Fillmore – Central Ave to 7th Street Lane Reduction Capacity Analysis December 3, 2021

Existing 2021 Conditions:

- AM
 - o All intersections operate at an acceptable overall LOS
 - o EB/WB approaches at 7th St have some movements at LOS E
 - o All other movements are LOS D or better
- MD
 - All intersections operate at an acceptable overall LOS
 - o EB approach at 7th St has some movements at LOS E
 - o All other movements are LOS D or better
- PM
- All intersections operate at an acceptable overall LOS
- o EB/WB approaches at 7th St have some movements at LOS E
- o EB Left Turn Queue at 7th St may exceed available storage
- All other movements are LOS D or better

Proposed 2021 Conditions:

- AM
 - o Signalized: Comparable to Existing
 - o Unsignalized:
 - 1st/Filmore Overall improves to LOS A
 - 2nd/Filmore Comparable to Existing
- MD
 - o Signalized: Comparable to Existing
 - o Unsignalized:
 - 1st/Filmore Overall improves to LOS A
 - 2nd/Filmore Comparable to Existing
- PM
- Signalized: Comparable to Existing
 - EB/WB approaches at 7th St have some movements at LOS E (matches existing condition)
 - EB Left Turn Queue at 7th St may exceed available storage (matches existing condition)
- o Unsignalized:
 - 1st/Filmore Comparable to Existing
 - 2nd/Filmore Slight decrease from Overall LOS A to LOS B; all individual movements LOS B or better

<u>Future 2026 Conditions (with Proposed Geometry):</u>

- Assumes 2% growth rate per year for 5 years
 - o Existing Year: 2021
 - o Future Year: 2026
- Comparable to 2021 Results.
 - o All locations operate at Overall LOS C or better for all three peaks.
 - o EB/WB approaches at 7th St have some movements at LOS E during the PM Peak (matches existing condition).
 - o EB Left Turn Queue at 7th St may exceed available storage during the PM Peak (matches existing condition).

Results:

- There appears to be plenty of capacity available to make the proposed geometric changes without impacting operations at the existing signalized and unsignalized intersections.
 - There is very little change in LOS/Delay with the proposed geometry. All intersections and movements are expected to continue operating at a LOS D or better. Most are LOS A/B.
 - Exception is the EB/WB approaches at 7th Street, which already operate at LOS E under existing conditions due to control delay.
 - o The proposed geometry is effectively the same as existing conditions for Central Ave and 7th Street intersections, which are the major intersections.
 - Note: The east leg of Central Ave assumes on-street parking will be removed in favor of the exclusive bike lane.

Recommendations:

- Review the existing signal timings after implementing the proposed lane reduction. Field adjust timings as needed and note the following:
 - Tweaking the timings at 7th Street will not significantly reduce the existing side street delay, because the delay is primarily from control delay. The split phasing makes it difficult to allocate much more time to Fillmore and the side street splits already receive the majority of the cycle when added together.
 - Any signal timing changes should favor the existing NB/SB progression on Central Ave and 7th Street.

				CENTRAL AVE & LOS AND 959						
			NB	SB	0 2010		EB			WB
Intersection	L/T	L	T R	L T	R	L	Т	R	L	T R
				EXISTING	G 2021					
	В	D	Α			С	D			D
AM Peak	В		А				С			D
					С					_
	В	D	Α			С	С			D
MD Peak	В		В				С			D
					С					
	В	D	Α			С	С			D
PM Peak	В		В				С			D
			1		С					
AM Queue	25′	25′	30′			30′	115′			105′
MD Queue	25′	50′	35′			35′	85′			130′
PM Queue	25′	45′	65′			45′	75′			185′
EX Storage	-	220′	-			-	-			-
	1	T	1	PROPOSE	D 2021				T T	
AM Peak	В	D	A			С	D			D
AM Peak	B A C D									
		I	T		С					,
MD Peak	В	D	A			С	С			D
	В		В				С			D
	_	T _	1 -		С					_
DNA De ele	В	D	A			С	С			D
PM Peak	В		В				С			D
444.6	05.	05.	1 00:		С		445.			105:
AM Queue	25′	25′	30'			30′	115′			105′
MD Queue	25′	50′	35′			35′	85′			135′
PM Queue	25′	45′	65′			45′	75′			185′
EX Storage	-	220′	-	PROPOSED 202)6 (ELITLU	- DE)	-			-
	В	D	A	FROFUSED 202	20 (1010)	C	D			D
AM Peak	В	D	A A			C	С			D D
Aivi i cak	В		Λ		С					D
	В	D	A			С	С			D
MD Peak	В		В			V	С			D
.TID I OUN		<u>I</u>			С	<u> </u>			1	
	В	D	A			С	С			D
PM Peak	В		В			, j	С			D D
. Wir out		<u>I</u>			С	<u> </u>			<u> </u>	
AM Queue	25′	30′	30′			35′	120′			115′
MD Queue	25'	55'	40′			40′	90'			145′
PM Queue	25'	45′	75′			50′	85'			200′
EX Storage	-	220′	-			-	-			-

