

FINAL REPORT

Cobb Parkway at Windy Hill Grade Separation Scoping Study

Cobb County Project No. X2540, ARC No. AR-038-2020, P.I. No. 0016027 / September 2022

Cobb County Department Of Transportation



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Appendix A: Feedback from 2/2/22 Stakeholder Steering Committee Meeting

2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- Traffic and Network Performance
- Impact to Transit
- Access to Nearby Land Parcels
- Safety Improvement (Vehicular)
- Pedestrian Connectivity and Safety
- ROW Requirements
- Construction Cost Effectiveness
- Ease of Construction (Constructability)
- Impact on Existing Utilities and Services
- Landscape and Visual Impact
- _____
- _____
- _____

Please list below any comments you have on the draft evaluation metrics.

FAA + Dobbins coordination on
heights of Alt 1 & 4 req'd.

3. Please list below any other comments related to the study or process.

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different?
Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPUI

Effect on Dobbins flight patterns

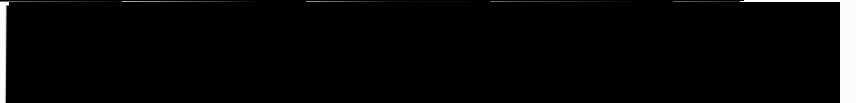
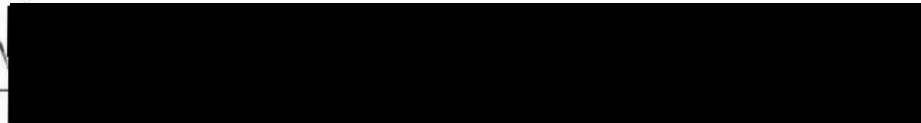
Alternative #2 - CFI

Alternative #3 - At-Grade Improvements

Alternative #4 - Flyover Ramp

Effect on Dobbins flight pattern

Name/Organization/Email



**Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022**

1. What are your thoughts on the alternatives? What do you like, or think should be different? Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPUI

maybe having wider sidewalks greater than 5ft.

Alternative #2 - CFI

Interesting. I like. Need education. Lots of education.

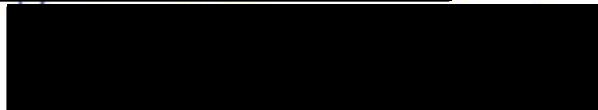
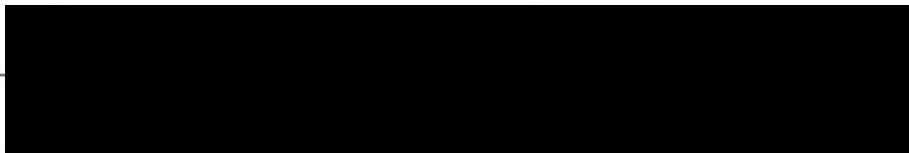
Alternative #3 - At-Grade Improvements

NO comments

Alternative #4 - Flyover Ramp

I like. It solves the ~~the~~ Tennell Mill of Windy Hill flow. Currently, very slow & timely waiting on both intersections

Name/Organization/Email



2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- 2 Traffic and Network Performance
 - 1 Impact to Transit
 - 8 Access to Nearby Land Parcels
 - 4 Safety Improvement (Vehicular)
 - 3 Pedestrian Connectivity and Safety
 - 10 ROW Requirements
 - 5 Construction Cost Effectiveness
 - 9 Ease of Construction (Constructability)
 - 7 Impact on Existing Utilities and Services
 - 6 Landscape and Visual Impact
- _____

Please list below any comments you have on the draft evaluation metrics.

3. Please list below any other comments related to the study or process.

- transit operations
 - pedestrian access - wide sidewalks
 - functionality of flow of traffic through windy Hill & Tennell Mill
- _____

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different? Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPUI - SINGLE TRAFFIC LIGHT LEFT TURNS - COBB THRU TRAFFIC ELEVATED

ANY ELEVATED TRAFFIC BRIDGE WOULD HAVE NEGATIVE IMPACTS TO AIR OPERATIONS AT DOBBINS ARB. THE ELEVATION OF THE INTERSECTION WILL NOT ALLOW ANY ELEVATED STRUCTURES WITHOUT SEVERE CHANGES TO INSTRUMENT APPROACHES.

