		0.0	0.40 P	D4.0	5.0	44.D	
Victible Education (a)				- - -			0.4	0.0	0.0	0; 4 0; 0	0.0	
	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	1
Lane Grp Cap (vpn)	797	618	245	660	991		284	937	655	23	1454	
V/S Kallo Prot	CU-U5	0.07	-00	0 14	CU 23		cu.up	cU.44		10.0	0.38	
VIS Katio Perm	050	0.44	10.0	0 T C	0.05		200	000	0.06	000	000	
V/C Kauo	50.0	1410	0.41	0.70	0.60		10.0	18.0	21.0	0.30	0.80	
Unitorm Delay, d I Prostor Easter	1 00 F	3/ 1	1 00 1	0.05	34.3		44.1	23.1	14.U	40.4	24.9	
Incremental Delay 40	7.1	001	8	00.1	001		2 4	12.0	10.0	27.6	00.1	
Delay (s)	52.0	37.6	38.3	43.5	416		56.4	100		50.6	317	
Level of Service							; u	0	e e		0	
Approach Delay (s)		42.0			42.3			30.7			32.0	
Approach LOS		٥			٥			U			U	
Intersection Summary						đ		4		Î		1
HCM Average Control Delay			36.3	H	M Level	ol Service			0			1
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			100.0	Su	m of last	lime (s)			9.0			
Intersection Capacity Utilization	5		87.9%	Ū	J Level o	f Service			ш			
Analysis Period (min)			5									
o olinoal carlo olondo												

Accellation 597.1 Kottimger & Adams And An An An	397. Kottinger & Adams 397. Kottinger & Adams 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 11 10 <t< th=""><th> → ↓ ↓</th><th>MRT NER SEI SEI SEI</th><th>L NDF NON JOL JOI JOY</th><th>+</th><th></th><th></th><th></th><th>c //1 cZ EE 001 Z</th><th>A TRANSPORT OF THE</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	→ ↓ ↓	MRT NER SEI SEI SEI	L NDF NON JOL JOI JOY	+				c //1 cZ EE 001 Z	A TRANSPORT OF THE																																						
Agenotic Service R. Adams A -	497 Control 597 Control 1 <th1< th=""> <th1< th=""> 1 <</th1<></th1<>		WAR NR	CIN LIGAN			80 00	0.0 00.0	150 4.	COLUMN T												St D XX			Conside	OCI AIRC																						
A202013 Sign: Kottinger & Adams Anomenen Eilen Kommen Kommen	9000000000000000000000000000000000000	+	WRT	1GM	Chor	done	22	No:U	163													10			in lovel 11	O LEVEL U																						
Accenta Second	597. Kottinger & Adams 597. Kottinger & Adams 10 10 10 10 11 </td <td>\</td> <td>MBI</td> <td>TOM</td> <td></td> <td>71</td> <td>CZ 0</td> <td>000</td> <td>47</td> <td>50.6</td> <td>000</td> <td>200</td> <td>22</td> <td>28</td> <td>-0.12</td> <td>5.8</td> <td>0.32</td> <td>551</td> <td>11.6</td> <td>11.6</td> <td>2</td> <td></td> <td></td> <td></td> <td><u>c</u></td> <td>2</td> <td></td>	\	MBI	TOM		71	CZ 0	000	47	50.6	000	200	22	28	-0.12	5.8	0.32	551	11.6	11.6	2				<u>c</u>	2																						
4/28/2013 597. KOttinger & Adams A Movement Even	Control Security	1	CRO	LIBI		ç	07 00	09'D	33	1.0.4	175	2	42	8	-0.03	5.9	0.29	532	11.3	E.11	Þ		12.6		AE 70/	R 1.0#	2																					
Academia 42840013 Academia Same Configurations Same Configurations	4026013 597. Kutinger & Andama 867 881 683 981 684 981 684 813 684 684 983 984 984 984 984 813 813 814 884 984 <	1	CB1	Ð •	to to	dote	16.0	0.00	29	WD 4	L L L	202	42	150	-0.17	5.3	0.52	638	14.0	14.0	æ																											
4282013 4242 4242 4242 4242 4242 4242 4242 42	4520000 5527. Kottinger & Ad 101	ams	E Bu	Ð		2	16	N.0U	79Z	201	1	147	152	33	0.08	5.7	0.39	581	12.3	12.3	'n				-	10																						
	MBF MBF MBF 100 107 96 108 167 198 108 167 96 109 167 150 130 130 130 130 130 130 130 130 130 130 130 130 141 10 10 127 295 10 131 130 130 143 111 295 143 111 295 143 111 295 143 111 295 101 111 295 143 111 295 143 111 295 101 111 295 101 111 295 111 295 111 143 111 295 150 111 295 150 111 295 161 111 295 171 295 111 161 111 295 171 295 111 171 295 111 171 295 111 <	597: Kottinger	Meanmant	Mayenen	Lane Comigurations		Volume (vpn)	reak Hour Factor	Hourly now rale (vpn	Distriction I and H		Volume I otal (vpn)	Volume Left (vph)	Volume Right (vph)	Had) (s)	Departure Headway	Degree Utilization, x	Capacity (veh/h)	Control Delay (s)	Approach Delay (s)	Approach LUS	Intersection Summar	Delav	HCM Level of Servic		Androin Deviced (min	Analysis Period (min																					
000 000 000 000 000 000 000 000		4/29/2013		VBL WBJ NBL NBK	200 TOP		Free Slop	0% 0%	0.64 0.64 0.64 0.64	47 188 167 150	20 20	13.0 13.0	404	2 2		None				350 577 295			350 577 295	41 64 62		22 25 33	1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	18/ 443 /1/	BILL TO REAL THE REAL PROPERTY OF THE REAL PROPERTY	347	467	150	E44	600	*n 90	0.02		20.6	0	1.9	10% ICU Level of Service A	15						
BER WBL 148 85 30 148 47 47 148 47 47 1187 531 47 1187 534 317 233 317 233 1187 541 06 13 20.6 36 36 36 96 36 36 96 36 96 96 36 96 96 366 96 96 37 20.6 0 366 96 96 366 96 96 366 96 96 37 20.6 0 15 20.6 0 15 20.6 0 15 15 14 16 15 14 15 15 14	11187 1	4/29/2013		CERK WEIL WEI NEU NEUK	or 0.0 407 00		Free Slop		0.64 0.64 0.64 0.64	148 47 188 167 150	20 20	13.0 13.0	40 40	2 2		None				350 577 295			350 577 295	41 64 62		22 35 32		11/ 644 /11/	VB.1 NB.1	234 317	A7 167	150	1407 5.40			0.02 8.1	ں ۲	1.9 20.6	U	5,9	44.0% ICU Level of Service A	15						
RS 350 File 95 30 File 95 30 13.0 14.8 47 20 95 30 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 13.0 964 964 14.0 964 13.0 964 14.1 964 14.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 0.1 964 144 964 15 67 16 <	Image: 12 minipage with the state st	lls 4/29/2013 ↓ ↓ ↑ ↑ ↑ ↓	tor coto vidi vido vido	EBI EBK WBL WBI NBK NBK			Free Prote Stop	0% 0% 0%	0.64 0.64 0.64 0.64 0.54 0.54	181 148 47 188 167 150	20 20 20	13.0 13.0 13.0	40 40 40	2 2		None				350 577 295			350 577 295	41 64 62		22 35 33		118/ 443 /1/	EBT WB1 NB1	330 234 317		148 15		0.19 0.04 0.09		0.0 1.3 0.0	cc ع	0.0 1.9 20.6	o	52	44.0% ICU Level of Service A	15						

Kottinger Drive Senior Housing Project AM Peak Hour Buildout Conditions plus Project

HCM Signalized Intersection Capacity Analysis

Movement Lane Configurations		t	1	-	ļ	1	1	-	٩.	×	+	¥
Lane Configurations	EBL	EBT	EBR	WBE	WBT	WBR	NBL	TBN	NBR	SBL	SBT	SBR
		¢			tr.	*	*	44		*	4	
Volume (vph)	93	49	13	31	30	76	36	1015	66	112	399	169
Ideal Flow (vphpl) 15	006	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util Factor 0	0.95	0.95			1.00	1.00	1.00	0.95		1,00	1,00	
Frpb, ped/bikes 1	8	1 00			1.00	1.00	1.00	1.00		1.00	66.0	
Fipb, ped/bikes	00	00			1.00	1.00	1.00	00		1 00	1 00	
Fit and the second s	00.	0.97			1.00	0.85	1.00	0.99		1.00	0,96	
Fit Protected 0	36	66 0			0.98	1.00	0.95	1.00		0.95	1.00	
Satd Flow (prot) 14	477	1496			1596	1391	1825	3611		1829	1825	
Fit Permitted	95	0.99			0.98	1.00	0.26	1 00		0.18	1.00	
Sato. Flow (perm) 14	4//	1496			1596	1391	203	3611		342	1825	1
Peak-hour factor, PHF 0	96	0.96	0,96	0.96	0.96	0.96	96'0	96 0	96 0	0.96	0,96	0.96
Adj Flow (vpn)	/6	51	4	32	31	62	æ	1057	6	117	416	176
ALUK KEGUCTION (VPN)	- 2	= 2	- -	-	- 5	80	-	5 1	-		RZ	
	0	2		- r	6	=	85 4	C411	Ð	111	7/0	
Parking (#/hr)	10	10	, t	, t	10	10	t					t
furn Type	tiller			Solit		Perm	Parm			Porm		
Protected Phases	4	4		m	3	1		2			9	
^p ermitted Phases						ო	2			9		
Actuated Green, G (s)	7.5	7.5			4.3	4.3	20.5	20.5		20.5	20.5	
effective Green, g (s)	9.5	9.5			6.3	6.3	22.5	22.5		22.5	22.5	
Acluated g/C Ratio 0	0.20	0.20			0.13	0.13	0.48	0.48		0.48	0.48	
Clearance Time (s)	5.0	5.0			5.0	5.0	5.0	5.0		5.0	5.0	
/ehicle Extension (s)	3.0	3.0	ľ		3.0	3.0	3.0	3.0		3.0	3.0	
ane Grp Cap (vph)	297	300			213	185	239	1718		163	868	
//s Ratio Prot c0	0.05	0.05			c0.04			0.32			0.31	
//s Ratio Perm						0.01	0.08			c0.34		
r/c Ratio 0	0.27	0.23			0:30	0.06	0.16	0.67		0.72	0.66	
Jniform Delay, d1	16.0	15.8			18.5	17.9	1.0	8.9		9.9	9.5	
rogression Factor	00.1	00.1			1.00	1 00	1 00	00.1		1.00	1.00	
ncremental Delay, d2	0.5	4.04			8.0	1.0	0.0	0.1		14.0	1.8	
Jelay (s)	0.0	2 0			2.5	10.0	0 ×	0		53.5	с. П	
Level of Service	٥	16.4					¢	10.4		ر	124	
Approach I OS		2			8						2	
the section Summer					1			1		0.00	2	
HCM Average Control Delav			12.3	H	M level	of Servic			æ			
HCM Volume to Capacity ratio			0.54				,		2			
Actualed Cycle Length (s)			47.3	Su	m of lost	time (s)			9.0			
Intersection Capacity Utilization			60.8%	Ö	U Level (of Service			8			
Analysis Period (min)			15									
c Critical Lane Group												

