Hillside Master Plan for Housing Opportunity

SIGN IN SHEET

Feb 21, 2019 | 6:30 – 8:30 p.m.
Ardenwald Elementary
8950 SE 36th Ave
Milwaukie, OR

10

Name	Affiliation	Email	Phone
Vera Gabor	resident	none	(503) 513-0124
LYUBOV GONCHAR			(503) 695-0263
Midori Ito	— " —	— " —	503-657-8310
Yelena KORDONETS	— " —	—	503-659-0024
Peter Khamo			503 853 6531
Sonja Souder	HACC	ssouder@clackamas.us	503-650-3134
Tarah DeGeorge	PGE	tarah.degeorge@pgn.com	503-970-7535
Michael PARSONS	resident		503-652-2039
Karen Tillou	Ardenwald neighborhood	kbtillou@gmail.com	
Gene ZAHARIE	MACG	Zaharie@Comcast	503-786-8210

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Milwaukie, OR

3

Name	Affiliation	Email	Phone
Nate Ember	Resident	nate@inkbuiltdesign.com	
Suematranga Watsa		Suemar@hotmail.com	
Lisa Batey	City Council	—	

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3

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Name	Affiliation	Email	Phone
Ivan Uzbia			
LUKE STRAIT	MILW. P.D.	STRAITL@MILWAUKIEOREGON.GOV	971.563.2716
Nancy Wogenknecht	Community Member	nancykwag@yahoo.com	
Ann Leenstra	Manor	pdxgramma.ann@gm.	503-878-2614
Kim Travis	Milwaukie Planning Commission	Kim.Travis75@gmail.com	
Angel Falconer	Mwk City Council		
Jemila Hart	HACC	jemilahar@clackamas.us	503-742-5317

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Milwaukie, OR

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Name	Affiliation	Email	Phone
Margaret Parsons	neighboor (manor)	—	503-652-2039
Brian Henderson	Hillside resident	—	—
MIKE ANDREWS	CONSULTANT		
KATHY HYZY	CITY COUNCIL	—	—
Becki Hayes	CPAC member	—	—
DJ Heffernan	Murphey Property		
Ben Rousseau	C.A. Resident		
Mark A. Smith		Mark_Smith1972@yahoo.com	(503) 360-8781

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Name	Affiliation	Email	Phone
Elvis Clark	neighbor	ECLARKMilwOr@Yahoo.com	
Matt Rinker	AJC NDA	MattRinker@hotmail.com	
Chris Riley	Hillside Resident		
Sandra Grzeskowiak	Hillside Steering Committee	sandragrzeskowiak@comcast.net	
Mark Gamba	Mayor	gambam@milwaukieOR.gov	
Rich Malloy	HACC Asset Manager	rmalloy@clackamas.us	
Alma Flores	COM	floresa@milwaukeeoregon.gov	
Till Smith	HACC	tsmith@clackamas.us	

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Milwaukie, OR

10

Name	Affiliation	Email	Phone
SUSAN HOSKINS	RESIDENT	—	503-380-4068
Jane Cozby	resident	none	(503) 23-45
Mary Spooner	Neighbor	mspooner56@gmail.com	503-679-1870
Donna Ryan	Resident	ryan9645@comcast.net	5039337826
MARGE HOCKHARY	RESIDENT		503-839-4126
NINA [illegible]	[illegible]	[illegible]	[illegible]
ARNOLD R-DRACKA	RESIDENT	NO [illegible]	[illegible]
Allison Coe	HACC Property Manag	acoe@clackamas.us	503-794-8079
BEN BORTOLAZZO	DESIGN PROFESSIONAL	benbortolazzo@otak.com	503 415 2307
Cathy Hearst	Manor #506	∅	503 209 7348

Health, Housing & Human Services
CLACKAMAS COUNTY

Hillside Master Plan for Housing Opportunity

SIGN IN SHEET

May 30, 2019 | 6:30 – 8:30 p.m.
Providence Milwaukie Hospital
Mother Gamelin Conference Room
10150 SE 32nd Ave
Milwaukie, OR 97222

Name	Affiliation	Email	Phone
Aris Bz Estupinian	Hillside Manor 304.		503-652-3984
SUSAN HOSKINS	HILLSIDE MANOR 906		
Jane Cortez	10045 SE 32nd Ave		
Sharon Ferguson	2889 S.E. Hillside Ct Apt 812		
Karen Durham	2874 ~~SE~~ Hillside Ct.		
John Kinyston	2889 SE Hillside #803		
Alan Rombeldt	2889 SE HILLSIDE CT #403		
Brian Henderson	manor #804		
Lizkva Ivan F.	10005 SE Street # Milwaukie		
Vera Gabor	10319 SE B st.		
Larisa, Svetlana	Milwaukie, OR 97222. 10244 SE D St.		
Dottie O'Dell	10144 SE "B" St		
Tatyana Kistol	10047 SE A st.		
NELLIE ALBER	2889 S.E. HILLSIDE CT #603		
ARNOLD R. Packer	10103 SE C ST		

Health, Housing & Human Services
CLACKAMAS COUNTY

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10150 SE 32nd Ave
Milwaukie, OR 97222

Name	Affiliation	Email	Phone
I. Hernandez	Hillside Tenant	irisahernandez2@gmail.com	503.367.7654
Elena Sizmin	HACC		503.655.8202
Nadia Kirilchuk	Hillside tenant		
Peter Khoma	Hillside tenant		
Anfisa Khoma	Hillside resident		
John Russell	Manor		
Elsis Clark	Ardenwald NA	EClarkmilwor@Yahoo.com	
Devin Ellin	HACC		
Pam Stoltz	Hillside Res.		
Becky Dresselhaus	Ardenwald NA	beckyd44@mac.com	503 451-9912
Nina Kaidalina	Helsibe		503.659.78.60
Phidoriya Chornaya	Helside		503.654.83.10
Bradley Bondy		bradleybondy@bradleybondy.com	503-919-5451
RANDY MCTIMMONDS	Hillside Ct.		971-232-0849
Cathy Haase	Hillside Manor	CathyTyrrell57@gmail.com	503-209-7348

Health, Housing & Human Services
CLACKAMAS COUNTY

Hillside Master Plan for Housing Opportunity

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Mother Gamelin Conference Room
10150 SE 32nd Ave
Milwaukie, OR 97222

Name	Affiliation	Email	Phone
Zhanna Mitchell	interpreter		503-916-9237
Erin Maxey	City of Milwaukie	maxeye@milwaukieoregon.gov	706-280-8487
Matt Rinker	AJC NDA	MattRinker@hotmail.com	971 336 8863
Lisa Gannon-Rinker	AJC NDA	astrantialgr@gmail.com	503-754-1655
Emily Gilchrist	none (affected neighbor)	emilygilchrist.jd@gmail.com	503-853-4553
Julie Kenelek	affected neighbor	strikegirl21@yahoo.com	971-400-7188
Katy Hyzy	City of Milwaukie	NyzyK@milwaukieoregon.gov	
Lisa Batey	City of Milwaukie	BateyL@milwaukieoregon.gov	
Mike Andrews	Structure Development Advisors	mike@structurepdx.com	503-249-5658
James Knight	Local Resident	j365K@yahoo.com	
June Ehrlin	NWFS.	jehrlin@nwfs-org.	503 309-2096.
Am Ober	City of Milwaukie	ober@milwaukieoregon.gov	503-753-6608
Isaac Barrow	PGE	isaac.barrow@pgn.com	503 593 2132
Jamie Zentner	Clack Co Public Health	jzentner@clackamas.us	503 742 5939

Health, Housing & Human Services
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Mother Gamelin Conference Room
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Milwaukie, OR 97222

Name	Affiliation	Email	Phone
Enoc Alvarez	Interpreter		
Carrie Bush	Hillside Park		
Cindy Rose	Hillside Park		
Allison Coe	HHCC	acoe@clackamas.us	
Marnie Smith	Hillside Manner		
Jay Davidson			
Rich Malloy	HHCC	rmalloy@clackamas.us	
Szabolcs Tekeli, Erzsebet		szutorkas@gmail.com.	
April Bravo	hillside	AprilBravo70@gmail.com	
Beth Byrne	Clackamas County	bbyrne@clackamas.us	
Mark Gamba	Milwaukie	mark@markgamba.com	
Linda Ricketts	Hillside Manor	lmbricketts2017@gmail.com	

Health, Housing & Human Services
CLACKAMAS COUNTY

Hillside Master Plan

S|EA

10/23/2020

BUILDING	USE	Area (SF)	# of Floors	Total units	Parking Provided (On Site)	Parking Ratio	UNIT MIX 1BD	2BD	3BD	4BD	SITE INFO. du/AC	Lot SF	Lot Acres	Bldg. Coverage	Lot Coverage %	FAR	PHASING FAR Bldg. SF Phase I	FAR	Bldg. SF Phase II	FAR
A1					**Shared Surface Lot**															
	Commercial	0	0		0															
1 BD Walk-ups	Residential	5,280	3	24	30	0.30	24	0	0	0	75	58,421	1.34	17,700	30%	5.5	118,447	2.6	67,640	1.2
	Total	**15,840**	**3**	**24**	**30**	**0.30**														
A2					**Shared Surface Lot**															
	Commercial	12,420	1																	
1 & 2 BD Apts	Residential	69,183	3	77																
	Total	**81,603**	**4**	**77**			**77**													
B1					**Shared Surface Lot**															
	Commercial	0	0		0															
2 BD Apts	Residential	12,687	4	44	38	0.35														
	Total	**50,748**	**4**	**44**	**38**	**0.35**	**0**	**44**	**0**	**0**	**78**	**60,026**	**1.38**	**28,438**	**47%**	**4.0**				
B2					**Shared Surface Lot**															
	Commercial	0	0																	
1 & 2 BD Apts	Residential	15,751	4	64																
	Total	**63,004**	**4**	**64**			**25**	**39**	**0**	**0**										
C1					**Shared Surface Lot**															
					0															
1 BD Apts	Residential	16,910	4	65	66	1.02														
	Total	**67,640**	**4**	**65**	**66**	**1.02**	**65**	**0**	**0**	**0**	**50**	**56,407**	**1.29**	**24,590**	**44%**	**3.7**				
D1					**Shared Surface Lot**															
	Commercial	0	0		0															
2 BD Walk-ups	Residential	7,680	3	20	43	0.80														
	Total	**23,040**	**3**	**20**	**43**	**0.80**	**0**	**20**	**0**	**0**	**39**	**60,641**	**1.39**	**18,240**	**30%**	**3.0**				
D2					**Shared Surface Lot**															
	Commercial	0	0																	
1&2 BD Walk-ups	Residential	10,560	3	34																
	Total	**31,680**	**3**	**34**			**12**	**22**	**0**	**0**										

BUILDING	USE	Area (SF)	# of Floors	Total units	Parking Provided (On Site)	Parking Ratio	Unit Mix 1BD	2BD	3BD	4BD	Site Info. du/AC	Lot SF	Lot Acres	Bldg. Coverage	Lot Coverage %	FAR
E1					**Shared Surface Lot**											
	Commercial	13,816	1													
1 BD Apts	Residential	46,546	3	69	31	0.33										
	Total	**60,362**	**4**	**69**	**31**	**0.33**	**69**	**0**	**0**	**0**	**67**	**60,540**	**1.39**	**19,096**	**32%**	**4.3**
E2					**Shared Surface Lot**											
	Commercial	0	0													
1 BD Walk-ups	Residential	5,280	4	24												
	Total	**21,120**	**4**	**24**			**24**	**0**	**0**	**0**						
F1					**Shared Surface Lot**											
	Commercial	0	0													
2 BD Walk-ups	Residential	7,680	3	24	40	1.00										
	Total	**23,040**	**3**	**24**	**40**	**1.00**	**0**	**24**	**0**	**0**	**40**	**43,154**	**0.99**	**13,180**	**31%**	**3.0**
F2					**Shared Surface Lot**											
	Commercial	0	0													
1&2 BD Walk-ups	Residential	5,500	3	16												
	Total	**16,500**	**3**	**16**			**6**	**10**	**0**	**0**						
G1																
	Commercial	0	0		**Shared Surface Lot**											
Townhouses	Residential	3,072	2	4	18	1.13										
	Total	**6,144**	**2**	**4**	**18**	**1.13**	**0**	**0**	**4**	**0**	**18**	**66,079**	**1.52**	**23,288**	**35%**	**2.5**
G2																
	Commercial	0	0		**Shared Surface Lot**											
Townhouses	Residential	3,072	2	4												
	Total	**6,144**	**2**	**4**			**0**	**0**	**4**	**0**						
G3																
	Commercial	0	0		**Shared Surface Lot**											
Townhouses	Residential	3,072	2	4												
	Total	**6,144**	**2**	**4**			**0**	**0**	**4**	**0**						
G4																
	Commercial	0	0		**Shared Surface Lot**											
Townhouses	Residential	3,072	2	4												
	Total	**6,144**	**2**	**4**			**0**	**0**	**4**	**0**						
G5																
	Commercial	0	0													
Townhouses	Residential	6,000	3	6	6	1.00										
	Total	**18,000**	**3**	**6**	**6**	**1.00**	**0**	**0**	**0**	**6**						
G6																
	Commercial	0	0													
Townhouses	Residential	5,000	3	5	5	1.00										
	Total	**15,000**	**3**	**5**	**5**	**1.00**	**0**	**0**	**0**	**5**						
H1																
Manor (existing)																
	Common Area (1)	8,033	1													
	Residential (2)	8,033	1													
	Residential (3-9)	8,033	7	100	59	0.59										
	Total	**72,297**	**9**	**100**	**59**	**0.59**		**n/a**			**37**	**106,725**	**2.45**			
J																
Open Space (existing)																
	Open Space	84,942	0													
	Total	**84,942**	**0**	-				**n/a**			**0**	**77,979**	**1.79**			

K1																	
	Commercial	0	0		**Shared Surface Lot**												
Townhouses	Residential	3,072	2	4	16	1.33											
	Total	**6,144**	**2**	**4**	**16**	**1.33**	**0**	**0**	**4**	**0**	**11**	**46,380**	**1.06**	**9,216**	**20%**	**2.7**
K2																	
	Commercial	0	0		**Shared Surface Lot**												
Townhouses	Residential	3,072	3	4													
	Total	**9,216**	**3**	**4**			**0**	**0**	**4**	**0**							
K3																	
	Commercial	0	0		**Shared Surface Lot**												
Townhouses	Residential	3,072	3	4													
	Total	**9,216**	**3**	**4**			**0**	**0**	**4**	**0**							

	Total Area (SF)	Total units	Parking Provided (On Site)	On-Site Parking Ratio	On-Street Parking*	Total stalls	Overall Parking Ratio	Total Lot Area (SF)	Lot Acres	Total Bldg. Coverage (SF)	Overall Coverage %	FAR
GRAND TOTAL	**560,846**	**600**	**352**	**0.59**	**137**	**489**	**0.82**	**636,352**	**14.61**	**153,748**	**24%**	**n/a**

*** Does NOT include parking on 32nd Ave.**

EXHIBIT D - HILLSIDE MASTER PLAN PARKING BY BUILDING

From Master Plan				Floors	Number of Bedrooms*				Est. Unit Count		Parking	
Bld.	Use	Units	Area (SF)		1 BD	2BD	3BD	4BD	<=800 SF	>800 SF	Spaces Provided	Ratio
A1	Multi Mid	24	21,120	4	24				24	0	30	0.30
A2	Multi w/ Com	77	69,183	3	77				77	0		
B1	Multi Mid	44	38,061	3		44			44	0	38	0.35
B2	Multi Mid	64	63,004	4	25	39			64	0		
C1	Multi Mid	65	50,730	3	65				65	0	66	1.02
D1	Multi Mid	20	23,040	3		20			20	0	43	0.80
D2	Multi Mid	34	31,680	3	12	22			34	0		
E1	Multi w/ Com	69	46,546	3	69				69	0	31	0.33
E2	Multi Mid	24	21,120	4	24				24	0		
F1	Multi Mid	24	23,040	3		24			24	0	40	1.00
F2	Multi Mid	16	16,500	3	6	10			16	0		
G1	Multi Low	4	6,144	2			4		0	4	29	1.07
G2	Multi Low	4	6,144	2			4		0	4		
G3	Multi Low	4	6,144	2			4		0	4		
G4	Multi Low	4	6,144	2			4		0	4		
G5	Multi Low	6	18,000	3				6	0	6		
G6	Multi Low	5	15,000	3				5	0	5		
K1	Multi Low	4	6,144	2			4		0	4	16	1.33
K2	Multi Low	4	6,144	2			4		0	4		
K3	Multi Low	4	6,144	2			4		0	4		
New	**Subtotal**	**500**	**480,032**		**302**	**159**	**28**	**11**	**461**	**39**	**293**	**0.59**
H1 (Manor)	Multi Mid	100	72,297	10							59	0.59
Resid.	**Subtotal**	**600**	**552,329**								**352**	**0.59**

*The standards of OHCS Table N13.01 dictate minimum unit size for units qualifying for affordable housing tax credits (1 bedroom = 600 sq. ft. minimum; 2 bedroom = 800 sq. ft. minimum; 3 bedroom = 1000 sq. ft minimum). All units with over 2 bedrooms are assumed to be greater than 800 sq. ft.

EXHIBIT E - HILLSIDE MASTER PLAN PARKING REDUCTIONS

Master Plan Lot	Parking Provided	Code Required Minimum Parking*				Comparison to Minimum	Affordable Housing Reduction +		Revised Parking Req.++	Comparison to Minimum
		Spaces for Units > 800	Spaces for Units > 800	Comm.	Total					
A	30	101	0	29	130	-100	0%	0	130	-100
B	38	108	0	0	108	-70	25%	-27	81	-43
C	66	65	0	0	65	1	25%	-16	49	17
D	43	54	0	0	54	-11	25%	-14	40	3
E	31	93	0	32	125	-94	0%	0	125	-94
F	40	40	0	0	40	0	25%	-10	30	10
G	29	0	34	0	33	-4	0	0	33	-4
K	16	0	15	0	15	1	0	0	15	1
All	**293**	**461**	**48**	**61**	**570**	**-277**	**-**	**-67**	**503**	**-210**
H	59	59	0	0	59	0	n/a	n/a	59	0
Total	**352**				**629**	**-277**			**562**	**-210**

* Assumed average commercial parking rate of 3 spaces/1000 GSF

+ ITE Parking Manual, 5th Edition shows average parking rate for Affordable Housing (Income Limits) is ~75% of Multifamily Mid-Rise Housing

++ Revised parking requirement with reduction in parking rate for affordable housing

^Assumes that all commercial parking will be shared with residential parking based on combined hourly parking demand rates from the ITE Parking Generation Manual, 5th Edition.

^^ Revised parking requirement with shared parking

Applies parking reduction of 20% to dwelling units within 500 feet of a high-frequency transit stop per MMC 19.605.3.B.2.b. Applies parking reduction of 10% to commercial development within

Revised parking requirement with shared parking & transit reduction.

@ On-street parking total excludes new spaces on 32nd Avenue. Total on-street parking is 156 if spaces on 32nd Avenue are included.

Shared Parking^	Revised Parking Req.^^	Comparison to Minimum	Proximity to Transit Reduction#		Revised Parking Req.##	Comparison to Minimum	On-Street Parking @	Comparison to Minimum
			Vehicles	%				
-29	101	-71	-20	-20%	81	-51	51	0
	81	-43	-16	-20%	65	-27	40	13
	49	17	-10	-20%	39	27	3	30
	40	3	-8	-20%	32	11		11
-32	93	-62	-19	-20%	74	-43	43	0
	30	10	-6	-20%	24	16		16
	33	-4	0	0	33	-4		-4
	15	1	0	0	15	1		1
-61	**442**	**-149**	**-79**	**0%**	**363**	**-70**	**137**	**67**
	59	0	n/a	n/a	59	0		0
	501	**-149**			**422**	**-70**		**67**

500 feet of a high-frequency transit stop per MMC 19.605.3.B.2.a.

