Jennifer MacDonald <macdonaldj@rochesterhills.org>

RE: 63131-85300-22 Rochester Hills Management

1 message

Gough, Stacey (MDOT) <goughs@michigan.gov> Thu, Dec 8, 2022 at 6:27 AM
To: Keith Depp <deppk@rochesterhills.org>
Cc: "Patel, Kajal (MDOT)" <PatelK8@michigan.gov>, "Galindo, Steve (MDOT)" <GalindoS@michigan.gov>, "Thomas, Jesse (MDOT)" <ThomasJ19@michigan.gov>, "Adelman, Doug (MDOT)" <AdelmanD@michigan.gov>, "Pozolo, Thomas (MDOT)" <PozoloT@michigan.gov>, Chris McLeod <mcleodc@rochesterhills.org>, Jennifer MacDonald <macdonaldj@rochesterhills.org>, "Gough, Stacey (MDOT)" <goughs@michigan.gov>

Keith,

Attached is the latest review email that was sent to applicant (MDOT doesn't send a "formal" letter we just send review emails).

Please note also that MDOT doesn't perform a FULL permit review until the TIS and conceptual approach are approved(location, # of approaches, & geometrics only). Once those are approved MDOT will review the entire set of plans. Therefore, I imagine MDOT will have more comments once we are in that stage. This is noted in our review email to alert the applicant of our process.

Thanks,

Stacey

Stacey Gough

MDOT Bay Region

ITS, Mobility, & Safety Engineer

5859 Sherman Rd

Saginaw, MI 48604

Cell - 248-895-2558

1. Trip gen for steady state: per our previous meetings we discussed around 10 to 12% pass by rate was appropriate for trip gen. instead of that 30% pass by rate is used in the analysis.

Table 4: Trip Generation (Opening Day) Summary

Land Use	ITE Code	Amount	Units	AM Peak Hour (vph)			PM Peak Hour (vph)			SAT MD Peak Hour (vph)			SAT PM Peak Hour (vph)		
				In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Chick-fil-A	820	4,978	SF	54	55	109	162	161	323	190	195	385	156	156	312
Pass-By (10%)				*5*	*5*	*10*	*16*	*16*	*32*	*19*	*19*	*38*	*15*	*15*	*30*
New Trips				49	50	99	146	145	291	171	176	347	141	141	282
Strip Retail Plaza (<40k SF)	822	5,036	SF	7	5	12	24	24	48	17	16	33	17	16	33
Total Trips				61	60	121	186	185	371	207	211	418	173	172	345
Total Pass-By				*5*	*5*	*10*	*16*	*16*	*32*	*19*	*19*	*38*	*15*	*15*	*30*
Existing (Development) Volumes				*9*	*5*	*14*	*17*	*13*	*30*	*16*	*24*	*40*	*18*	*15*	*33*
Total Net New Trips				**47**	**50**	**97**	**153**	**156**	**309**	**172**	**168**	**340**	**140**	**142**	**282**

Table 5: Trip Generation (Steady State) Summary

Land Use	ITE Code	Amount	Units	AM Peak Hour (vph)			PM Peak Hour (vph)			SAT MD Peak Hour (vph)			SAT PM Peak Hour (vph)		
				In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Chick-fil-A	820	4,978	SF	54	55	109	162	161	323	190	195	385	156	156	312
Pass-By (30%)				*16*	*16*	*32*	*48*	*48*	*96*	*58*	*58*	*116*	*47*	*47*	*94*
New Trips				38	39	77	114	113	227	132	137	269	109	109	218
Strip Retail Plaza (<40k SF)	822	5,036	SF	7	5	12	24	24	48	17	16	33	17	16	33
Total Trips				61	60	121	186	185	371	207	211	418	173	172	345
Total Pass-By				*16*	*16*	*32*	*48*	*48*	*96*	*58*	*58*	*116*	*47*	*47*	*94*
Existing (Development) Volumes				*9*	*5*	*14*	*17*	*13*	*30*	*16*	*24*	*40*	*18*	*15*	*33*
Total Net New Trips				**36**	**39**	**75**	**121**	**124**	**245**	**133**	**129**	**262**	**108**	**110**	**218**

2. How vehicles are going to weave to exit with short queue for exiting vehicles at driveway. What impact does exiting backups have on service rate? Internal circulation comment has consistently not addressed since 1st review.
3. Right turn for the driveway needs to show existing crosswalk on Rochester Rd.
4. Queue analysis: Provide detailed calculations for queueing analysis. Provide sources used for data used in queuing analysis (e.g., time per vehicles) for Chick-fil-A. Random arrival analysis is missing and needed as a part of queueing analysis.