Momentation Exit		1	t	~	1	ŧ	1	•	-	•	1	→	1
Outment (with) Image (with	Movement	EBL	EBT	EBR	MBL	TBW	WBR	NBL	NBT	NBR	SBL	SBI	SBR
Volume (vpi) 160 125 143 55 143 346 56 730 300	Lane Configurations	£			**	\$	×.	*	\$	*	5	4	ſ
Internation 1300	Volume (vph)	160	1225	143	255	742	363	140	346	645	666	206	169
Tend UII, Factor 30	Ideal Flow (vphpi)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Late Dial Dial <thdial< th=""> Dial Dial <thd< td=""><td>Tolal Lost time (s)</td><td>3.0</td><td>3.0</td><td></td><td>30</td><td>3.0</td><td>0.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td>3.0</td><td></td></thd<></thdial<>	Tolal Lost time (s)	3.0	3.0		30	3.0	0.0	3.0	3.0	3.0	3.0	3.0	
From Propresentation 1.00<	Lane Util Factor	0.97	0.91		26.0	0.95	1.00	1.00	0.95	1.00	0.97	0.95	
From the products 1.00 <td>Frpb, ped/bikes</td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1 00</td> <td>0.98</td> <td>1.00</td> <td>1.00</td> <td>0.98</td> <td>1.00</td> <td>1.00</td> <td></td>	Frpb, ped/bikes	1.00	1.00		1.00	1 00	0.98	1.00	1.00	0.98	1.00	1.00	
Fit Fit <td>FIPD, ped/bikes</td> <td>1.00</td> <td>1.00</td> <td></td> <td>00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td>	FIPD, ped/bikes	1.00	1.00		00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
The Protected 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 335 100 100 335 100 100 335 100 100 335 100 100 335 100 100 335 100 335 100 100 335 100 100 335 100 100 335 100 100 335 100 101 100 101 100 101 100 101 <	Fit	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Add Filew (perc) 3547 5156 3547 5557 5599 3577 3557 3559 3577 3557 3559 3577 3557 357<	Flt Protected	0.95	1.00		0.95	1,00	1.00	0.95	1.00	1.00	0.95	1.00	
Filt Description 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.00 0.35 1.01 1.00 0.35 1.00 0.35 1.01 0.35 3.55 1.00 0.35 1.01 1.21 2.35 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36 3.56 1.36	Satd. Flow (prot)	3547	5156		3547	3657	1599	1829	3657	1599	3547	3551	
Adv Team S347 S156 S347 S557 T599 S547 T599 T544 T546 T646 T646 T647	Flt Permitted	0.95	1.00		0.95	1,00	1.00	0.95	1.00	1.00	0.95	1.00	
Adj. Flow (rph) 174 035 034 035 034 035 034 035 035 034 035	Satd Flow (perm)	3547	5156		3547	3657	1599	1829	3657	1599	3547	3551	1
Adj. Flow (wph) 170 1333 152 271 789 386 149 386 666 709 751 RTOR Reduction (wph) 170 133 152 271 789 386 149 386 709 751 Lame Group Flow (wph) 170 143 0 2 7 86 709 74 Comf. Prease, (#hr) 170 120 217 789 366 139 391 14 Comf. Prease, (#hr) 1 6 717 382 100 129 133 301 36 493 386 709 374 421 Free endige 7 4 7 4 221 100 121 313 301 303 321 421 74 421 421 401 501 521 421 421 421 421 421 421 421 421 421 421 421 421 421 421	Peak-hour factor, PHF	0.94	0,94	0,94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
RTOR Reduction (ym) 10 12 0 271 789 66 709 914 Confl. Pease (#m) 170 143 0 271 789 36 149 366 709 914 Confl. Pease (#m) 170 143 0 271 789 56 709 914 Protect Phases 7 6 5 2 7 36 56 709 914 Protect Phases 11 6 5 2 36 36 301 30	Adj Flow (vph)	170	1303	152	271	789	386	149	368	686	601	751	180
Lane Choup Flow (relit) 170 143 0 271 789 386 149 386 709 914 Turn Type 7 7 3 6 7 3 8 7 4 Prouth 7 7 3 7 3 8 7 4 Protected Phases 1 7 3 7 3 8 7 4 Protected Phases 1 6 5 2 3<	RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	17	0
Confl. Peaks (#hi) 12 766 36 36 Turn (Prese Port 5 2 3 8 7 4 Turn (Prese Port 5 2 3 8 7 4 Protected Phases 11 5 2 3 8 53 31 31 32 301 32 301 32 301 32 301 32 301 32 301 33<	Lane Group Flow (vph)	170	1443	0	271	789	386	149	368	686	602	914	0
Turn Type Prot Prot Free Prot Free Prot Tee Prot To To <thto< td=""><td>Confl. Peds. (#/hr)</td><td></td><td></td><td>12</td><td></td><td></td><td>36</td><td></td><td></td><td>36</td><td></td><td></td><td></td></thto<>	Confl. Peds. (#/hr)			12			36			36			
Protection Phases 1 6 5 2 7 4 Perment of Phases 117 38.2 700 139 153 301 303 357 301 Perment of Creen (s) 9.8 35.3 117 38.2 1200 139 153 301 303 357 321 322 020 035 340 035 045 043 045 043 045 043 045 043 045 043 045 045 045 045 045 045 045 045 045 045 045 045	Turn Type	Prol			Prot		Free	Prot		Free	Prot		
Permitted Phases Free	Protected Phases	-	9		Ω.	2		e	80		1	4	
Actuated Green, C (s) B.B 35.3 11.7 3B.2 72.00 15.3 72.00 35.7 39.1 Actuated Green, C (s) B.B 35.3 11.7 3B.2 12.0 12.9 16.3 12.0 35.7 39.1 Actuated Green, C (s) 9.8 39.3 0.11 0.35 100 0.15 0.16 0.03 0.35 30.0 Actuated Green, C (s) 4.0 7.0 4.0 7.0 4.0 7.0 36.7 4.0 50.0 Vehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 30 30 30 30 30 Vehicle Extension (s) 3.0 3.0 0.17 0.35 130 0.13 0.13 0.16 0.12 Vehicle Extension (s) 3.0 0.17 0.16 0.17 0.10 0.10 0.13 0.13 0.13 Vehicle Extension (s) 0.05 0.12 0.17 0.10 0.10 0.10 0.13 0.13 0.13 Vehicle Extension (s) 0.10 0.10 0.10 0.10 0.10 0.10 0.13 0.13 0.13 Vehicle Extension (s) 0.10 0.10 0.10 0.10 </td <td>Permitted Phases</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Free</td> <td></td> <td></td> <td>Free</td> <td></td> <td></td> <td></td>	Permitted Phases						Free			Free			
Effective Green, g(s) 9.8 39.3 12.7 42.2 120.0 36.7 42.1 Acutade gC Ratio 0.03 0.33 0.11 0.35 100 0.33 0.30 Acutade gC Ratio 0.03 0.33 0.11 0.35 100 0.33 0.30 Vehicle Extension (s) 3.0	Actuated Green, G (s)	8.8	35.3		11.7	38.2	120.0	12.9	16.3	120.0	35.7	39.1	
Actualed g/C Raio 0.08 0.33 0.11 0.35 100 0.12 0.16 100 0.31 0.33 0.35 0.31 0.33	Effective Green, g (s)	9.6	39.3		12.7	42.2	120.0	13.9	19.3	120.0	36.7	42.1	
Clearance Time (s) 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 6.0 4.0	Actuated g/C Ratio	80.0	0.33		0.11	0.35	1.00	0.12	0,16	1 00	0.31	0.35	
Vehicle Extension (s) 30 </td <td>Clearance Time (s)</td> <td>4.0</td> <td>0.7</td> <td></td> <td>4.0</td> <td>0.7</td> <td></td> <td>4.0</td> <td>6.0</td> <td></td> <td>4.0</td> <td>6.0</td> <td></td>	Clearance Time (s)	4.0	0.7		4.0	0.7		4.0	6.0		4.0	6.0	