ITE PARKING GENERATION MANUAL, 5TH EDITION

PARKING DEMAND BY TIME OF DAY

Time of Day	Affordable Housing (223)		Multifamily -Mid (221)		Small Office (712)		Coffee/Donut w/o Drive-Thru (936)		Fast Casual Restaurant (930)		Shopping Center (820)	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
12:00 AM			100%	100%								
5:00 AM			94%	99%								
6:00 AM			83%	97%					2%			
7:00 AM			71%	95%			73%	100%	2%			
8:00 AM			61%	88%	27%		100%	90%	5%	3%	15%	27%
9:00 AM			55%	83%	69%		63%	80%	14%	7%	32%	46%
10:00 AM			54%	75%	88%		57%	65%	17%	7%	54%	67%
11:00 AM			53%	71%	100%		42%	62%	18%	27%	71%	85%
12:00 PM			50%	68%	81%		39%	40%	100%	70%	99%	95%
1:00 PM			49%	66%	81%		27%	32%	75%	80%	100%	100%
2:00 PM			49%	70%	84%				45%	100%	90%	98%
3:00 PM			50%	69%	86%				31%	57%	83%	92%
4:00 PM			58%	72%	92%				23%	43%	81%	86%
5:00 PM			64%	74%	85%				49%	60%	84%	79%
6:00 PM			67%	74%	4%				77%	87%	86%	71%
7:00 PM			70%	73%					69%	53%	80%	69%
8:00 PM			76%	75%					28%	43%	63%	60%
9:00 PM			83%	78%					20%	33%	42%	51%
10:00 PM			90%	82%					11%	20%	15%	38%
11:00 PM			93%	88%								
Supply	1.3 spaces/DU		1.7 spaces/DU		3.9 spaces/KSF		7.1 spaces/KSF		11 spaces/KSF		5.1 spaces/KSF	
Average Demand	per DU (Income Limits)		per DU		per KSF GFA		per DU		per KSF GFA		per KSF GFA	
	0.99	0.79	1.31	1.22	2.56	NA	10.49	14.44	9.92	8.75	1.98	2.91
	76%	65%	Affordable as % of MF M									

LOT A - Estimated Parking Demand Using ITE Rates

Time of Day	Multifamily -Mid (221)		Shopping Center (820)		Combined Demand	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
Demand	132	123	179	263		
12:00 AM	132	123	0	0	132	123
5:00 AM	124	122	0	0	124	122
6:00 AM	110	119	0	0	110	119
7:00 AM	94	117	0	0	94	117
8:00 AM	81	108	27	71	108	179
9:00 AM	73	102	57	121	130	223
10:00 AM	71	92	97	176	168	268
11:00 AM	70	87	127	224	197	311
12:00 PM	66	84	177	250	243	334
1:00 PM	65	81	179	263	244	344
2:00 PM	65	86	161	258	226	344
3:00 PM	66	85	149	242	215	327
4:00 PM	77	89	145	226	222	315
5:00 PM	84	91	150	208	234	299
6:00 PM	88	91	154	187	242	278
7:00 PM	92	90	143	181	235	271
8:00 PM	100	92	113	158	213	250
9:00 PM	110	96	75	134	185	230
10:00 PM	119	101	27	100	146	201
11:00 PM	123	108	0	0	123	108
				MAX	344	

LOT E - Estimated Parking Demand Using ITE Rates

Time of Day	Multifamily -Mid (221)		Shopping Center (820)		Combined Demand	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
Demand	193	179	134	197		
12:00 AM	193	179	0	0	193	179
5:00 AM	181	177	0	0	181	177
6:00 AM	160	174	0	0	160	174
7:00 AM	137	170	0	0	137	170
8:00 AM	118	158	20	53	138	211
9:00 AM	106	149	43	91	149	240
10:00 AM	104	134	72	132	176	266
11:00 AM	102	127	95	167	197	294
12:00 PM	97	122	133	187	230	309
1:00 PM	95	118	134	197	229	315
2:00 PM	95	125	121	193	216	318
3:00 PM	97	124	111	181	208	305
4:00 PM	112	129	109	169	221	298
5:00 PM	124	132	113	156	237	288
6:00 PM	129	132	115	140	244	272
7:00 PM	135	131	107	136	242	267
8:00 PM	147	134	84	118	231	252
9:00 PM	160	140	56	100	216	240
10:00 PM	174	147	20	75	194	222
11:00 PM	179	158	0	0	179	158
				MAX	318	

Conclusion: Combined site use with shared parking does not exceed weekday residential parking demand at night based on ITE demand

OT A - Estimated Parking Demand Using Milwaukie Coc

Time of Day	Multifamily -Mid (221)		Shopping Center (820)		Combined Demand	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
Demand	101	101	29	29		
12:00 AM	101	101	0	0	101	101
5:00 AM	95	100	0	0	95	100
6:00 AM	84	98	0	0	84	98
7:00 AM	72	96	0	0	72	96
8:00 AM	62	89	4	8	66	97
9:00 AM	56	84	9	13	65	97
10:00 AM	55	76	16	19	71	95
11:00 AM	54	72	21	25	75	97
12:00 PM	51	69	29	28	80	97
1:00 PM	49	67	29	29	78	96
2:00 PM	49	71	26	28	75	99
3:00 PM	51	70	24	27	75	97
4:00 PM	59	73	23	25	82	98
5:00 PM	65	75	24	23	89	98
6:00 PM	68	75	25	21	93	96
7:00 PM	71	74	23	20	94	94
8:00 PM	77	76	18	17	95	93
9:00 PM	84	79	12	15	96	94
10:00 PM	91	83	4	11	95	94
11:00 PM	94	89	0	0	94	89
				MAX	101	

OT E - Estimated Parking Demand Using Milwaukie Coc

Time of Day	Multifamily -Mid (221)		Shopping Center (820)		Combined Demand	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
Demand	93	93	32	32		
12:00 AM	93	93	0	0	93	93
5:00 AM	87	92	0	0	87	92
6:00 AM	77	90	0	0	77	90
7:00 AM	66	88	0	0	66	88
8:00 AM	57	82	5	9	62	91
9:00 AM	51	77	10	15	61	92
10:00 AM	50	70	17	21	67	91
11:00 AM	49	66	23	27	72	93
12:00 PM	47	63	32	30	79	93
1:00 PM	46	61	32	32	78	93
2:00 PM	46	65	29	31	75	96
3:00 PM	47	64	27	29	74	93
4:00 PM	54	67	26	28	80	95
5:00 PM	60	69	27	25	87	94
6:00 PM	62	69	28	23	90	92
7:00 PM	65	68	26	22	91	90
8:00 PM	71	70	20	19	91	89
9:00 PM	77	73	13	16	90	89
10:00 PM	84	76	5	12	89	88
11:00 PM	86	82	0	0	86	82
				MAX	96	

Conclusion: Combined site use with shared parking does not exceed weekday residential parking demand at night based on parking requirements in Milwaukie Code but combined Saturday demand on Lot E would exceed residential demand by 3 spaces.

Hillside Master Plan - Water System Loads

SEA011

** Based on City of Milwaukie 2010 Water Master Plan (WMP)

Lot	Units	Average per capita demand (gpcd) WMP Sec. 4.1.4	ADD (gpd)	Max Day Demand (MDD), gpd Peak Factor = 1.9	Peak Hour Demand (PHD), gpd Peak Factor = 2.7	Remarks
A-units	113	116	13108	24905	35392	
A-Commercial (12,420sf)			375	713	1013	Commerical = to 1317 gpd/acre (normalized) per COM 2010 Water MP, Table 4-6
B	100	116	11600	22040	31320	
C	75	116	8700	16530	23490	
D	48	116	5568	10579	15034	
E-units	105	116	12180	23142	32886	
E-Commercial (13,816sf)			418	794	1129	Commerical = to 1317 gpd/acre (normalized) per COM 2010 Water MP, Table 4-6
F	34	116	3944	7494	10649	
G	20	116	2320	4408	6264	
H	100	116	11600	22040	31320	
K	12	116	1392	2645	3758	
Total	607					
		Totals	71205	135290	192254	

Totals by Lot	ADD (gpd)	MDD (gpd)	PHD (gpd)
A	13483	25618	36404
B	11600	22040	31320
C	8700	16530	23490
D	5568	10579	15034
E	12598	23936	34015
F	3944	7494	10649
G	2320	4408	6264
H	11600	22040	31320
K	1392	2645	3758
Totals	71205	135290	192254

Hillside Master Plan -Sanitary System Loads

SEA011

** Based on City of Milwaukie 2010 Sanitary Sewer Master Plan (SMP)

Lot	Units	Average multifamily residence flow per day (gpd/unit)	Average Daily Flow (gpd)	Daily Flow Peaking Factor = 2.5 (gpd)	Remarks
A-units	113	80	9040	22600	
A-Commercial (12,420sf)	8	80	640	1600	Commercial = to 8 residences (2010 Sewer MP, p. 4-3)
B	100	80	8000	20000	
C	75	80	6000	15000	
D	48	80	3840	9600	
E-units	105	80	8400	21000	
E-Commercial (13,816sf)	8	80	640	1600	Commercial = to 8 residences (2010 Sewer MP, p. 4-3)
F	34	80	2720	6800	
G	20	80	1600	4000	
H	100	80	8000	20000	
K	12	80	960	2400	
Total	623				
		Totals	49840	124600	

Totals by Lot	Avg Flow with 2.5 peaking factor (gpd)
A	24200
B	20000
C	15000
D	9600
E	22600
F	6800
G	4000
H	20000
K	2400
	124600

U.S. Department of Housing and Urban Development
451 Seventh Street, SW
Washington, DC 20410
www.hud.gov
espanol.hud.gov

Environmental Assessment
Determinations and Compliance Findings
for HUD-assisted Projects
24 CFR Part 58

Project Information

Project Name: Hillside-Park-Redevelopment

HEROS Number: 900000010105346

Responsible Entity (RE): CLACKAMAS COUNTY, 112 11th St Oregon City OR, 97045

RE Preparer: Mark Sirois

State / Local Identifier: HACC Hillside Park Redev

Certifying Officer: Pamela Anderson

Grant Recipient (if different than Responsible Entity):

Point of Contact:

Consultant (if applicable):

Point of Contact:

Project Location: 2887 SE Hillside Ct, Milwaukie, OR 97222

Additional Location Information:
2887 SE Hillside Court, Milwaukie, OR 97222 This is an urban residential neighborhood across from a hospital

Direct Comments to:

Description of the Proposed Project [24 CFR 50.12 & 58.32; 40 CFR 1508.25]:

The project involves the redevelopment of the Hillside Park public housing complex. This is a conventional public housing development, owned and operated by the Housing Authority of Clackamas County (HACC), consisting of one hundred (100) dwelling units in seventy-five (75) to eighty-six (86) one-story residential apartment buildings located on a 16-acre parcel of land located at 2887 SE Hillside Court, Milwaukie, OR 97222 (Tax Parcel # 11E25CD00100). The development includes twenty-five (25) one-bedroom apartments and seventy-five (75) two-bedroom apartments built in 1941-1942. The project will involve assisting current Hillside Park residents with permanent relocation, including the option to return to a redeveloped unit upon completion. The project will involve the demolition of existing improvements, including the razing and removal of all structures, demolition of existing roads, and abandoning of infrastructure. Redevelopment will include the creation of a new street grid and infrastructure plan mandated by the City of Milwaukie and incorporated into the Hillside Park Master Plan. The Master Plan includes the creation of new streets, realigned for increased safety and better connectivity to the surrounding neighborhood and designed to support the increased density of the redevelopment. In accordance with the Master Plan, HACC plans to subdivide the 16-acre parcel into smaller parcels and conduct the redevelopment in phases. These parcels will be developed by HACC or in partnership with HACC under a leasehold interest. HACC may consider disposition and sale of a portion of the subdivided parcels at or below fair market value. The residential redevelopment will be a multi-phased, mixed-finance development that will leverage federal, state, and local funding opportunities. It entails the construction of roughly five hundred (500) units, which includes one hundred (100) replacement units, of both affordable and market rate housing. These units will be developed by HACC, in partnership with HACC, or sold to others for development. One hundred (100) replacement units will be developed by HACC and leased to low income residents living in units supported with a local Project Based Voucher contract. In addition to the residential development, HACC plans for the development of a community center, new open space, a playground, a sports court, and potentially commercial or office space.

Statement of Purpose and Need for the Proposal [40 CFR 1508.9(b)]:

Affordable housing and market rate housing is needed through Clackamas County. The Housing Authority owns some outdated public housing units on a 16 acre property known as Hillside Park in the City of Milwaukie, Oregon. The Housing Authority is working with the city to design a new housing development to replace the out dated public housing units. The Hillside Park Redevelopment Project will include the creation of a new street grid and infrastructure plan mandated by the City of Milwaukie and incorporated into the Hillside Park Master Plan. The Master Plan includes the creation of new streets, realigned for increased safety and better connectivity to the surrounding neighborhood and designed to support the increased density of the redevelopment. In accordance with the Master Plan, HACC plans to subdivide the 16-acre parcel into smaller parcels and conduct the redevelopment in phases. These parcels will be developed by HACC or in partnership with HACC under a leasehold interest. HACC may consider disposition and sale of a portion of the subdivided parcels at or below fair market value. The residential redevelopment will be a multi-phased, mixed-finance development that will leverage federal, state, and local funding opportunities. It entails the construction of roughly five hundred (500)

units, which includes one hundred (100) replacement units, of both affordable and market rate housing. These units will be developed by HACC, in partnership with HACC, or sold to others for development. One hundred (100) replacement units will be developed by HACC and leased to low income residents living in units supported with a local Project Based Voucher contract. In addition to the residential development, HACC plans for the development of a community center, new open space, a playground, a sports court, and potentially commercial or office space.

Existing Conditions and Trends [24 CFR 58.40(a)]:

Affordable housing and market rate housing is needed throughout Clackamas County and the Portland Metropolitan area. The Housing Authority owns some outdated public housing units on a 16 acre property known as Hillside Park in the City of Milwaukie, Oregon. The Housing Authority is working with the city to design a new housing development to replace the 100 out dated public housing units with up to 500 new units of affordable and market rate housing. The Housing Authority and the City of Milwaukie want to replace the outdated public housing units with a new housing development to increase density of units on the site.

Maps, photographs, and other documentation of project location and description:

Pictures10.19.pdf

Determination:

✓	Finding of No Significant Impact [24 CFR 58.40(g)(1); 40 CFR 1508.13] The project will not result in a significant impact on the quality of human environment
	Finding of Significant Impact

Approval Documents:

ERR Signature Page762020.pdf

7015.15 certified by Certifying Officer on:

7015.16 certified by Authorizing Officer on:

Funding Information

Grant / Project Identification Number	HUD Program	Program Name

2020.1	Community Planning and Development (CPD)	Community Development Block Grants (CDBG) (Entitlement)
2020.2	Community Planning and Development (CPD)	HOME Program
2020.3	Public Housing	Project-Based Voucher Program
2020.4	Other	Low Income Housing Tax credits, Metro Affordable Housing Bonds
CDP5600078	Public Housing	Housing Choice Voucher Program

Estimated Total HUD Funded, Assisted or Insured Amount: $15,000,000.00

Estimated Total Project Cost [24 CFR 58.2 (a)(5)]: $85,000,000.00

Compliance with 24 CFR §50.4, §58.5 and §58.6 Laws and Authorities

Compliance Factors: Statutes, Executive Orders, and Regulations listed at 24 CFR §50.4, §58.5, and §58.6	Are formal compliance steps or mitigation required?	Compliance determination (See Appendix A for source determinations)
STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR §50.4 & § 58.6		
Airport Hazards Clear Zones and Accident Potential Zones; 24 CFR Part 51 Subpart D	☐ Yes ☑ No	The project site is not within 15,000 feet of a military airport or 2,500 feet of a civilian airport. The project is in compliance with Airport Hazards requirements.
Coastal Barrier Resources Act Coastal Barrier Resources Act, as amended by the Coastal Barrier Improvement Act of 1990 [16 USC 3501]	☐ Yes ☑ No	This project is located in a state that does not contain CBRS units. Therefore, this project is in compliance with the Coastal Barrier Resources Act.
Flood Insurance Flood Disaster Protection Act of 1973 and National Flood Insurance Reform Act of 1994 [42 USC 4001-4128 and 42 USC 5154a]	☐ Yes ☑ No	The structure or insurable property is not located in a FEMA-designated Special Flood Hazard Area. While flood insurance may not be mandatory in this instance, HUD recommends that all insurable structures maintain flood insurance under the National Flood Insurance Program (NFIP). The project is in compliance with flood insurance requirements.

STATUTES, EXECUTIVE ORDERS, AND REGULATIONS LISTED AT 24 CFR §50.4 & § 58.5		
Air Quality Clean Air Act, as amended, particularly section 176(c) & (d); 40 CFR Parts 6, 51, 93	☐ Yes ☑ No	The project's county or air quality management district is in attainment status for all criteria pollutants. The project is in compliance with the Clean Air Act. A review of the Environmental Protection Agency's site found
Coastal Zone Management Act Coastal Zone Management Act, sections 307(c) & (d)	☐ Yes ☑ No	This project is not located in or does not affect a Coastal Zone as defined in the state Coastal Management Plan. The project is in compliance with the Coastal Zone Management Act.
Contamination and Toxic Substances 24 CFR 50.3(i) & 58.5(i)(2)]	☑ Yes ☐ No	Site contamination was evaluated as follows: ASTM Phase I ESA, ASTM Phase II ESA. On-site or nearby toxic, hazardous, or radioactive substances were found that could affect the health and safety of project occupants or conflict with the intended use of the property. The adverse environmental impacts can be mitigated. With mitigation, identified in the mitigation section of this review, the project will be in compliance with contamination and toxic substances requirements.
Endangered Species Act Endangered Species Act of 1973, particularly section 7; 50 CFR Part 402	☐ Yes ☑ No	This project will have No Effect on listed species based on a letter of understanding, memorandum of agreement, programmatic agreement, or checklist provided by local HUD office. This project is in compliance with the Endangered Species Act.
Explosive and Flammable Hazards Above-Ground Tanks)[24 CFR Part 51 Subpart C	☐ Yes ☑ No	There are no current or planned stationary aboveground storage containers of concern within 1 mile of the project site. The project is in compliance with explosive and flammable hazard requirements.
Farmlands Protection Farmland Protection Policy Act of 1981, particularly sections 1504(b) and 1541; 7 CFR Part 658	☐ Yes ☑ No	This project does not include any activities that could potentially convert agricultural land to a non-agricultural use. The project is in compliance with the Farmland Protection Policy Act. The City of Milwaukie is in an urban area

		within an Urban Growth Boundary (UGB).
Floodplain Management Executive Order 11988, particularly section 2(a); 24 CFR Part 55	☐ Yes ☑ No	This project does not occur in a floodplain. The project is in compliance with Executive Order 11988.
Historic Preservation National Historic Preservation Act of 1966, particularly sections 106 and 110; 36 CFR Part 800	☐ Yes ☑ No	Based on Section 106 consultation there are No Historic Properties Affected because there are no historic properties present. The project is in compliance with Section 106.
Noise Abatement and Control Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978; 24 CFR Part 51 Subpart B	☐ Yes ☑ No	A Noise Assessment was conducted. The noise level was acceptable: Weighted 24hr average of 59.0 db. See Site Noise Study Report noise analysis completed by Listen Acoustics. The project is in compliance with HUD's Noise regulation.The primary sources of noise are traffic noise from Highway 224, McLoughlin industrial facilities to the West, and the adjacent rail line, with heavy commercial and Amtrak train traffic. The sound levels on the loudest (West) side of the site vary within a 52 to 74 dBA range, with an overall hourly average of 54 dBA and a weighted 24-hour average Ldn of 59 dBA. The maximum levels in each hour range from 55 dBA to 87 dBA. The minimum levels are between 50 dBA and 55 dBA.
Sole Source Aquifers Safe Drinking Water Act of 1974, as amended, particularly section 1424(e); 40 CFR Part 149	☐ Yes ☑ No	The project is not located on a sole source aquifer area. The project is in compliance with Sole Source Aquifer requirements. Clackamas County has no sole source acquifers.
Wetlands Protection Executive Order 11990, particularly sections 2 and 5	☐ Yes ☑ No	The project will not impact on- or off-site wetlands. The project is in compliance with Executive Order 11990.
Wild and Scenic Rivers Act Wild and Scenic Rivers Act of 1968, particularly section 7(b) and (c)	☐ Yes ☑ No	This project within the City of Milwaukie, is not within proximity of a NWSRS river. The project is in compliance with the Wild and Scenic Rivers Act.
HUD HOUSING ENVIRONMENTAL STANDARDS		
ENVIRONMENTAL JUSTICE		

Environmental Justice Executive Order 12898	☐ Yes ☑ No	No adverse environmental impacts were identified in the project's total environmental review. The project is in compliance with Executive Order 12898.

Environmental Assessment Factors [24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27]

Impact Codes: An impact code from the following list has been used to make the determination of impact for each factor.
(1) Minor beneficial impact
(2) No impact anticipated
(3) Minor Adverse Impact – May require mitigation
(4) Significant or potentially significant impact requiring avoidance or modification which may require an Environmental Impact Statement.

Environmental Assessment Factor	Impact Code	Impact Evaluation	Mitigation
LAND DEVELOPMENT			
Conformance with Plans / Compatible Land Use and Zoning / Scale and Urban Design	1	The Hillside Redevelopment Project has a compatible land use and is appropriate in scale and design for the residential area in accordance with the City of Milwaukie land use plans.	
Soil Suitability / Slope/ Erosion / Drainage and Storm Water Runoff	2	There is a storm water plan that will meet city and county drainage requirements. Standard erosion controls will be used during the construction process.	
Hazards and Nuisances including Site Safety and Site-Generated Noise	2	Safety practices will be used during construction. The project is not expected to generate any hazards, noise or nuisances once completed.	
Energy Consumption/Energy Efficiency	2	The project will be new construction with reduced energy consumption techniques. The project will be supplied with energy efficient heating and cooling systems and energy efficient appliances.	
SOCIOECONOMIC			
Employment and Income Patterns	2	Local businesses may get a slight increase in business income due to additional residents.	
Demographic Character Changes / Displacement	2	No individuals or businesses will be displaced due to construction of this	

Environmental Assessment Factor	Impact Code	Impact Evaluation	Mitigation
LAND DEVELOPMENT			
		project. Public housing residents will be allowed to move into new apartments onsite.	
COMMUNITY FACILITIES AND SERVICES			
Educational and Cultural Facilities (Access and Capacity)	2	Residents of the completed housing project will have access to schools and cultural facilities. Oregon City schools and cultural facilities have the capacity to handle 300 to 400 new residents that may include 100 new students.	
Commercial Facilities (Access and Proximity)	2	Residents of the completed housing project will have access to grocery stores and other commercial facilities. City of Milwaukie stores and other commercial facilities have the capacity to handle 300 to 400 new residents. The new development may include retail and commercial activities.	
Health Care / Social Services (Access and Capacity)	2	Residents of the completed housing project will have access to health care and social services.The City of Milwaukie, County and state health care and social services are located in close proximity to this project site and have the capacity to handle new consumers of services. Providence Milwaukie Hospital is located across the street	
Solid Waste Disposal and Recycling (Feasibility and Capacity)	2	Residents of the completed housing project will have access to solid waste disposal and recycling services. City of Milwaukie solid waste and recycling providers have the capacity to handle new residents.	
Waste Water and Sanitary Sewers (Feasibility and Capacity)	2	The completed housing project will have connections to waste water and sanitary sewer services. The City of Milwaukie and the Couty's Water and Enviromental Services have water and sanitary sewer services with the capacity to handle these new residents.	