Table 12: Queue Length Calculations

Opening Day Operations		Normal Operations	
STACKING SPACE CALCULATOR		**STACKING SPACE CALCULATOR**	
Number of Arrivals	**186**	Number of Arrivals	**133**
Peak Period Time (minutes)	**60**	Peak Period Time (minutes)	**60**
% Arrivals during peak period	**100%**	% Arrivals during peak period	**100%**
Time per Vehicle (s)	**36**	Time per Vehicle (s)	**36**
Vehicle Stacking Length (FT)	**25**	Vehicle Stacking Length (FT)	**25**
Service Rate	100	Service Rate	100
Arrival Rate	186	Arrival Rate	133
TOTAL QUEUE (Veh)	**86**	**TOTAL QUEUE (Veh)**	**33**
TOTAL QUEUE (ft)	**2,150**	**TOTAL QUEUE (ft)**	**825**

Total vehicle queue = 33 (report even shows Kalamazoo has 41 vehicles). Random Google imagery shows 50+ cars for Novi Chick-fil-A and additional cars stacked on Mall Road.

5. How emergency is going to be handled due to lack of escape lane if someone in the queue has emergency and when they are trying to exit?

140s cycle length was used for all existing and future scenarios. Any final proposed timings need to be optimized, and not just using the max 140s cycle that SCATS allows. The backup timings for SCATS should come from optimized models.

Concern about accommodating total queue of 2150' on opening day with 1636' stacking.