Lane Cirp Cap (rph) 230 1689 375 1286 1593 1085 1246 vis Ratio Kis Ratio Kis Ratio Vis Ratio Microm Delay, dri 0.05 0.28 0.018 0.20 0.21 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.21 0.20 0.20 0.21 0.20 0.21 0.20 0.21 0.20 0.21 0.20 0	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
vk Fatio Preti 0.05 60.28 c0.08 0.02 0.00 0.10 0.00 0	Lane Grp Cap (vph)	290	1689		375	1286	1599	212	588	1599	1085	1246	
with Ratio Perm 0.24 0.72 0.61 0.24 0.73 0.61 0.24 with Ratio 0.59 0.85 0.72 0.61 0.24 0.70 0.63 0.43 with Ratio 0.10 0.10 1.00 1.00 1.00 1.00 0.00 8.07 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 0.00 8.0 0.78 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 0.80 0.78 Incremental Delay, d2 5.3 5.7 3.0 0.4 6.1 4.01 2.1 0.8 2.8 Incremental Delay, d2 6.7 0.3 0.4 6.1 0.4 1.0 1.0 1.0 Reprodention 6.7 0.3 0.4 6.1 0.4 6.1 2.9 Reprodention 6.7 0.3 0.4 6.1 0.4 6.1 2.9 Approach Dist 4.4 8 2.91 4.4 2.31 2.3 Approach Dist 1.0 1.00 1.00 1.0 2.9 Approach Dist 0.7 0.7 0.7 0.7 0.7	v/s Ratio Prot	0.05	c0.28		c0.08	0.22		c0.08	c0.10		0.20	c0.26	
vic Ratio 059 085 0.72 0.51 0.24 0.70 065 0.43 0.65 0.43 0.65 0.43 0.65 0.43 0.65 0.43 0.65 0.43 0.65 0.70 0.65 0.71 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.00 361 34.0 0.76 0.65 0.43 0.61 24.1 44.0 10.0 361 14.0 0.00 361 24.0 0.61 24.1 44.0 26.0 28.2 2.00 0.75 28.2 28.1 28.	v/s Ratio Perm						0.24			c0.43			
Uniform Delay, d1 531 377 519 322 0.0 511 470 0.0 361 340 Progression Factor 1.00 1.00 1.00 1.00 0.0 0.0 73 Intermental Delay (s) 562 434 511 21 0.8 28 21 Delay (s) 562 434 511 491 0.8 315 286 Level of Savrices E D A E D A C C C Aproach Delay (s) 281 330 0.4 611 491 0.8 315 286 Aproach Delay (s) 281 231 231 233 Aproach Delay (s) 281 231 233 Aproach Delay (s) 281 231 231 233 Aproach Delay (s) 281 324 HCM Level of Service C C A Hutlevel Cycle transformer 2 HCM Average Control Delay 324 HCM Level of Service C C A Hutlevel Cycle transformer 2 Aproach Delay (s) 120.0 Sum of fost time (s) 9.0 hiersecton Capacity tailo Analysis Period (min) 15 ICU Level of Service D A A C C C C C A Hutlevel Cycle transformer 2 Analysis Period (min) 15 C C C C C C C C C C C C C C C C C C	v/c Ratio	0.59	0.85		0.72	0.61	0.24	0.70	0.63	0.43	0.65	0.73	
Progression Fador 1.00	Uniform Delay, d1	53.1	37.7		51.9	32.2	0.0	51.1	47.0	0.0	36.1	34.0	
Incremental Delay, d2 30 57 67 0.9 0.4 101 2.1 0.8 2.8 21 Delay (s) 562 4.3 4 58.7 33.0 0.4 61.1 4.91 0.8 316 286 Delay (s) 56.2 4.3 4 58.7 33.0 0.4 61.1 4.91 0.8 316 286 Approach Delay (s) 2.9.1 A E D A C C Approach Delay (s) 2.9.1 A E D A C C C Approach Delay 2.2 3.2 4 HCM Level of Service C C C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00		1.00	1.00	1.00	1 00	1,00	1.00	0.80	0.78	
Delay (s) 56.2 4.3.4 58.7 33.0 0.4 61.1 4.9.1 0.8 31.6 2.8.6 Level of Service E D C	Incremental Delay, d2	3.0	5.7		6.7	0.9	0.4	10.1	2.1	0.8	2.8	2.1	
Level of Service E D E C A E D A C C A E D A C C A E D A C C C A E D A C C C A E D A C C C C C C C C C C C C C C C C C C	Delay (s)	56.2	43.4		58.7	33.0	0.4	61.1	49.1	0.8	31.6	28.6	
Apprach Delay (s) 44.8 29.1 23.1 23.4 Apprach LOS D D C C C C C C C C C C C C C C C C C	Level of Service	ш	0		ш	U	A	ш	0	×	o	C	
Approach LOS D C C C Intersector Summary Intersector Summary 32.4 HCM Level of Service C HCM Volume to Capacity ratio 0.76 Sum of host time (s) 9.0 Actualed Cycle Length (s) 120.0 Sum of host time (s) 9.0 Intersection Capacity Unitization 80.3% ICU Level of Service D Analysis Period (min) 15 Critical Lane Group D	Approach Delay (s)		44.8			29.1			23.1			29.9	
Mitusecton Summary 32.4 HCM Level of Service C HCM Average Control Delay 32.4 HCM Level of Service C HCM Average Control Delay 32.4 HCM Level of Service C HCM Houre Io Gazacity at 0 10.0 Sum of fost time (s) 9.0 Intersection Capacity Ullifaction 80.3% ICU Level of Service D Analysis Period (min) 15 c Critical Lane Group c Critical Lane Group	Approach LOS		0			c			o			U	
HCM Average Control Delay 32.4 HCM Level of Service C HCM Volume to Capacity ratio 0.76 0.76 9.0 Intersection Capacity Utilitation 80.3% ICU Level of Service D Intersection Capacity Utilization 80.3% ICU Level of Service D Analysis Period (min) 15 ICU Level of Service D Analysis Period (min) 15 ICU Level of Service D Critical Lane Group	Intersection Summary	1										ľ.	
HCM Volume to Capacity ratio 0.76 Actualed Cycle Length (s) 120.0 Sum of lost time (s) 9.0 Analysis Period Capacity Utilization 80.3% ICU Level of Service D Analysis Period (anci) 15 ICU Level of Service D Critical Lane Group	HCM Average Control Delay			32.4	Ŧ	CM Level	of Servic	e		U			
Actualed Cycle Length (s) 120.0 Sum of lost time (s) 9.0 Intersection Capacity Utilization 80.3% ICU Level of Service D Analysis Period (min) 15 Cutical Lane Group C Critical Lane Group C Critical Lane Group C Critical Lane Group C C Critical Lane Group C C Critical Lane Group C C C C C C C C C C C C C C C C C C C	HCM Volume to Capacity ratio			0.76									
Intersection Capacity Utilization 80.3% ICU Level of Service D Analysis Period (min) 15 ICU Level of Service C c. Critical Lane Group c. Critical Lane Group	Actuated Cycle Length (s)			120.0	SL	m of lost	time (s)			9.0			
c Critical Lane Group C Unitical Lane Group C Unitical Lane Group C United Lane Group	Intersection Capacity Utilization			80.3%	<u> </u>	U Level c	f Service			0			
C Unical Lane Group	Analysis Period (min)			15									
Ku Warnen Datier Hammed American Datients	c Critical Lane Group												
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14. una - 1 - 11 - 11 - 11 - 11 - 11 - 11 - 1													
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	Kottinger Drive Senior Housing I	Project									Syr	ichra 7 -	Report
PM Peak Hour Buildout Conditions with Planned TIF Improvements plus Project	PM Peak Hour Buildout Condition	ons with	Planned	TIF Impr	ovements	plus Pro	ject				2	~	Ē