Alternative #2 - CFI - LEFT TURN FROM COBB PKWY REROUTE SIGNAL

Alternative #3 - At-Grade Improvements - ADDITIONAL TRAVEL LANE WINDY HILL

Alternative #4 - Flyover Ramp - RAMP OFF WINDY HILL TO TERREL HILL
SEE ALTERNATIVE #1 FAA APPROVAL MAY BE REQUIRED

Name/Organization/Email _____



2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- Traffic and Network Performance
- 5 Impact to Transit
- Access to Nearby Land Parcels
- 2 Safety Improvement (Vehicular)
- Pedestrian Connectivity and Safety
- ROW Requirements
- 4 Construction Cost Effectiveness
- 3 Ease of Construction (Constructability)
- Impact on Existing Utilities and Services
- Landscape and Visual Impact
- 1 IMPACT TO AIR OPERATIONS @ DOBBINS ARB
- _____
- _____

Please list below any comments you have on the draft evaluation metrics.

FAA MAY NOT ALLOW ANY ELEVATED STRUCTURES
DUE TO SAFETY

3. Please list below any other comments related to the study or process.

HAS A TUNNEL BEEN PROPOSED?

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different? Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPUI

Great - no delay for Through traffic.
What is the impact on pedestrians & bus stops?
impact on businesses?

Alternative #2 - CFL

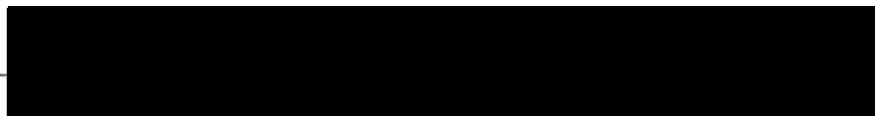
impact on pedestrians & bus stops? how would
ped's cross?
no traffic light for left turn - better flow of traffic

Alternative #3 - At-Grade Improvements

Simple - but is it enough? Does it plan for the future?

Alternative #4 - Flyover Ramp

Name/Organization/Email



2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- 3 Traffic and Network Performance
- 2 Impact to Transit
- 8 Access to Nearby Land Parcels
- 4 Safety Improvement (Vehicular)
- 1 Pedestrian Connectivity and Safety
- 9 ROW Requirements
- 5 Construction Cost Effectiveness
- 10 Ease of Construction (Constructability)
- 7 Impact on Existing Utilities and Services
- 6 Landscape and Visual Impact

Please list below any comments you have on the draft evaluation metrics.

impact on transit arrival times - impact on
express bus arrival time?

3. Please list below any other comments related to the study or process.

impact on pedestrians & transit - especially looking
to the future, with the updated Cobb CTP
have you looked into how we can decrease
traffic in the area overall? making it more
accessible by other modes? sidewalks included?

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different?
Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPUI

- Single point urban interchange*
- Look at improvements for Lake Park Dr./Cobb Parkway intersection (Extension of project south to next signal)
 - Provide opportunity for SB Cobb Parkway lane to go back NB for access to local businesses.
 - Look at multi-use trail on west side of Cobb Parkway
 - Look at access impacts to new Mixed Use development on Cobb Parkway - Lake Park/Cobb Parkway ^{NW corner} Windy Hill/Cobb Parkway ^{SW corner}.

Alternative #2 - CFI

- Continuous Flow intersection*
- ~~Creates~~ Lack of at-turn opportunities creates access issues for surrounding commercial properties.
 - Creates no opportunities for proposed mixed use projects to go north bound on Cobb Parkway
 - Provide multi-use trail along Cobb Parkway from Windy Hill to Lake Park Drive

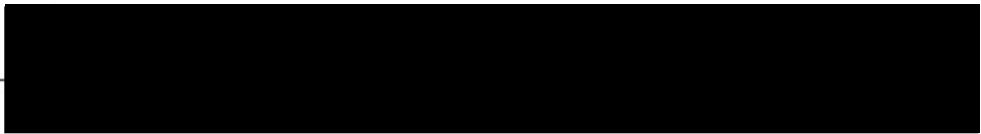
Alternative #3 - At-Grade Improvements

- Improvements should be carried to Village Parkway intersection.
- Should create multi use trail on south side of Windy Hill with project from Village Parkway to Cobb Parkway. There is an existing multi-use trail on Village Parkway

Alternative #4 - Flyover Ramp

- Improvements should be carried to Village Parkway intersection.
- with better access to the managed lanes, you may create more congestion at this intersection.
- Should create a multi-use trail on south side of Windy Hill From Village Parkway to Cobb Parkway. There is an existing multi-use trail on Village Parkway.

Name/Organization/Email



2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- 1 Traffic and Network Performance
- 5 Impact to Transit
- 2 Access to Nearby Land Parcels
- 4 Safety Improvement (Vehicular)
- 3 Pedestrian Connectivity and Safety
- 6 ROW Requirements
- 7 Construction Cost Effectiveness
- 11 Ease of Construction (Constructability)
- 8 Impact on Existing Utilities and Services
- 10 Landscape and Visual Impact
- 12 Long-term Maintenance Costs
- 9 Impacts to Runways @ DAF

Please list below any comments you have on the draft evaluation metrics.