Opening Day Operations		Normal Operations	
STACKING SPACE CALCULATOR		**STACKING SPACE CALCULATOR**	
Number of Arrivals	**186**	Number of Arrivals	**133**
Peak Period Time (minutes)	**60**	Peak Period Time (minutes)	**60**
% Arrivals during peak period	**100%**	% Arrivals during peak period	**100%**
Time per Vehicle (s)	**36**	Time per Vehicle (s)	**36**
Vehicle Stacking Length (FT)	**25**	Vehicle Stacking Length (FT)	**25**
Service Rate	100	Service Rate	100
Arrival Rate	186	Arrival Rate	133
TOTAL QUEUE (Veh)	**86**	**TOTAL QUEUE (Veh)**	**33**
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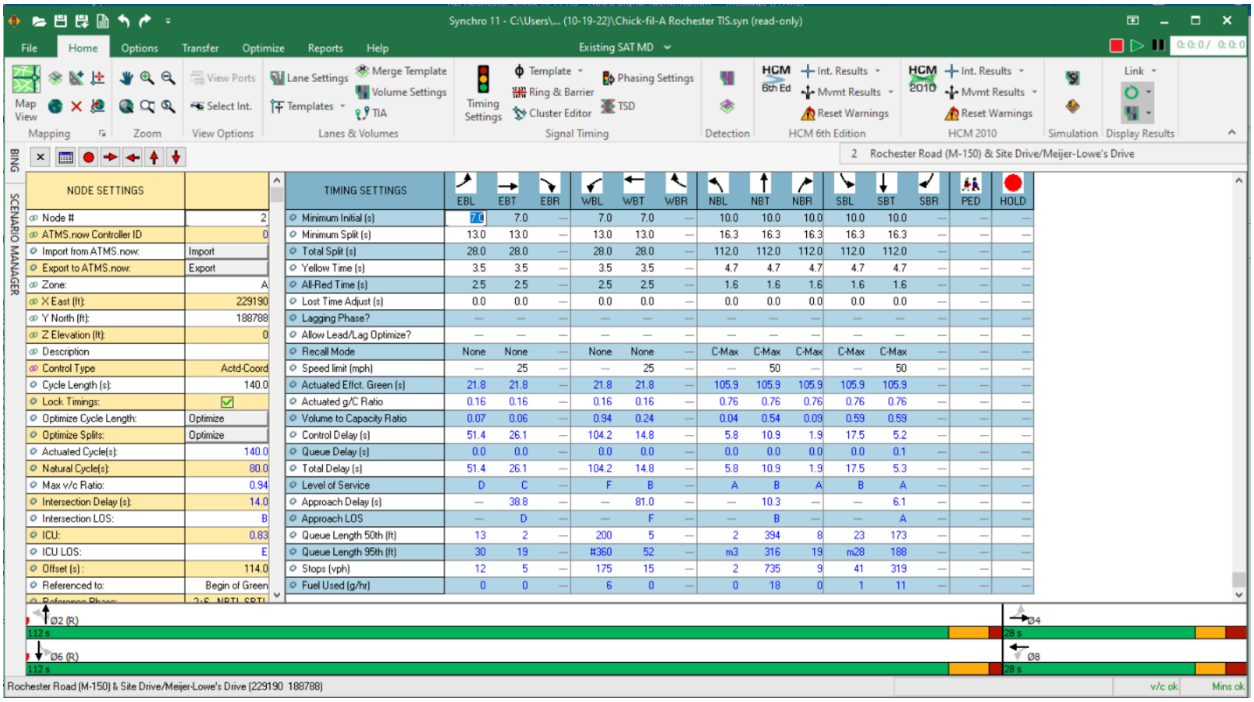