Kotlinger Drive Senior Housing Project PM Peak Hour Buildout Conditions plus Project

Movement EBL E Lane Configurations EBL E Lane Configurations 10 clume (ptuble) 19 cl	3.0 900 3.0	000	(BM)								
Lane Configurations 7 Volume (typh) 7 Volume (typh) 7 Volume (typh) 7 1048 (how (typh)) 709 1 1048 (how (typh)) 3.0 1 100 1 120 1 12	3.0 900	CDA	- Internet	WBT	VIBR	NBL	18N	NBR	SBL	SBT	SBR
Volume (vph) 79 1 Ideal Flow (vph) 1900 19 Ideal Flow (vph) 1900 19 Ideal Flow (vph) 13.0 10 Ideal Flow (vph) 13.0 13.0 Ideal Flow (vph) 100 1 Fipb, pedbhess 1.00 1 Fipb, pedbhess 1.00 1 Fith Protected 0.95 1 Sadd Flow (porth) 1829 1 Sadd Flow (perm) 1829 1 Agai Flow (vph) 0 95 1 Ady Flow (perm) 1829 1 1	105 3.0 3.0	*	*	+	Ł	*	44		*	\$	-
Ideal Flow (vphp) 1900 15 Ideal Flow (vphp) 1900 16 Total Lost lime (s) 300 1 Fipb, pedbhes 100 1 Fipb, pedbhes 100 1 Fipb, pedbhes 100 1 Fipb, pedbhes 100 1 Fith Permitted 0.95 1 Satd. Flow (prot) 1823 182 1 Peak-nour (perm) 0.95 1 2 Past-nour (perm) 1823 1 1 1 Past-nour (perm) 1823 1 1 1 1 Past-nour (perm) 1823 1	3.0	91	106	83	46	63	1214	87	47	780	69
Total Lost Unit, Factor 3.0 Lane Util, Factor 100 Frpb, peablykes 100 Frpb, peablykes 100 Frp 100 Frp 100 Frp 100 Frp 100 Frp 100 Frp 100 Fr 100 Fr 100 Fr 100 Fr 1829 Sadt, Frow (porth) 1829 Fr 1829 Fr 1829 Sadt, Frow (porth) 1829 Fr 1829 Fr 1829 Fr 1829 Fr 1829 Fr 1829 Adj, Frow (porth) 0 RTOR Reduction (wh) 0	0.00	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Ull, Factor 1.00 1 Fipb, pedbikes 1.00 1 Fill meteded 0.95 1 Fill meteded 0.95 1 Satd. Flow (prot) 1829 15 Fill Permitted 0.95 1 Rit Permitted 0.95 1 R	8 8	3.0	3.0	3.0	3.0	3.0	3.0		3.0	0.6	3.0
Frpb, ped/bikes 100 1 Fth, ped/bikes 100 1 Ft Pend/bikes 100 1 Saki Flow (prot) 0.95 1 2 Saki Flow (prot) 0.95 1 2 Saki Flow (prot) 0.95 1 2 Saki Flow (prot) 0.82 1 2 Saki Flow (prot) 0.95 1 2 Saki Flow (prot) 0.95 1 2 Saki Flow (prot) 0.95 1 2 RTOR Reduction (wpt) 0 0 3 1		1 00	1 00	1 00	1 00	00	0.95		1 00	0,95	1 00
Flpb, ped/bikes 1.00 1 F1 F1 1.00 1 F1 F1 F1 1.00 1 Satd. Flow (prot) 1829 15 1 Satd. Flow (prot) 1829 15 1 Et Permitted 0.95 1 1 1 Satd. Flow (prot) 1829 15 1<	3	66 0	1.00	8	66 0	1 00	1 00		100	1.00	0.96
Fri Fri Protected 0.05 11 Satd. Flow (prot) 1829 11 Fit Permitted 0.95 1 Satd. Flow (perm) 1829 11 Peak-hour (perm) 1829 11 Adj. Flow (ph) 0 RTOR Reduction (wh) 0	8	1 00	1 00	1.00	1 00	1 00	1 00		100	1 00	1 00
FI Protected 0.95 1 Satcl - Flow (prod) 18.29 15 FI Perritted 0.95 11 Satcl - Flow (perm) 18.29 15 Pack-hour (perm) 18.29 15 Adl - Flow (pth) 81 1 RTOR Reduction (vph) 0	8	0.85	1 00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Satt. Flow (prot) 1829 15 EIP Permitted 0.95 1 Satt. Flow (perm) 1829 15 Peak-hour factor, PHF 0.98 0 Adj. Flow (vph) 0 RTOR Reduction (vph) 0	8	1 00	0.95	1 00	1 00	0.95	1.00		0.95	1.00	1.00
Fir Permitted 0.95 1 Satu Flow (perm) 1829 15 Peak-hour factor, PHF 0.98 0 Adi, Flow (vph) 81 1 RTOR Reduction (vph) 0	925	1613	1554	1636	1371	1829	3605		1829	3657	1571
Satu, Flow (perm) 1829 16 Peak-hour factor, PHF 0.98 0 Adj. Flow (vph) 81 1 RTOR Reduction (vph) 0	8	1.00	0.95	1.00	1 00	0.95	1,00		0.95	1.00	100
Peak-hour factor, PHF 0.98 0 Adj. Flow (vph) 81 1 RTOR Reduction (vph) 0	925	1613	1554	1636	1371	1829	3605		1829	3657	1571
Adj. Flow (vph) 81 1 RTOR Reduction (vph) 0	98	0.98	0.98	0.98	0.98	96 0	0.98	0.98	0.98	0.98	0.98
RTOR Reduction (vph) 0	107	93	108	85	47	64	1239	89	48	962	70
	0	76	0	0	41	0	ო	0	0	0	29
Lane Group Flow (vph) 81 1	107	17	108	85	9	64	1325	0	48	262	41
Confl Peds (#/hr)		-			-			о			4
Parking (#/hr)			10	10	10					Ē	
Turn Type Split		Perm	Split		Perm	Prot			Prol		Perm
Protected Phases 4	4		6	3		1	9		S	2	
Permitted Phases		4			e						2
Actuated Green, G (s) 13.5 1	3.5	13.5	14.2	14.2	14,2	7.2	68.6		6.7	68.1	68.1
Effective Green, g (s) 14.5 1	14.5	14.5	15.2	15.2	15.2	8.2	70.6		7.7	70.1	70.1
Actuated g/C Ratio 0.12 0	0.12	0.12	0.13	0.13	0.13	20.0	0.59		0.06	0.58	0.58
Clearance Time (s) 4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s) 3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Gro Cap (voh) 221 2	233	195	197	207	174	125	2121		117	2136	918
v/s Ratio Prot 0.04 c0	0.06		c0.07	0.05		0.03	c0.37		c0.03	0.22	
v/s Ratio Perm		0.01			00.0						0.03
v/c Ratio 0.37 0	0.46	0.08	0.55	0.41	0.03	0.51	0.62		0.41	0.37	0.04
Uniform Delay, d1 48.5 4	1 9.1	46.9	49.2	48.3	46.0	54.0	16.1		54.0	13.3	10.7
Progression Factor 1.00 1	00.1	1.00	1 00	1.00	1.00	1 10	1.26		1.00	1.00	1.00
Incremental Delay, d2 1.0	1.4	0.2	3.1	13	0.1	12	0.5		2.3	0.5	0.1
Delay (s) 49.6 5	50.5	47.0	52.3	49.6	46,0	9.09	20.7		56.3	13.8	10.7
Level of Service		٥		0	0	ш	0		ш	8	8
Approach Delay (s) 4	19.1			50.1			22.6			15.8	
Approach LOS	0			٥			o			•	
Intersection Summary					-			D .			
HCM Average Control Delay		25.3	H	M Level	of Service			U			
HCM Volume to Capacity ratio		0.58									
Actuated Cycle Length (s)		120.0	ns s	m of lost	time (s)			12.0			
intersection Capacity Outization Analysis Period (min)		15	2					þ			
c Critical Lane Group											

HCM Signalized Intersection Canacity Analysis

Mountaint	S	t	۴	۶	ŧ	4	4	+	•	۶	→	¥
MUDSTRUM	EBL	EBT	EBR	NBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			T		*	,±		*	\$	Í
Volume (vph)	61	22	19	13	41	55	30	1265	21	29	834	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Util, Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.98			1.00	0.92	1.00	1.00		1.00	0.99	
Flpb, ped/bikes		0.96			0.99	1.00	1.00	1.00		1.00	1.00	
Frt		0.98			1.00	0.85	1.00	1.00		1.00	66.0	
FII Protected		0.97			0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1465			1597	1276	1554	1628		1554	1590	
Fit Permitted		0.80			0.94	1.00	0.24	1.00		60.0	1.00	
Satd. Flow (perm)		1207			1523	1276	399	1628		144	1590	
Peak-hour factor, PHF	19.0	0.97	16.0	0.97	0.97	0.97	0.97	19,0	197	0.97	0.97	0.97
Adj. Flow (vph)	63	26	20	13	42	57	31	1304	22	61	960	95
RTOR Reduction (vph)	0	8	0	0	0	49	0	0	0	0	2	0
Lane Group Flow (vph)	0	101	0	0	55	80	31	1326	0	61	953	0
Confl. Peds. (#/hr)	36		24	24		36	36		36	36		36
Parking (#/hr)	10	10	10	10	10	10	10	10	10	10	10	10
Turn Type	Perm			Perm		Perm	Perm	8		Perm		
Protected Phases		4			80			0			9	
Permitted Phases	4			-00		80	2			9		
Actuated Green, G (s)		15.1			15.1	15.1	6'96	6.96		6.96	6'96	
Effective Green, g (s)		16,1			16.1	16.1	97.9	97.9		6.79	6.79	
Actuated g/C Ratio		0.13			0.13	0.13	0.82	0.82		0.82	0.82	
Clearance Time (s)		4 0			4 0	40	4.0	4 0		4.0	4.0	
Vehicle Extension (s)	R.	3.0		5	3.0	3.0	3.0	3.0		3.0	3.0	T
Lane Grp Cap (vph)		162			204	171	326	1328		117	1297	
v/s Ratio Prot								c0.81			09'0	
v/s Ratio Perm		c0,08			0.04	0.01	0.08			0.42		
v/c Ralio		0,62			0.27	0.04	0.10	1.00		0.52	0.73	
Uniform Delay, d1		49.1			46.7	45.3	2.2	11.0		3.5	5.1	
Progression Factor		1.00			1.00	1.00	0.52	1.36		2.80	3.23	
Incremental Delay, d2		7,3			0.7	0.1	0.1	7.0		15.0	3.6	
Delay (s)		56.4			47.4	45.4	12	21.9		24.9	20.0	
Level of Service		ω.			٥	٥	A	o		o	8	
Approach Delay (s)		56.4			46.4			21.5			20.3	
Approach LOS		ш			٥			U			U	
Intersection Summary.											ļ	
HCM Average Control Delay			23.5	Ĩ	CM Level	of Servic	e,		U			
HCM Volume to Capacity ratio	-		0.95		;				4			
Actuated Cycle Length (s)			120.0	ภี 9	In of lost	time (s)			0 C			
Analysis Period (min)			15	2					0			
c Critical Lane Group												

Kottinger Drive Senior Housing Project PM Peak Hour Buildout Conditions plus Project

Kottinger Drive Senior Housing Project PM Peak Hour Buidout Conditions plus Project

Synchro 7 - Report W-Trans

	1	t	r	۶	ŧ	4	¥	-	4	٨	-	¥
Movement	EI	EBT	EBR	WBL	WB1	WBR	NBL	TBN	NBR	SBL	SBT	SBR
Lane Configurations	-	\$	×	*	44	140	**	4-	*	*		
Volume (vph)	578	498	170	121	188	24	293	992	554	11	743	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost time (s)	3.0	3.0	0.9	3.0	3.0		3.0	3.0	3.0	30	3.0	
Cark and the racion	18.0	56.0	81	160	96.0		16.0	1.00	81	100	0.95	
Figue, pedicines	3 5	8.4	10.0	1.00	001		8	81	6.79	8	550	
Friput, provincias	3 8	3 9		1.00	001		3	001	1.00		001	
CII Distorted	0.06	3 8	000	200	00.1		1.00	201	0.65	1.00	IR'D	
Sate Flow (nmt)	36.47	2857	1410	CR'D	1.00		CR.U	1.00	1.00	1554	1.00	
Ell Darmittad	D OF		2.0	500	200 -		1000	100	100 1	1000	2626	
Sati Flow (norm)	3547	2867	1410	26.47	3570		25.47	1005	1001	1551	001	
Peak-hour factor PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.70	0.70	0.70
Adi Flow (unh)	741	828	218	155	241	34	175	1275	740	0.0	01.0	970
RTOR Reduction (vah)	•	30	140	30	σ	5 0	5		114	g c	38	014
Lane Group Flow (vph)	741	638	19	155	263		376	1272	205	8	1200	
Confl. Peds. (#/hr)			72	È		12			98		-	24
Parking (#/hr)						R.				10	10	10
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	1	4		1	80		50	2			9	
Permitted Phases		4	-1						2		•	
Actuated Green, G (s)	18.2	25.0	25.0	0.7	13.8		15.0	63.0	63.0	1.0	55.0	
Effective Green, g (s)	19.2	27.0	27.0	8.0	15.8		16.0	65.0	65.0	8.0	57.0	
Actuated g/C Ratio	0.16	0.22	0.22	0.07	0.13		0.13	0.54	0.54	0.07	0.48	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	ľ
Lane Grp Cap (vph)	568	823	319	236	471		473	1043	669	104	1535	
v/s Ratio Prot	:0.21	c0.17		c0.04	0.07		0.11	c0.66		c0.06	0.37	
v/s Ratio Perm			0.06						0.46			
v/c Ratio	1.30	0.78	0.25	0.66	0.56		0.79	122	0.85	0.95	0.79	
Uniform Delay, d1	50.4	43.7	38.1	54.7	48.8		50.4	27.5	23.4	55.8	26.4	
Progression Factor	8	1.00	1.00	1.00	1.00		0.73	0.54	0.25	1 00	1.00	
Incremental Delay, d2	49.5	4.6	0.4	6.4	1.4		0.7	105.7	6.6	72.5	4.2	
Delay (s)	99.99	48.3	38.6	61.1	50.3		43.9	120.5	15.9	128.3	30.6	
	L	1 2 2 7	2	ш			C	т с Г	ž	-	5 C	
Approacn Uelay (s)		E./11			54.2			/9.9			37.9	
Approach LOS		LL.			۵			ш				
Intersection Summary		111			and and		1111		S TRANK			1
HCM Average Control Delay			77.4	H	CM Level	of Service	۵		ш			
HCM Volume to Capacity ratio			1 16		ł							
Actuated Cycle Length (s)			120.0	Su	m of lost	time (s)			15.0			
Analysis Period (min)			34.070	2	n revei o	I Service			L			
c Critical Lane Group												