	3RD STREET & FILLMORE ST LOS AND 95% QUEUES									
Intersection		NB			SB		EB		WB	
IIItersection	L	T	R	L	T R	L	T R	L	Τ	R
					EXISTING 2021					
	С		Α	С	С		A	Α	Α	
AM Peak		В			С		Α		Α	
					AND 95% QUEUES SB EB WB T R L T R L T R EXISTING 2021 C A A A					
	С		Α	С	В		Α	Α	Α	
MD Peak		В			С		А		Α	
						В				
	С		А	С	С		А	А	Α	
PM Peak		Α			С		A		Α	
				•		В		•		
AM Queue	25′		25′	65′	95′		30′	25′	30′	
MD Queue	25′		25′	50′	75′		35′	25′	30′	
PM Queue	25′		25′	45′	85′		45′	25′	30′	
EX Storage	140′		-	-						
J				ŀ	PROPOSED 2021					1
	С		А	С	С		A	А	Α	
AM Peak		В		l l					l	·
				I	-	В				
	С		А	С	В		Α	Α	Α	
MD Peak		В								
				I.	-	В				
	С		А	С	С		Α	Α	Α	
PM Peak		Α	ı						l .	
· ···· · · ·				I		В				
AM Queue	25′		25′	65′	95′		60'	25′	55′	
MD Queue	25'		25'	50'				+		
PM Queue	25′		25'	45′						
EX Storage	140′		-	-	-		-			
znotorago	7.10		1	PROP	OSFD 2026 (FUTL	JRF)		,,,,		
	С		А	С			A	A	Α	
AM Peak		В							l	
7 IIVI I GUIX						R	,,			
	С		Α	С	C		Δ	Δ	Δ	
MD Peak	0	В	/ / /	<u> </u>				71		
WID I OUR				<u>I</u>	<u> </u>	R	, ,	1		
	С		Α	С	C		Δ	Δ	Δ	
PM Peak		A	I /\					- / \		
I IVII CUN		А		I .	<u> </u>	R				
AM Queue	25′		25′	70′	105′		65'	25′	60'	
MD Queue	25'		25'	55'				-		
PM Queue	30'		25'	45′						
	140′							+		
EX Storage	140		-	-	-		-	130	_	

			5TH STREET & FILLMORE ST LOS AND 95% QUEUES					
Interception	NB	SB		EB		WB		
Intersection	L T R	L T R	L	T R	L	T R		
		EXISTING 2021	1					
	В		В	В		В		
AM Peak	В			В		В		
			В					
	В		В	A		Α		
MD Peak	В			A		A		
			В					
	В		В	В		А		
PM Peak	В			В		A		
			В					
AM Queue	30′		30′	45′		70′		
MD Queue	40′		35′	45′		50′		
PM Queue	65′		65′	90′		45′		
EX Storage	-		135′	-		-		
	_	PROPOSED 202		_	1	_		
	В		В	В		В		
AM Peak	В			В		В		
	_		В	_		_		
	В		В	В		В		
MD Peak	В		D.	В		В		
			В	D		В		
D14D 1	В		В	В		В		
PM Peak	В		D	В		В		
4440	201		В	05/		150/		
AM Queue	30'		30′	85'		150′		
MD Queue	40'		35′	90′		110'		
PM Queue	65′		65′	190′		95′		
EX Storage	-	PROPOSED 2026 (FL	135'	-		-		
	В	PROPOSED 2020 (FC	B	В		В		
AM Peak	В		D	В В		В		
AIVI PEAK	D		B	D		D		
	В		В	В		В		
MD Peak	В		Ь	В В		В		
IVID FEAK	В		B	В		В		
	В		В	В		В		
PM Peak	В		Ь	В В		В		
I IVI I GAN	D		B	U		U		
AM Queue	30′		30′	90'		170′		
MD Queue	45'		35'	100′		125′		
PM Queue	70′		75′	210'		105′		
EX Storage	-		135'	-		-		