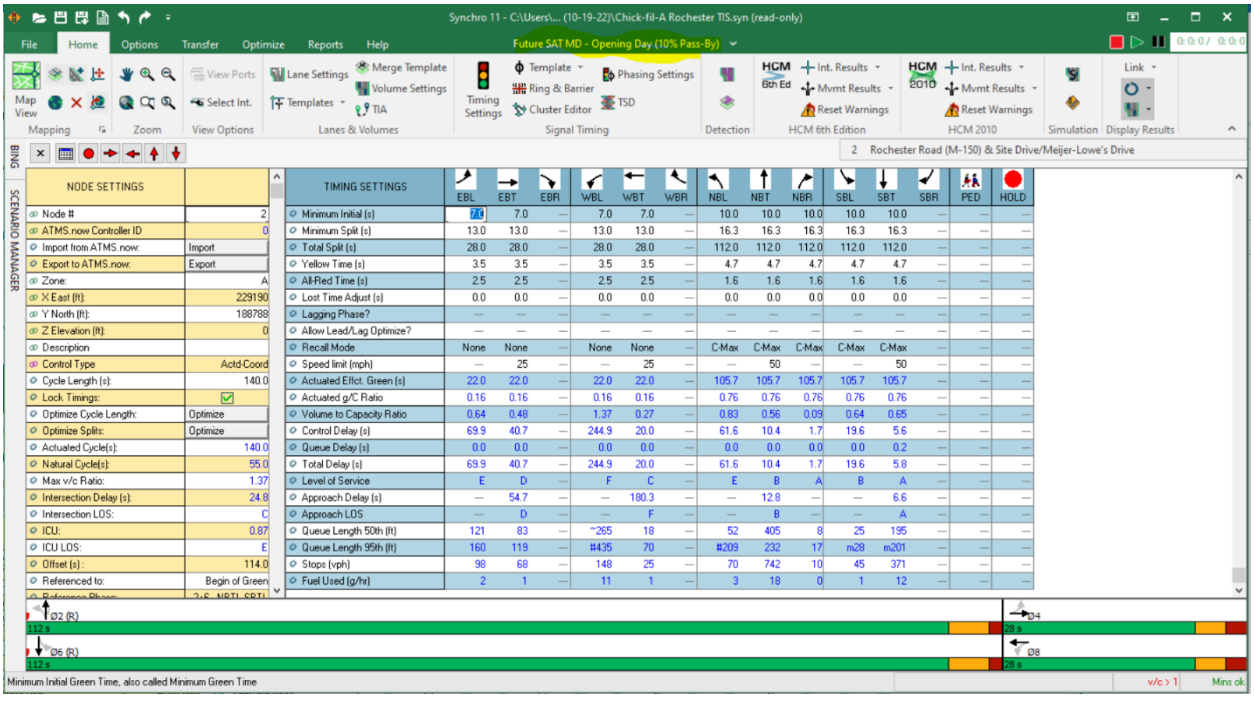
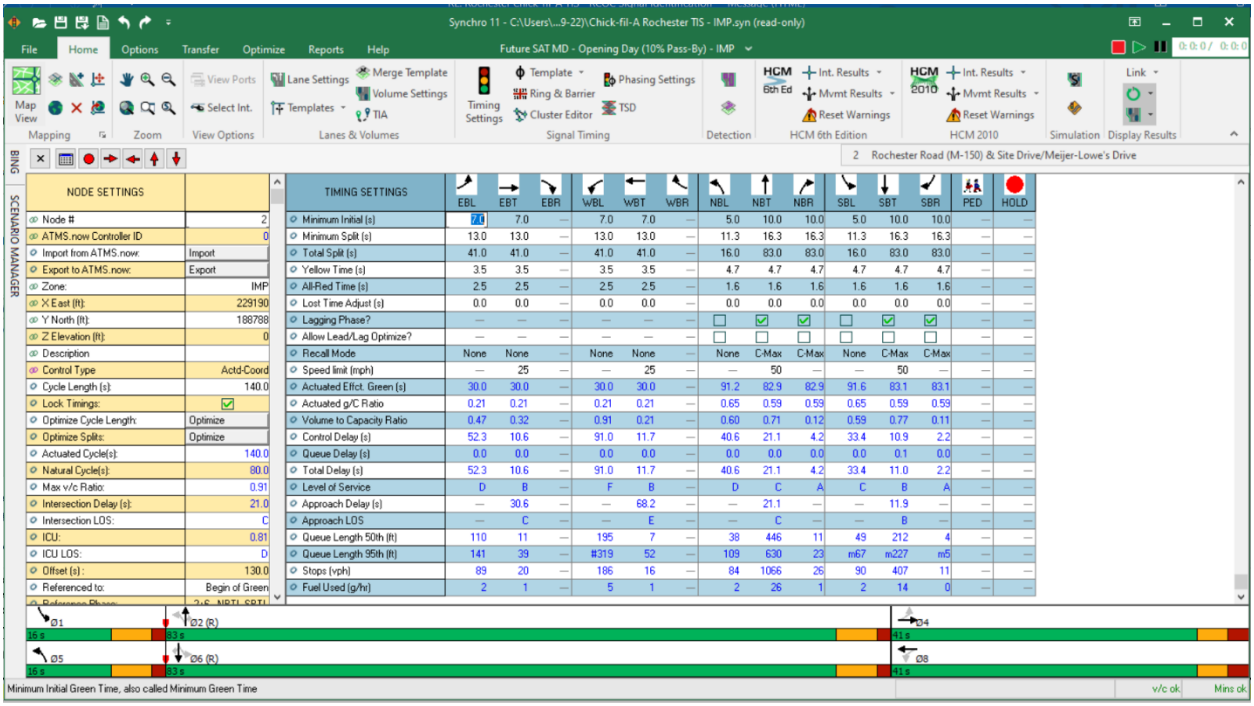
- During peak time periods, Chick-fil-A utilizes employees stationed outside along the drive-through queue, with menu tablets to take patrons orders, eliminating the need for the menu kiosk and providing additional queueing storage space. This also helps to expedite the ordering and payment process, thus increasing the service rate.
- The opening day queueing can accommodate a minimum of 1,636-LF of stacking, with the option to expand further into the parking lot as necessary for additional storage as necessary to accommodate additional vehicle demand.