Movement EBL Lanc Configurations EBL Volume (typh) 67 Volume (typh) 1900 1 Volume (typh) 1900 1 Total Lost time (typh) 3.0 Lanc Util Factor 1.00 Fbrb, pedbikes 0.98 Fd	t	1	\$	Ļ	4	•	+-	•	٨	-	¥
Lane Configurations Lane Configurations Volume (veh) 1900 1 Volume (veh) 1900 1 Total Lost Ume (s) 3.0 3.0 Lane Uli Factor 1.00 Fipb, pedibikes 0.98 Fit	183	EBR	WBL	WBT	WBR	NBL	TBN	NBR	SBL	SBI	SBR
Volume (vph) 60 1 200 1	÷		*	ș t		*	**		*	4	
Total Lost time (s) 3.0 1 Total Lost time (s) 3.0 Lane Uil, Factor 1.00 1 Fipb, ped/bikes 1.00 99 Fipb, ped/bikes 0.98	10/	105	42	23	18	57	1224	42	6 000	765	68
Fride Unit Factor 100 Fride Productions 100 Fride Productions 100 Fride Productions 100	3.0	1300	3.0	3.0	1200		30	1200	3 0	0061	1061
Frpb, ped/bikes 1.00 Fripb, ped/bikes 0.98 Fri	1.00		1.00	1.00		100	1 00		1 00	1.00	
Flpb, ped/bikes 0.98 Fri 1.00	0.98		1.00	0.99		001	1.00		1 00	1.00	
Frd 1.00	1.00		0.99	1.00		1 00	1.00		1 00	1.00	
	0.93		1.00	0.96		1.00	1.00		1 00	0.99	
Fit Protected 0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd Flow (prot) 1529 1	1486		1540	1559		1554	1626		1554	1611	
Fill Permitted 0.66	1.00		0.29	1.00		0.26	1.00		0.05	1.00	
Satd. Flow (perm) 1069 1	1486		471	1559		419	1626		75	1611	
Peak-hour factor, PHF 0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph) 71	113	H	4	99	1 0	69	1288	4	6	805	72
KI OK Keduction (vpn) 0	5		•	11	•	0	-	0	0	~	0
Lane Group Flow (vph) 71	52		4,	3	0	8	1331	0 1	o 1	875	0
Comu. reces. (#Am) 3 Parkino (#An) 10	40	o ç	n ç	10	n ç	n ç	10	n ç	n ç	10	n ç
Turn Tuna Parm	2	2	Darm	2	2	Darm	2	2	Down	2	2
Protected Phases	4			-			0			40	
Permitted Phases	8		60)	5		0	•		u)		
Actuated Green, G (s) 19.9	19.9		19.9	19.9		92.1	92.1		92.1	92.1	
Effective Green, g (s) 20.9	20.9		20.9	20.9		93.1	93.1		93.1	93.1	
Actuated g/C Ratio 0.17 1	0.17		0.17	0.17		0.78	0.78		0.78	0.78	
Clearance Time (s) 4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s) 3.0	3.0		3.0	3,0		3.0	3.0		3.0	3.0	1
Lane Grp Cap (vph) 186	259		82	272		325	1262		58	1250	
v/s Ratio Prot	c0.13			0.04			c0.82			0.54	
v/s Ratio Perm 0.07			0.09			0,14			0.12		
v/c Ratio 0.38 I	0.74		0.54	0.24		0.18	1.05		0.16	0.70	
Uniform Delay, d1 43.8 4	47.0		45.1	42.7		3.5	13.5		3.4	6.6	
Progression Factor 1.00	1.00		1.00	1.00		1.00	1.00		1.64	1.95	
Incremental Delay, d2 1.3	11.0		9.9	0.4		12	411		3.8	2.2	
Delay (s) 45.1	58.0		51.7	43.1		4.8	54.6		9.5	15.1	
Level of Service D	ш (0			A			A	-	
Approach Delay (s)	54.9			46.3			52.4			15.1	
Approach LOS	0			٥			٥			80	
Intersection Summary			ALT-IN	1	1			THE REAL			
HCM Average Control Delay		40.1	H	M Level	of Service			٥			
HCM Volume to Capacity ratio		1.00									
Actuated Cycle Length (s) Intersection Canacity (Hilitration		120-0	<u>ה</u> ה	I over lost	Ime (s)			0.9			
Analysis Period (min)		15	2					-			

Kotlinger Drive Senior Housing Project PM Peak Hour Buildout Conditions with Planned TIF Improvements plus Project

÷	SB			13	0.81	16																																		
-+	SBT	÷	Stop	27	0.81	33											1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																							
۶	SBL			6	0.81	1												ľ																						
٩	NBR			15	0.81	19														4	1																			
+	NBT	4	Slop	40	0.81	49																																		
4	NBI			20	0.81	25																																		
~	WBR			12	0.81	15														Service																				
ŧ	WBT	¢	Stop	50	0.81	62														i evel of																				
5	WBL			10	0.81	12	SB 1	60	1	16	-0.09	4.4	764	7.8	8.7	•				Ģ	2																			
*	FBR.			17	0.81	21	NB 1	6 3	25	19	0.01	6.4 14	763	80	8.0	A		8.0	5 d	7 8%	15																			
t	FBI	4	Stop	60	0.81	74	MB 1	68	12	15	0.01	4.4	774	1.9	6.7	A				6	1																			
•	Ē			23	0.81	28	EB 1	123	28	21	0.02	4.3	797	1.8	1.0	•	1570																							
																				hlization	Innertine																			
		ations			ctor	le (vph)	44	(hdv)	(hd)	(hdv)		adway (s)	(h)	(2)	(s) av (s)	20	-NETTING	Carriero	Service	anarity II	apacity of (min)																			
	ment	Configur	Control	ne (vph)	Hour Fa	y flow ra	tion. Lan	ne Total	ne Left (ne Right	(s)	Infure Hei	ee ouiza	nol Delav	bach Del	pach LO	Sutine		Pvel of	Level U	sis Peric																			
																																			A					
			36			0.91	40									264		264	62		3.3	95	747												iervice A					
	In Map	V NUI	30 36	top	0%	1,91 0.91	33 40	70			4					465 264		465 264	6.4 6.2		3.5 3.3	94 95	529 747	A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY AND A REAL PRO											.evel of Service Å					
•	Ver Noi Noo		151 30 36	ree Stop	0% 0%	.91 0.91 0.91	166 33 40	20 20	10.1 10.1 10.1 10.1 10.1 10.1 10.1 10.1		4	Die				465 264		465 264	6.4 6.2		3.5 3.3	94 95	529 747												ICU Level of Service A					
	to 1007 Mail Nap		16 151 30 36	Free Stop	0% 0%	91 0.91 0.91 0.91	18 166 33 40	20 20	13.0 13,0 A 0 A 0	1,4 C C C C C C C C C C C C C C C C C C C	4	None				257 465 264		57 465 264	11 64 62		3.5 3.3	99 94 95	194 529 747 529 747		27	33	40	90	40	21. 1		15	6	06	0% ICU Level of Service A	e				
	to luid) luid har har har		25 16 151 30 36	Free Stop	0% 0%	91 0.91 0.91 0.91 0.91	27 18 166 33 40	20 20		5 c c c c c c c c c c c c c c c c c c c	2 2	None				257 465 264		257 465 264	41 64 62		2.2 3.5 3.3	99 94 95	1284 529 747 59		51 100 100 100 100 100 100 100 100 100 1	18 33 ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;		669 Pb			115	19 115	B	20	37.0% ICU Level of Service A	e				
	TE COS (URD) (URD) MAD		N1 25 16 151 30 36	te Free Stop	% 0%	11 0.91 0.91 0.91 0.91 0.91	10 27 18 166 33 40	20 ZU ZU			2 2 2	te None				257 465 264		257 465 264	41 64 62		2.2 3.5 3.3	99 94 95	1284 529 747		17 194 73			10 1284 629				0 0 115		20	37,0% ICU Level of Service A	2				
	CET COD (MD) (MD) MAD		191 25 16 151 30 36	Free Free Stop	0% 0%	0.91 0.91 0.91 0.91 0.91	210 27 18 166 33 40					None None				257 465 264		257 465 264	41 64 52		22 35 33	99 94 95 	1284 529 747	ED 4 MAD 4 MAD 4	227 (84 73		22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1200 1387 659						20	zation 37.0% ICU Level of Service A	2				

Appendix B

Queuing Calculations


Queuing and Blocking Report AM Peak Hour Existing plus Approved Project Conditions-No Project

Intersection: 93: Vineyard-Ray St & First

Directions Served	-	⊢	~	_	-	æ	_	-	R	-	-	-
Maximum Queue (#)	25	143	65	66	294	63	41	63	72	66	1317	1154
Average Queue (ft)	60	85	51	61	184	32	18	25	30	22	959	783
S5th Queue (f)	27	165	84	120	364	73	50	99	9/	100	1453	1229
Link Distance (ft)		142			1758			116	116		1303	1303
Upstream Bik Time (%)		2							0		12	-
Queuing Penalty (veh)		0							0		0	0
Storage Bay Dist (ft)	225		40	75		40	100			125		
Storage Bik Time (%)		31	1	10	45	2		0			52	1
Queuing Penalty (veh)		35	13	28	68	s		0			52	11

Intersection: 93: Vineyard-Ray St & First

MUNITING	rections Served	aximum Queue (ft)	erage Queue (ft)	th Queue (ft)	nk Distance (ft)	ostream Blk Time (%)	Leuing Penalty (veh)	orage Bay Dist (ft)	orage Blk Time (%)	seuing Penalty (veh)
90	æ	8	36	163				220	0	0