3. Please list below any other comments related to the study or process.

- There are concerns of negative impacts to new ~~prop~~ Mixed Use developments in Marietta & Smyrna.
- Concern about creating barriers for pedestrians to cross Cobb Parkway with some alternatives.
- Concerns about impacts to commercial properties.

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different?
Any factors we need to consider? Please let us know in the space below.

Alternative #1 - SPU

- evaluate need & performance of queue jumper lane
- impacts to existing bus stops on Cobb Parkway
(would require relocation for removal?)

Alternative #2 - CFI

- maybe
- difficult for bus to maneuver in curves of CFI lanes
 - evaluate need & performance of queue jump lane
 - # of driveways around ^{bus} stops may impede bus
pullover & create traffic delays

Alternative #3 - At-Grade Improvements

- minimal impacts to bus stops during construction
- evaluate need & performance of queue jump lane
at intersection

Alternative #4 - Flyover Ramp

- offers ~~few~~ minimal impacts to existing bus stops
& opportunity to improve DTP on Cobb Parkway w/
reduced traffic volumes
- evaluate need & performance of queue jumper lane
at intersection

Name/Organization/Email _____

2. We'd like your help in prioritizing the draft evaluation metrics. Please list your preference in order of highest importance to least, "1" representing the highest. If you have a suggestion for additional metrics, please let us know in the blank spaces.

- 1 Traffic and Network Performance
 - 5 Impact to Transit
 - 8 Access to Nearby Land Parcels
 - 2 Safety Improvement (Vehicular)
 - 3 Pedestrian Connectivity and Safety
 - 9 ~~8~~ ROW Requirements
 - 6 Construction Cost Effectiveness
 - 4 ~~8~~ Ease of Construction (Constructability)
 - 7 Impact on Existing Utilities and Services
 - 10 Landscape and Visual Impact
- _____
- _____
- _____

Please list below any comments you have on the draft evaluation metrics.

3. Please list below any other comments related to the study or process.

Cobb Parkway and Windy Hill Road Scoping Study
Stakeholder Input Form
Stakeholder Steering Committee
February 2, 2022

1. What are your thoughts on the alternatives? What do you like, or think should be different? Any factors we need to consider? Please let us know in the space below.

Alternative #1 – SPUI

There doesn't seem to be a huge amount of benefit for this one, major costs associated with this type of bridge, limiting access to businesses in the area and not a significant reduction in delay.

Alternative #2 – CFI

I would be concerned with the crossover signal at Terrell mill rd. Typically these crossover intersections work because they are only two phases, but this will require a more complicated timing to incorporate Terrell mill traffic. Also it will be confusing for Terrell mill to get into the correct lanes for turning east or west on Windy Hill. This also heavily restricts access to businesses.

Alternative #3 – At-Grade Improvements

This is obviously the least invasive and probably lowest cost. Would need to see additional information about cost vs. benefit of this alternative to consider further. Does this option make enough of an impact to make local citizens "feel" like this was worth the effort?

Alternative #4 – Flyover Ramp

This would be my preferred alternative from the information presented as it removes vehicles making that "S" movement between windy hill and terrell mill from both signals. These vehicles likely wouldn't be stopping at the business in this area so it both keeps them moving and allows the local vehicles in this area more capacity to move around.

Name/Organization/Email



Appendix B: Presentation and Feedback from 3/16/22 Public Meeting

**Cobb Parkway at
Windy Hill Road
Scoping Study**

**PUBLIC
INFORMATION OPEN
HOUSE**

March 16, 2022



- **Welcome**
- **Study Purpose and Status**
- **Stakeholder and Public Outreach to Date**
- **Preliminary Alternatives**
- **Evaluation Process**
- **Obtaining your Feedback**

STUDY PURPOSE AND STATUS

- Study Location
 - Cobb Parkway and Windy Hill Road Intersection
- Goal
 - Develop a concept design to enhance operations and safety
- Scoping Process
 - Collected data on existing conditions
 - Analyzed existing operations
 - Conduct stakeholder and public outreach
 - Develop and evaluate draft alternatives to address congestion and enhance safety
 - Select a preferred alternative for future implementation
- For more information, visit the study website: www.cobbcounty.org/roadway-studies

STAKEHOLDER AND PUBLIC OUTREACH TO DATE

- **Stakeholder Steering Committee**
- **Online Public Survey**
- **Public Information Open House**

STAKEHOLDER STEERING COMMITTEE

- Includes local and state government agencies and community organizations
- Will meet a total of four times
- Provide input on:
 - Existing Conditions
 - Challenges for Implementation
 - Draft Options