These models do provide a comparison:

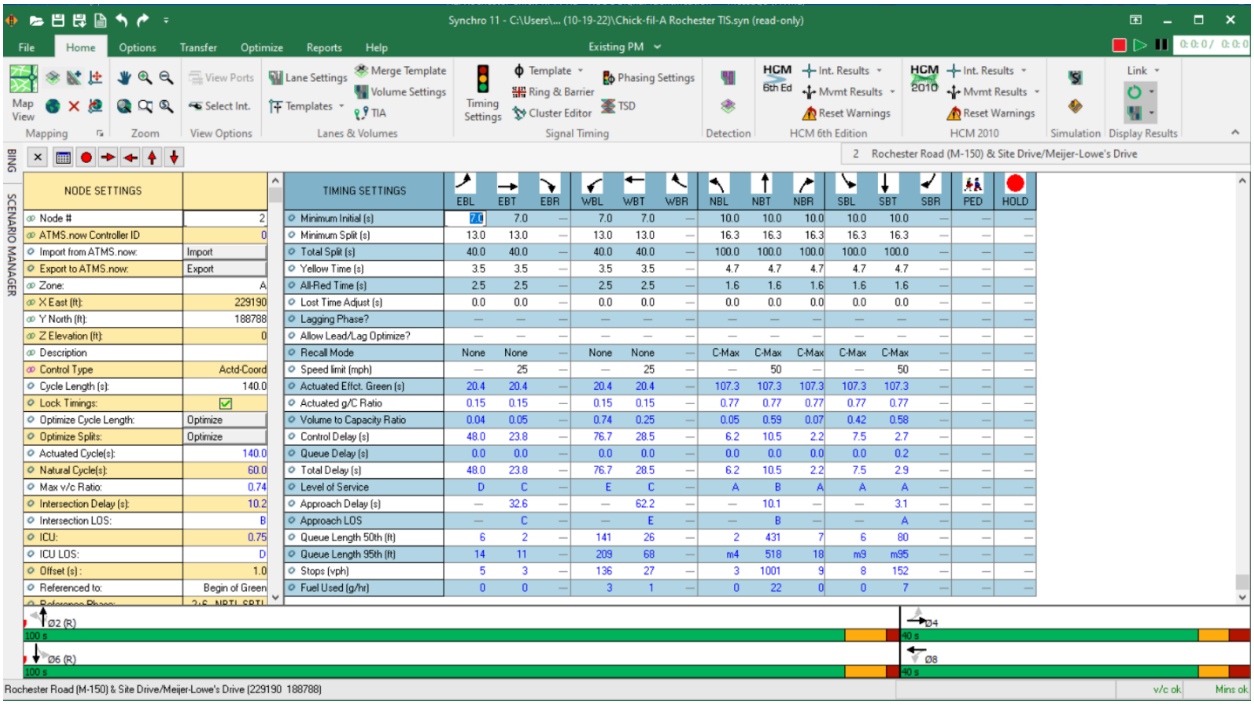
1. First screen shot is Saturday mid-day with existing volumes and existing splits (assuming max 140s cycle):
    a. 112s split for M-150
    b. 28s split for driveway
    c. Note natural cycle length is 80s
2. Second screen shot is Saturday mid-day with future volumes and existing splits (assuming max 140s cycle):
    a. 112s split for M-150
    b. 28s split for driveway
3. Third screen shot is Saturday mid-day with future volumes and improvements including N/S left turn phasing, a SBRT lane, and proposed splits (assuming max 140s cycle):
    a. 83s split for M-150
    b. 41s split for driveway
    c. 16s for N/S Left turn phase
    d. Note natural cycle length is 80s