Intersection: 94: Kottinger-Spring & First

Directions Served	LTR	5	æ	-	TR		TR	F	
Maximum Queue (ft)	15	122	57	50	213	47	230	62	
Average Queue (ft)	67	67	34	26	107	19	143	20	
95th Queue (ft)	21	140	71	63	236	55	288	109	
-ink Distance (ft)	548	473			1064		224	116	
Upstream Blk Time (%)							2	0	
Queuing Penalty (veh)							19	2	
Storage Bay Dist (ft)			09	60		60			
Storage Blk Time (%)		16	0	9	6		6		
Queuing Penalty (veh)		10	0	31	2		9		
Network Summary									

Network wide Queuing Penalty: 275

Kottinger Drive Senior Housing Project W-Trans

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Queuing and Blocking Report PM Peak Hour Existing plus Approved Projects Conditions-No Project

5/14/2013

Intersection: 93: Vineyard-Ray St & First

NOVENIEN	8	8	8	1991	WB	MB	9M	- AN	202	AN	87.88	89.9
Directions Served	-	⊢	œ	F	-	F	æ	ľ	-	TR	F	ľ
faximum Queue (ft)	63	135	63	15	91	111	50	82	194	187	139	154
Werage Queue (It)	22	62	43	e	51	60	28	\$	181	185	80	95
15th Queue (ft)	73	150	76	27	101	135	65	96	216	193	170	172
Link Distance (ft)		142		1018		1758			116	116	224	224
Jpstream Blk Time (%)	0	2						0	19	26		
Dueuing Penalty (veh)	0	0						0	128	172		
Storage Bay Dist (ft)	225		40		75		40	100				
Storage Bik Time (%)	0	27	ŝ		9	13	2	0	21			
Queuing Penalty (veh)	0	34	80		8	19	4	-	15			
		;	•		,	2			2			
	-	č	i									
			2									

33. VINEYard-Ray SI & FIRSI וווכומכר

MOVERNEN	77	BS						
Directions Served		F						ι.
Maximum Queue (ft)	36	298						
Average Queue (1)	13	189						
95th Queue (ft)	50	315						
Link Distance (f)		1303						
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	125							
Storage Bik Time (%)		14						
Queuing Penalty (veh)		4						
Intersection: 94: Ko	htinger-9	Spring	& First					
		2	10					

111 35 125 116 - 4 6 09 4 TR 301 232 363 363 224 62 67 60 TR 1079 753 1292 1064 ~ 0 24 9 0 4 46 15 53 1 3 80 73 82 H LT 62 38 71 71 -EB LTTR 226 175 287 287 548 Network Summary 95th Queue (ft) Link Distance (ft) Link Distance (ft) Queurig Penalty (veh) Storage Bay Dist (ft) Storage Bit Time (%) Queuring Penalty (veh) Movement Directions Served Maximum Queue (ft) Average Queue (ft)

Network wide Queuing Penalty: 479

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Kotlinger Drive Senior Housing Project W-Trans

Queuing and Blocking Report AM Peak Hour Existing plus Approved Project plus Proejct Conditions Intersection: 93: Vineyard-Ray St & First

Mavement	8	8	88	WB	MB	WB	INE	NB	RN	HD D	200	20
Directions Served	-	⊢	æ	-	⊢	œ	L	⊢	TR	-1	F	L
Maximum Queue (ft)	46	147	65	66	301	57	25	65	35	89	1236	1060
Average Queue (ft)	14	83	50	81	215	33	7	26	39	14	006	722
95th Queue (ft)	58	165	11	128	416	9/	26	99	4	80	1497	1294
Link Distance (ft)		142			1758			116	116		1303	1303
Uostream Blk Time (%)	0	2							-		11	0
Oueuing Penalty (veh)	0	0							en		0	0
Storage Bay Dist (ft)	225		40	75		40	100			125		
Storace Bik Time (%)	0	27	16	6	4	-		0			49	2
Queuing Penalty (veh)	0	31	20	25	06	ŝ		0			21	4

Intersection: 93: Vineyard-Ray St & First

Movement	SB	0.00 0 0	1	ł			E
Directions Served	ж						
Maximum Queue (ft)	102						
Average Queue (ft)	32						
95th Queue (ft)	162						
Link Distance (ft)							
Upstream Bik Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	220						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 94: Kottinger-Spring & First

Movement	2	RM	MB	SB	SG	5	20	81/20		100	
Directions Served	LTR	5	¥	-	Ц	_	R	1			
Maximum Queue (ft)	30	118	75	52	176	69	215	26			
Average Queue (ft)	16	61	39	21	88	28	143	10			
95th Queue (ft)	42	130	81	2	191	83	250	5			
Link Distance (ft)	548	473			1064		224	116			
Upstream Blk Time (%)							0	0			
Queuing Penalty (veh)							g	-			
Storage Bay Dist (ft)			09	09		66					
Storage Blk Time (%)		14	0	0	80	0	12				
Queuing Penalty (veh)		60	0	-	2	-	13				
Network Summary											
Network wide Queuing Penalty	: 230					5			1		Ì

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Kottinger Drive Senior Housing Project W-Trans

5/13/2013

Queuing and Blocking Report PM Peak Hour Existing plus Approved Projects plus Project Conditions Intersection: 93: Vineyard-Ray St & First

5/14/2013

Movement	8	æ	8	W/B	BW	WB	8N	82	BN	B786	8788	88
Directions Served	-	F	æ		-	æ	1	F	Ц	⊢	⊢	-
Maximum Queue (ft)	76	139	63	68	67	53	99	204	197	153	171	55
Average Queue (ft)	22	81	45	47	47	26	26	187	186	66	116	25
95th Queue (ft)	11	173	82	101	106	64	72	208	205	189	206	91
Link Distance (ft)		142			1758			116	116	224	224	
Upstream Blk Time (%)	0	69					0	22	26		0	
Queuing Penalty (veh)	0	0					0	148	173		0	
Storage Bay Dist (ft)	225		40	75		40	100					125
Storage Blk Time (%)	0	32	80	en	15	-	-	24				
Queuing Penalty (veh)	0	42	14	4	ន	en	æ	17				
Intersection: 93: Vine	evard-F	Sav St	e First									
												1
Movement	SB	88	5	Ľ				2	1	ł	l	Ţ

HIDSHELLANDAN	ab.	(inter-	80						1
Directions Served	F	F	œ						1
Maximum Queue (fl)	261	66	51						
Average Queue (ft)	162	20	10						
95th Queue (ft)	285	131	68						
Link Distance (ft)	1303	1303							
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			220						
Storage Blk Time (%)	60	0							
Queuing Penalty (veh)	4	0							
Intersection: 94: Kott	tinger-	Spring	& Firs	st					
									l

Movement	89	WB	WB	NB	NB	55	BS	8788	
Directions Served	LTR	5	œ	-	TR	-	IR	L	
Maximum Queue (ft)	273	58	33	49	1083	45	295	156	
Average Queue (ft)	204	37	21	19	938	15	229	41	
95th Queue (ft)	346	68	42	55	1357	57	368	154	
Link Distance (ft)	548	473			1064		224	116	
Upstream Blk Time (%)					14		9	2	
Queuing Penalty (veh)					0		69	7	
Storage Bay Dist (ft)			60	60		6			
Storage Blk Time (%)		2	0	0	25	0	14		
Queuing Penalty (veh)		-	0	0	10	0	4		
Network Summary									
Network wide Queuing Penalt	y: 526	'n		2					

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Kottinger Drive Senior Housing Project W-Trans

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SimTraffic Report Page 1

Queuing and Blocking F AM Peak Hour Buildout	Sepor	t Jitions	-No P	roject							5/13	1/2013
Intersection: 93: First &	Vine	vard-F	Ray St	Viney	ard							i i
Movement	8	83	89	8371	WB	WB	WB	NB	NR	NR	8786	5
Directions Served		F	æ	L	-	F	æ	-	F	IR	F	31-1
Maximum Queue (ft)	29	140	99	0	66	255	65	72	145	147	9	125
Average Queue (ft)	7	58	47	0	58	133	34	22	71	78		27
95th Queue (ft)	25	133	62	ю	118	256	11	67	140	152	6	113
Link Distance (ft)		142		1018		1758			116	116	224	
Upstream Blk Time (%)		-						0	2	ო		
Queuing Penalty (veh)		0						0	о	12		
Storage Bay Dist (ft) 2:	25		40		22		40	100				125
Storage Blk Time (%) Oueuinn Penath (veh)		21	t t		~ r	37	~ ~	00	40			
(incl) function i Birmonto		5	2			5	>	5	a:			
Intersection: 93: First &	Vine	/ard-F	kay St	Viney	ard							Ĩ
Movement	98	88	BS									
Directions Served	F	F	ά									ľ
Maximum Queue (ft) 13	37 1	347	222									
Average Queue (ft) 12:	22 1	207	53									
95th Queue (ft) 15.	32 1	549	209									
Link Distance (ft) 13(1 03	303										
Upstream Blk Time (%)	89	23										
Queuing Penalty (veh)	0	0										
Storage Bay Dist (ft)			220									
Storage Bik Time (%)	5	10	0									
Queuing Penalty (veh)	24	13	0									
01.17		C	-									
Intersection: 94: FIrst &	Kotti	2der-	buind	/Kottin	ger							Ĩ
Movement		WB	WB	NB	NB	SB	SB	8788				F
Directions Served	e	÷	α	-	۲Ľ	-	α	F				1
Maximum Ouene (II)	30	58	74	15	986	108	242	10				
Average Queue (#)	=	47	40	9	151	29	124	-				
95th Queue ([t)	34	90	78	52	360	86	225	12				
Link Distance (ft) 54	48	473	2	1	1064	;	224	116				
Upstream Blk Time (%)							-					
Outputton Penalty (veh)							12					
Storage Bay Dist (11)			60	60		06						
Storage Blk Time (%)		80	-	2	13	0	12					
Queuing Penalty (veh)		9	-	13	e	0	10					
Network Summary												
Network wide Queuing Penalty: 21	6											
											ti H	Ľ
Kottinger urive senior housing mit. W-Trans	ject									ō	T I Tallor	tepori age 1

ig and Blocking Report ak Hour Buildout Conditions-No Project ction: 93: Vineyard-Ray St & First