ONLINE PUBLIC SURVEY

- Closed in December 2021
- Total Responses = 872
- Received feedback on known issues, intersection needs and improvement priorities
- Feedback was used to develop preliminary alternatives for intersection improvements



ONLINE PUBLIC SURVEY – TOP RESPONSES

Intersection Issues	<ol style="list-style-type: none">1. Congestion2. Unreliable/Delay in Travel Time
Safety Issues	<ol style="list-style-type: none">1. Signal Timing2. Left Turns and Driver Behavior
Needed Improvements	<ol style="list-style-type: none">1. Congestion Relief2. Increased Capacity
Biggest Challenge for Implementation	<ol style="list-style-type: none">1. Disruption of Traffic During Construction2. Right-of-Way and Cost

PRELIMINARY ALTERNATIVES

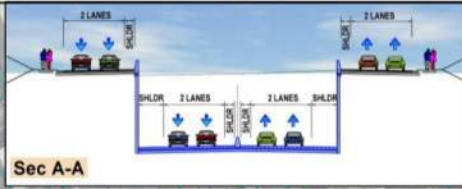
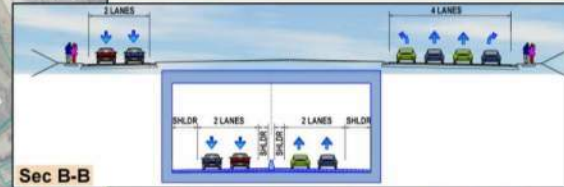
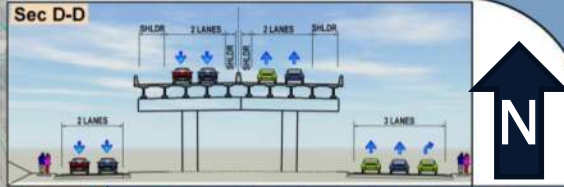
ALTERNATIVE #1

PROS

- Improves traffic operations on Cobb Parkway
- Improves safety at the intersection

CONS

- Minimal traffic operation improvements on Windy Hill Road
- Requires higher cost
- Disruption to traffic during construction



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DRAFT

SCALE IN FEET
0 200 400 600

ALTERNATIVE #2

PROS

Improves traffic operations on Cobb Parkway

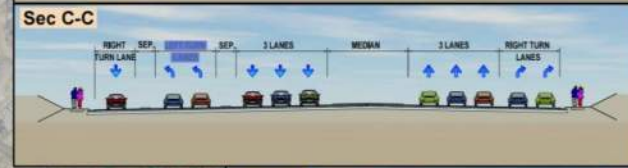
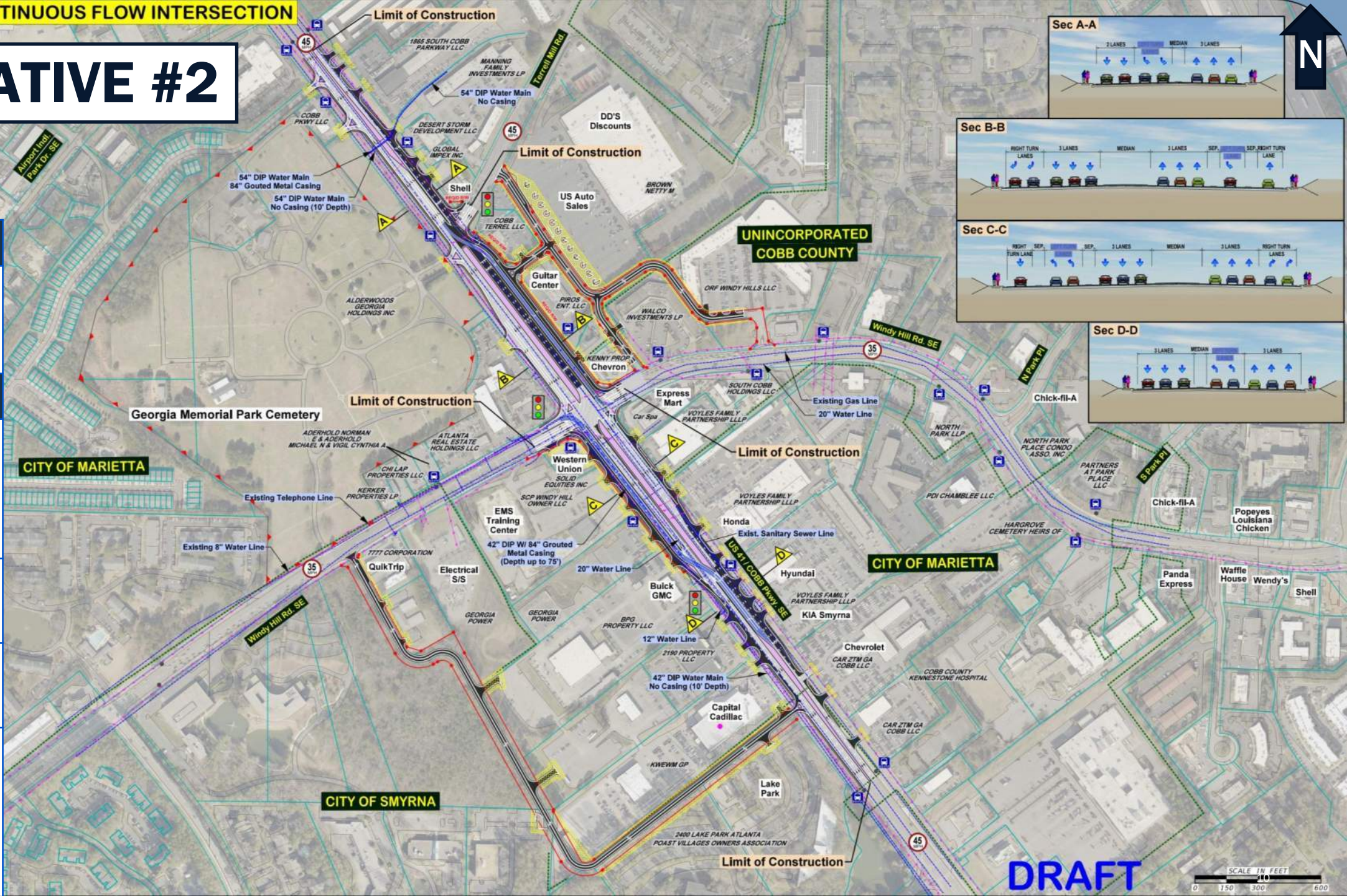
CONS