Environmental Assessment Factor	Impact Code	Impact Evaluation	Mitigation
LAND DEVELOPMENT			
Water Supply (Feasibility and Capacity)	2	The completed housing project will have connections to city water supply services. City of Milwaukie water services has the capacity to handle these new residents.	
Public Safety - Police, Fire and Emergency Medical	2	Residents of the completed housing project will have access to police, fire and emergency medical services. City of Milwaukie police, fire and emergency medical services have the capacity to serve new residents.	
Parks, Open Space and Recreation (Access and Capacity)	2	Residents of the completed housing project will have access to parks, open space and recreation. The City of Milwaukie has numerous parks, open space and recreational opportunities with the capacity to handle new residents. The development will also include green space and a park like setting.	
Transportation and Accessibility (Access and Capacity)	2	Residents of the completed housing project will have access to public transportation. TRIMET buses will be available less than 100 yards from the project site. The metro Trimet services has the capacity to handle new riders. The Max light rail stop is within walking distance of the development.	
NATURAL FEATURES			
Unique Natural Features /Water Resources	2	Residents of the completed housing project will have access to the Willamette River waterfront park and to Mount Hood which is part of the Mt Hood national forest recreational area. The Willamette River, the Milwaukie Water Front Park and the Mt Hood national forest recreational areas have the capacity to handle new consumers of these nature features.	
Vegetation / Wildlife (Introduction,	2	This project once completed will not create nuisance or non-native vegetation. No plant species, trees,	

Environmental Assessment Factor	Impact Code	Impact Evaluation	Mitigation
LAND DEVELOPMENT			
Modification, Removal, Disruption, etc.)		migratory birds or wildlife habitats will be harmed. The re-development will add native trees and plants to this area.	
Other Factors	2	None	

Supporting documentation

Additional Studies Performed:

Phase 1 Environmental Site Report Phase II Environmental Site Report

Phase_1_ESA_Hillside_111519.pdf
Hillside_PhIIESA.PDF

Field Inspection [Optional]: Date and completed by:
Mark Sirois 10/15/2019 12:00:00 AM

Pictures10.19.pdf

List of Sources, Agencies and Persons Consulted [40 CFR 1508.9(b)]:

* Dept. Of Housing and Urban Development (HUD) * City of Milwaukie: City Council * City of Milwaukie: City Planning Commission * City of Milwaukie: Planning Dept. * City of Milwaukie: Engineering Dept. * Clackamas County: Board of Commissioners * Iroz Elardo Research: Health Impact Analysis * David Paul Rosen & Associates (DRA): Financial analysis * ECONorthwest: Economic Impact Analysis * Listen Acoustics: Acoustic Analysis (environmental noise mitigation) * Structure PDX: Development / Finance steering * DCW Cost Management: Construction Estimate * Brightworks: Sustainability Planning * Scott Edwards Architecture: Master Planning / Zoning * Walker Macy: Landscape Planning * Humber Design Group: Civil Engineering * Lancaster Mobley: Traffic Engineering * EnviroIssues: Community Engagement

List of Permits Obtained:

Pre-Application Meeting: Development Permit with City of Milwaukie Land Use Narrative: City of Milwaukie: Planning Commission and City Council Land Use approval Traffic Impact Study with scope for the masterplan analysis approval by City of Milwaukie Preliminary Development Plan (Master Plan) approval by City of Milwaukie: Planning Commission Final Development Plan (Master Plan) approval by City of

Milwaukie: Planning Commission and City Council CPA / ZC Application (Base Zone for Density) approval by City of Milwaukie: Planning Commission, City Council Preliminary Plat - Phase 1 approval by City of Milwaukie: Planning Commission and City Council Final Plat - Phase 1 approval by City of Milwaukie.

Public Outreach [24 CFR 58.43]:

* September 2018: Listening Sessions (2 meetings) * October 2018: Visioning Workshops (2 meetings) * November 2018: Sustainability Workshop (4 meetings) * February 2018: Community Design Workshop (4 meetings) * May 2019: Community Open House (2 meetings) * June/July 2019: Draft Master Plan Presentation (1 meeting)

Cumulative Impact Analysis [24 CFR 58.32]:

The proposed housing re-development project will have minimal impact on the environment since the project will be built in the middle of a 100-year old city in the middle of a residential neighborhood with access to all city services and amenities. The proposed project is for new construction of up to 500 units of affordable and market rate housing on a 16 acre parcel in the City of Milwaukie to replace an existing 100 units of public housing. When complete, Hillside Park Redevelopment will provide up to 500 households with safe and stable homes.

Alternatives [24 CFR 58.40(e); 40 CFR 1508.9]

Other sites of this size were not readily available for a reasonable purchase price. The current project site could if sold for private development of single family homes or condominiums for private sale would result in the loss of affordable housing units. This was not selected due to the great need for affordable housing units for low income families, homeless veterans, persons with disabilities and elderly persons.

No Action Alternative [24 CFR 58.40(e)]

If no action was taken the existing public housing units would deteriorate further and the 16 acre property would continue to be under utilized in the context of a housing crisis and a high demand private housing market.

Summary of Findings and Conclusions:

Clackamas County has reached a Finding of No Significant Impact for the proposed project. There is a potential beneficial impact on the affordable housing market in the Portland metro area. Proper construction design and techniques should be incorporated to reduce the impacts of exterior noise on the occupants of the project. All stormwater will be treated onsite with potential beneficial impact to the natural environment. No changes to the proposal are necessary.

Mitigation Measures and Conditions [CFR 1505.2(c)]:

Summarized below are all mitigation measures adopted by the Responsible Entity to reduce, avoid or eliminate adverse environmental impacts and to avoid non-compliance or non-conformance with the above-listed authorities and factors. These measures/conditions must be incorporated into project contracts, development agreements and other relevant documents. The staff responsible for implementing and monitoring mitigation measures should be clearly identified in the mitigation plan.

Law, Authority, or Factor	Mitigation Measure or Condition	Comments on Completed Measures	Complete
Contamination and Toxic Substances	If housing is built in the area where RECs were found all containents will be removed.	N/A	
Permits, reviews and approvals	Pre-Application Meeting: Development Permit with City of Milwaukie Land Use Narrative: City of Milwaukie: Planning Commission and City Council Land Use approval Traffic Impact Study with scope for the masterplan analysis approval by City of Milwaukie Preliminary Development Plan (Master Plan) approval by City of Milwaukie: Planning Commission Final Development Plan (Master Plan) approval by City of Milwaukie: Planning Commission and City Council CPA / ZC Application (Base Zone for Density) approval by City of Milwaukie: Planning Commission, City Council Preliminary Plat - Phase 1 approval by City of Milwaukie: Planning Commission and City Council Final Plat - Phase 1 approval by City of Milwaukie.	N/A	

Mitigation Plan

None other than proper building techniques and all required permits

Supporting documentation on completed measures

APPENDIX A: Related Federal Laws and Authorities

Airport Hazards

General policy	Legislation	Regulation
It is HUD's policy to apply standards to prevent incompatible development around civil airports and military airfields.		24 CFR Part 51 Subpart D

1. To ensure compatible land use development, you must determine your site's proximity to civil and military airports. Is your project within 15,000 feet of a military airport or 2,500 feet of a civilian airport?

✓ **No**

Based on the response, the review is in compliance with this section. Document and upload the map showing that the site is not within the applicable distances to a military or civilian airport below

Yes

Screen Summary

Compliance Determination

The project site is not within 15,000 feet of a military airport or 2,500 feet of a civilian airport. The project is in compliance with Airport Hazards requirements.

Supporting documentation

OregonAirports2015.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Coastal Barrier Resources

General requirements	Legislation	Regulation
HUD financial assistance may not be used for most activities in units of the Coastal Barrier Resources System (CBRS). See 16 USC 3504 for limitations on federal expenditures affecting the CBRS.	Coastal Barrier Resources Act (CBRA) of 1982, as amended by the Coastal Barrier Improvement Act of 1990 (16 USC 3501)	

This project is located in a state that does not contain CBRA units. Therefore, this project is in compliance with the Coastal Barrier Resources Act.

Compliance Determination

This project is located in a state that does not contain CBRS units. Therefore, this project is in compliance with the Coastal Barrier Resources Act.

Supporting documentation

CoastalZoneChecklist2015.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Flood Insurance

General requirements	Legislation	Regulation
Certain types of federal financial assistance may not be used in floodplains unless the community participates in National Flood Insurance Program and flood insurance is both obtained and maintained.	Flood Disaster Protection Act of 1973 as amended (42 USC 4001-4128)	24 CFR 50.4(b)(1) and 24 CFR 58.6(a) and (b); 24 CFR 55.1(b).

1. Does this project involve financial assistance for construction, rehabilitation, or acquisition of a mobile home, building, or insurable personal property?

No. This project does not require flood insurance or is excepted from flood insurance.

✓ Yes

2. Upload a FEMA/FIRM map showing the site here:

FloodMap2019.pdf

The Federal Emergency Management Agency (FEMA) designates floodplains. The FEMA Map Service Center provides this information in the form of FEMA Flood Insurance Rate Maps (FIRMs). For projects in areas not mapped by FEMA, use the best available information to determine floodplain information. Include documentation, including a discussion of why this is the best available information for the site. Provide FEMA/FIRM floodplain zone designation, panel number, and date within your documentation.

Is the structure, part of the structure, or insurable property located in a FEMA-designated Special Flood Hazard Area?

✓ No

Based on the response, the review is in compliance with this section.

Yes

Screen Summary
Compliance Determination

The structure or insurable property is not located in a FEMA-designated Special Flood Hazard Area. While flood insurance may not be mandatory in this instance, HUD recommends that all insurable structures maintain flood insurance under the National Flood Insurance Program (NFIP). The project is in compliance with flood insurance requirements.

Supporting documentation

Are formal compliance steps or mitigation required?

Yes

✓ No

Air Quality

General requirements	Legislation	Regulation
The Clean Air Act is administered by the U.S. Environmental Protection Agency (EPA), which sets national standards on ambient pollutants. In addition, the Clean Air Act is administered by States, which must develop State Implementation Plans (SIPs) to regulate their state air quality. Projects funded by HUD must demonstrate that they conform to the appropriate SIP.	Clean Air Act (42 USC 7401 et seq.) as amended particularly Section 176(c) and (d) (42 USC 7506(c) and (d))	40 CFR Parts 6, 51 and 93

1. Does your project include new construction or conversion of land use facilitating the development of public, commercial, or industrial facilities OR five or more dwelling units?

✓ Yes

No

Air Quality Attainment Status of Project's County or Air Quality Management District

2. Is your project's air quality management district or county in non-attainment or maintenance status for any criteria pollutants?

✓ No, project's county or air quality management district is in attainment status for all criteria pollutants.

Yes, project's management district or county is in non-attainment or maintenance status for the following criteria pollutants (check all that apply):

Screen Summary

Compliance Determination

The project's county or air quality management district is in attainment status for all criteria pollutants. The project is in compliance with the Clean Air Act. A review of the Environmental Protection Agency's site found

Supporting documentation

Nonattainment Areas Oregon 10.19.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Coastal Zone Management Act

General requirements	Legislation	Regulation
Federal assistance to applicant agencies for activities affecting any coastal use or resource is granted only when such activities are consistent with federally approved State Coastal Zone Management Act Plans.	Coastal Zone Management Act (16 USC 1451-1464), particularly section 307(c) and (d) (16 USC 1456(c) and (d))	15 CFR Part 930

1. Is the project located in, or does it affect, a Coastal Zone as defined in your state Coastal Management Plan?

Yes

✓ No

Based on the response, the review is in compliance with this section. Document and upload all documents used to make your determination below.

Screen Summary

Compliance Determination

This project is not located in or does not affect a Coastal Zone as defined in the state Coastal Management Plan. The project is in compliance with the Coastal Zone Management Act.

Supporting documentation

CoastalZoneChecklist2015(1).pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Contamination and Toxic Substances

General requirements	Legislation	Regulations
It is HUD policy that all properties that are being proposed for use in HUD programs be free of hazardous materials, contamination, toxic chemicals and gases, and radioactive substances, where a hazard could affect the health and safety of the occupants or conflict with the intended utilization of the property.		24 CFR 58.5(i)(2) 24 CFR 50.3(i)

1. How was site contamination evaluated? Select all that apply. Document and upload documentation and reports and evaluation explanation of site contamination below.

- ✓ American Society for Testing and Materials (ASTM) Phase I Environmental Site Assessment (ESA)
- ✓ ASTM Phase II ESA
- Remediation or clean-up plan
- ASTM Vapor Encroachment Screening
- None of the Above

2. Were any on-site or nearby toxic, hazardous, or radioactive substances found that could affect the health and safety of project occupants or conflict with the intended use of the property? (Were any recognized environmental conditions or RECs identified in a Phase I ESA and confirmed in a Phase II ESA?)

No

✓ Yes

3. Mitigation

Document and upload the mitigation needed according to the requirements of the appropriate federal, state, tribal, or local oversight agency. If the adverse environmental effects cannot be mitigated, then HUD assistance may not be used for the project at this site.

Can adverse environmental impacts be mitigated?

Adverse environmental impacts cannot feasibly be mitigated.

✓ Yes, adverse environmental impacts can be eliminated through mitigation. Document and upload all mitigation requirements below.

4. Describe how compliance was achieved in the text box below. Include any of the following that apply: State Voluntary Clean-up Program, a No Further Action letter, use of engineering controls, or use of institutional controls.

If housing is built in the area where RECs were found all containents will be removed.

If a remediation plan or clean-up program was necessary, which standard does it follow?

✓ Complete removal

Risk-based corrective action (RBCA)

Screen Summary

Compliance Determination

Site contamination was evaluated as follows: ASTM Phase I ESA, ASTM Phase II ESA. On-site or nearby toxic, hazardous, or radioactive substances were found that could affect the health and safety of project occupants or conflict with the intended use of the property. The adverse environmental impacts can be mitigated. With mitigation, identified in the mitigation section of this review, the project will be in compliance with contamination and toxic substances requirements.

Supporting documentation

Phase2 Hillside_PhIIESA.PDF
Phase 1 Summary8.20.19.pdf

Are formal compliance steps or mitigation required?

✓ Yes

No

Endangered Species

General requirements	ESA Legislation	Regulations
Section 7 of the Endangered Species Act (ESA) mandates that federal agencies ensure that actions that they authorize, fund, or carry out shall not jeopardize the continued existence of federally listed plants and animals or result in the adverse modification or destruction of designated critical habitat. Where their actions may affect resources protected by the ESA, agencies must consult with the Fish and Wildlife Service and/or the National Marine Fisheries Service ("FWS" and "NMFS" or "the Services").	The Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq*.); particularly section 7 (16 USC 1536).	50 CFR Part 402

1. Does the project involve any activities that have the potential to affect specifies or habitats?

No, the project will have No Effect due to the nature of the activities involved in the project.

✓ No, the project will have No Effect based on a letter of understanding, memorandum of agreement, programmatic agreement, or checklist provided by local HUD office

Explain your determination:

We determined that there would be no impact based on a checklist provided by HUD and a review of the critical habitats in the area. All local storm water permitting will ensure compliance.

Based on the response, the review is in compliance with this section. Document and upload all documents used to make your determination below.

Yes, the activities involved in the project have the potential to affect species and/or habitats.

Screen Summary

Compliance Determination

This project will have No Effect on listed species based on a letter of understanding, memorandum of agreement, programmatic agreement, or checklist provided by local HUD office. This project is in compliance with the Endangered Species Act.

Supporting documentation

ESA Determination10.23.19.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Explosive and Flammable Hazards

General requirements	Legislation	Regulation
HUD-assisted projects must meet Acceptable Separation Distance (ASD) requirements to protect them from explosive and flammable hazards.	N/A	24 CFR Part 51 Subpart C

1. Is the proposed HUD-assisted project itself the development of a hazardous facility (a facility that mainly stores, handles or processes flammable or combustible chemicals such as bulk fuel storage facilities and refineries)?

✓ No

Yes

2. Does this project include any of the following activities: development, construction, rehabilitation that will increase residential densities, or conversion?

No

✓ Yes

3. Within 1 mile of the project site, are there any current or planned stationary aboveground storage containers that are covered by 24 CFR 51C? Containers that are NOT covered under the regulation include:

- **Containers 100 gallons or less in capacity, containing common liquid industrial fuels OR**
- **Containers of liquified petroleum gas (LPG) or propane with a water volume capacity of 1,000 gallons or less that meet the requirements of the 2017 or later version of National Fire Protection Association (NFPA) Code 58.**

If all containers within the search area fit the above criteria, answer "No." For any other type of aboveground storage container within the search area that holds one of the flammable or explosive materials listed in Appendix I of 24 CFR part 51 subpart C, answer "Yes."

✓ No

Based on the response, the review is in compliance with this section. Document and upload all documents used to make your determination below.

Yes

Screen Summary

Compliance Determination

There are no current or planned stationary aboveground storage containers of concern within 1 mile of the project site. The project is in compliance with explosive and flammable hazard requirements.

Supporting documentation

Are formal compliance steps or mitigation required?

Yes

✓ No

Farmlands Protection

General requirements	Legislation	Regulation
The Farmland Protection Policy Act (FPPA) discourages federal activities that would convert farmland to nonagricultural purposes.	Farmland Protection Policy Act of 1981 (7 U.S.C. 4201 et seq.)	7 CFR Part 658

1. Does your project include any activities, including new construction, acquisition of undeveloped land or conversion, that could convert agricultural land to a non-agricultural use?

Yes

✓ No

If your project includes new construction, acquisition of undeveloped land or conversion, explain how you determined that agricultural land would not be converted:

Based on the response, the review is in compliance with this section. Document and upload all documents used to make your determination below.

Screen Summary

Compliance Determination

This project does not include any activities that could potentially convert agricultural land to a non-agricultural use. The project is in compliance with the Farmland Protection Policy Act. The City of Milwaukie is in an urban area within an Urban Growth Boundary (UGB).

Supporting documentation

Urbanized2010DC10UA71317.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Floodplain Management

General Requirements	Legislation	Regulation
Executive Order 11988, Floodplain Management, requires federal activities to avoid impacts to floodplains and to avoid direct and indirect support of floodplain development to the extent practicable.	Executive Order 11988	24 CFR 55

1. Do any of the following exemptions apply? Select the applicable citation? [only one selection possible]

55.12(c)(3)
55.12(c)(4)
55.12(c)(5)
55.12(c)(6)
55.12(c)(7)
55.12(c)(8)
55.12(c)(9)
55.12(c)(10)
55.12(c)(11)
✓ None of the above

2. Upload a FEMA/FIRM map showing the site here:

FloodMap2019.pdf

The Federal Emergency Management Agency (FEMA) designates floodplains. The FEMA Map Service Center provides this information in the form of FEMA Flood Insurance Rate Maps (FIRMs). For projects in areas not mapped by FEMA, use **the best available information** to determine floodplain information. Include documentation, including a discussion of why this is the best available information for the site.

Does your project occur in a floodplain?

✓ No

Based on the response, the review is in compliance with this section.

Yes

Screen Summary

Compliance Determination

This project does not occur in a floodplain. The project is in compliance with Executive Order 11988.

Supporting documentation

Are formal compliance steps or mitigation required?

Yes

✓ No

Historic Preservation

General requirements	Legislation	Regulation
Regulations under Section 106 of the National Historic Preservation Act (NHPA) require a consultative process to identify historic properties, assess project impacts on them, and avoid, minimize, or mitigate adverse effects	Section 106 of the National Historic Preservation Act (16 U.S.C. 470f)	36 CFR 800 "Protection of Historic Properties" http://www.access.gpo.gov/nara/cfr/waisidx_10/36cfr800_10.html

Threshold

Is Section 106 review required for your project?

No, because the project consists solely of activities listed as exempt in a Programmatic Agreement (PA). (See the PA Database to find applicable PAs.)

No, because the project consists solely of activities included in a No Potential to Cause Effects memo or other determination [36 CFR 800.3(a)(1)].

✓ Yes, because the project includes activities with potential to cause effects (direct or indirect).

Step 1 – Initiate Consultation

Select all consulting parties below (check all that apply):

✓ State Historic Preservation Offer (SHPO) Completed

✓ Indian Tribes, including Tribal Historic Preservation Officers (THPOs) or Native Hawaiian Organizations (NHOs)

✓ Confederated Tribes of Grand Ronde	Completed
✓ Confederated Tribes of Siletz Indians	Completed

Other Consulting Parties

Describe the process of selecting consulting parties and initiating consultation here:

State Historic Preservation Office Local Tribes

Document and upload all correspondence, notices and notes (including comments and objections received below).

Step 2 – Identify and Evaluate Historic Properties

1. **Define the Area of Potential Effect (APE), either by entering the address(es) or uploading a map depicting the APE below:**
   The project involves the redevelopment of the Hillside Park public housing complex located on a 16-acre parcel of land located at 2887 SE Hillside Court, Milwaukie, OR 97222 (Tax Parcel # 11E25CD00100).

   In the chart below, list historic properties identified and evaluated in the APE. Every historic property that may be affected by the project should be included in the chart.

   Upload the documentation (survey forms, Register nominations, concurrence(s) and/or objection(s), notes, and photos) that justify your National Register Status determination below.

Address / Location / District	National Register Status	SHPO Concurrence	Sensitive Information
2887 SE Hillside Court, Milwaukie, OR 97222	Not Eligible	Yes	✓ Not Sensitive

   Additional Notes:

2. **Was a survey of historic buildings and/or archeological sites done as part of the**

project?

✓ Yes

Document and upload surveys and report(s) below.
For Archeological surveys, refer to HP Fact Sheet #6, Guidance on Archeological Investigations in HUD Projects.

Additional Notes:

No

Step 3 –Assess Effects of the Project on Historic Properties

Only properties that are listed on or eligible for the National Register of Historic Places receive further consideration under Section 106. Assess the effect(s) of the project by applying the Criteria of Adverse Effect. (36 CFR 800.5)] Consider direct and indirect effects as applicable as per guidance on direct and indirect effects.

Choose one of the findings below - No Historic Properties Affected, No Adverse Effect, or Adverse Effect; and seek concurrence from consulting parties.

✓ No Historic Properties Affected

Based on the response, the review is in compliance with this section. Document and upload concurrence(s) or objection(s) below.

Document reason for finding:

✓ No historic properties present.

Historic properties present, but project will have no effect upon them.

No Adverse Effect

Adverse Effect

Screen Summary

Compliance Determination

Based on Section 106 consultation there are No Historic Properties Affected because there are no historic properties present. The project is in compliance with Section 106.