5/13/2013

Movement	88	œ	33	8371	BW	BM	WB	BN	BN	-NB	B788	B7788
Directions Served	-	⊢	æ	⊢	-	F	¥	-	-	¥	F	
Maximum Queue (ft)	6	145	8	19	83	104	58	85	191	201	182	192
Average Queue (ft)	43	83	46	4	43	54	30	43	184	188	108	130
95th Queue (It)	108	192	82	37	96	117	63	102	199	205	212	213
Link Distance (II)		142		1018		1758			116	116	224	224
Upstream Bik Time (%)	0	9						0	20	27		0
Queuing Penalty (veh)	0	0						0	137	189		
Storage Bay Dist (ft)	225		40		75		40	100				
Storage Blk Time (%)	0	34	14		e	18	2	0	22			
Queuing Penalty (veh)	0	57	25		4	26	4	-	14			

Movement	SB	88	SB	SB			F
Directions Served	-	F	⊢	æ			1
Maximum Queue (ft)	130	492	451	51			
Average Queue (#)	32	390	235	10			
95th Queue. (ft)	119	585	555	89			
Link Distance (ft)		1303	1303				
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	125			220			
Storage Bik Time (%)		35	-				
Queuing Penalty (veh)		16	0				
			i L				
Intersection: 34: NO	muger-	Bunde					

									L
ement	83	WB	WB	NB	NB	88	拐	B788	li
ctions Served	LTR	11	æ	-	TR	-	TR	-	
imum Queue (II)	109	85	5	2	928	106	295	253	
rage Queue (ft)	78	45	40	22	693	57	273	134	
Queue (tt)	122	100	80	65	1212	120	373	312	
Distance (ft)	548	473			1064		224	116	
tream Blk Time (%)					S		12	1	
uing Penalty (veh)					0		116	36	
age Bay Dist (ft)			60	60		6			
age Bik Time (%)		9	4	0	20	3	15		
uing Penalty (veh)		e	2	0	9	25	6		
twork Summary									
vork wide Queuing Penal	ty: 673								

Orive Senior Housing Project

Momentary Intervention Eta Eta Eta Eta Eta Eta Eta Her	Monoment Ex <	Movement Directions 3 Maximum Maximum Average 0 Average 10 Upstream P Storage BI Storage BI Storage BI Queung P												
Marking Date (I) I T R T I T R T R T R I I R I I R I I R I I R I I R I	Dimension 1 1 R 1 L 1 R 1 L 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R 1 R R R 1 R	Directions Maximum Average 60 Averue Average 10 Upstream 1 Queung P Storage BI Storage BI Queung P		88	83	EB	8371	WB	WB	WB	NB	NB	NB	8788
Macrimum durate (1) 7.3 1/1 6/2 3 3/1 1/2 3/1 2/2 3/1 <td>Amarchini (Julio et al.) 5 17 5 7 5 17 5 7 20 10 11 17 22 11 10 11 11 21 24 10 Amarchini (Julio et (1) 0 200 76 100 11 11 21 24 10 List bilatore (1) 1 6 1 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 23 Strong By Dat (1) 1 6 1 1 1 23 1 1 23 Marchinatore (1) 1 23 1 8 23 1 1 23 1 1 1 Marchinatore (1) 1 23 1 8 23 1 1 23 1 1 1 Marchinatore (1) 1 23 23<td>Maximum Average of Sfth Queur Upstreamt Queuring P Storage BI Storage BI Storage BI</td><td>Served</td><td>ц,</td><td>⊢ į</td><td>æ 8</td><td>⊢ ;</td><td> ;</td><td>T of</td><td>œ</td><td>- 0</td><td>F ee</td><td>R i</td><td>1 000</td></td>	Amarchini (Julio et al.) 5 17 5 7 5 17 5 7 20 10 11 17 22 11 10 11 11 21 24 10 Amarchini (Julio et (1) 0 200 76 100 11 11 21 24 10 List bilatore (1) 1 6 1 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 22 24 Cubinatore (1) 1 6 1 1 1 23 4 10 23 Strong By Dat (1) 1 6 1 1 1 23 1 1 23 Marchinatore (1) 1 23 1 8 23 1 1 23 1 1 1 Marchinatore (1) 1 23 1 8 23 1 1 23 1 1 1 Marchinatore (1) 1 23 23 <td>Maximum Average of Sfth Queur Upstreamt Queuring P Storage BI Storage BI Storage BI</td> <td>Served</td> <td>ц,</td> <td>⊢ į</td> <td>æ 8</td> <td>⊢ ;</td> <td> ;</td> <td>T of</td> <td>œ</td> <td>- 0</td> <td>F ee</td> <td>R i</td> <td>1 000</td>	Maximum Average of Sfth Queur Upstreamt Queuring P Storage BI Storage BI Storage BI	Served	ц,	⊢ į	æ 8	⊢ ;	;	T of	œ	- 0	F ee	R i	1 000
Bit of the set of the	And Determining Description Total and the file	Storage da Upstream 1 Upstream 1 Outring P Storage Ba Storage Ba Storage La	Queue (II)	2 2	1/1	29	59	5 2	771	20	8	192	18/	200
Link Distance (i) 125 1018 1754 116 120 Distance (i) 125 40 12 12 Storage Bik Time (%) 1 6 1 14 1 12 23 8 15 40 100 Storage Bik Time (%) 1 6 1 14 1 12 23 8 15 12 Calcung Pendity (%) 22 8 11 12 Storage Bik Time (%) 1 12 2 2 Calcung Pendity (%) 2 2 12 Calcung Pendity (%) 2 2 2 2 2 12 Calcung Pendity (%) 2 2 2 2 2 12 Calcung Pendity (%) 2 2 2 2 2 2 2 12 Calcung Pendity (%) 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Unstance (n) 142 1018 1758 0 16 <td< td=""><td>Link Distan Upstream F Queung P, Storage Ba Storage Ba Storage La</td><td>e (ft)</td><td>100</td><td>200</td><td>92</td><td>120</td><td>111</td><td>147</td><td>62</td><td>114</td><td>206</td><td>192</td><td>224</td></td<>	Link Distan Upstream F Queung P, Storage Ba Storage Ba Storage La	e (ft)	100	200	92	120	111	147	62	114	206	192	224
Upstream RB: Time (%) 0 6 0 20 28 1 <td>Optionarii Time (%) 0 6 0 20 28 4 Outward Penaty (with) 2.5 0 4 7 5 6 4 0 29 28 1 Stronge Bau/ Det (%) 0 6 6 4 7 5 6 4 0 23 14 Stronge Bau/ Det (%) 0 6 6 7 5 6 4 0 0 24 Stronge Bau/ Det (%) 0 5 5 5 4 1 25 4 2 2 Stronge Bau/ Det (%) 5 5 5 5 5 5 5 5 Directoric Screed 1 7 8 5 5 5 5 Directoric Screed 1 7 8 5 5 5 5 Outware (%) 10 0 0 0 0 0 10 Stronge Bau/ Det (%) 125 20 20 20 20 20 Stronge Bau/ Det (%) 125 30 127 10 10 10 Channer (%) 125 30 127 20 20 20 Stron</td> <td>Upstream E Queuing Pr Storage Ba Storage BI Queuing Pr</td> <td>nce (ft)</td> <td></td> <td>142</td> <td></td> <td>1018</td> <td></td> <td>1758</td> <td></td> <td></td> <td>116</td> <td>116</td> <td>224</td>	Optionarii Time (%) 0 6 0 20 28 4 Outward Penaty (with) 2.5 0 4 7 5 6 4 0 29 28 1 Stronge Bau/ Det (%) 0 6 6 4 7 5 6 4 0 23 14 Stronge Bau/ Det (%) 0 6 6 7 5 6 4 0 0 24 Stronge Bau/ Det (%) 0 5 5 5 4 1 25 4 2 2 Stronge Bau/ Det (%) 5 5 5 5 5 5 5 5 Directoric Screed 1 7 8 5 5 5 5 Directoric Screed 1 7 8 5 5 5 5 Outware (%) 10 0 0 0 0 0 10 Stronge Bau/ Det (%) 125 20 20 20 20 20 Stronge Bau/ Det (%) 125 30 127 10 10 10 Channer (%) 125 30 127 20 20 20 Stron	Upstream E Queuing Pr Storage Ba Storage BI Queuing Pr	nce (ft)		142		1018		1758			116	116	224
Queung Penalty (veh) 0 0 140 151 4 123 4 0 140 191 4 Storage Bix y Dirth 2 3 8 1 1 1 1 1 2 2 2 2 Storage Bix y Dirth 3 Storage Bix y Dirth 1 2 3 4 2 2 2 Storage Bix y Dirth 3 Storage Bix y Dirth 3 5 3 <td>Storage Bit Time (N) 0 0 10 14 11 23 40 10 14 Storage Bit Time (N) 0 5 5 4 75 40 0 14 Concerning Frankly (reih) 1 51 14 11 23 8 16 14 Concerning Frankly (reih) 1 51 54 47 58 8 10 14 Concerning Frankly (reih) 28 54 47 58 54 77 58 Directions Stored 1 2 47 56 17 5 47 56 Directions Stored 1 23 333 1303 1303 1303 1303 1303 Directions Stored 1 1 7 8 12 7 5 Opening Prankly (reit) 13 333 1303 1303 1303 1303 UpdatameRit 11 13 1303 1303 1303 127 Distribution 14 1 1 13 1303 127 Distribution 14 1 1 1 1 1 Distriction 1 1 1</td> <td>Queuing P Storage Ba Storage BI Queuing P</td> <td>Blk Time (%)</td> <td>0</td> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td> <td>20</td> <td>28</td> <td>-</td>	Storage Bit Time (N) 0 0 10 14 11 23 40 10 14 Storage Bit Time (N) 0 5 5 4 75 40 0 14 Concerning Frankly (reih) 1 51 14 11 23 8 16 14 Concerning Frankly (reih) 1 51 54 47 58 8 10 14 Concerning Frankly (reih) 28 54 47 58 54 77 58 Directions Stored 1 2 47 56 17 5 47 56 Directions Stored 1 23 333 1303 1303 1303 1303 1303 Directions Stored 1 1 7 8 12 7 5 Opening Prankly (reit) 13 333 1303 1303 1303 1303 UpdatameRit 11 13 1303 1303 1303 127 Distribution 14 1 1 13 1303 127 Distribution 14 1 1 1 1 1 Distriction 1 1 1	Queuing P Storage Ba Storage BI Queuing P	Blk Time (%)	0	9						0	20	28	-
Storage Bay Dist (1) 225 40 75 40 100 Storage Bay Dist (1) 1 61 1 1 2 2 Storage Bay Dist (1) 1 61 1 61 1 2 2 Storage Bay Dist (1) 25 6 1 6 1 2 2 Storage Bay Dist (1) 1 61 1 6 1 2 2 2 Chemental Storage Bay Tart 8 53 50 127 6 1 2 2 2 Prectors Same(1) 25 22 20 127 2 2 2 Storage Bit Trie (%) 125 20 220 2 2 2 3<	Storage BK (h) 25 40 75 40 10 Storage BK (h) 1 61 14 11 23 40 10 Covering Penalty (vel) 1 61 14 11 23 40 10 Covering Penalty (vel) 1 61 14 11 23 8 10 14 Coverind SB SB SB SB SB 8 10 14 Coverind SB SB SB SB SB SB 10 14 Coverind SB	Storage Ba Storage BII Queuing Pr	enalty (veh)	0	0						0	140	191	4
Storage Bit Time (%) 0 36 8 15 4 2 22 Queuing Penalty (rein) 1 61 14 11 23 8 16 14 Intersection: 93: Vineyard-Ray St & First Movement B 15 4 2 22 Orection: 53: Vineyard-Ray St & First Entertories Served L T R Note 8 16 12 2 2 Orection: Served L T R Note N	Solution 0 36 8 15 4 2 22 Soluting Frendly (vels) 0 36 8 15 4 2 22 Intersection: 33: Vineyard-Ray St & First 11 23 8 10 14 Intersection: 33: Vineyard-Ray St & First 8 33 333 14 1 <	Storage BI Queuing P	ay Dist (ft)	225		40		75		40	100			
Queung Perany (ven) 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 01 1 03 00 14 St Vineyard-Ray St & First St S	Ordenoid Total Total Total Total Total Inflersection: 93: Vineyard-Ray Si & First Womment S8 S8 S8 S8 Maxemin Osee (t) 28 47 8 S8 S8 Arenage Ouele (t) 28 47 8 S8 S8 Arenage Ouele (t) 28 47 86 9 Arenage Ouele (t) 28 52 20 20 Storage Bay Dist (t) 23 313 313 313 Consult Preatly (ten) 28 51 27 16 Oueler (t) 13 313 213 313 131 Storage Bay Dist (t) 12 40 0 0 Oueler (t) 13 313 217 16 Oueler (t) 13 313 217 131 Oueler (t) 13 313 212 131 Oueler (t) 13 313 212 131 Oueler (t) 13 21 40 226 Storage Bay Dist (t) 13 21 28 221 Marmun Oueler (t) 13 22 22 231 Marmun (t) 13 23 2		k Time (%)	• •	36	80 ;		æ ;	15	4 0	2	22		
Intersection: 93: Vineyard-Ray St & First Kornener 28 58 58 58 Kornener 1 1 1 1 1 1 Maxmum Oener (n) 28 58 58 58 58 58 Maxmum Oener (n) 28 247 266 19 50 500 127 106 Ansrege Orener (n) 28 220 220 220 220 220 220 Storage Bix Time (%) 135 200 0	Momental Momental Declores Served L T R Prectores Served L T R R Drectores Served L R R R Drectores Served L R L R R Drectores Served L R R R R R Stripper Served L R <td< td=""><td>and a large state of the second state of the s</td><td>Alight (Veri)</td><td>-</td><td>0</td><td>t</td><td></td><td>=</td><td>3</td><td>•</td><td>2</td><td><u>t</u></td><td></td><td></td></td<>	and a large state of the second state of the s	Alight (Veri)	-	0	t		=	3	•	2	<u>t</u>		
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Appendix C