	7TH STREET & FILLMORE ST LOS AND 95% QUEUES									
Intersection		NB		SB		EB		WB		
Intersection	L	T R	L	T R	L	T	R	L T	R	
				XISTING 2021				T		
	В	В	В	В	E	E	В	E	С	
AM Peak		В		В		E		D		
	В	A	Α	Α	B E	E	В	D	В	
MD Peak	D	A	A	A A	E	D	Б	С	D	
IVID PEAK		A		А	B	U U		C		
	В	В	В	В	E	E	Α	E	С	
PM Peak		В	D	В	L	E		D		
T WIT Cak		C E D								
AM Queue	55′	180′	125′	315′	115′	120′	30′	145′	20′	
MD Queue	40'	155′	25'	165′	145′	145′	30'	25′	25′	
PM Queue	55′	315′	40′	210′	305′	305′	45′	55′	30′	
EX Storage	500′	-	500′	-	120′	-	-	160′	-	
Ü			PF	ROPOSED 2021						
AM Peak	В	В	В	В	Е	E	В	E	С	
		В	В		E			D		
					В					
MD Peak	В	Α	А	Α	E	E	В	D	В	
MD Peak		Α		A		D		С		
			1 1		В			T	1	
	В	В	В	В	E	E	Α	E	С	
PM Peak		В		В		E		D		
			T T		C	1	T	T	T	
AM Queue	55′	180′	125′	315′	115′	120′	30′	145′	25′	
MD Queue	40′	155′	25′	165′	145′	145′	30′	25′	25′	
PM Queue	55′	315′	40′	210′	305′	305′	45′	55′	30′	
EX Storage	500′	-	500'	- SED 2026 (FUTU)	120'	-	-	160′	-	
	С	B	C	B	E E	E	В	E	С	
AM Peak	C	В		В	<u> </u>	E	U	D	C	
7 IVI I CUR					C	<u> </u>		<u> </u>		
	В	Α	В	A	E	Е	Α	D	В	
MD Peak		A		A	_	D		С		
			l		В					
	В	В	С	В	E	Е	Α	Е	D	
PM Peak		В		В		D		D		
			<u> </u>		С					
AM Queue	55′	220′	175′	395′	125′	130′	35′	150′	55′	
MD Queue	45′	190′	30′	200′	155′	155′	30′	30′	25′	
PM Queue	65′	385′	50′	255′	320′	330′	45′	60′	50′	
EX Storage	500′	-	500′	-	120′	-	-	160′	-	