Supporting documentation

SHPO Response Archeology Response Case No19-1657.pdf
106 Form_HillsidePark101719.docx
SHPO Response Letter Concurrance Final Case Nbr SHPO Case 191657.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Noise Abatement and Control

General requirements	Legislation	Regulation
HUD's noise regulations protect residential properties from excessive noise exposure. HUD encourages mitigation as appropriate.	Noise Control Act of 1972 General Services Administration Federal Management Circular 75-2: "Compatible Land Uses at Federal Airfields"	Title 24 CFR 51 Subpart B

1. What activities does your project involve? Check all that apply:

✓ New construction for residential use

NOTE: HUD assistance to new construction projects is generally prohibited if they are located in an Unacceptable zone, and HUD discourages assistance for new construction projects in Normally Unacceptable zones. See 24 CFR 51.101(a)(3) for further details.

Rehabilitation of an existing residential property

A research demonstration project which does not result in new construction or reconstruction

An interstate land sales registration

Any timely emergency assistance under disaster assistance provision or appropriations which are provided to save lives, protect property, protect public health and safety, remove debris and wreckage, or assistance that has the effect of restoring facilities substantially as they existed prior to the disaster
None of the above

4**. Complete the Preliminary Screening to identify potential noise generators in the vicinity (1000' from a major road, 3000' from a railroad, or 15 miles from an airport).**

Indicate the findings of the Preliminary Screening below:

There are no noise generators found within the threshold distances above.

✓ Noise generators were found within the threshold distances.

5. **Complete the Preliminary Screening to identify potential noise generators in the**

✓ Acceptable: (65 decibels or less; the ceiling may be shifted to 70 decibels in circumstances described in §24 CFR 51.105(a))

Indicate noise level here: 59

Based on the response, the review is in compliance with this section. Document and upload noise analysis, including noise level and data used to complete the analysis below.

Normally Unacceptable: (Above 65 decibels but not exceeding 75 decibels; the floor may be shifted to 70 decibels in circumstances described in §24 CFR 51.105(a))

Unacceptable: (Above 75 decibels)

HUD strongly encourages conversion of noise-exposed sites to land uses compatible with high noise levels.

Check here to affirm that you have considered converting this property to a non-residential use compatible with high noise levels.

Indicate noise level here: 59

Document and upload noise analysis, including noise level and data used to complete the analysis below.

Screen Summary

Compliance Determination

A Noise Assessment was conducted. The noise level was acceptable: Weighted 24hr average of 59.0 db. See Site Noise Study Report noise analysis completed by Listen Acoustics. The project is in compliance with HUD's Noise regulation.The primary sources of noise are traffic noise from Highway 224, McLoughlin industrial facilities to the West, and the adjacent rail line, with heavy commercial and Amtrak train traffic.

The sound levels on the loudest (West) side of the site vary within a 52 to 74 dBA range, with an overall hourly average of 54 dBA and a weighted 24-hour average Ldn of 59 dBA. The maximum levels in each hour range from 55 dBA to 87 dBA. The minimum levels are between 50 dBA and 55 dBA.

Supporting documentation

Noise 010719_Hillside Site Noise Study Report.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Sole Source Aquifers

General requirements	Legislation	Regulation
The Safe Drinking Water Act of 1974 protects drinking water systems which are the sole or principal drinking water source for an area and which, if contaminated, would create a significant hazard to public health.	Safe Drinking Water Act of 1974 (42 U.S.C. 201, 300f et seq., and 21 U.S.C. 349)	40 CFR Part 149

1. Does the project consist solely of acquisition, leasing, or rehabilitation of an existing building(s)?

Yes

✓ No

2. Is the project located on a sole source aquifer (SSA)?

A sole source aquifer is defined as an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. This includes streamflow source areas, which are upstream areas of losing streams that flow into the recharge area.

✓ No

Based on the response, the review is in compliance with this section. Document and upload documentation used to make your determination, such as a map of your project (or jurisdiction, if appropriate) in relation to the nearest SSA and its source area, below.

Yes

Screen Summary

Compliance Determination

The project is not located on a sole source aquifer area. The project is in compliance with Sole Source Aquifer requirements. Clackamas County has no sole source acquifers.

Supporting documentation

Sole Source Aquifer Map 2015.docx

Are formal compliance steps or mitigation required?

Yes

✓ No

Wetlands Protection

General requirements	Legislation	Regulation
Executive Order 11990 discourages direct or indirect support of new construction impacting wetlands wherever there is a practicable alternative. The Fish and Wildlife Service's National Wetlands Inventory can be used as a primary screening tool, but observed or known wetlands not indicated on NWI maps must also be processed Off-site impacts that result in draining, impounding, or destroying wetlands must also be processed.	Executive Order 11990	24 CFR 55.20 can be used for general guidance regarding the 8 Step Process.

1. Does this project involve new construction as defined in Executive Order 11990, expansion of a building's footprint, or ground disturbance? The term "new construction" shall include draining, dredging, channelizing, filling, diking, impounding, and related activities and any structures or facilities begun or authorized after the effective date of the Order

No

✓ Yes

2. Will the new construction or other ground disturbance impact an on- or off-site wetland? The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

"Wetlands under E.O. 11990 include isolated and non-jurisdictional wetlands."

✓ No, a wetland will not be impacted in terms of E.O. 11990's definition of new construction.

Based on the response, the review is in compliance with this section. Document and upload a map or any other relevant documentation below which explains your determination

Yes, there is a wetland that be impacted in terms of E.O. 11990's definition of new construction.

Screen Summary

Compliance Determination

The project will not impact on- or off-site wetlands. The project is in compliance with Executive Order 11990.

Supporting documentation

wetlands inventory map - N. Clackamas Cnty.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Wild and Scenic Rivers Act

General requirements	Legislation	Regulation
The Wild and Scenic Rivers Act provides federal protection for certain free-flowing, wild, scenic and recreational rivers designated as components or potential components of the National Wild and Scenic Rivers System (NWSRS) from the effects of construction or development.	The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287), particularly section 7(b) and (c) (16 U.S.C. 1278(b) and (c))	36 CFR Part 297

1. Is your project within proximity of a NWSRS river?

✓ No

Yes, the project is in proximity of a Designated Wild and Scenic River or Study Wild and Scenic River.
Yes, the project is in proximity of a Nationwide Rivers Inventory (NRI) River.

Screen Summary

Compliance Determination

This project within the City of Milwaukie, is not within proximity of a NWSRS river. The project is in compliance with the Wild and Scenic Rivers Act.

Supporting documentation

WildandScenicRivers2015.pdf

Are formal compliance steps or mitigation required?

Yes

✓ No

Environmental Justice

General requirements	Legislation	Regulation
Determine if the project creates adverse environmental impacts upon a low-income or minority community. If it does, engage the community in meaningful participation about mitigating the impacts or move the project.	Executive Order 12898	

HUD strongly encourages starting the Environmental Justice analysis only after all other laws and authorities, including Environmental Assessment factors if necessary, have been completed.

1. Were any adverse environmental impacts identified in any other compliance review portion of this project's total environmental review?

Yes

✓ No

Based on the response, the review is in compliance with this section.

Screen Summary

Compliance Determination

No adverse environmental impacts were identified in the project's total environmental review. The project is in compliance with Executive Order 12898.

Supporting documentation

Are formal compliance steps or mitigation required?

Yes

✓ No

COMBINED PUBLIC NOTICE

NOTICE OF FINDING OF NO SIGNIFICANT IMPACT
AND
INTENT TO REQUEST FOR RELEASE OF FUNDS

August 19, 2020
Clackamas County
Community Development Division
2051 Kaen Road, Suite 245
Oregon City, Oregon 97045
(503) 655-8591

These notices shall satisfy two separate but related procedural requirements for activities to be undertaken by the Clackamas Development Division.

REQUEST FOR RELEASE OF FUNDS

On or about September 21, 2020 the above-named Clackamas County will submit a request to the U.S. Department of Housing and Urban Development (HUD) for the release of Section 18 Disposition/Demolition funds under Section 18 of the United States Housing Act of 1937 (42 U.S.C. 1437p) (1937 Act) for the Hillside Park Redevelopment Project.

The Hillside Park land and housing units are owned by the Housing Authority (HACC) of Clackamas County. The project site is on a 16 acre property at 2887 SE Hillside Court in Milwaukie, Oregon 97222. The project site is located in an existing residential area that is within the Metro Urban Growth Boundary.

The project includes demolition of one hundred (100) housing units in seventy-five (75) one-story houses built in 1941. The project would build as many as five hundred (500) new units of affordable and market rate housing. Current Hillside Park residents will be assisted with permanent relocation, including the option to return to a redeveloped unit upon completion. In addition to the residential development, HACC plans to build a community center, new open space, a playground, a sports court, and potentially commercial or office space.

Redevelopment will include the razing and removal of all structures, demolition of existing roads and infrastructure to build a new street grid and new infrastructure as mandated by the City of Milwaukie and incorporated into the Hillside Park Master Plan. Construction of this project will meet all of the following: All post-construction runoff will be completely infiltrated or used onsite; and the project will not impact an area of natural habitat, a wetland, or a riparian area and the project will comply with all state and local building codes and storm water regulations.

FINDING OF NO SIGNIFICANT IMPACT

A Phase I Environmental Site Assessment of the proposed project site was completed on August 20, 2019 by EvrenNorthwest. The Phase I Environmental Assessment found no significant environmental hazards. The County of Clackamas has conducted an Environmental Assessment and determined that the project will have no significant impact on the human environment. Therefore, an Environmental Impact Statement under the National Environmental Policy Act of 1969 (NEPA) is not required. Additional project information is contained in the Environmental Review Record (ERR) on file at the Community Development offices, 2051 Kaen Road, Suite 245, Oregon City, Oregon and may be examined or copied Monday through Thursday 8:30 A.M. to 5:00 P.M.

PUBLIC COMMENTS

Any individual, group, or agency disagreeing with this determination or wishing to comment on the ERR may submit written comments to Clackamas County Community Development Division at the above address All comments received by September 21, 2020 will be considered by Clackamas County prior to authorizing submission of a request for release of funds. Commentors should specify which Notice they are addressing.

ENVIRONMENTAL CERTIFICATION

Clackamas County certifies to HUD that Clackamas County and Mark Sirois, in his capacity as Community Development Manager and Certifying Officer, consent to accept the jurisdiction of the Federal Courts if an action is brought to enforce responsibilities in relation to the environmental review process and that these responsibilities have been satisfied. HUD's approval of the certification satisfies its responsibilities under NEPA and related laws and authorities, and allows Clackamas County to use Program funds.

OBJECTIONS TO RELEASE OF FUNDS

HUD will accept objections to its release of funds and Clackamas County certification received by October 6, 2020 or a period of fifteen days from its receipt of the request (whichever is later) only if they are on one of the following bases: (a) the certification was not executed by the Certifying Officer of Clackamas County; (b) Clackamas County has omitted a step or failed to make a decision or finding required by HUD regulations at 24 CFR Part 58; (c) the grant recipient or other participants in the development process have committed funds, incurred cost or undertaken activities not authorized by 24 CFR Part 58 before approval of a release of funds by HUD; or (d) another Federal agency acting pursuant to 40 CFR Part 1504 has submitted a written finding that the project is unsatisfactory from the standpoint of environmental quality. Objections must be prepared and submitted in accordance with the required procedures (24 CFR Part 58, Sec. 58.76) and shall be addressed to HUD Portland Office of Public Housing at: Portland_RROF@hud.gov Potential objectors should contact HUD to verify the actual last day of the objection period.

Mark Sirois
Certifying Officer

Oregon
Kate Brown, Governor

Department of Transportation
Region 1 Headquarters
123 NW Flanders Street
Portland, Oregon 97209
(503) 731.8200
FAX (503) 731.8259

January 27, 2021 ODOT #10427

ODOT Response

Project Name: Hillside Park Master Plan	**Applicant:** Hill Smith, HACC
Jurisdiction: City of Milwaukie	**Jurisdiction Case #:** PD-2020-002
Site Address: 2889 Southeast Hillside Court, Milwaukie, OR	**Legal Description:** 01S 01E 25CD **Tax Lot(s):** 00100
State Highway: OR 224	**Mileposts:** 0.67

The site of this proposed land use action is in the vicinity of OR 224. ODOT has permitting authority for this facility and an interest in ensuring that this proposed land use is compatible with its safe and efficient operation.

COMMENTS/FINDINGS

ODOT has reviewed the submitted application materials for the proposed redevelopment of Hillside Park to allow higher density and mixed-use buildings. The Hillside Master Plan proposes a zone change for the property from medium-density residential zoning (R-3) to a split of high-density residential (R1) and general mixed-use zoning (GMU). To determine the potential impact of the plan amendment on the surrounding transportation system, a trip generation comparison of the site under a reasonable worst-case scenario for the existing and the proposed zoning is required. Table 19.302.2 of City of Milwaukie's municipal code lists the permitted land uses in the proposed zoning. The GMU zoning includes multiple commercial uses that are not included in the reasonable trip generation comparison, underestimating the trip generation from the proposed GMU zoning. The Transportation Impact Study (TIS) completed by Lancaster Mobley argues that the evaluated land uses in the report are expected to have the highest trip generation potential. Eliminating any commercial uses in the evaluation most likely reduces the trip generation estimate.

The Transportation Planning Rule (TPR) and the City of Milwaukie require a 20-year planning horizon analysis study to determine the potential impacts the proposed zone change could have on the transportation system. An annual growth rate of 0.725 % was used to generate 2040 traffic volumes. In addition, the "Planned Transportation Improvements" (TIS, pg 43) drawn from the City's Transportation System Plan were assumed to be completed by the horizon year (2040). ODOT recommends that the applicant obtain confirmation from City staff regarding the assumed growth rate and whether the "Planned Transportation Improvements" will require funding to be in place by the horizon year.

Please contact the ODOT Traffic representative identified below for further discussion of the Traffic Impact Study.

Please send a copy of the Staff Report and/or Notice of Decision including conditions of approval to:

ODOT Region 1 Planning
Development Review
123 NW Flanders St
Portland, OR 97209

ODOT_R1_DevRev@odot.state.or.us

Development Review Planner: Kate Hawkins	503.731.3049 kate.w.hawkins@odot.state.or.us
Traffic Contact: Avi Tayar, P.E.	503.731.8221 abraham.tayar@odot.state.or.us
District Contact:	d2bup@odot.state.or.us

lancaster mobley

321 SW 4th Ave., Suite 400
Portland, OR 97204
503.248.0313
lancastermobley.com

Memorandum

To: **Vera Kolias & Steve Adams, City of Milwaukie**

Copy: **Devin Ellin & Stephen McMurtrey, HACC**

From: **Jennifer Danziger, PE**

Date: **February 12, 2021**

Subject: **Hillside Master Plan – Response to Zone Change Comments**

Introduction

This memorandum addresses comments related to the Hillside Master Plan Transportation Impact Study (TIS) dated January 4, 2021. The Oregon Department of Transportation (ODOT) commented in a letter dated January 27, 2021 and DKS Associates, Inc. (DKS) provided an email response on February 2, 2021. All comments pertain to the zone change and Transportation Planning Rule (TPR) analysis.

Trip Generation Assumptions for TPR

The Hillside Master Plan proposes a zone change for the property from medium-density residential zoning (R-3) to a split of high-density residential and general mixed-use zoning (R-1 and GMU). The TIS presented a reasonable worst-case development scenario under existing and proposed zoning.

In their comments, ODOT raised concerns over the limited consideration of the size and variety of commercial uses allowed in the GMU zoning. For the GMU zone, the Hillside Master Plan proposes a restrictive list of permitted land uses and a cap on the amount of potential commercial development of 20,000 square feet. The proposal includes 20,000 square feet of ground floor commercial in two of the buildings adjacent to SE 32nd Avenue. Potential uses include a mix of small offices, retail, and restaurants that enhance the Hillside community but may also attract external patronage. The uses will not include drive-through facilities or fueling stations.

The TIS used a land use category that was added to the *Trip Generation Manual*[1] for the 10th Edition: land use code 231 - Mid-Rise Residential with 1st-Floor Commercial to analyze the mixed-use buildings. As noted by DKS, the data for this land use is still quite limited and they requested that trip generation be calculated using separate residential and commercial trip rates for these buildings.

For easy reference, Table 1 presents the trip generation from the TIS while Table 2 presents the trip generation using Land Use 820: Shopping Center for the ground floor retail estimates. Internal trip capture rates between the residential and commercial uses were estimated based on research presented in NCHRP Report 684.[2]

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition, 2017.
[2] National Cooperative Highway Research Program (NCHRP), *Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, 2011

Table 1: Trip Generation Summary - Zone Change Analysis in TIS

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing Zoning (R-3)									
Single Family Housing	210	232 DU	43	129	172	145	85	230	2,190
Modal Split Reduction (10%)			*4*	*13*	*17*	*15*	*9*	*24*	*220*
Net External Trips			39	116	155	130	76	206	1,970
Proposed Zoning (R-1, GMU)									
Multi-Family Housing (Low-Rise)	220	39 DU	4	14	18	14	8	22	286
Multi-Family Housing (Mid-Rise)	221	415 DU	38	111	149	112	72	184	2,258
Multi-Family Housing w/ First Floor Commercial	231	146 DU	15	51	66	34	20	54	530
Total Site Generated Trips			57	176	233	160	100	260	3,074
Modal Split (10%)			*6*	*18*	*24*	*16*	*10*	*26*	*308*
Net External Trips			51	158	209	144	90	234	2,766
Net Difference			**12**	**42**	**54**	**14**	**14**	**28**	**796**

Table 2: Trip Generation Summary - Zone Change Analysis with Shopping Center

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing Zoning (R-3)									
Single Family Housing	210	232 DU	43	129	172	145	85	230	2,190
Modal Split Reduction (10%)			*4*	*13*	*17*	*15*	*9*	*24*	*220*
Net External Trips			39	116	155	130	76	206	1,970
Proposed Zoning (R-1, GMU)									
Multi-Family Housing (Low-Rise)	220	39 DU	4	14	18	14	8	22	286
Multi-Family Housing (Mid-Rise)	221	561 DU	52	150	202	151	97	248	3,052
First Floor Commercial	820	20 KSF	12	7	19	36	40	76	756
Internal Trips			*3*	*3*	*6*	*14*	*14*	*28*	218
Total Site Generated Trips			65	168	233	187	131	318	3,876
Modal Split (10%)			*7*	*17*	*24*	*19*	*13*	*32*	388
Net External Trips			*58*	*151*	*209*	*168*	*118*	*286*	3,488
Net Difference			19	35	54	38	42	80	1,518
TPR Alternative - TIS Estimates			**7**	**-7**	**0**	**24**	**28**	**52**	**722**

Calculating the trip generation using separate land use categories for the mixed-use building (Table 2) results in a net increase of 54 morning peak hour, 80 evening peak hour, and 1,518 weekday trips with the proposed zone change. Comparing these estimates with the estimates from the TIS (Table 1) result in no change in morning peak hour trips but an increase of 52 evening peak hour and 722 weekday trips.

Table 3 compares the net increase in trip generation for the zone change with the year 2040 traffic forecasts for the TIS calculations and the alternative methodology using Land Use 820 for each intersection in the TIS study area.

Table 3. 2040 Volume Comparison

	Intersection	2040 Background Entering Volumes		Net Increase in Trips				Percent of Forecast Traffic			
				TIS		With LU 820		TIS		With LU 820	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	SE Tacoma St/ SE Johnson Creek Blvd at SE 32nd Ave	1,760	1,910	19	10	19	28	1.1%	0.5%	1.1%	1.4%
2	SE Balfour St at SE 29th Avenue	20	20	0	0	0	0	0.0%	0.0%	0.0%	0.0%
3	SE Balfour St at SE 32nd Avenue	510	640	19	10	19	28	3.6%	1.5%	3.6%	4.2%
4	SE Dwyer Dr at SE 32nd Ave	560	690	27	14	27	40	4.6%	2.0%	4.6%	5.5%
5	SE Meek St at SE 32nd Ave	1,160	1,020	27	14	27	40	2.3%	1.4%	2.3%	3.8%
6	SE Harrison St at Highway 224	3,930	4,800	32	17	32	48	0.8%	0.4%	0.8%	1.0%
7	SE Harrison St at SE 32nd Ave	1,330	1,570	35	18	35	52	2.6%	1.1%	2.6%	3.2%
8	SE Harrison St at SE 42nd Ave	880	1,320	3	1	3	4	0.3%	0.1%	0.3%	0.3%
9	SE Monroe St at Highway 224	3,240	3,940	16	8	16	24	0.5%	0.2%	0.5%	0.6%
10	Highway 224 at SE Oak St	4,130	4,880	16	8	16	24	0.4%	0.2%	0.4%	0.5%

In general, the volume changes using the alternative methodology (land use 820 for retail) are small compared with the overall traffic demand at the study area intersections. The greatest change in volumes occurs along SE 32nd Avenue where the project volumes are greatest.

Table 4 compares the operations for the 2040 evening peak hour for the TIS calculations and the alternative methodology (land use 820 for retail) for each intersection in the TIS study area. Morning peak hour conditions were not evaluated since the trip generation forecasts were unchanged by the alternate methodology.

Table 4. 2040 Operations Comparison for the Evening Peak Hour

	Intersection	Evening Peak Hour - TIS			Evening Peak Hour - LU 820		
		LOS	Delay (s)	v/c	LOS	Delay (s)	v/c
1	SE Tacoma Street/SE Johnson Creek Boulevard at SE 32nd Avenue	D	38	0.94	D	41	0.95
2	SE Balfour Street at SE 29th Avenue	A	7	0.02	A	7	0.02
3	SE Balfour Street at SE 32nd Avenue	B	13	0.03	B	13	0.03
4	SE Dwyer Drive at SE 32nd Avenue	C	17	0.25	C	17	0.26
5	SE Meek Street at SE 32nd Avenue	C	17	0.10	C	18	0.16
6	SE Harrison Street at Highway 224	D	48	0.93	D	49	0.94
7	SE Harrison Street at SE 32nd Avenue	C	35	0.67	D	36	0.67
8	SE Harrison Street at SE 42nd Avenue	B	15	0.67	B	15	0.67
9	SE Monroe Street at Highway 224	A	10	0.74	A	10	0.75
10	Highway 224 at SE Oak Street	D	35	0.93	D	35	0.93

The difference between the two forecasting methodologies is negligible and the study intersections are projected to operate acceptably per the performance standards identified in the city of Milwaukie's Transportation System Plan (TSP) and the Oregon Highway Plan (OHP). Accordingly, the Transportation Planning Rule is satisfied with either forecast of zone change trip generation.