Collision Rate Calculations













February 14, 2014

City of Pleasanton Eric Luchini – Planning Division 200 Old Bernal Avenue Pleasanton, CA 94566

 RE: Kottinger Gardens General Plan Amendment (P14-0011) and Planned Unit Development (PUD- 101) at Kottinger Drive APN: 094-0019-017
 Landscape Response : Modal Water Efficient Landscape / Sustainable Landscape Practices Compliance

Dear Eric Luchini,

This letter in response to application comment 4, issued on January 31th, 2014.

With regards to item 4 - Modal Water Efficient Landscaping Ordinance (MWELO), Our plans will meet compliance with the following practices – These items are also Bay Friendly:

- Hydrozone plans shall be provided based upon landscape planting plans and WUCOLS.
- No lawn on slopes greater than 4:1 unless the toe of slope is permeable.
- Soil test shall be provided by General Contractor and report shall outline recommended soil amendments which shall be amended to soils on site per specifications.
- A dedicated water meter shall be provided for irrigation systems for the project.
- Overspray in minimized and spray irrigation shall not be used for areas less than 8' wide in any direction.
- Drip irrigation and sub-surface irrigation shall be used for the majority of the site.
- All irrigation controllers shall be self adjusting type that use evapotranspiration or soil moisture data. Rain sensors shall be required to shut off water during rain events.

- Irrigation spray heads on slopes greater that 25% (4:1) do not exceed .75" per hour precipitation rate.
- An irrigation design includes a water efficient landscape worksheet inclusive of water budget calculations and irrigation schedules. Irrigation system design does not exceed maximum applied water allowance.
- Special Landscape Areas shall be calculated with a plant factor of one (1). This
 includes landscape dedicated solely to edible plants.
- Irrigation systems shall be designed by a certified irrigation designer.
- Certificate of completion shall include: an irrigation inspection by a landscape irrigation specialist, Landscape and irrigation maintenance schedules, certification of installation and soils test results.

This is not a certified Bay Friendly Project. However the project shall follow Bay Friendly Basics – Landscape Sustainable Practices which help to make it a sustainable landscape:

- Plant Selection is appropriate to Pleasanton area.
- Within project, plant selection is appropriate to landscape micro area, i.e. Bioswale shall be planted with plants that can handle wet conditions, yet also exhibit drought tolerance.
- ^a 3" mulch shall be specified for all shrub, groundcover, and unplanted area.
- Plants shall be grouped into similar hydrozone requirements
- No invasive species were included within the plant list for the project.
- Plants shall be spaced according to their maximum growth, reducing shearing and cutting of plants.

If you should have any questions, please feel free to call me.

Jennie Suen Associate Landscape Architect Gates + Associates



Housing Commission Minutes - EXCERPT [SUBJECT TO APPROVAL]

City Council Chambers, 200 Old Bernal Ave., Pleasanton, CA

February 20, 2014 7:00 p.m.

PUBLIC HEARINGS AND OTHER MATTERS

10. Approval of Kottinger Gardens Overall Plan (PUD-101) and Submittal of a HUD Section 18 Demolition and Disposition Application

Mr. Bocian introduced the agenda item and provided information about the Kottinger Gardens Overall Plan (PUD-101) and the work that has been done by the Task Force and MidPen. He noted that in September 2012, the Housing Commission recommended approval of the Kottinger Place and Pleasanton Gardens Predevelopment Analysis Report establishing the parameters for a new affordable senior housing development on the Kottinger Place and Pleasanton Gardens sites.

Commissioners were provided a PowerPoint presentation by MidPen representative Abby Goldware. Items reviewed included:

- Information pertaining to Task Force meetings and the desired objectives of the group
- Incorporation of feedback from appropriate stakeholders and City of Pleasanton
- Review of various design options
- Required next steps
- Necessary disposition process (Public Housing) and change of ownership
- Project financing
- Relocation process (and the use of phasing to minimize impact on residents)
- Project phasing and developing a construction phasing plan
- Affordability issues
- Provision of onsite resident services

Ms. Goldware provided information about the site plan that was approved by the Task Force at its October 23, 2013, meeting. The site plan includes the current Pleasanton Gardens, Kottinger Place, Regalia House, and 4138 Vineyard Avenue parcels, for a total of approximately 6.5 acres.

The proposed project includes a total of 185 units to be built in a configuration of single story cottage units and multi-story (two- and three-story) buildings, open space, community rooms on both the Kottinger Place and Pleasanton Gardens sites, additional parking spaces, an improved pedestrian crossing over Kottinger Drive, and garden places for residents.

The Commission was advised by Ms. Goldware that over the next several months, City staff and MidPen will be focusing on completing the requirements related to HUD's Section 18 Demolition and Disposition process. Staff and MidPen also met recently with Congressman Swalwell to keep him advised of the process for and status of this project. HUD staff have encouraged the Housing Authority and MidPen to submit the application for a technical assistance review prior to a formal submittal. HUD requires the Housing Authority's Board to formally approve the submittal of an application to HUD. As soon as HUD completes its technical assistance review, staff anticipates bringing the action to the City Council.

Chairperson Welsh questioned Ms. Goldware about the minor site design changes that were made after the overall plan was approved by the Task Force in order to address the water line easement. Ms. Goldware showed Commissioners how minor site plan changes had been made on both the Kottinger Place and Pleasanton Gardens sides to allow for improved access to the easement as required by the Fire Department. The changes allowed them to maintain the same number of units in the new project.

Chairperson Welsh opened the meeting for public comment.

Becky Dennis, Chair of the Task Force, noted that it had been a long process, but it is inspiring to finally reach this stage of the project. Ms. Dennis noted that the City of Pleasanton has committed \$10 million to this very worthwhile project and she hopes that more projects of this kind will be forthcoming, especially projects that will benefit Pleasanton's workforce by creating housing units at the lowest affordability levels.

Chairperson Welsh closed the meeting for public comment.

A motion was made by Commissioner Mermelstein, seconded by Commissioner Welsh, to approve the Kottinger Gardens Overall Plan (PUD-101) and authorize submittal of the HUD Section 18 Demolition and Disposition Application required to facilitate the proposed new development.

ROLL CALL VOTE:

AYES:Commissioners Lopez, Mermelstein, and Chairperson Welsh.NOES:NoneABSENT:Commissioner CaseyABSTAIN:None

EXHIBIT I

Eric Luchini

From: Sent: To: Subject: ERIC LARSON Monday, March 03, 2014 8:25 PM Eric Luchini p14-0011

Hi Eric, My wife and I are concerned about parking considerations during construction and afterwards in regards to the MidPen project. We reside at 302 Kottinger dr.

Eric Larson

Click here to report this email as spam.

EXHIBIT J