Minimal traffic improvements on Windy Hill Road

Requires higher cost

Disruption to traffic during construction

Modifies and restricts property access, transit and pedestrian movements.



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CITY OF MARIETTA

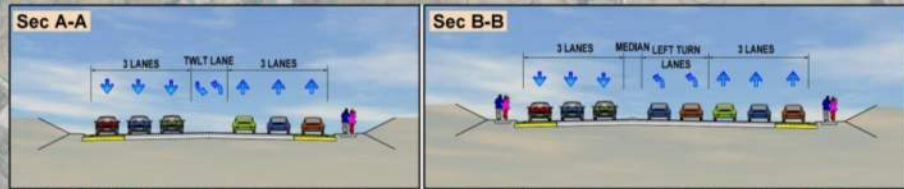
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AT GRADE WIDENING



ALTERNATIVE #3

PROS

- Lowest cost option
- Minimal disruption to traffic during construction

CONS

- Does not improve long-term traffic operations
- Does not improve safety within the study area
- Does not improve Cobb Parkway



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FLYOVER RAMP

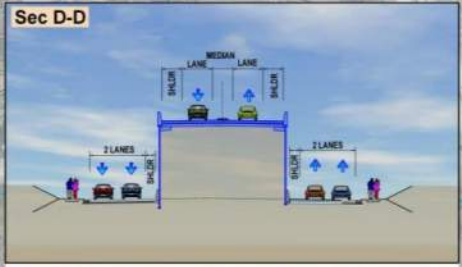
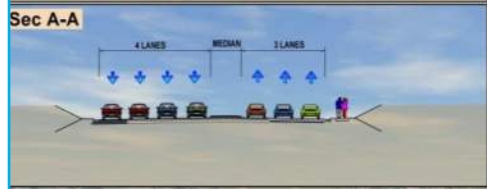
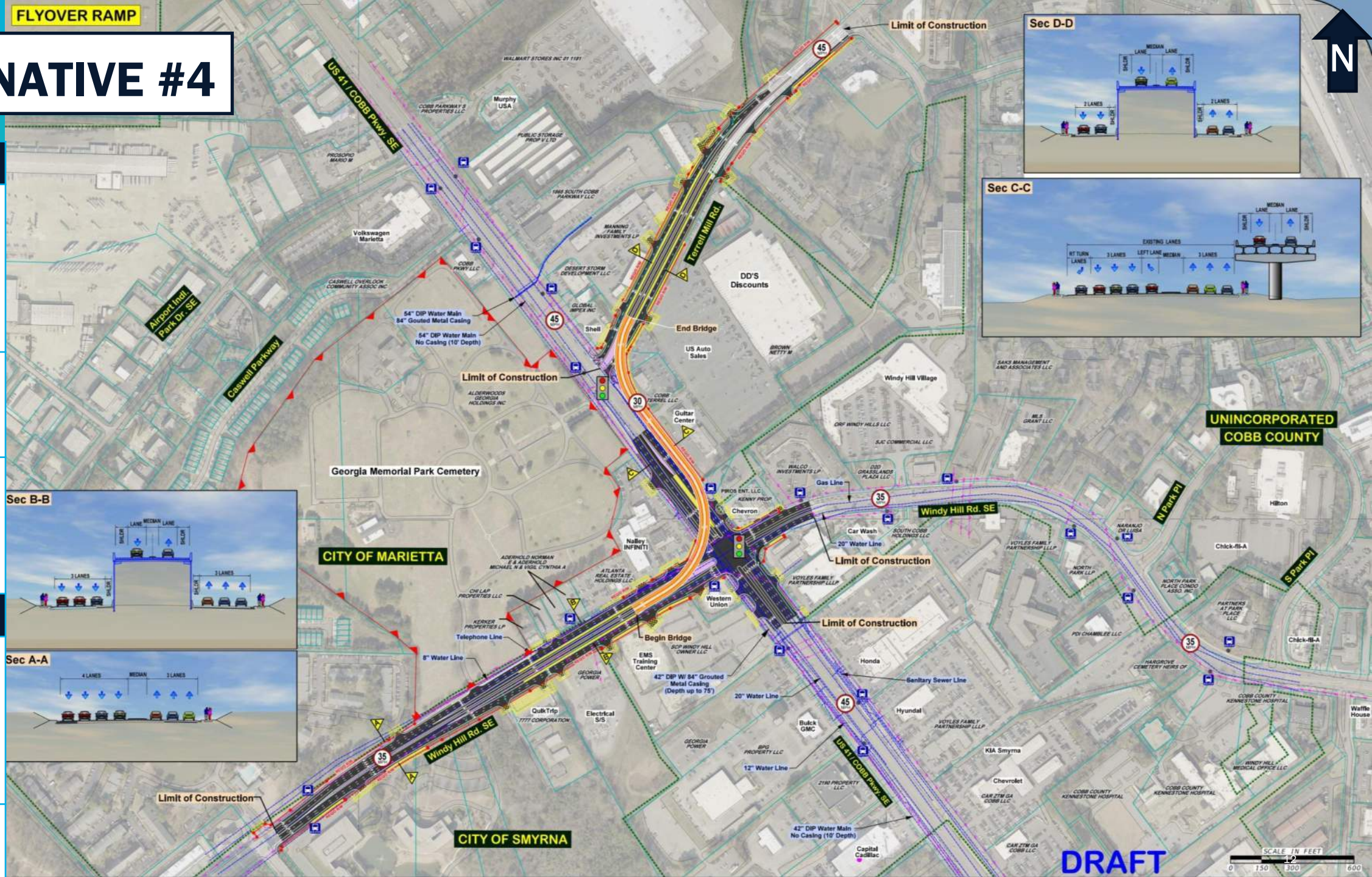
ALTERNATIVE #4

PROS

- Best capacity improvement for long-term traffic operations
- Improves safety in study area

CONS

- Potential property displacements in the project area
- Requires higher cost



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EVALUATION PROCESS

- Review feedback from online public survey and Stakeholder Steering Committee
- Establish evaluation metrics