Growth Rate

An average annual growth rate of 0.725 percent per year was applied to the study area traffic volumes to estimate the background volumes for the TPR analysis. This rate was based on an average of the growth rates shown in Figure 8-2a of the Milwaukie Transportation System Plan (TSP). The TSP figure shows 16 percent growth projected for Highway 224, 21 percent growth on SE 32nd Avenue, and 17 percent growth on SE Johnson Creek Boulevard. The TSP growth period was 23 years (2012 to 2035). DKS has confirmed the assumption is consistent with the TSP.

Planned Improvements

The purpose of Section 660-12-0060 of the TPR is to ensure consistency between a jurisdiction's Comprehensive Plan and TSP. Thus, a TPR analysis determines if a change in the Comprehensive Plan (i.e., a zone change) will require a change in the TSP to address significant effects.

The planned improvements in the Milwaukie TSP were identified as necessary to address projected deficiencies in the transportation system under the current zoning. They are needed regardless of whether sufficient funding is available to construct the improvements.

The TPR analysis presented in the TIS and updated in this memorandum demonstrates that no mitigation in the form of additional projects or changes in policy are necessary to accommodate the proposed zone change.

Conclusion

Three issues were raised in the ODOT letter which have been addressed in this memorandum as follows:

1. The zone change analysis was updated to specifically analyze the allowable commercial development (maximum 20,000 square feet) in the GMU zone separately from the multifamily housing. The analysis results show the net increase in traffic associated with the zone change would be greater than what was presented in the TIS. However, the transportation system can accommodate the higher volumes without modification to the TSP.
2. The background growth rates used to forecast the 2040 traffic demand in the TIS are consistent with those used in the TSP as confirmed by DKS.
3. Both funded and unfunded TSP projects were used in the operational analysis presented in the TIS. These projects are necessary to meet the forecast growth in the city regardless of the zone change. The TPR analysis demonstrates that no mitigation in the form of additional projects or changes in policy are necessary to accommodate the proposed zone change.

Attachments

Hillside Master Plan TIS
Existing & Proposed Zoning - TIS

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing Zoning (R-3)									
Single Family Housing	210	232	43	129	172	145	85	230	2,190
Modal Split Reduction (10%)			*4*	*13*	*17*	*15*	*9*	*24*	*220*
Net External Trips			39	116	155	130	76	206	1,970
Proposed Zoning (R-1, GMU)									
Multi-Family Housing (Low-Rise)	220	39 Units	4	14	18	14	8	22	286
Multi-Family Housing (Mid-Rise)	221	415 Units	38	111	149	112	72	184	2,258
Multi-Family Housing w/ First Floor Commercial	231	146 Units	15	51	66	34	20	54	530
Total Site Generated Trips			57	176	233	160	100	260	3,074
Modal Split (10%)			*6*	*18*	*24*	*16*	*10*	*26*	*308*
Net External Trips			51	158	209	144	90	234	2,766
Net Difference			**12**	**42**	**54**	**14**	**14**	**28**	**796**

Hillside Master Plan TIS

Existing & Proposed Zoning - Alternative Methodology

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Existing Zoning (R-3)									
Single Family Housing	210	232	43	129	172	145	85	230	2,190
Modal Split Reduction (10%)			*4*	*13*	*17*	*15*	*9*	*24*	*220*
Net External Trips			39	116	155	130	76	206	1,970
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First Floor Commercial	820	20 KSF	12	7	19	36	40	76	756
Internal Trips			*3*	*3*	*6*	*14*	*14*	*28*	218
Total Site Generated Trips			65	168	233	187	131	318	3,876
Modal Split (10%)			*7*	*17*	*24*	*19*	*13*	*32*	388
Net External Trips			*58*	*151*	*209*	*168*	*118*	*286*	3,488
Net Difference			19	35	54	38	42	80	1,518
TPR Alternative 2 - TIS Estimates			7	-7	0	24	28	52	722

Internal Calculations

Residential	%	2%	1%		46%	42%		
Retail		17%	14%		10%	26%		
Residential	Unconstrained	1	2		76	44		
Retail		2	1		4	10		
Residential	Constrained	1	2	3	10	4	14	109
Retail		2	1	3	4	10	14	109

TRIP GENERATION CALCULATIONS

Land Use: Multifamily Housing (Low-Rise)
Land Use Code: 220
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 39

AM PEAK HOUR

Trip Rate: 0.46

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	4	14	18

PM PEAK HOUR

Trip Rate: 0.56

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	14	8	22

WEEKDAY

Trip Rate: 7.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	143	143	286

SATURDAY

Trip Rate: 8.14

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	159	159	318

Source: TRIP GENERATION, Tenth Edition

Hillside Master Plan TIS
Proposed Development

TRIP GENERATION CALCULATIONS

Land Use: Multifamily Housing (Mid-Rise)
Land Use Code: 221
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 415

AM PEAK HOUR

Trip Rate: 0.36

	Enter	Exit	Total
Directional Distribution	26%	74%	
Trip Ends	38	111	149

PM PEAK HOUR

Trip Rate: 0.44

	Enter	Exit	Total
Directional Distribution	61%	39%	
Trip Ends	112	72	184

WEEKDAY

Trip Rate: 5.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,129	1,129	2,258

SATURDAY

Trip Rate: 4.91

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,019	1,019	2,038

Source: TRIP GENERATION, Tenth Edition

Hillside Master Plan TIS
Proposed Development

TRIP GENERATION CALCULATIONS

Land Use: Mid-Ride Residential with 1st Floor Commercial
Land Use Code: 231
Setting/Location General Urban/Suburban
Variable: Occupied Dwelling Units
Variable Value: 146

AM PEAK HOUR

Trip Rate: 0.45

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	15	51	66

PM PEAK HOUR

Trip Rate: 0.37

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	34	20	54

WEEKDAY

Trip Rate: 3.62

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	265	265	530

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Single-Family Detached Housing
Land Use Code: 210
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 232

AM PEAK HOUR

Trip Rate: 0.74

	Enter	Exit	Total
Directional Distribution	25%	75%	
Trip Ends	43	129	172

PM PEAK HOUR

Trip Rate: 0.99

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	145	85	230

WEEKDAY

Trip Rate: 9.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,095	1,095	2,190

SATURDAY

Trip Rate: 9.54

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,107	1,107	2,214

Source: Trip Generation Manual, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Multifamily Housing (Low-Rise)
Land Use Code: 220
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 39

AM PEAK HOUR

Trip Rate: 0.46

	Enter	Exit	Total
Directional Distribution	23%	77%	
Trip Ends	4	14	18

PM PEAK HOUR

Trip Rate: 0.56

	Enter	Exit	Total
Directional Distribution	63%	37%	
Trip Ends	14	8	22

WEEKDAY

Trip Rate: 7.32

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	143	143	286

SATURDAY

Trip Rate: 8.14

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	159	159	318

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Multifamily Housing (Mid-Rise)
Land Use Code: 221
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Variable Value: 561

AM PEAK HOUR

Trip Rate: 0.36

	Enter	Exit	Total
Directional Distribution	26%	74%	
Trip Ends	52	150	202

PM PEAK HOUR

Trip Rate: 0.44

	Enter	Exit	Total
Directional Distribution	61%	39%	
Trip Ends	151	97	248

WEEKDAY

Trip Rate: 5.44

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,526	1,526	3,052

SATURDAY

Trip Rate: 4.91

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	1,377	1,377	2,754

Source: TRIP GENERATION, Tenth Edition

TRIP GENERATION CALCULATIONS

Land Use: Shopping Center
Land Use Code: 820
Setting/Location General Urban/Suburban
Variable: 1,000 Sq. Ft. GFA
Variable Value: 20

AM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Distribution	62%	38%	
Trip Ends	12	7	19

PM PEAK HOUR

Trip Rate: 3.81

	Enter	Exit	Total
Directional Distribution	48%	52%	
Trip Ends	36	40	76

WEEKDAY

Trip Rate: 37.75

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	378	378	756

SATURDAY

Trip Rate: 46.12

	Enter	Exit	Total
Directional Distribution	50%	50%	
Trip Ends	461	461	922

Source: Trip Generation Manual, Tenth Edition

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	34	855	325	74	369	122
Future Volume (vph)	34	855	325	74	369	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.98	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.96
Satd. Flow (prot)	1770	1547	1845			1795
Flt Permitted	0.95	1.00	1.00			0.96
Satd. Flow (perm)	1770	1547	1845			1795
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	37	919	349	80	397	131
RTOR Reduction (vph)	0	193	8	0	0	0
Lane Group Flow (vph)	37	726	421	0	0	528
Confl. Peds. (#/hr)	3			1	1	
Confl. Bikes (#/hr)		6				
Heavy Vehicles (%)	2%	2%	0%	0%	2%	2%
Turn Type	Prot	Perm	NA		Split	NA
Protected Phases	3		1		2	2
Permitted Phases		1 2				
Actuated Green, G (s)	1.7	55.0	22.8			28.2
Effective Green, g (s)	1.7	55.0	22.8			28.2
Actuated g/C Ratio	0.02	0.79	0.33			0.41
Clearance Time (s)	4.0		4.0			4.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	43	1222	604			727
v/s Ratio Prot	c0.02		c0.23			c0.29
v/s Ratio Perm		0.47				
v/c Ratio	0.86	0.59	0.70			0.73
Uniform Delay, d1	33.8	2.9	20.4			17.4
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	85.1	0.8	3.5			3.6
Delay (s)	118.9	3.7	23.9			21.1
Level of Service	F	A	C			C
Approach Delay (s)	8.1		23.9			21.1
Approach LOS	A		C			C

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Intersection Delay, s/veh	6.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	6	0	2	0	2	0	0	5	2	0	0
Future Vol, veh/h	2	6	0	2	0	2	0	0	5	2	0	0
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	11	0	4	0	4	0	0	9	4	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	6.8	6.4	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	50%	100%
Vol Thru, %	0%	75%	0%	0%
Vol Right, %	100%	0%	50%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	8	4	2
LT Vol	0	2	2	2
Through Vol	0	6	0	0
RT Vol	5	0	2	0
Lane Flow Rate	9	14	7	4
Geometry Grp	1	1	1	1
Degree of Util (X)	0.008	0.016	0.007	0.004
Departure Headway (Hd)	3.339	3.977	3.732	4.144
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1075	905	963	867
Service Time	1.348	1.979	1.737	2.152
HCM Lane V/C Ratio	0.008	0.015	0.007	0.005
HCM Control Delay	6.4	7	6.8	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	6	5	212	303	2
Future Vol, veh/h	2	6	5	212	303	2
Conflicting Peds, #/hr	0	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	0	0	7	7	6	6
Mvmt Flow	2	7	6	247	352	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	613	355	355	0	-	0
Stage 1	354	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.17	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.263	-	-	-
Pot Cap-1 Maneuver	459	693	1176	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	789	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	455	692	1175	-	-	-
Mov Cap-2 Maneuver	455	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1175	-	612	-	-
HCM Lane V/C Ratio	0.005	-	0.015	-	-
HCM Control Delay (s)	8.1	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	0	20	34	0	15	7	173	31	44	273	5
Future Vol, veh/h	14	0	20	34	0	15	7	173	31	44	273	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	7	7	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	9	9	9	10	10	10	5	5	5
Mvmt Flow	17	0	25	42	0	19	9	214	38	54	337	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	709	725	340	719	709	240	343	0	0	259	0	0
Stage 1	448	448	-	258	258	-	-	-	-	-	-	-
Stage 2	261	277	-	461	451	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.19	6.59	6.29	4.2	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.19	5.59	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.19	5.59	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.581	4.081	3.381	2.29	-	-	2.245	-	-
Pot Cap-1 Maneuver	352	354	707	335	351	782	1173	-	-	1288	-	-
Stage 1	594	576	-	731	682	-	-	-	-	-	-	-
Stage 2	748	685	-	567	559	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	328	330	707	306	327	777	1173	-	-	1279	-	-
Mov Cap-2 Maneuver	328	330	-	306	327	-	-	-	-	-	-	-
Stage 1	589	546	-	719	671	-	-	-	-	-	-	-
Stage 2	724	674	-	519	530	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	16.4	0.3	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	479	376	1279	-	-
HCM Lane V/C Ratio	0.007	-	-	0.088	0.161	0.042	-	-
HCM Control Delay (s)	8.1	0	-	13.2	16.4	7.9	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.6	0.1	-	-

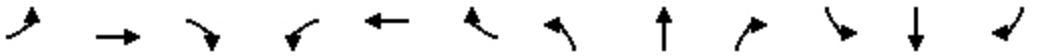
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	52	15	532	574	6
Future Vol, veh/h	20	52	15	532	574	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	64	19	657	709	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1408	713	716	0	-	0
Stage 1	713	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	155	435	894	-	-	-
Stage 1	489	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	150	435	894	-	-	-
Mov Cap-2 Maneuver	150	-	-	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	499	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.3	0.2	0
HCM LOS	C		

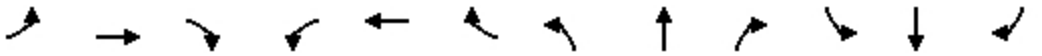
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	894	-	285	-	-
HCM Lane V/C Ratio	0.021	-	0.312	-	-
HCM Control Delay (s)	9.1	0	23.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	141	46	60	212	365	66	1916	69	111	942	15
Future Volume (vph)	21	141	46	60	212	365	66	1916	69	111	942	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1569	3024		1736	1827	1540	1719	3438	1538	1703	3406	1524
Flt Permitted	0.28	1.00		0.45	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	465	3024		818	1827	1540	1719	3438	1538	1703	3406	1524
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)	22	148	48	63	223	384	69	2017	73	117	992	16
RTOR Reduction (vph)	0	26	0	0	0	56	0	0	29	0	0	6
Lane Group Flow (vph)	22	170	0	63	223	328	69	2017	44	117	992	10
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	15%	15%	15%	4%	4%	4%	5%	5%	5%	6%	6%	6%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6		5	2	
Permitted Phases	8			4		4			6			2
Actuated Green, G (s)	16.6	14.2		21.4	16.6	27.8	7.7	69.8	69.8	11.2	73.3	73.3
Effective Green, g (s)	16.6	15.2		21.4	17.6	27.8	7.7	72.8	72.8	11.2	76.3	76.3
Actuated g/C Ratio	0.14	0.13		0.18	0.15	0.23	0.06	0.61	0.61	0.09	0.64	0.64
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	7.0	7.0	4.0	7.0	7.0
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 Grp Cap (vph)	86	383		182	267	356	110	2085	933	158	2165	969
v/s Ratio Prot	0.01	0.06		c0.01	0.12	c0.09	0.04	c0.59		0.07	c0.29	
v/s Ratio Perm	0.03			0.05		0.13			0.03			0.01
v/c Ratio	0.26	0.44		0.35	0.84	0.92	0.63	0.97	0.05	0.74	0.46	0.01
Uniform Delay, d1	45.5	48.5		42.1	49.8	45.0	54.8	22.5	9.6	53.0	11.2	8.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.97	0.80	2.74	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.8		1.1	19.7	28.5	7.1	9.9	0.1	16.9	0.7	0.0
Delay (s)	47.0	49.3		43.3	69.5	73.6	60.0	27.9	26.3	69.9	11.9	8.0
Level of Service	D	D		D	E	E	E	C	C	E	B	A
Approach Delay (s)		49.1			69.3			28.9			17.9	
Approach LOS		D			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



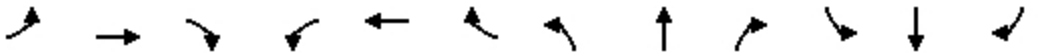
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	141	46	60	212	365	66	1916	69	111	942	15
Future Volume (veh/h)	21	141	46	60	212	365	66	1916	69	111	942	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1678	1678	1678	1841	1841	1841	1826	1826	1826	1811	1811	1811
Adj Flow Rate, veh/h	22	148	48	63	223	384	69	2017	73	117	992	16
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	15	15	15	4	4	4	5	5	5	6	6	6
Cap, veh/h	99	279	87	189	261	324	88	2195	979	129	2260	1008
Arrive On Green	0.02	0.12	0.11	0.04	0.14	0.13	0.02	0.21	0.21	0.08	0.66	0.66
Sat Flow, veh/h	1598	2386	746	1753	1841	1553	1739	3469	1547	1725	3441	1535
Grp Volume(v), veh/h	22	97	99	63	223	384	69	2017	73	117	992	16
Grp Sat Flow(s),veh/h/ln	1598	1594	1538	1753	1841	1553	1739	1735	1547	1725	1721	1535
Q Serve(g_s), s	1.5	6.9	7.3	3.8	14.2	16.0	4.7	68.3	4.6	8.1	16.7	0.4
Cycle Q Clear(g_c), s	1.5	6.9	7.3	3.8	14.2	16.0	4.7	68.3	4.6	8.1	16.7	0.4
Prop In Lane	1.00		0.49	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	99	186	180	189	261	324	88	2195	979	129	2260	1008
V/C Ratio(X)	0.22	0.52	0.55	0.33	0.86	1.19	0.78	0.92	0.07	0.90	0.44	0.02
Avail Cap(c_a), veh/h	124	199	192	203	261	324	145	2195	979	129	2260	1008
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.74	0.74	0.74	0.57	0.57	0.57	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	49.8	50.3	44.3	50.3	47.5	58.3	44.5	19.2	55.1	9.9	7.1
Incr Delay (d2), s/veh	1.1	2.3	2.9	0.8	18.2	104.3	8.3	4.7	0.1	51.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.9	3.0	1.7	7.9	19.1	2.3	33.0	1.7	5.3	5.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	52.1	53.1	45.1	68.5	151.8	66.6	49.2	19.3	106.2	10.5	7.2
LnGrp LOS	D	D	D	D	E	F	E	D	B	F	B	A
Approach Vol, veh/h		218			670			2159			1125	
Approach Delay, s/veh		52.2			114.0			48.7			20.4	
Approach LOS		D			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	82.8	6.1	21.0	13.0	79.9	9.1	18.0
Change Period (Y+Rc), s	4.0	7.0	4.0	5.0	4.0	7.0	4.0	5.0
Max Green Setting (Gmax), s	10.0	70.0	4.0	16.0	9.0	71.0	6.0	14.0
Max Q Clear Time (g_c+I1), s	6.7	18.7	3.5	18.0	10.1	70.3	5.8	9.3
Green Ext Time (p_c), s	0.0	8.5	0.0	0.0	0.0	0.6	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	51.8
HCM 6th LOS	D

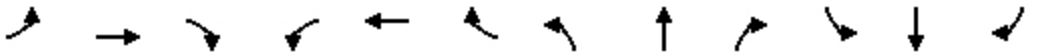
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	124	10	24	459	26	66	158	16	21	122	205
Future Volume (vph)	130	124	10	24	459	26	66	158	16	21	122	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.97		1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)	1641	1705		1748	1827			1836	1533		1778	1503
Flt Permitted	0.95	1.00		0.67	1.00			0.86	1.00		0.93	1.00
Satd. Flow (perm)	1641	1705		1230	1827			1595	1533		1665	1503
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)	135	129	10	25	478	27	69	165	17	22	127	214
RTOR Reduction (vph)	0	2	0	0	2	0	0	0	13	0	0	162
Lane Group Flow (vph)	135	137	0	25	503	0	0	234	4	0	149	52
Confl. Peds. (#/hr)	3		3	3		3			5	5		
Confl. Bikes (#/hr)			2			1			2			2
Heavy Vehicles (%)	10%	10%	10%	3%	3%	3%	2%	2%	2%	6%	6%	6%
Turn Type	Prot	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases				6			8		8	4		4
Actuated Green, G (s)	8.9	32.5		27.6	25.6			15.7	15.7		15.7	15.7
Effective Green, g (s)	8.9	32.5		27.6	25.6			15.7	15.7		15.7	15.7
Actuated g/C Ratio	0.14	0.51		0.43	0.40			0.24	0.24		0.24	0.24
Clearance Time (s)	4.0	5.0		4.0	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)	227	863		544	728			390	374		407	367
v/s Ratio Prot	c0.08	0.08		0.00	c0.28							
v/s Ratio Perm				0.02				c0.15	0.00		0.09	0.03
v/c Ratio	0.59	0.16		0.05	0.69			0.60	0.01		0.37	0.14
Uniform Delay, d1	26.0	8.5		10.6	16.0			21.5	18.4		20.1	19.0
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.1	0.1		0.0	2.8			2.5	0.0		0.6	0.2
Delay (s)	30.1	8.6		10.6	18.9			24.0	18.4		20.7	19.2
Level of Service	C	A		B	B			C	B		C	B
Approach Delay (s)		19.2			18.5			23.6			19.8	
Approach LOS		B			B			C			B	