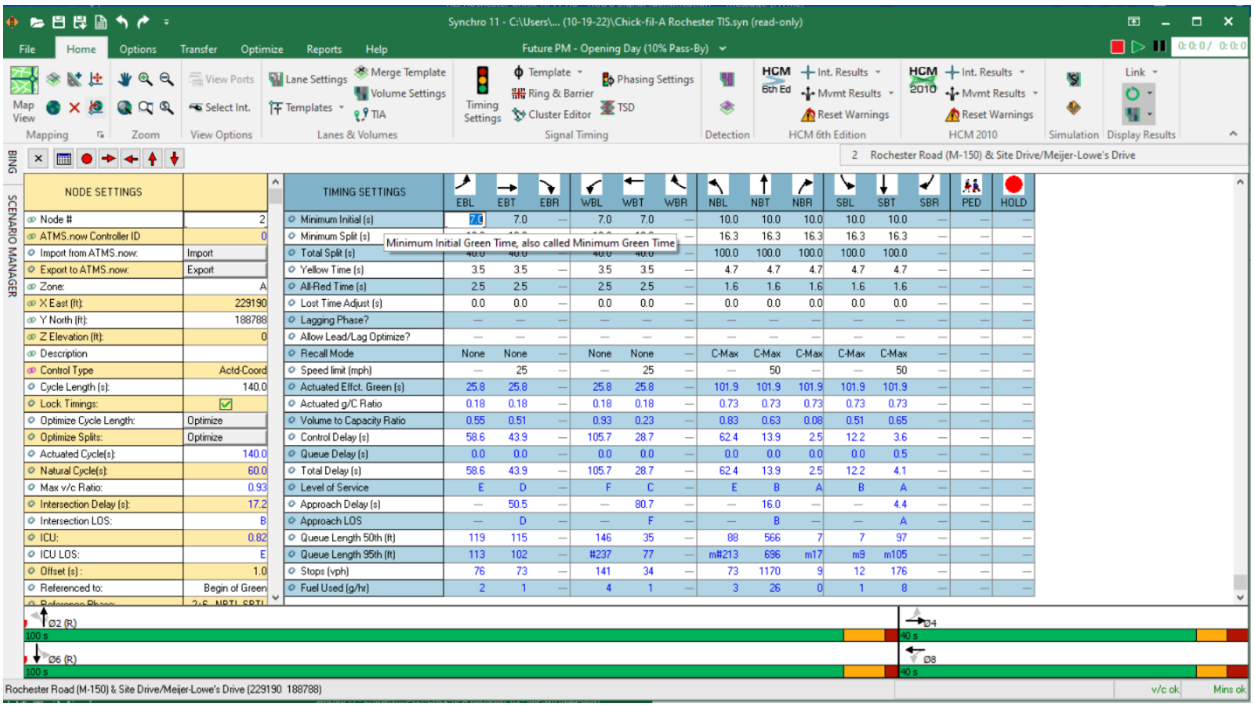

Synchro 11 - C:\Users\... (10-19-22)\Chick-fil-A Rochester TIS.syn (read-only)
Existing SAT MD
2 Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive
NODE SETTINGS
TIMING SETTINGS
Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive (229190 188788)
v/c ok
Mins ok