- Compare draft alternatives based on metric performance
- Select preferred alternative

ONLINE PUBLIC SURVEY – TOP RESPONSES

Intersection Issues	<ol style="list-style-type: none">1. Congestion2. Unreliable/Delay in Travel Time
Safety Issues	<ol style="list-style-type: none">1. Signal Timing2. Left Turns and Driver Behavior
Needed Improvements	<ol style="list-style-type: none">1. Congestion Relief2. Increased Capacity
Biggest Challenge for Implementation	<ol style="list-style-type: none">1. Disruption of Traffic During Construction2. Right-of-Way and Cost

DRAFT EVALUATION METRICS

- **Traffic Network Performance**
- **Vehicular Safety**
- **Construction and Right-of-Way Cost**
- **Pedestrian Connectivity and Safety**
- **Impact to Transit**
- **Impact to Dobbins Air Reserve Base Flight Paths**
- **Impact to Land Parcels and Access**
- **Utility Impact**
- **Constructability**
- **Environmental Impact**



PRELIMINARY FINDINGS: HIGH-LEVEL COMPARISON

Alternative	1	2	3	4
	SPUI	CFI	Widening	Flyover
Traffic Operations				
Safety				
Cost				
Constructability and Access				

Good Better Best

**PLEASE REVIEW DISPLAYS AND LEAVE YOUR
COMMENT CARD.**

THANK YOU!