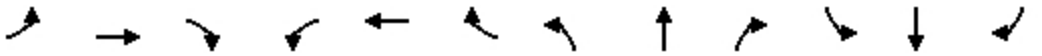
Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	68.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	124	10	24	459	26	66	158	16	21	122	205
Future Volume (veh/h)	130	124	10	24	459	26	66	158	16	21	122	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1856	1856	1856	1870	1870	1870	1811	1811	1811
Adj Flow Rate, veh/h	135	129	10	25	478	27	69	165	17	22	127	214
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	10	10	10	3	3	3	2	2	2	6	6	6
Cap, veh/h	173	648	50	544	561	32	69	130	566	61	266	554
Arrive On Green	0.10	0.40	0.40	0.02	0.32	0.32	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1668	1601	124	1767	1737	98	0	353	1540	0	723	1508
Grp Volume(v), veh/h	135	0	139	25	0	505	234	0	17	149	0	214
Grp Sat Flow(s),veh/h/ln	1668	0	1726	1767	0	1835	353	0	1540	723	0	1508
Q Serve(g_s), s	5.4	0.0	3.5	0.6	0.0	17.5	0.0	0.0	0.5	0.0	0.0	7.1
Cycle Q Clear(g_c), s	5.4	0.0	3.5	0.6	0.0	17.5	25.0	0.0	0.5	25.0	0.0	7.1
Prop In Lane	1.00		0.07	1.00		0.05	0.29		1.00	0.15		1.00
Lane Grp Cap(c), veh/h	173	0	698	544	0	593	198	0	566	326	0	554
V/C Ratio(X)	0.78	0.00	0.20	0.05	0.00	0.85	1.18	0.00	0.03	0.46	0.00	0.39
Avail Cap(c_a), veh/h	515	0	761	921	0	809	198	0	566	326	0	554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	13.1	14.8	0.0	21.5	19.2	0.0	13.8	16.5	0.0	15.9
Incr Delay (d2), s/veh	7.4	0.0	0.1	0.0	0.0	6.5	120.9	0.0	0.0	1.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	1.3	0.3	0.0	8.1	8.7	0.0	0.2	1.6	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	0.0	13.3	14.8	0.0	28.0	140.1	0.0	13.8	17.5	0.0	16.3
LnGrp LOS	D	A	B	B	A	C	F	A	B	B	A	B
Approach Vol, veh/h		274			530			251			363	
Approach Delay, s/veh		25.0			27.4			131.5			16.8	
Approach LOS		C			C			F			B	

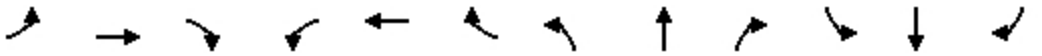
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	32.5		30.0	11.1	27.0		30.0				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	30.0		25.0	21.0	30.0		25.0				
Max Q Clear Time (g_c+I1), s	2.6	5.5		27.0	7.4	19.5		27.0				
Green Ext Time (p_c), s	0.0	0.8		0.0	0.3	2.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			42.7									
HCM 6th LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	9	13	20	31	6	31	149	6	3	148	308
Future Volume (vph)	161	9	13	20	31	6	31	149	6	3	148	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.5		4.5			4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.98		1.00	0.98		1.00			1.00	0.99
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.85		1.00	0.85		1.00			1.00	0.85
Flt Protected		0.95	1.00		0.98	1.00		0.99			1.00	1.00
Satd. Flow (prot)		1712	1491		1757	1491		1820			1808	1521
Flt Permitted		0.95	1.00		0.98	1.00		0.93			0.99	1.00
Satd. Flow (perm)		1712	1491		1757	1491		1699			1798	1521
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	173	10	14	22	33	6	33	160	6	3	159	331
RTOR Reduction (vph)	0	0	10	0	0	5	0	1	0	0	0	145
Lane Group Flow (vph)	0	183	4	0	55	1	0	198	0	0	162	186
Confl. Peds. (#/hr)	1					1	3		3	3		3
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	3%	3%	3%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	4	4		8	8			2			6	4
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)		11.3	11.3		3.8	3.8		10.8			10.8	22.1
Effective Green, g (s)		11.3	11.3		3.8	3.8		10.8			10.8	22.1
Actuated g/C Ratio		0.29	0.29		0.10	0.10		0.27			0.27	0.56
Clearance Time (s)		4.5	4.5		4.5	4.5		4.5			4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		491	427		169	143		465			492	1026
v/s Ratio Prot		c0.11			c0.03							0.05
v/s Ratio Perm			0.00			0.00		c0.12			0.09	0.07
v/c Ratio		0.37	0.01		0.33	0.00		0.42			0.33	0.18
Uniform Delay, d1		11.2	10.0		16.6	16.1		11.7			11.4	4.2
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		0.5	0.0		1.1	0.0		0.6			0.4	0.1
Delay (s)		11.7	10.1		17.7	16.1		12.4			11.8	4.3
Level of Service		B	B		B	B		B			B	A
Approach Delay (s)		11.6			17.6			12.4			6.8	
Approach LOS		B			B			B			A	

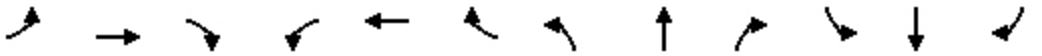
Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	161	9	13	20	31	6	31	149	6	3	148	308
Future Volume (veh/h)	161	9	13	20	31	6	31	149	6	3	148	308
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1856	1856	1856	1826	1826	1826
Adj Flow Rate, veh/h	173	10	14	22	33	6	33	160	6	3	159	331
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	6	6	6	6	6	3	3	3	5	5	5
Cap, veh/h	270	16	247	49	74	106	187	450	15	129	543	717
Arrive On Green	0.17	0.17	0.17	0.07	0.07	0.07	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1635	95	1496	710	1065	1530	141	1503	51	10	1811	1540
Grp Volume(v), veh/h	183	0	14	55	0	6	199	0	0	162	0	331
Grp Sat Flow(s),veh/h/ln	1729	0	1496	1776	0	1530	1695	0	0	1821	0	1540
Q Serve(g_s), s	2.9	0.0	0.2	0.9	0.0	0.1	0.0	0.0	0.0	0.0	0.0	4.2
Cycle Q Clear(g_c), s	2.9	0.0	0.2	0.9	0.0	0.1	2.5	0.0	0.0	2.0	0.0	4.2
Prop In Lane	0.95		1.00	0.40		1.00	0.17		0.03	0.02		1.00
Lane Grp Cap(c), veh/h	286	0	247	123	0	106	653	0	0	672	0	717
V/C Ratio(X)	0.64	0.00	0.06	0.45	0.00	0.06	0.30	0.00	0.00	0.24	0.00	0.46
Avail Cap(c_a), veh/h	1581	0	1369	1256	0	1083	1780	0	0	1971	0	1823
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	0.0	10.2	13.0	0.0	12.6	8.0	0.0	0.0	7.8	0.0	5.3
Incr Delay (d2), s/veh	2.4	0.0	0.1	2.5	0.0	0.2	0.3	0.0	0.0	0.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.1	0.4	0.0	0.0	0.7	0.0	0.0	0.6	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.7	0.0	10.3	15.5	0.0	12.8	8.2	0.0	0.0	8.0	0.0	5.7
LnGrp LOS	B	A	B	B	A	B	A	A	A	A	A	A
Approach Vol, veh/h		197			61			199			493	
Approach Delay, s/veh		13.4			15.2			8.2			6.5	
Approach LOS		B			B			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.2		9.3		13.2		6.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		29.5		26.5		29.5		20.5				
Max Q Clear Time (g_c+I1), s		4.5		4.9		6.2		2.9				
Green Ext Time (p_c), s		1.3		1.1		2.2		0.2				

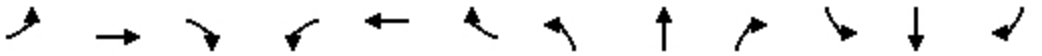
Intersection Summary												
HCM 6th Ctrl Delay			8.9									
HCM 6th LOS			A									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	10	66	6	20	27	46	1989	15	6	1023	17
Future Volume (vph)	36	10	66	6	20	27	46	1989	15	6	1023	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			0.99		1.00	1.00	0.98	1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92			0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1689			1711		1719	3438	1504	1687	3374	1509
Flt Permitted		0.87			0.95		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1497			1640		1719	3438	1504	1687	3374	1509
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)	38	11	70	6	21	29	49	2116	16	6	1088	18
RTOR Reduction (vph)	0	44	0	0	26	0	0	0	3	0	0	5
Lane Group Flow (vph)	0	75	0	0	30	0	49	2116	13	6	1088	13
Confl. Peds. (#/hr)	2		3	3		2			1	1		
Heavy Vehicles (%)	1%	1%	1%	2%	2%	2%	5%	5%	5%	7%	7%	7%
Turn Type	D.Pm	NA		D.Pm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	4			8					6			2
Actuated Green, G (s)		11.1			11.1		7.2	91.5	91.5	1.4	85.7	85.7
Effective Green, g (s)		12.1			12.1		7.2	94.5	94.5	1.4	88.7	88.7
Actuated g/C Ratio		0.10			0.10		0.06	0.79	0.79	0.01	0.74	0.74
Clearance Time (s)		5.0			5.0		4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		150			165		103	2707	1184	19	2493	1115
v/s Ratio Prot							c0.03	c0.62		0.00	0.32	
v/s Ratio Perm		c0.05			0.02				0.01			0.01
v/c Ratio		0.50			0.18		0.48	0.78	0.01	0.32	0.44	0.01
Uniform Delay, d1		51.1			49.4		54.6	7.0	2.7	58.8	6.0	4.1
Progression Factor		1.00			1.00		0.88	2.52	1.00	0.82	2.43	1.00
Incremental Delay, d2		2.6			0.5		2.0	1.3	0.0	8.6	0.5	0.0
Delay (s)		53.7			49.9		49.9	19.1	2.7	57.0	15.1	4.1
Level of Service		D			D		D	B	A	E	B	A
Approach Delay (s)		53.7			49.9			19.6			15.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



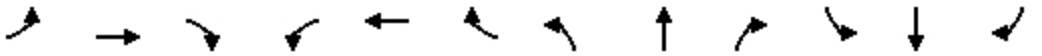
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	10	66	6	20	27	46	1989	15	6	1023	17
Future Volume (veh/h)	36	10	66	6	20	27	46	1989	15	6	1023	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1826	1826	1826	1796	1796	1796
Adj Flow Rate, veh/h	38	11	70	6	21	29	49	2116	16	6	1088	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	2	2	2	5	5	5	7	7	7
Cap, veh/h	71	30	88	39	81	93	63	2744	1223	10	2596	1157
Arrive On Green	0.09	0.10	0.10	0.09	0.10	0.10	0.01	0.26	0.26	0.01	0.76	0.76
Sat Flow, veh/h	309	289	853	55	787	903	1739	3469	1546	1711	3413	1521
Grp Volume(v), veh/h	119	0	0	56	0	0	49	2116	16	6	1088	18
Grp Sat Flow(s),veh/h/ln	1450	0	0	1745	0	0	1739	1735	1546	1711	1706	1521
Q Serve(g_s), s	8.8	0.0	0.0	3.7	0.0	0.0	3.4	67.7	0.9	0.4	13.4	0.3
Cycle Q Clear(g_c), s	8.8	0.0	0.0	3.7	0.0	0.0	3.4	67.7	0.9	0.4	13.4	0.3
Prop In Lane	0.32		0.59	0.11		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	0	0	0	0	63	2744	1223	10	2596	1157
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.77	0.01	0.58	0.42	0.02
Avail Cap(c_a), veh/h	0	0	0	0	0	0	145	2744	1223	143	2596	1157
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.41	0.41	0.41	0.90	0.90	0.90
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	58.8	34.3	9.6	59.5	5.0	3.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.9	0.0	38.9	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	1.6	31.5	0.2	0.3	3.9	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	67.0	35.2	9.6	98.3	5.5	3.5
LnGrp LOS	A	A	A	A	A	A	E	D	A	F	A	A
Approach Vol, veh/h		119			56			2181			1112	
Approach Delay, s/veh		0.0			0.0			35.7			6.0	
Approach LOS		A			A			D			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	95.3		16.4	4.7	98.9		16.4				
Change Period (Y+Rc), s	4.0	7.0		5.0	4.0	7.0		5.0				
Max Green Setting (Gmax), s	10.0	79.0		15.0	10.0	79.0		15.0				
Max Q Clear Time (g_c+I1), s	5.4	15.4		5.7	2.4	69.7		10.8				
Green Ext Time (p_c), s	0.0	9.9		0.1	0.0	8.1		0.2				

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

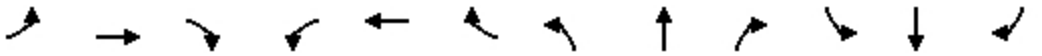
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	987	18	154	1752	186	54	188	97	89	308	215
Future Volume (vph)	98	987	18	154	1752	186	54	188	97	89	308	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1719	3438	1538	1703	3406	1504	1719	3438	1514	1719	3438	1510
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1719	3438	1538	1703	3406	1504	1719	3438	1514	1719	3438	1510
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
Adj. Flow (vph)	100	1007	18	157	1788	190	55	192	99	91	314	219
RTOR Reduction (vph)	0	0	8	0	0	65	0	0	89	0	0	191
Lane Group Flow (vph)	100	1007	10	157	1788	125	55	192	10	91	314	28
Confl. Peds. (#/hr)	1					1	5		4	4		5
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	5%	5%	5%	6%	6%	6%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	12.3	62.9	62.9	15.6	66.2	66.2	7.1	10.6	10.6	10.9	14.4	14.4
Effective Green, g (s)	12.3	65.9	65.9	15.6	69.2	69.2	8.1	11.6	11.6	11.9	15.4	15.4
Actuated g/C Ratio	0.10	0.55	0.55	0.13	0.58	0.58	0.07	0.10	0.10	0.10	0.13	0.13
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	5.0	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	3.0
Lane Grp Cap (vph)	176	1888	844	221	1964	867	116	332	146	170	441	193
v/s Ratio Prot	0.06	c0.29		0.09	c0.53		0.03	0.06		c0.05	c0.09	
v/s Ratio Perm			0.01			0.08			0.01			0.02
v/c Ratio	0.57	0.53	0.01	0.71	0.91	0.14	0.47	0.58	0.07	0.54	0.71	0.15
Uniform Delay, d1	51.3	17.2	12.3	50.0	22.6	11.7	53.9	51.9	49.3	51.4	50.2	46.5
Progression Factor	1.31	1.73	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.8	1.0	0.0	10.3	7.8	0.3	3.0	2.4	0.2	3.2	5.4	0.3
Delay (s)	70.9	30.9	12.3	60.3	30.4	12.1	56.9	54.3	49.5	54.6	55.5	46.8
Level of Service	E	C	B	E	C	B	E	D	D	D	E	D
Approach Delay (s)		34.2			31.0			53.3			52.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	987	18	154	1752	186	54	188	97	89	308	215
Future Volume (veh/h)	98	987	18	154	1752	186	54	188	97	89	308	215
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1811	1811	1811	1826	1826	1826	1826	1826	1826
Adj Flow Rate, veh/h	100	1007	18	157	1788	190	55	192	99	91	314	219
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	5	5	6	6	6	5	5	5	5	5	5
Cap, veh/h	259	2173	969	185	1924	858	72	260	114	116	347	150
Arrive On Green	0.15	0.63	0.63	0.11	0.56	0.56	0.04	0.08	0.08	0.07	0.10	0.10
Sat Flow, veh/h	1739	3469	1547	1725	3441	1534	1739	3469	1516	1739	3469	1503
Grp Volume(v), veh/h	100	1007	18	157	1788	190	55	192	99	91	314	219
Grp Sat Flow(s),veh/h/ln	1739	1735	1547	1725	1721	1534	1739	1735	1516	1739	1735	1503
Q Serve(g_s), s	6.2	18.3	0.5	10.7	57.2	4.5	3.8	6.5	7.8	6.2	10.7	8.6
Cycle Q Clear(g_c), s	6.2	18.3	0.5	10.7	57.2	4.5	3.8	6.5	7.8	6.2	10.7	8.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	2173	969	185	1924	858	72	260	114	116	347	150
V/C Ratio(X)	0.39	0.46	0.02	0.85	0.93	0.22	0.76	0.74	0.87	0.78	0.91	1.46
Avail Cap(c_a), veh/h	290	2173	969	273	1950	869	72	260	114	116	347	150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	11.8	8.5	52.6	24.3	4.8	56.9	54.3	54.9	55.2	53.4	27.5
Incr Delay (d2), s/veh	0.8	0.6	0.0	15.0	9.5	0.6	36.5	10.5	46.9	28.9	26.1	238.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	6.7	0.2	5.3	23.7	2.6	2.4	3.2	4.5	3.7	6.0	13.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.9	12.5	8.5	67.7	33.7	5.4	93.4	64.9	101.9	84.1	79.6	266.3
LnGrp LOS	D	B	A	E	C	A	F	E	F	F	E	F
Approach Vol, veh/h		1125			2135			346			624	
Approach Delay, s/veh		15.5			33.7			80.0			145.7	
Approach LOS		B			C			E			F	

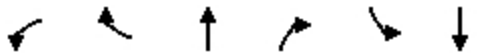
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.9	79.1	8.0	16.0	24.9	71.1	11.0	13.0
Change Period (Y+Rc), s	4.0	7.0	4.0	5.0	7.0	* 7	4.0	5.0
Max Green Setting (Gmax), s	19.0	66.0	4.0	11.0	20.0	* 65	7.0	8.0
Max Q Clear Time (g_c+I1), s	12.7	20.3	5.8	12.7	8.2	59.2	8.2	9.8
Green Ext Time (p_c), s	0.2	8.6	0.0	0.0	0.2	4.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	49.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	600	151	48	694	377
Future Volume (vph)	66	600	151	48	694	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	1.00			1.00
Frpb, ped/bikes	1.00	0.97	0.99			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	0.97			1.00
Flt Protected	0.95	1.00	1.00			0.97
Satd. Flow (prot)	1736	1512	1756			1822
Flt Permitted	0.95	1.00	1.00			0.97
Satd. Flow (perm)	1736	1512	1756			1822
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	69	632	159	51	731	397
RTOR Reduction (vph)	0	147	12	0	0	0
Lane Group Flow (vph)	69	485	198	0	0	1128
Confl. Peds. (#/hr)	1	1				
Confl. Bikes (#/hr)		12		2		
Heavy Vehicles (%)	4%	4%	4%	4%	1%	1%
Turn Type	Prot	Perm	NA		Split	NA
Protected Phases	3		1		2	2
Permitted Phases		1 2				
Actuated Green, G (s)	3.9	56.0	8.2			43.8
Effective Green, g (s)	3.9	56.0	8.2			43.8
Actuated g/C Ratio	0.05	0.77	0.11			0.60
Clearance Time (s)	4.0		4.0			4.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	92	1159	197			1093
v/s Ratio Prot	c0.04		c0.11			c0.62
v/s Ratio Perm		0.32				
v/c Ratio	0.75	0.42	1.00			1.03
Uniform Delay, d1	34.1	2.9	32.4			14.6
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	28.6	0.2	64.9			35.8
Delay (s)	62.6	3.2	97.3			50.4
Level of Service	E	A	F			D
Approach Delay (s)	9.0		97.3			50.4
Approach LOS	A		F			D

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	73.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM 6th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	3	0	3	1	9	0	1	3	1	0	0
Future Vol, veh/h	0	3	0	3	1	9	0	1	3	1	0	0
Peak Hour Factor	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	5	0	5	2	14	0	2	5	2	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7	6.6	6.5	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	23%	100%
Vol Thru, %	25%	100%	8%	0%
Vol Right, %	75%	0%	69%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	3	13	1
LT Vol	0	0	3	1
Through Vol	1	3	1	0
RT Vol	3	0	9	0
Lane Flow Rate	6	5	21	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.006	0.005	0.02	0.002
Departure Headway (Hd)	3.494	3.929	3.548	4.148
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	1029	916	1014	867
Service Time	1.5	1.932	1.551	2.154
HCM Lane V/C Ratio	0.006	0.005	0.021	0.002
HCM Control Delay	6.5	7	6.6	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.1	0

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	7	15	341	297	3
Future Vol, veh/h	7	7	15	341	297	3
Conflicting Peds, #/hr	0	2	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	3	3	3	3
Mvmt Flow	8	8	17	388	338	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	768	348	347	0	-	0
Stage 1	346	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	373	700	1206	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	362	695	1199	-	-	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	662	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1199	-	476	-	-
HCM Lane V/C Ratio	0.014	-	0.033	-	-
HCM Control Delay (s)	8	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	15	52	0	35	19	310	23	9	269	14
Future Vol, veh/h	13	0	15	52	0	35	19	310	23	9	269	14
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	3	3	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	2	2	2	3	3	3	3	3	3
Mvmt Flow	15	0	17	60	0	40	22	356	26	10	309	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	772	766	317	762	761	374	325	0	0	385	0	0
Stage 1	337	337	-	416	416	-	-	-	-	-	-	-
Stage 2	435	429	-	346	345	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.52	6.22	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4.018	3.318	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	319	335	728	322	335	672	1229	-	-	1168	-	-
Stage 1	681	645	-	614	592	-	-	-	-	-	-	-
Stage 2	604	587	-	670	636	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	292	323	728	306	323	669	1229	-	-	1165	-	-
Mov Cap-2 Maneuver	292	323	-	306	323	-	-	-	-	-	-	-
Stage 1	665	639	-	598	577	-	-	-	-	-	-	-
Stage 2	554	572	-	648	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	17.3	0.4	0.3
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	430	391	1165	-	-
HCM Lane V/C Ratio	0.018	-	-	0.075	0.256	0.009	-	-
HCM Control Delay (s)	8	0	-	14	17.3	8.1	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	1	0	-	-

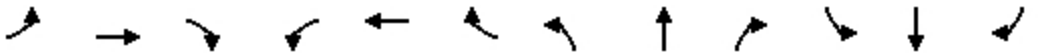
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	35	46	425	544	16
Future Vol, veh/h	12	35	46	425	544	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	3	3	3	3
Mvmt Flow	14	40	53	489	625	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1229	634	643	0	-	0
Stage 1	634	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.13	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.227	-	-	-
Pot Cap-1 Maneuver	198	483	937	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	183	483	937	-	-	-
Mov Cap-2 Maneuver	183	-	-	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0.9	0
HCM LOS	C		