1 ST STREET & FILLMORE ST LOS AND 95% QUEUES										
		NB		SB		EB	WB			
Intersection	L	T R	L	T R	L	T R	L	T	R	
			Ε	EXISTING 2021						
	А	А	А	В	Α	В	А	В	Α	
AM Peak		Α		В		В		Α		
					В					
	Α	В	В	В	Α	В	Α	В	Α	
MD Peak		В		В		В		A		
					В		1	1	1	
	В	В	В	В	В	В	В	В	Α	
PM Peak		В		В		В	В			
					В	T	1	T	1	
AM Queue	25′	25′	25′	25′	25′	50′	25′	25′	25′	
MD Queue	25′	25′	25′	25′	25′	25′	25′	25′	25′	
PM Queue	25′	50′	25′	25′	25′	50′	25′	50′	25′	
EX Storage	100′	-	100′	-	95′	-	90′	-		
		•		ROPOSED 2021	T . I					
ANA Darah	Α	Α	Α	Α	Α	В	Α	Α Α		
AM Peak		A		A	^	В		Α		
	Δ.	В	Ι Δ	Δ	A	Δ.	Α .	1	<u> </u>	
MD Dools	Α		A	Α	А	Α Α	Α	<u> </u> В	В	
MD Peak		A		A	<u> </u>	A		В		
	В	В	В	A	A	В	Α		 B	
PM Peak		В		В		В		В .		
T IVIT Cak		U U		U U	В	U U		В		
AM Queue	25′	25′	25′	25′	25′	50′	25′	2	5′	
MD Queue	25'	25′	25'	25′	25'	25′	25'		0'	
PM Queue	25′	25′	25′	25′	25′	50′	25′		0'	
EX Storage	100′	-	100′	-	95′	-	90′		_	
J			PROPO	DSED 2026 (FUTU	IRE)					
	А	А	А	В	Α	В	Α	Е	3	
AM Peak		Α		A		В		В		
					В					
	Α	В	Α	В	Α	В	Α		В	
MD Peak		В		В	В			В		
					В					
	В	В	В	В	Α	В	В		В	
PM Peak		В		В		В		В		
			, , , , , , , , , , , , , , , , , , , 		В	1	-	1		
AM Queue	25′	25′	25′	25′	25′	50′	25′		0'	
MD Queue	25′	50′	25′	25′	25′	50′	25′		0'	
PM Queue	25′	50′	25′	25′	25′	50′	25′	6	0′	
EX Storage	100′	-	100′	-	<i>95′</i>	-	90'		-	

2 ND STREET & FILLMORE ST LOS AND 95% QUEUES										
	NB		SB			EB	WB			
Intersection	L T	R	L T	R	L	T	R	L	T	R
			EXISTIN			<u> </u>			<u> </u>	
	A	Α	Α	Α	А	А	А	Α	Α	Α
AM Peak	A		А	· ·		Α			Α	1
					A					
	A	А	Α	А	Α	А	Α	А	Α	Α
MD Peak	А	•	A			А			Α	•
					A					
	В	Α	А	Α	Α	В	Α	Α	В	Α
PM Peak	В		Α			Α			В	
				A						
AM Queue	25′	25′	25′	25′	25′	25′	25′	25′	25′	25′
MD Queue	25′	25′	25′	25′	25′	25′	25′	25′	25′	25′
PM Queue	25′	25′	25′	25′	25′	25′	25′	25′	25′	25′
EX Storage	-	50′	-	160′	75′	-	-	-	-	-
		•	PROPOS	ED 2021				•		
AM Peak	А	Α	Α	Α	Α	В		Α	А	
	A									
		1	T		Α	1		1	,	
	А	Α	Α	Α	Α	1	4	Α		В
MD Peak	A		А			А			Α	
			1		A	Т		1	T	
	В	Α	Α	Α	Α	1	В	Α	l	В
PM Peak	A		A			В			В	
		1	1		В	T		1	1	
AM Queue	25′	25′	25′	25′	25′		0'	25′	50′	
MD Queue	25′	25′	25′	25′	25′		0'	25′	50′	
PM Queue	25′	25′	25′	25′	25′	5	i0′	25′	5	50'
EX Storage	-	50′	-	160′	75'		-	-		-
		Ι.,	PROPOSED 20		-	Ι .		Ι.,		ь
4445	A	Α	A	В	Α		3	Α		В
AM Peak	A		A		<u> </u>	В			В	
	D	Ι Δ	Δ.	1	В			Ι Δ	1	D
MD Dook	В	Α	A	А	Α		3	Α		В
MD Peak	А		A		В		В			
	В	Α	Λ				 R	Λ		В
PM Peak	В	I A	A A		A B B		A	<u>I</u> В	ט	
FIVIFEAN	D		I A		<u>I </u>	D		1	D	
AM Queue	25′	25′	25′	25′	25′	-		25′	-	50'
MD Queue	25′	25'	25'	25'	25'		50'	25'		50'
PM Queue	25'	25'	25'	25'	25'	+	50'	25'	†	50'
		50'		_						
EX Storage	-	<i>50</i> °	-	160′	75′		-	-		-