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name JAMES HUBBINS

Address 4230 HOWLEY CREEK WAY, POWDER SPRINGS, GA. 30127

Email JAMES.HUBBINS@GMAIL.COM

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

Single-Point Urban Interchange (SPUI) - Alternative 1

Continuous Flow Intersection (CFI) - Alternative 2

At-Grade Widening - Alternative 3

Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 - SPUI

SOLVES THE ISSUE AT TWO MAJOR
INTERSECTIONS WHILE MAINTAINING ACCESS TO
ADJACENT PROPERTIES AND MINIMIZES PROPERTY
ACQUISITIONS. THIS SEEMS TO ADDRESS THE
NEED AND PURPOSE OF THE PROJECT.

Alternative 2 - CFI

BASICALLY ELIMINATES ACCESS TO PROPERTIES
ON TWO DIAGONAL QUADRANTS OF THE NH/41 INTERSECTION
WHILE REQUIRING SIGNIFICANT ~~AMOUNT~~ AMOUNT OF R/W.
NOT A COMMON CONFIGURATION FOR SYSTEM
USERS.

Alternative 3 - At-Grade Widening

BANDAGED IF THAT. THIS DOES NOT SOLVE THE NEED AND PURPOSE. THIS IS BASICALLY WHAT EXISTS TODAY WITH LITTLE NEW BENEFITS.

Alternative 4 - Flyover Ramp

VERY EXPENSIVE TO FLY THROUGH THESE INTERSECTIONS ONLY TO COME TO A TRAFFIC SIGNAL ON EACH END. OVERKILL. QUESTION THE CONSTRUCTION OF A FLYOVER BRIDGE THAT NEAR THE END OF THE DOBBINS RUNWAY.

3. Please list below any other comments related to the study or process.

DON'T FORGET DOBBINS ARB AND YELLOW FREIGHT TRUCKING TERMINAL.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name PATTI RICE
Address 2984 RIVERGREEN LANE, ATL 30339
Email pjriceatl@gmail.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

- 2 Single-Point Urban Interchange (SPUI) - Alternative 1
- 3 Continuous Flow Intersection (CFI) - Alternative 2
- 4 At-Grade Widening - Alternative 3
- 1 Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI



Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

- ① While I know this is a "roadway" project, pedestrian safety and separation from fast moving traffic should figure into the plan.
- ② Burying utility lines underground to the biggest extent possible should be carried out.

Please submit your comments by March 25, 2022 to info@sycamoreconsulting.net

GOOD PRESENTATION

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name Josh Kenny
Address 140 Blackland Ct E, Marietta, GA 30067
Email jkenny@thompsonenergyllc.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

- 3 Single-Point Urban Interchange (SPUI) - Alternative 1
- 4 Continuous Flow Intersection (CFI) - Alternative 2
- 1 At-Grade Widening - Alternative 3
- 2 Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Best Alternative

Alternative 2 – CFI

2nd Best

Alternative 3 – At-Grade Widening

too much disruption
and cost

Alternative 4 – Flyover Ramp

too much disruption and cost

3. Please list below any other comments related to the study or process.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name Michael Williams - SEE COMMENTS

Address _____

Email _____

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

___ Single-Point Urban Interchange (SPUI) - Alternative 1

___ Continuous Flow Intersection (CFI) - Alternative 2

___ At-Grade Widening - Alternative 3

___ Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI

Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

- ① Ut. City times - BURT @ TIME OF construction. With TORANDES i chuate chane opportunity to reduce LONG TERM costs
- ② Option 3 - good for short term but may prove expensive when work has to be done in next decade

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name Priti Kolhe
Address 1500 Roswell St. SE
Email pkolhe@gmail.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

Single-Point Urban Interchange (SPUI) - Alternative 1

Continuous Flow Intersection (CFI) - Alternative 2

At-Grade Widening - Alternative 3

Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI

Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name PAT BARNES

Address 10 CONCORD RD SW

Email PATRICIAMBARNES1@gmail.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

Single-Point Urban Interchange (SPUI) - Alternative 1

Continuous Flow Intersection (CFI) - Alternative 2

At-Grade Widening - Alternative 3

Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI

Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name Karyl Boyd
Address 1209 Wynnes Ridge Cir Marietta GA 30067
Email kboyd219@bellsouth.net

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

- Single-Point Urban Interchange (SPUI) - Alternative 1
- Continuous Flow Intersection (CFI) - Alternative 2
- At-Grade Widening - Alternative 3
- Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 - SPUI

This is my second choice

Alternative 2 - CFI

I don't like this one at all. I find
the Snellville interchange very
confusing to navigate.

Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

Since I live close to this area (Terrell Mill),
this was my favorite option.