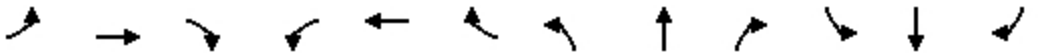
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	937	-	340	-	-
HCM Lane V/C Ratio	0.056	-	0.159	-	-
HCM Control Delay (s)	9.1	0	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	303	65	78	214	200	72	1562	90	353	1869	36
Future Volume (vph)	6	303	65	78	214	200	72	1562	90	353	1869	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.99	1.00	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	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1711	3337		1736	1827	1540	1752	3505	1547	1752	3505	1533
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1711	3337		1736	1827	1540	1752	3505	1547	1752	3505	1533
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)	6	312	67	80	221	206	74	1610	93	364	1927	37
RTOR Reduction (vph)	0	14	0	0	0	40	0	0	50	0	0	14
Lane Group Flow (vph)	6	365	0	80	221	166	74	1610	43	364	1927	23
Confl. Peds. (#/hr)	6		4	4		6	1		1	1		1
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	3	8		7	4	5	1	6		5	2	
Permitted Phases						4			6			2
Actuated Green, G (s)	0.8	18.2		6.1	23.5	52.0	7.8	57.2	57.2	28.5	77.9	77.9
Effective Green, g (s)	0.8	19.2		6.1	24.5	52.0	7.8	60.2	60.2	28.5	80.9	80.9
Actuated g/C Ratio	0.01	0.15		0.05	0.19	0.40	0.06	0.46	0.46	0.22	0.62	0.62
Clearance Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	7.0	7.0	4.0	7.0	7.0
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 Grp Cap (vph)	10	492		81	344	616	105	1623	716	384	2181	953
v/s Ratio Prot	0.00	c0.11		c0.05	0.12	0.06	0.04	c0.46		c0.21	0.55	
v/s Ratio Perm						0.05			0.03			0.02
v/c Ratio	0.60	0.74		0.99	0.64	0.27	0.70	0.99	0.06	0.95	0.88	0.02
Uniform Delay, d1	64.4	53.0		61.9	48.7	26.2	60.0	34.7	19.3	50.0	20.6	9.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.94	1.38	5.80	1.00	1.00	1.00
Incremental Delay, d2	70.6	6.0		95.0	4.1	0.2	15.1	17.7	0.1	32.4	5.7	0.0
Delay (s)	135.0	59.0		157.0	52.8	26.5	71.7	65.5	111.9	82.4	26.2	9.5
Level of Service	F	E		F	D	C	E	E	F	F	C	A
Approach Delay (s)		60.2			58.5			68.2			34.8	
Approach LOS		E			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



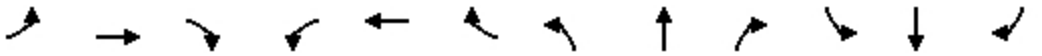
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	303	65	78	214	200	72	1562	90	353	1869	36
Future Volume (veh/h)	6	303	65	78	214	200	72	1562	90	353	1869	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	6	312	67	80	221	206	74	1610	93	364	1927	37
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	5	5	4	4	4	3	3	3	3	3	3
Cap, veh/h	10	350	74	81	300	581	94	1724	768	387	2307	1028
Arrive On Green	0.01	0.12	0.12	0.05	0.16	0.16	0.02	0.16	0.16	0.22	0.65	0.65
Sat Flow, veh/h	1739	2840	601	1753	1841	1542	1767	3526	1572	1767	3526	1571
Grp Volume(v), veh/h	6	189	190	80	221	206	74	1610	93	364	1927	37
Grp Sat Flow(s),veh/h/ln	1739	1735	1707	1753	1841	1542	1767	1763	1572	1767	1763	1571
Q Serve(g_s), s	0.4	13.9	14.3	5.9	14.8	12.5	5.4	58.6	6.6	26.3	54.1	1.1
Cycle Q Clear(g_c), s	0.4	13.9	14.3	5.9	14.8	12.5	5.4	58.6	6.6	26.3	54.1	1.1
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	10	213	210	81	300	581	94	1724	768	387	2307	1028
V/C Ratio(X)	0.58	0.88	0.91	0.99	0.74	0.35	0.79	0.93	0.12	0.94	0.84	0.04
Avail Cap(c_a), veh/h	54	213	210	81	300	581	109	1724	768	394	2307	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.4	56.1	56.4	62.0	51.7	29.4	63.1	52.4	30.6	50.0	17.1	7.9
Incr Delay (d2), s/veh	41.6	32.4	37.4	88.4	7.8	0.3	20.6	8.2	0.2	30.6	3.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	8.1	8.4	4.6	7.6	4.8	3.0	29.6	2.7	14.7	20.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.0	88.5	93.8	150.4	59.5	29.7	83.8	60.7	30.8	80.5	20.9	8.0
LnGrp LOS	F	F	F	F	E	C	F	E	C	F	C	A
Approach Vol, veh/h		385			507			1777			2328	
Approach Delay, s/veh		91.4			61.7			60.1			30.0	
Approach LOS		F			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	89.1	4.8	25.2	32.4	67.6	10.0	20.0
Change Period (Y+Rc), s	4.0	7.0	4.0	5.0	4.0	7.0	4.0	5.0
Max Green Setting (Gmax), s	8.0	81.0	4.0	17.0	29.0	60.0	6.0	15.0
Max Q Clear Time (g_c+I1), s	7.4	56.1	2.4	16.8	28.3	60.6	7.9	16.3
Green Ext Time (p_c), s	0.0	16.9	0.0	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D

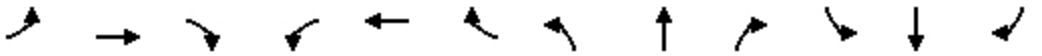
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	506	23	28	231	23	40	149	24	56	160	205
Future Volume (vph)	172	506	23	28	231	23	40	149	24	56	160	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.95		1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		0.99	1.00
Frt	1.00	0.99		1.00	0.99			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.99	1.00
Satd. Flow (prot)	1752	1830		1752	1813			1843	1505		1812	1543
Flt Permitted	0.95	1.00		0.95	1.00			0.88	1.00		0.86	1.00
Satd. Flow (perm)	1752	1830		1752	1813			1643	1505		1569	1543
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	195	575	26	32	262	26	45	169	27	64	182	233
RTOR Reduction (vph)	0	2	0	0	4	0	0	0	20	0	0	173
Lane Group Flow (vph)	195	599	0	32	285	0	0	214	7	0	246	60
Confl. Peds. (#/hr)	12		4	4		12	1		16	16		1
Confl. Bikes (#/hr)			3			1			2			3
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	Prot	NA		Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	12.5	29.0		2.6	19.1			15.7	15.7		15.7	15.7
Effective Green, g (s)	12.5	29.0		2.6	19.1			15.7	15.7		15.7	15.7
Actuated g/C Ratio	0.20	0.47		0.04	0.31			0.26	0.26		0.26	0.26
Clearance Time (s)	4.0	5.0		4.0	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)	357	865		74	564			420	385		401	395
v/s Ratio Prot	c0.11	c0.33		0.02	0.16							
v/s Ratio Perm								0.13	0.00		c0.16	0.04
v/c Ratio	0.55	0.69		0.43	0.51			0.51	0.02		0.61	0.15
Uniform Delay, d1	21.9	12.7		28.6	17.2			19.5	17.0		20.1	17.6
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	1.7	2.4		4.0	0.7			1.0	0.0		2.8	0.2
Delay (s)	23.6	15.1		32.6	18.0			20.5	17.1		22.9	17.8
Level of Service	C	B		C	B			C	B		C	B
Approach Delay (s)		17.2			19.4			20.1			20.4	
Approach LOS		B			B			C			C	

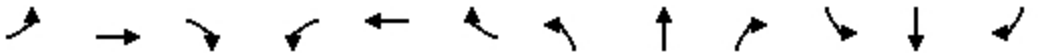
Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	14.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	506	23	28	231	23	40	149	24	56	160	205
Future Volume (veh/h)	172	506	23	28	231	23	40	149	24	56	160	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	195	575	26	32	262	26	45	169	27	64	182	233
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	3	3	3	3	3	3	2	2	2	3	3	3
Cap, veh/h	247	659	30	48	434	43	67	204	582	70	158	587
Arrive On Green	0.14	0.37	0.37	0.03	0.26	0.26	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1767	1758	79	1767	1653	164	0	533	1518	0	412	1532
Grp Volume(v), veh/h	195	0	601	32	0	288	214	0	27	246	0	233
Grp Sat Flow(s),veh/h/ln	1767	0	1837	1767	0	1817	533	0	1518	412	0	1532
Q Serve(g_s), s	7.0	0.0	19.8	1.2	0.0	9.1	0.0	0.0	0.7	0.0	0.0	7.2
Cycle Q Clear(g_c), s	7.0	0.0	19.8	1.2	0.0	9.1	25.0	0.0	0.7	25.0	0.0	7.2
Prop In Lane	1.00		0.04	1.00		0.09	0.21		1.00	0.26		1.00
Lane Grp Cap(c), veh/h	247	0	689	48	0	477	271	0	582	228	0	587
V/C Ratio(X)	0.79	0.00	0.87	0.67	0.00	0.60	0.79	0.00	0.05	1.08	0.00	0.40
Avail Cap(c_a), veh/h	569	0	845	434	0	836	271	0	582	228	0	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	18.9	31.4	0.0	21.1	16.5	0.0	12.6	17.2	0.0	14.6
Incr Delay (d2), s/veh	5.6	0.0	8.5	15.1	0.0	1.2	14.5	0.0	0.0	82.7	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	9.4	0.7	0.0	3.8	3.1	0.0	0.2	7.4	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.7	0.0	27.4	46.5	0.0	22.3	31.0	0.0	12.7	99.9	0.0	15.1
LnGrp LOS	C	A	C	D	A	C	C	A	B	F	A	B
Approach Vol, veh/h		796			320			241			479	
Approach Delay, s/veh		28.7			24.7			28.9			58.6	
Approach LOS		C			C			C			E	

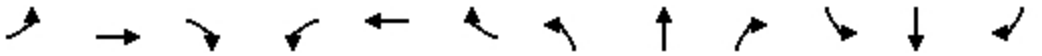
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	29.5		30.0	13.1	22.1		30.0				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	30.0		25.0	21.0	30.0		25.0				
Max Q Clear Time (g_c+I1), s	3.2	21.8		27.0	9.0	11.1		27.0				
Green Ext Time (p_c), s	0.0	2.6		0.0	0.4	1.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		35.9	
HCM 6th LOS		D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	397	38	54	44	39	17	36	326	22	9	155	187
Future Volume (vph)	397	38	54	44	39	17	36	326	22	9	155	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.5		4.5			4.5	4.5
Lane Util. Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.97		1.00	0.97		1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Frt		1.00	0.85		1.00	0.85		0.99			1.00	0.85
Flt Protected		0.96	1.00		0.97	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1764	1524		1763	1497		1833			1857	1556
Flt Permitted		0.96	1.00		0.97	1.00		0.96			0.98	1.00
Satd. Flow (perm)		1764	1524		1763	1497		1766			1816	1556
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)	414	40	56	46	41	18	38	340	23	9	161	195
RTOR Reduction (vph)	0	0	36	0	0	16	0	3	0	0	0	62
Lane Group Flow (vph)	0	454	20	0	87	2	0	398	0	0	170	133
Confl. Peds. (#/hr)	4		4	4		4	9		13	13		9
Confl. Bikes (#/hr)			1									1
Heavy Vehicles (%)	3%	3%	3%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	4	4		8	8			2			6	4
Permitted Phases			4			8	2			6		6
Actuated Green, G (s)		23.3	23.3		7.1	7.1		20.7			20.7	44.0
Effective Green, g (s)		23.3	23.3		7.1	7.1		20.7			20.7	44.0
Actuated g/C Ratio		0.36	0.36		0.11	0.11		0.32			0.32	0.68
Clearance Time (s)		4.5	4.5		4.5	4.5		4.5			4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)		636	549		193	164		565			581	1168
v/s Ratio Prot		c0.26			c0.05							0.04
v/s Ratio Perm			0.01			0.00		c0.23			0.09	0.04
v/c Ratio		0.71	0.04		0.45	0.01		0.70			0.29	0.11
Uniform Delay, d1		17.8	13.4		26.9	25.6		19.3			16.5	3.6
Progression Factor		1.00	1.00		1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2		3.8	0.0		1.7	0.0		4.0			0.3	0.0
Delay (s)		21.6	13.4		28.6	25.7		23.3			16.7	3.6
Level of Service		C	B		C	C		C			B	A
Approach Delay (s)		20.7			28.1			23.3			9.7	
Approach LOS		C			C			C			A	

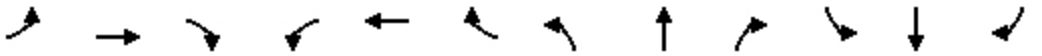
Intersection Summary			
HCM 2000 Control Delay	19.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	397	38	54	44	39	17	36	326	22	9	155	187
Future Volume (veh/h)	397	38	54	44	39	17	36	326	22	9	155	187
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	0.99		0.98	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1826	1826	1826	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	414	40	56	46	41	18	38	340	23	9	161	195
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	5	5	5	2	2	2	2	2	2
Cap, veh/h	540	52	511	81	72	130	109	479	31	87	551	990
Arrive On Green	0.33	0.33	0.33	0.09	0.09	0.09	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1618	156	1530	941	838	1517	92	1578	102	30	1816	1518
Grp Volume(v), veh/h	454	0	56	87	0	18	401	0	0	170	0	195
Grp Sat Flow(s),veh/h/ln	1775	0	1530	1779	0	1517	1772	0	0	1845	0	1518
Q Serve(g_s), s	11.2	0.0	1.2	2.3	0.0	0.5	3.3	0.0	0.0	0.0	0.0	2.6
Cycle Q Clear(g_c), s	11.2	0.0	1.2	2.3	0.0	0.5	9.7	0.0	0.0	3.4	0.0	2.6
Prop In Lane	0.91		1.00	0.53		1.00	0.09		0.06	0.05		1.00
Lane Grp Cap(c), veh/h	593	0	511	153	0	130	618	0	0	637	0	990
V/C Ratio(X)	0.77	0.00	0.11	0.57	0.00	0.14	0.65	0.00	0.00	0.27	0.00	0.20
Avail Cap(c_a), veh/h	1111	0	957	657	0	560	1083	0	0	1123	0	1401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	0.0	11.2	21.4	0.0	20.6	15.1	0.0	0.0	13.0	0.0	3.7
Incr Delay (d2), s/veh	2.1	0.0	0.1	3.3	0.0	0.5	1.2	0.0	0.0	0.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.4	1.0	0.0	0.2	3.7	0.0	0.0	1.3	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	0.0	11.3	24.7	0.0	21.1	16.3	0.0	0.0	13.2	0.0	3.8
LnGrp LOS	B	A	B	C	A	C	B	A	A	B	A	A
Approach Vol, veh/h		510			105			401			365	
Approach Delay, s/veh		16.1			24.1			16.3			8.2	
Approach LOS		B			C			B			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.3		20.8		19.3		8.7				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		28.0		30.5		28.0		18.0				
Max Q Clear Time (g_c+I1), s		11.7		13.2		5.4		4.3				
Green Ext Time (p_c), s		2.4		3.1		1.7		0.4				

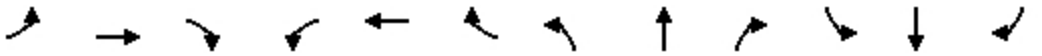
Intersection Summary												
HCM 6th Ctrl Delay			14.7									
HCM 6th LOS			B									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	35	95	17	22	23	37	1676	15	24	1965	27
Future Volume (vph)	32	35	95	17	22	23	37	1676	15	24	1965	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00			1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes		0.99			1.00		1.00	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.92			0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99			0.99		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1667			1771		1752	3505	1568	1752	3505	1519
Flt Permitted		0.93			0.76		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1569			1365		1752	3505	1568	1752	3505	1519
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)	33	36	98	18	23	24	38	1728	15	25	2026	28
RTOR Reduction (vph)	0	41	0	0	17	0	0	0	4	0	0	8
Lane Group Flow (vph)	0	126	0	0	48	0	38	1728	11	25	2026	20
Confl. Peds. (#/hr)	1		3	3		1	4					4
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	3%	3%	3%	3%	3%
Turn Type	D.Pm	NA		D.Pm	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		8			4		1	6		5	2	
Permitted Phases	4			8					6			2
Actuated Green, G (s)		15.2			15.2		6.9	93.7	93.7	5.1	91.9	91.9
Effective Green, g (s)		16.2			16.2		6.9	96.7	96.7	5.1	94.9	94.9
Actuated g/C Ratio		0.12			0.12		0.05	0.74	0.74	0.04	0.73	0.73
Clearance Time (s)		5.0			5.0		4.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		195			170		92	2607	1166	68	2558	1108
v/s Ratio Prot							c0.02	0.49		0.01	c0.58	
v/s Ratio Perm		c0.08			0.04				0.01			0.01
v/c Ratio		0.65			0.28		0.41	0.66	0.01	0.37	0.79	0.02
Uniform Delay, d1		54.2			51.6		59.6	8.4	4.3	60.9	11.2	4.8
Progression Factor		1.00			1.00		1.00	1.00	1.00	0.78	1.49	4.47
Incremental Delay, d2		7.1			0.9		3.0	1.3	0.0	1.7	1.3	0.0
Delay (s)		61.3			52.6		62.6	9.8	4.3	49.2	18.0	21.5
Level of Service		E			D		E	A	A	D	B	C
Approach Delay (s)		61.3			52.6			10.8			18.5	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



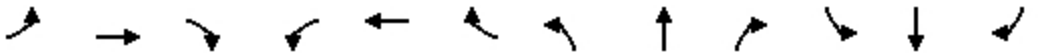
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	35	95	17	22	23	37	1676	15	24	1965	27
Future Volume (veh/h)	32	35	95	17	22	23	37	1676	15	24	1965	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1900	1900	1900	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	33	36	98	18	23	24	38	1728	15	25	2026	28
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	0	0	0	3	3	3	3	3	3
Cap, veh/h	58	58	118	69	86	70	49	2677	1191	32	2644	1176
Arrive On Green	0.12	0.13	0.13	0.12	0.13	0.13	0.03	0.76	0.76	0.02	0.75	0.75
Sat Flow, veh/h	195	443	906	257	661	537	1767	3526	1568	1767	3526	1568
Grp Volume(v), veh/h	167	0	0	65	0	0	38	1728	15	25	2026	28
Grp Sat Flow(s),veh/h/ln	1544	0	0	1456	0	0	1767	1763	1568	1767	1763	1568
Q Serve(g_s), s	13.1	0.0	0.0	4.7	0.0	0.0	2.8	30.1	0.3	1.8	43.9	0.6
Cycle Q Clear(g_c), s	13.1	0.0	0.0	4.7	0.0	0.0	2.8	30.1	0.3	1.8	43.9	0.6
Prop In Lane	0.20		0.59	0.28		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	0	0	0	0	49	2677	1191	32	2644	1176
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.65	0.01	0.77	0.77	0.02
Avail Cap(c_a), veh/h	0	0	0	0	0	0	136	2677	1191	136	2644	1176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.41	0.41	0.41	0.40	0.40	0.40
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	62.8	7.4	3.8	63.5	9.5	4.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.5	0.0	14.4	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	1.4	9.3	0.1	0.9	13.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	73.4	7.9	3.8	77.9	10.4	4.1
LnGrp LOS	A	A	A	A	A	A	E	A	A	E	B	A
Approach Vol, veh/h		167			65			1781			2079	
Approach Delay, s/veh		0.0			0.0			9.2			11.2	
Approach LOS		A			A			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	101.5		20.9	6.4	102.7		20.9				
Change Period (Y+Rc), s	4.0	7.0		5.0	4.0	7.0		5.0				
Max Green Setting (Gmax), s	10.0	83.0		20.0	10.0	84.0		20.0				
Max Q Clear Time (g_c+I1), s	4.8	45.9		6.7	3.8	32.1		15.1				
Green Ext Time (p_c), s	0.0	23.5		0.2	0.0	21.4		0.4				