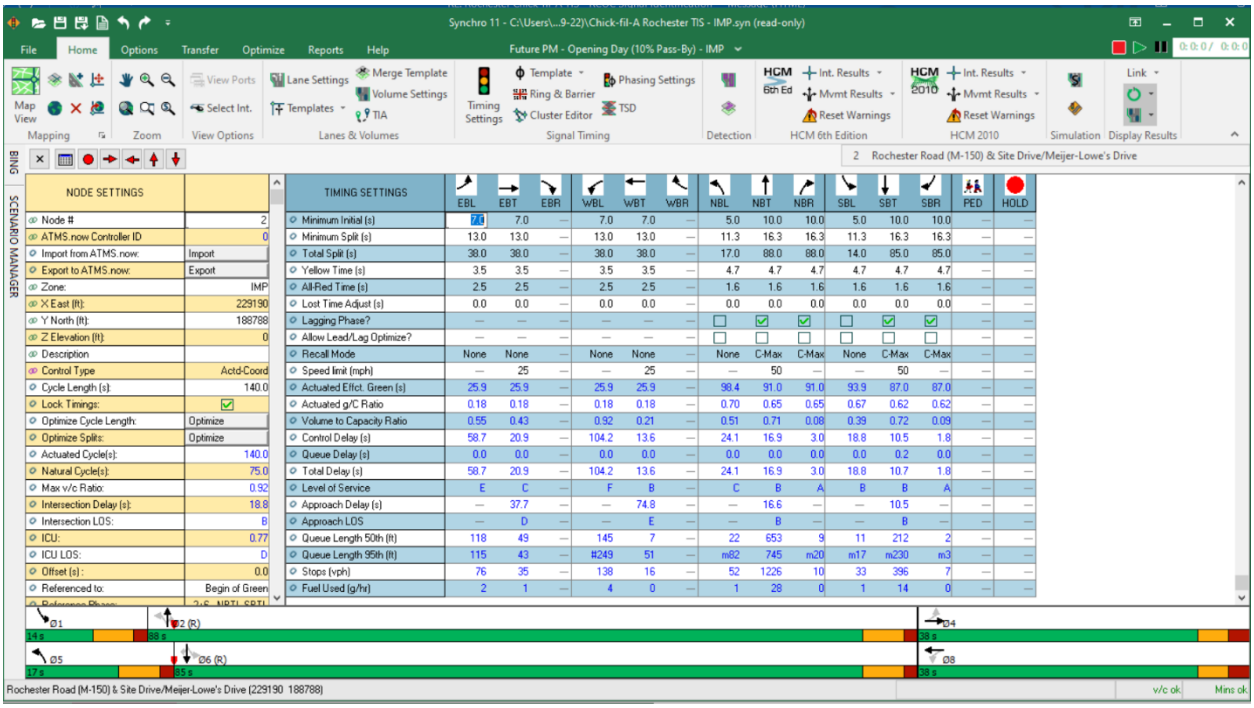

Synchro 11 - C:\Users\... (10-19-22)\Chick-fil-A Rochester TIS.syn (read-only)
Future SAT MD - Opening Day (10% Pass-By)
2 Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive
NODE SETTINGS
TIMING SETTINGS
Minimum Initial Green Time, also called Minimum Green Time
v/c > 1
Mins ok



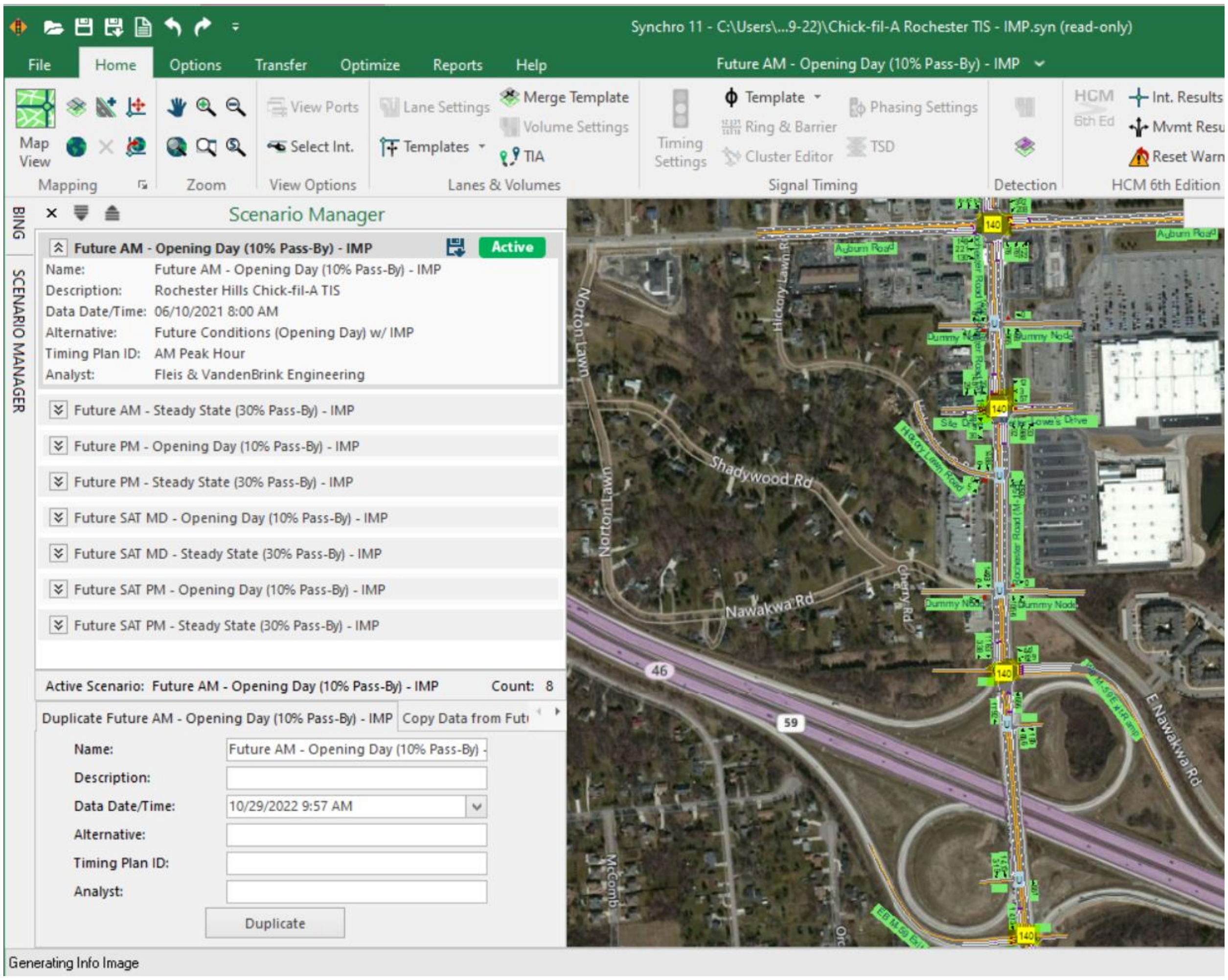
1. First screen shot is PM with existing volumes and existing splits (assuming max 140s cycle):
    a. 100s split for M-150
    b. 40s split for driveway
    c. Note natural cycle length is 60s
2. Second screen shot is PM with future volumes and existing splits (assuming max 140s cycle):
    a. 100s split for M-150
    b. 40 split for driveways
    c. Note natural cycle length remains 60s
    d. EB approach goes from C to D
    e. WB approach goes from E to F
    f. NBLT goes from A to E
3. Third screen shot is PM with future volumes and improvements including N/S left turn phasing, a SBRT lane, and proposed splits (assuming max 140s cycle):
    a. 85 to 88s split for M-150
    b. 38s split for driveways
    c. 14 to 17s for S/N Left turn phase
    d. Note natural cycle length is 75s
    e. EB approach remains D
    f. WB approach goes from F to E (Not sure and we believe this result since they took 2s split time away)
    g. NBLT goes from E to C
    h. SB M150 goes from A to B