Intersection Summary		
HCM 6th Ctrl Delay	9.7	
HCM 6th LOS	A	

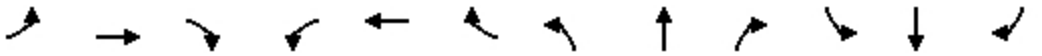
Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	1799	59	116	1559	192	30	236	91	143	272	155
Future Volume (vph)	252	1799	59	116	1559	192	30	236	91	143	272	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00	0.98	1.00	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	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1752	3505	1548	1770	3539	1557	1734	3471	1519	1749	3505	1543
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.57	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)	1752	3505	1548	1770	3539	1557	1046	3471	1519	564	3505	1543
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	271	1934	63	125	1676	206	32	254	98	154	292	167
RTOR Reduction (vph)	0	0	25	0	0	80	0	0	88	0	0	142
Lane Group Flow (vph)	271	1934	38	125	1676	126	32	254	10	154	292	25
Confl. Peds. (#/hr)	5		1	1		5	3		10	10		3
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	3%	3%	3%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8	4		4
Actuated Green, G (s)	22.3	69.7	69.7	10.7	58.1	58.1	14.1	11.7	11.7	23.6	17.2	17.2
Effective Green, g (s)	22.3	72.7	72.7	10.7	61.1	61.1	16.1	12.7	12.7	24.6	18.2	18.2
Actuated g/C Ratio	0.19	0.61	0.61	0.09	0.51	0.51	0.13	0.11	0.11	0.21	0.15	0.15
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	5.0	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	3.0
Lane Grp Cap (vph)	325	2123	937	157	1801	792	159	367	160	203	531	234
v/s Ratio Prot	0.15	c0.55		0.07	c0.47		0.01	0.07		c0.06	0.08	
v/s Ratio Perm			0.02			0.08	0.02		0.01	c0.10		0.02
v/c Ratio	0.83	0.91	0.04	0.80	0.93	0.16	0.20	0.69	0.06	0.76	0.55	0.11
Uniform Delay, d1	47.1	20.8	9.6	53.6	27.5	15.7	45.8	51.8	48.3	42.1	47.1	43.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.6	7.3	0.1	23.7	10.1	0.4	0.6	5.6	0.2	14.9	1.2	0.2
Delay (s)	63.6	28.1	9.6	77.3	37.6	16.2	46.5	57.3	48.5	57.0	48.3	44.1
Level of Service	E	C	A	E	D	B	D	E	D	E	D	D
Approach Delay (s)		31.9			37.9			54.2			49.3	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	1799	59	116	1559	192	30	236	91	143	272	155
Future Volume (veh/h)	252	1799	59	116	1559	192	30	236	91	143	272	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1870	1870	1870	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	271	1934	63	125	1676	206	32	254	98	154	292	167
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	2	2	2	4	4	4	3	3	3
Cap, veh/h	311	2228	992	151	1832	815	158	321	138	199	452	194
Arrive On Green	0.18	0.63	0.63	0.08	0.52	0.52	0.03	0.09	0.09	0.07	0.13	0.13
Sat Flow, veh/h	1767	3526	1569	1781	3554	1580	1753	3497	1509	1767	3526	1515
Grp Volume(v), veh/h	271	1934	63	125	1676	206	32	254	98	154	292	167
Grp Sat Flow(s),veh/h/ln	1767	1763	1569	1781	1777	1580	1753	1749	1509	1767	1763	1515
Q Serve(g_s), s	17.9	53.6	1.8	8.3	51.9	5.6	2.0	8.5	7.6	8.0	9.4	8.7
Cycle Q Clear(g_c), s	17.9	53.6	1.8	8.3	51.9	5.6	2.0	8.5	7.6	8.0	9.4	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	2228	992	151	1832	815	158	321	138	199	452	194
V/C Ratio(X)	0.87	0.87	0.06	0.83	0.91	0.25	0.20	0.79	0.71	0.77	0.65	0.86
Avail Cap(c_a), veh/h	339	2228	992	163	1866	830	178	321	138	199	452	194
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	18.0	8.5	54.1	26.6	6.6	47.2	53.4	52.9	46.8	49.7	23.3
Incr Delay (d2), s/veh	11.6	2.6	0.1	27.2	8.6	0.7	0.6	12.7	15.4	17.2	3.2	30.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	20.0	0.6	4.8	22.5	3.2	0.9	4.3	3.5	1.7	4.4	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	20.6	8.5	81.2	35.2	7.3	47.9	66.1	68.3	64.0	52.9	53.4
LnGrp LOS	E	C	A	F	D	A	D	E	E	E	D	D
Approach Vol, veh/h		2268			2007			384			613	
Approach Delay, s/veh		25.0			35.2			65.1			55.8	
Approach LOS		C			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	79.9	6.6	19.4	28.1	65.9	11.0	15.0
Change Period (Y+Rc), s	4.0	7.0	4.0	5.0	7.0	* 7	4.0	5.0
Max Green Setting (Gmax), s	11.0	72.0	4.0	13.0	23.0	* 60	7.0	10.0
Max Q Clear Time (g_c+I1), s	10.3	55.6	4.0	11.4	19.9	53.9	10.0	10.5
Green Ext Time (p_c), s	0.0	12.4	0.0	0.4	0.2	5.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.4
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

THE BOOKIN GROUP LLC

Land Use & Institutional Planning

Policy Analysis

Project Management

Group Facilitation

DATE: February 15, 2021

TO: Lisa Gunion-Rinker - Land Use Chair, AJCNDA
Vera Kolias - Senior Planner, City of Milwaukie

FROM: Debbie Cleek, The Bookin Group LLC

SUBJECT: Additional Information regarding Hillside Preliminary Planned Development PD-2020-02

The purpose of this memo is to address the questions raised by the Ardenwald-Johnson Creek Neighborhood Association in their letter dated January 27, 2021.

We apologize for not contacting the Neighborhood Association prior to submitting the Planned Development application to the City of Milwaukie, but as you are aware, HACC engaged in an extensive neighborhood outreach process during the development of the Master Plan in 2019 and the project team felt as though nothing significant about the project had changed since that time. HACC has to set up a meeting on February 17th to discuss the project with the Neighborhood Association and has moved the Planning Commission hearing date from February 23rd to March 9th to allow adequate time for the neighborhood to re-review the project. We are looking forward to our upcoming meeting with the NA to answer any additional questions you have.

The topics below are provided in order to shed light on some of the major questions raised about the project in the January 27th letter.

Subdivision/Phasing and Timeline:

The Hillside Master Plan is proposed to be developed in three major phases. Phase 1 which consists of Lots A and B is anticipated to be completed by roughly the summer of 2023. The specific lots that will be included in Phases 2 and 3 will be determined after the completion of Phase 1 and will be based on market demand and funding sources for affordable housing available at that time. The City of Milwaukie's Planned Development code requires completion of all phases of the project within 7 years of the approval of the Final Development Plan and it is anticipated that Hillside will be fully redeveloped within this timeframe.

The proposed subdivision of the development into lots is not related to the phasing or timeline of the development. The primary reason for the subdivision is the fact that all of the privately owned parcels will be bounded on all sides by public streets which will create a de-facto division of the land. With the existing configuration of the Hillside property all the internal roads dead end, allowing the large parcel to remain intact as a single undivided tax lot. The new configuration of the streets will create a grid pattern to provide greater connectivity through the neighborhood, but the result of this is "islands" of private land surrounded on all sides by public streets. As such, platting of the lots is required by both the City of Milwaukie and the Clackamas County Surveyor since existing rules would not let each of these individual "islands" of property be described and taxed under a single tax lot number.

Unlike the current configuration of Hillside, where public water and sewer lines run across the private property in public easements, all of the public utilities in the redevelopment will be located within the new public streets. The connections to these public utility lines that will serve each of the individual buildings will be private. By subdividing the property and creating actual lot lines around all of the parcels it will create a clear delineation of what is publicly owned.

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Creating lot lines will also assist the City in applying development standards such as setbacks, percentage building coverage and other standards to the development because they will have specific lines and areas to measure these standards from.

Additionally, creating clear boundaries and legal descriptions for each of the parcels is critical for applying for public housing funding since each lot in the development may have a different bundle of funding supplied to it based on what is available and can be secured. For example, some funding might be only available for family-sized units, which in the case of Hillside would include the three-bedroom units on Lots G and K, but not the larger buildings on the other lots that have more one-bedroom and studio units. So being able to describe lots separately will be critical to securing funding that might not be able to be applied to the entire site.

It is important to state that there is no attempt to obfuscate the reasons for subdividing the property. It is simply a function of the fact that the new road network will be *physically* dividing the land into individual lots so formally platting the land to match this reality is a necessary requirement of the process. The lots do not coincide with the phasing of the development or the future ownership of the property. The only lots that may be sold and developed with mixed-use and housing are Lots A and E.

Development Partners and Funding:

When lots are developed by other parties they will be held to the density, development standards and all other requirements of the approved Planned Development since the approval will be tied to the land, not to the ownership. Lots that are sold for market-rate or mixed-use development will be taxed the way any other market rate housing is taxed in the City. The remainder of the lots will likely remain in HACC ownership and leased to organizations that specialize in the development of affordable housing and first-time homeownership. The housing would remain affordable based on the terms tied to funding requirements. For example, we expect many of the new buildings will utilize Metro Affordable Housing Bond funding which requires that housing built using those funds remain affordable for at least 60 years.

It is important to clarify that HACC itself is not a developer – their mission is to connect citizens in need of housing with safe housing opportunities – therefore these partnerships are necessary to allow HACC to focus on their mission while getting new housing online to serve their clients. These partner organizations might design, construct and even manage the development once it's complete, but HACC will retain ownership of the land.

The refurbishment of Hillside Manor provides an example of how these partnerships might work. HACC recently platted the Manor onto its own lot to secure special funding from HUD to pay for the refurbishment, however the lot itself is still owned by HACC. The Housing Development Center, a Portland-based nonprofit that helps develop affordable housing, is managing the design, permitting and construction of the project. Quantum Residential, a firm that specializes in the management of multi-family communities in the Pacific Northwest, now manages the development. Partnership agreements similar to this will play out on each of the new lots in Hillside based on the funding sources obtained, the type of construction, and the availability of development partners.

The townhome-style units proposed for Lot K offer the possibility for future homeownership opportunities. The townhome units could eventually be divided into condominium units after construction allowing each home to be individually owned, while the land under the units remained in HACC's ownership. HACC envisions partnering with organizations like Proud Ground or Habitat for Humanity that specialize in first time homebuyer opportunities.

Conclusion:

The Hillside Planned Development application submitted to the City of Milwaukie is substantially similar to the plan that came out of the master planning process conducted with the neighbors in 2019. The minor changes to the plan are mainly been a result of complying with the City's preliminary review comments and engineering challenges that were discovered as the plan was refined. HACC remains committed to the vision of Hillside that was created with the help of the neighborhood and welcomes the opportunity to update the neighborhood on how this initial visioning work continues to move closer to becoming a reality.

THE BOOKIN GROUP LLC

Land Use & Institutional Planning

Policy Analysis

Project Management

Group Facilitation

Minutes from the Ardenwald/Johnson Creek Neighborhood Association meeting
February 24, 2021
Hillside Park redevelopment

Prepared by Debbie Cleek on February 25, 2021

The meeting began with Jill Smith, the Executive Director of HACC, introducing the project and team. Next Ryan McCluckie with Scott|Edwards Architecture walked through the changes to the project that had occurred since the end of the public engagement process in December 2019. Then Debbie Cleek with the Bookin Group presented information about the Planned Development process and how phasing and dividing the lot would work. Finally, Devin Ellin with HACC described the process for funding affordable housing projects and how HACC would work with their partners to develop and manage the buildings. The presentation included a slide deck that included copies of the plans that were submitted to the City as part of the Preliminary Planned Development application.

Approximately 17 participants attended the meeting. The community members in attendance asked the following questions about the proposal:

- What is the number of on-street parking spaces proposed for each retail space? Are there dedicated spots for the retail businesses?
  Answer: 32nd Ave will be widened to provide on-street parking and HACC has requested that the City consider regulated (timed) parking for these spaced to encourage retail parking during the day. Also, there will be 1 or 2 spaces in the lots behind the businesses for staff and customers.

- As Lots A and E are sold to outside developers how will HACC assure that these private interests operate in a good and neighborly way?? What will be the mechanism for this?
  Answer: HACC will vet all interests that want to operate on the site. There will be management and maintenance agreements overlays across the development.

- Are there any development renderings or sample pictures available?
  Answer: Not at this time, the project is still in the conceptual phase

- How will this development impact the surrounding property values?
  Answer: This development will add neighborhood amenities and improve existing conditions, which should help to increase surrounding property values.

- What GMU retail uses will not be allowed on the site?
  Answer: No warehouses, light (or other) industrial/manufacturing or cannabis related activities or business will be allowed. The commercial uses will also be limited to a total of 20,000 sq. ft. between the two buildings.

- What (if anything) is being put into place to ensure the trees survive over a longer period of time and any that die will be replaced?
  Answer: We are unsure what City regulations govern the long-term health of the trees, but typically in most jurisdictions this is a compliance issue and missing trees need to be accounted for whenever new development is proposed. As a side note, the City of Milwaukie is currently in the process of writing their tree regulations so this might be something that is not currently regulated.

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- Will existing mature trees be preserved?
  Answer: 44 conifers and 35 deciduous trees on are proposed to be preserved on the site, primarily located in the Open Space area in the northwest corner of the site. The new street grid requires a lot of changes to the site, but new trees will be planted in all of the new streets, which the city will ultimately maintain. Additional trees will be planted on all of the lots after construction of each building.

- Are there higher income units on the site?
  Answer: There will be units for people making up to 80% of AMI on the HACC owned parcels, and potentially market rate units on the lots A & E that will be sold for private development. The City Planner has determined that the breakdown of units is 367 units of affordable housing and 233 units of market rate housing, so there will be options for many income levels.

- Will 32nd Avenue need to be expanded to allow for on-street parking?
  Answer: Yes, a significant amount of right-of-way is being dedicated from the west edge site to allow for the widening of 32nd Avenue.

- How wide is the landscape buffer on the north property line? How wide is this buffer adjacent to the parking areas? Is this wide enough to support large trees? Will any existing trees be preserved in this area of the site?
  Answer: The majority of the buffer along the north property line will be 15 feet wide, since all buildings will be setback from this property line at least 15 feet. The parking areas adjacent to the north property line will be 6 feet wide, in compliance with the City's parking lot landscaping standards, which is wide enough to support large trees. Three existing trees are being preserved on the north edge of the property but then are not located adjacent to the parking lot.

- How was usage for 29th determined? Will the traffic control bollards be removed later and the street opened to through traffic?
  Answer: The Traffic Impact Analysis submitted with the application analyzed how much cut-through traffic would be likely if 29th Avenue was a through street. It found that 29th Avenue is not really an attractive entrance/exit for the Hillside site since north of the Hillside the street is in need of improvement and the intersection at 32nd and Balfour is unsafe. Ultimately the decision on if 29th will be required to be a through street will be made by the Milwaukie Planning Commission. HACC would like to see this street continue as a bikeway, and emergency access when needed, but not a through street.

- How do we get information to the Planning Commission?
  Answer: The public notice should be sent out by the City of Milwaukie on March 3rd and will include directions on how to submit comments in writing until the hearing on March 23rd and/or how to attend the hearing in person.

1.27.2021

Vera Kolias
Senior Planner
City of Milwaukie

There is a lot of information contained in the documents presented **for PD-2020-02** that have raised many questions and concerns for the Ardenwald-Johnson Creek Neighborhood Association. Neighbors have requested that a presentation of this proposal by HACC and their associates be given to the neighborhood before this project goes before the Planning Commission.

Changing the Zoning and Comprehensive Plan Designation of the property to reach density goals of the City and County and allow for mixed use development was anticipated after viewing documentation presented at the last open house in 2019. The request for division of the HACC 16.16-acre site into the tower/open field (note, the open field was historically another fill/dump in the city) parcel, and the rest of the 14.7-acre site was then needed by the County to apply for specific HUD funding.

Now, after seeing that the Master Plan also includes subdividing the remaining larger property into smaller parcels to facilitate phased development and provide the opportunity for development of lots by outside partners there are questions and concerns. It was anticipated that there would be a few more subdivisions of the remaining large parcel to account for the phased development so very few residents are displaced. Something normal would be, development in 3 phases, but 8 parcels, 10 parcels total, raises so many questions.

Questions about how many phases are being considered, what is the need/intent for this many parcels, is there a timeline for phases, what is the anticipated timeline for Hillside Park project completion once phases start, how many years of this construction including 32nd Ave is being ballparked, are the partners identified/known entities, how many parcels is HACC planning to develop themselves vs. outside partners, what happens to a parcel if HACC sells it undeveloped, is that an option, can that sold parcel plan then be modified/densified if developed by another entity, if a parcel is built as affordable housing by HACC but then sold – does it stay as affordable housing or become market rate housing. The neighborhood would like to understand and has many more questions about this project.

The new residential development is anticipated to be both market rate and affordable housing that will leverage federal, state, and local funding opportunities. The neighborhood would like to become informed about how this process will work. How will utilities be separated from public vs. private, if the parcel is sold by HACC to a private entity will it then be taxable land, how will equity and homeowner ownership opportunities be encouraged/come into play as previously discussed during open houses and what will be the process.

Thank you for your help, Vera, and I look forward to learning more about the possibilities of this project. I will submit specific questions/comments concerning the Type III land use review for the Planning Commission later this week or beginning of next, after I have more time to study the submitted plans.

Best regards,

Lisa Gunion-Rinker
AJCNDA, LandUse Chair

From: Vera Kolias
To: Elvis Clark
Cc: Ronelle Coburn; Lisa Gunion-Rinker; hacc@clackamas.us; HACC - HillsideMasterPlanInfo
Subject: RE: Comment on Hillside application (pd-2020-002)
Date: Wednesday, January 27, 2021 13:28:00

Hello Elvis,

Below are our replies to your questions.

1. I have notified the applicant of your request for a meeting with the NDA.
2. 29th Ave and bikeway connections:
    a. Regarding the bikeway connection, all of the options the city is reviewing have the route coming through the Hillside property along the realigned/extended 29th Ave, so it's more than likely. We don't yet have details about the design of the route through the Hillside property—probably with cyclists sharing the street marked with sharrows or other pavement markings (rather than a separated cycletrack or path), but that may depend on the final plan for Hillside and what kind of traffic we see on 29th Ave. The traffic on 29th Ave within the planned Hillside development will probably be pretty light, so a sharrow is likely.
    b. You are correct that we don't yet know the details of how all the various redevelopments will affect a specific design for improvements, but the point of that bikeway connection project is to consider the possibilities and make our best choice based on what we know and assume, and thereby direct the course of required improvements.
    c. The question of allowing vehicle access on 29th from Hillside further north is obviously a huge one for volumes on 29th and could impact the neighborhood greenway feel of the route. However, I can only reiterate what the plans indicate – it has been designed to be a bike/ped connection and to allow emergency vehicles only. The traffic study completed as part of the project indicates little impact to the proposed street connections at Dwyer Dr. and Meek St. Therefore, the connection at 29th Ave. will have a condition of approval to provide for a bike/ped connection and street connection that will be gated, with locks that allow Public Works and emergency access.
    d. We know of no developer responsibilities to improve 28th Ave. or 28th Pl. The city does have a future CIP project (tentatively scheduled for 2023) that will upgrade utilities and streets from Roswell to Van Water, and from 29th through 32nd Ave. When the TSP is updated (FY 22 and FY 23), the consultant will study our transportation grid and determine if changes are needed.
3. Subsidies and taxes: The City is not providing any subsidies. Housing Authority projects are exempt from all property taxes per ORS 307.092. The County will likely be using a combination of federal, state and regional housing bond funds for the project. Questions about the project financing should be directed to the County as that is beyond our scope of review for the PD.

I hope this is helpful.

-Vera

VERA KOLIAS, AICP
Senior Planner
she • her • hers
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City of Milwaukie
6101 SE Johnson Creek Blvd • Milwaukie, OR 97206

From: Elvis Clark <eclarkmilwor@yahoo.com>
Sent: Tuesday, January 26, 2021 18:02
To: Vera Kolias <KoliasV@milwaukieoregon.gov>
Cc: Ronelle Coburn <milwaukierip@gmail.com>; Lisa Gunion-Rinker <astrantialgr@gmail.com>; hacc@clackamas.us; HACC - HillsideMasterPlanInfo <hillsidemasterplaninfo@clackamas.us>; Steve Adams <AdamsS@milwaukieoregon.gov>
Subject: Comment on Hillside application (pd-2020-002)

This Message originated outside your organization.

Hi, Vera.

Last night (1/25/21) the Ardenwald-Johnson Creek Neighborhood Association discussed the Hillside Park planning application pd-2020-002.

It is my personal opinion that **we in the neighborhood association & neighborhood could really use another presentation by Hillside Park planners with the Clackamas Housing Authority, and hopefully this occurs before the Planning Commission takes up the Application sometime in the next month.**

First, it is over a year since folks in the neighborhood hear from HACC and consultants and other government officials about the plan as then proposed and town halls commenced.

Second, despite my getting reassurances from the City engineer and other City officials that 29th street will not be available for vehicular traffic heading north out of Hillside itself or south into the same, last night's Neighborhood Association still have members not convinced that at some point this connection is not changed to allow vehicular traffic as a routine (emergency vehicle use aside). The members remain unconvinced even as the Hillside Plan application states very clearly that this connection will be for bicyclists, pedestrians, and emergency vehicles only.

I guess the worry remains that once this and other developments occur along 32nd that it may very well become evident another arterial is needed besides 32nd. The plan map of Hillside development doesn't show 28th street but the application talks of it elsewhere; and so I am not sure of how 28th street improvements in the plan relate to street connection if any to north onto 28th out of Hillside, or into.

Third, the Monroe Greenway connection to 29th and onto Springwater Trail/corridor north is very likely to come through Hillside Park development. Yet we don't know for certain how this connection is exactly impacted by the redevelopment of HIllside nor the Senior housing units now in preliminary planning along Llewellyn Street (this is the third option favored currently the last I hear by Bike Milwaukie). I missed the Jan 14th virtual open house, unfortunately.

Fourth, I would like to know personally if city of Milwaukie or County of Clackamas are providing any tax exemptions or subsidies to the re-development of Hillside; additionally will the market rate lots

particularly those owned by other than government incur property taxation?

Conclusion: I am pleased the plan keeps the 29th connection a bicycle and pedestrian only (with exemption for emergency vehicles). But doubts remain about longer future on this matter, elevating the need for a meeting in my opinion with the Ardenwald-Johnson Creek neighborhood association with its invitation open to all the public to join in the conversation. I remain uncertain also as to whether the retail in the redone Hillside actually becomes nothing more than government offices, as I don't see a lot of bicyclists stopping in at the potential retail establishments mentioned in the plan. Maybe Providence Milwaukie can fill these spaces with offices instead if other retail doesn't work out (usually mixed use retail is higher priced than competing shops in older existing establishments or big volume stores; and folks in Milwaukie are not usually the higher income folks like in the hipper sections of nearby City of Portland - who are more into spending on specialty shops and restaurants.)

Thank you for considering my comments here,

Elvis Clark
Ardenwald neighborhood resident
also Public Safety Advisory Committee and Transportation representative

503-654-8895

Sent from Yahoo Mail. Get the app

From: Milwaukie Planning
To: Vera Kolias
Subject: FW: Written Comments for 2889 SE Hillside Ct
Date: Friday, March 5, 2021 13:39:25

From: Mattie Courtright <mattielynncourtright@gmail.com>
Sent: Friday, March 5, 2021 1:28 PM
To: Milwaukie Planning <Planning@milwaukieoregon.gov>
Subject: Written Comments for 2889 SE Hillside Ct

This Message originated outside your organization.

Hello,

I am writing in full support of the redevelopment of 2889 SE Hillside Ct. I however want to make sure that it will include not only housing to as many low-income units as it does now, but that it will increase the number of low-income units available at the site. Our region is in great need of low-income housing, and this is the perfect opportunity to provide much-needed housing to our community.

It would also be wonderful for a significant portion of the development to be set aside for park and/or playground space as we direly need more green space in our neighborhood for recreation. A community garden would also be a welcome addition to green space as it would greatly benefit the low-income residents of the community.

Thank you,
Mattie Levendosky
3226 SE Harvey St, Milwaukie, OR 97222