Synchro 11 - C:\Users\... (10-19-22)\Chick-fil-A Rochester TIS.syn (read-only)
Existing PM
2 Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive
NODE SETTINGS
TIMING SETTINGS
Ø2 (R)
Ø4
Ø6 (R)
Ø8
Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive (229190 188788)
v/c ok
Mins ok


Synchro 11 - C:\Users\... (10-19-22)\Chick-fil-A Rochester TIS.syn (read-only)
Future PM - Opening Day (10% Pass-By)
2 Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive
NODE SETTINGS
TIMING SETTINGS
Minimum Initial Green Time, also called Minimum Green Time
Ø2 (R)
Ø4
Ø6 (R)
Ø8
Rochester Road (M-150) & Site Drive/Meijer-Lowe's Drive (229190 188788)
v/c ok
Mins ok



Future AM Opening Day Improved: They used 140s cycle lengths (first screen shot) even though natural cycle lengths (2nd screen shot) range from 45 to 90s max.


Synchro 11 - C:\Users\...9-22)\Chick-fil-A Rochester TIS - IMP.syn (read-only)
File
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Help
Future AM - Opening Day (10% Pass-By) - IMP
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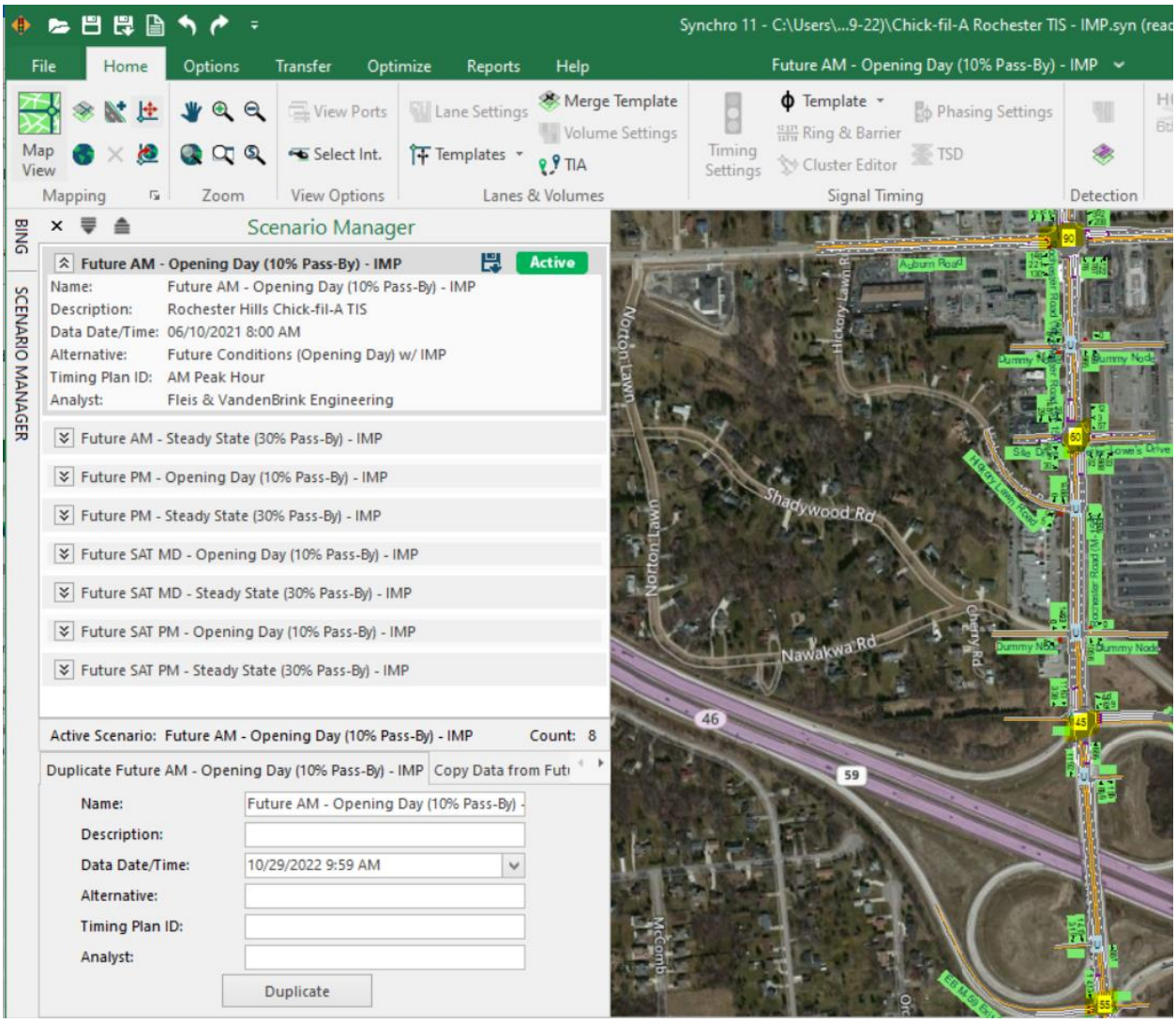
Templates
Merge Template
Volume Settings
TIA
Timing Settings
Template
Ring & Barrier
Cluster Editor
Phasing Settings
TSD
HCM 6th Ed
Int. Results
Mvmt Resu
Reset Warn
Mapping
Zoom
View Options
Lanes & Volumes
Signal Timing
Detection
HCM 6th Edition
BING
SCENARIO MANAGER
Scenario Manager
Future AM - Opening Day (10% Pass-By) - IMP
Active
Name: Future AM - Opening Day (10% Pass-By) - IMP
Description: Rochester Hills Chick-fil-A TIS
Data Date/Time: 06/10/2021 8:00 AM
Alternative: Future Conditions (Opening Day) w/ IMP
Timing Plan ID: AM Peak Hour
Analyst: Fleis & VandenBrink Engineering
Future AM - Steady State (30% Pass-By) - IMP
Future PM - Opening Day (10% Pass-By) - IMP
Future PM - Steady State (30% Pass-By) - IMP
Future SAT MD - Opening Day (10% Pass-By) - IMP
Future SAT MD - Steady State (30% Pass-By) - IMP
Future SAT PM - Opening Day (10% Pass-By) - IMP
Future SAT PM - Steady State (30% Pass-By) - IMP
Active Scenario: Future AM - Opening Day (10% Pass-By) - IMP
Count: 8
Duplicate Future AM - Opening Day (10% Pass-By) - IMP
Copy Data from Futi
Name: Future AM - Opening Day (10% Pass-By) -
Description:
Data Date/Time: 10/29/2022 9:57 AM
Alternative:
Timing Plan ID:
Analyst:
Duplicate
Generating Info Image
Auburn Road
Norton Lawn
Hickory Lawn Rd
Shadywood Rd
Nawakwa Rd
Cherry Rd
E Nawakwa Rd
Lowe's Drive
Dummy Node
140
46
59


Synchro 11 - C:\Users\...9-22)\Chick-fil-A Rochester TIS - IMP.syn (read
File
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Future AM - Opening Day (10% Pass-By) - IMP
Map View
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View Options
Lane Settings
Templates
Merge Template
Volume Settings
TIA
Lanes & Volumes
Timing Settings
Template
Ring & Barrier
Cluster Editor
Phasing Settings
TSD
Signal Timing
Detection
BING
SCENARIO MANAGER
Scenario Manager
Future AM - Opening Day (10% Pass-By) - IMP
Active
Name: Future AM - Opening Day (10% Pass-By) - IMP
Description: Rochester Hills Chick-fil-A TIS
Data Date/Time: 06/10/2021 8:00 AM
Alternative: Future Conditions (Opening Day) w/ IMP
Timing Plan ID: AM Peak Hour
Analyst: Fleis & VandenBrink Engineering
Future AM - Steady State (30% Pass-By) - IMP
Future PM - Opening Day (10% Pass-By) - IMP
Future PM - Steady State (30% Pass-By) - IMP
Future SAT MD - Opening Day (10% Pass-By) - IMP
Future SAT MD - Steady State (30% Pass-By) - IMP
Future SAT PM - Opening Day (10% Pass-By) - IMP
Future SAT PM - Steady State (30% Pass-By) - IMP
Active Scenario: Future AM - Opening Day (10% Pass-By) - IMP
Count: 8
Duplicate Future AM - Opening Day (10% Pass-By) - IMP
Copy Data from Futı
Name:
Future AM - Opening Day (10% Pass-By) -
Description:
Data Date/Time:
10/29/2022 9:59 AM
Alternative:
Timing Plan ID:
Analyst:
Duplicate
Auburn Road
Hickory Lawn R
Norton Lawn
Shadywood Rd
Nawakwa Rd
Cherry Rd
Dummy Node
46
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McComb