3. Please list below any other comments related to the study or process.

I was wondering if the Windy Hill Connector
between Terrell Mill & W.H. will be
completed when construction starts to
help with some of traffic flow issues
when construction begins on Cobb
Pkwy / Windy Hill.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name OSMAN ERCIN

Address Dobbins

Email osman.ercin@jacobs.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

3 Single-Point Urban Interchange (SPUI) - Alternative 1

1 Continuous Flow Intersection (CFI) - Alternative 2

2 At-Grade Widening - Alternative 3

4 Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI

Alternative 3 – At-Grade Widening

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

Please submit your comments by March 25, 2022 to info@sycamoreconsulting.net

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name Beth Warren
Address 735 Sharp Mtn Creek Marietta
Email bethwarren3@yahoo.com 30067

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

3 Single-Point Urban Interchange (SPUI) - Alternative 1

2 Continuous Flow Intersection (CFI) - Alternative 2

4 At-Grade Widening - Alternative 3

1 Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Alternative 2 – CFI

Alternative 3 – At-Grade Widening

This seems like a very short-term solution that does not address safety.

Alternative 4 – Flyover Ramp

3. Please list below any other comments related to the study or process.

Long term, I'd love to see Cobb Parkway improvements (esp. north of the Cumberland Battery area) that include limiting access to improve traffic flow, rather than big, expensive intersection projects.

**Cobb Parkway and Windy Hill Road Scoping Study
Public Information Open House Comment Form**

Name JOSEPH Greenway

Address 1553 Princeton Trl. Smyrna

Email JoeyG724@hotmail.com

1. Please rank the alternatives in order of your preference, "#1" representing your first choice.

3 Single-Point Urban Interchange (SPUI) - Alternative 1

4 Continuous Flow Intersection (CFI) - Alternative 2

2 At-Grade Widening - Alternative 3

1 Flyover Ramp - Alternative 4

2. What are your thoughts on the alternatives? What do you like, or think should be different?

Alternative 1 – SPUI

Nice idea but the extensive disruption sounds bad.
It also focuses on Cobb Pkwy flow.

Alternative 2 – CFI

This doesn't seem to address the majority issue
with Windy Hill traffic and merge on Cobb Pkwy
which isn't as bad during rush hour.

Alternative 3 – At-Grade Widening

Cheap version that probably should have been done in the last project! I like the quick return.

Alternative 4 – Flyover Ramp

Long term is good idea. Area population trends are rising. This doesn't seem to fully address the issues at the intersection.

3. Please list below any other comments related to the study or process.

Has any research been done on traffic light management? Traffic 21 and Sustrack in Philadelphia claims 45% increase in flow with no additional construction

Q2. Please provide your comments on Alternative 1 - SPUI.	Q.3 Please provide your comments on Alternative 2 - CFI.	Q. 4 Please provide your comments on Alternative 3 - At-Grade Widening.	Q,5 Please provide your comments on Alternative 4 - Flyover Ramp.	Q.6 Please list below any other comments related to the study or process.
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<p>too much disruption and cost</p>	<p>Too much disruption and cost</p>	<p>Best alternative</p>	<p>2nd Best</p>	<p>1) Utility lines - bury @ time of construction. With tornadoes & chaos opportunity to reduce long term costs. 2) Option 3 - good for short term but may prove expensive when work has to be done in the next decade.</p>
<p>Solves the issue at two major intersections while maintaining access to adjacent properties and minimizes property acquisition. This seems to address the need and purpose of the project. Did not see like it improves much No comments I still say visit New Jersey and check out jug handles. I vote no on this option.</p>	<p>Basically eliminates access to properties on the two diagonal quadrants to the WH/41 intersection while requiring significant amounts of ROW. Not a common configuration for system users. Does not seem to make it better No comments I still say visit New Jersey and check out jug handles. I vote no on this option.</p>	<p>Band-Aid, if that. This does not solve the need and purpose. This is basically what exists today with little new benefit. Almost as good as the option 4 No comments I still say visit New Jersey and check out jug handles. I vote no on this option.</p>	<p>Very expensive to fly through these intersections only to come to a traffic signal on each end. Overkill. Question the construction of a flyover bridge that near the end of the Dobbins runway. Time to complete and cost vs option 3 was not clear Will Terrell Mill Road be improved. I still say visit New Jersey and check out jug handles. I vote YES on this option as it mitigates traffic congestion.</p>	<p>1) While I know this is a "roadway" project, pedestrian safety and separation from fast moving traffic should figure into the plan. 2) Burying utility lines underground to the biggest extent possible should be carried out. GOOD PRESENTATION</p> <p>Don't forget Dobbins ARB and Yellow Freight Trucking Terminal. Question is how long will it take to complete vs the benefits for options 3 vs 4</p> <p>I still say visit New Jersey and check out jug handles.</p>
<p>This is my second choice. Nice idea but the extensive disruption sounds bad. It also focuses on Cobb Pkwy flow.</p>	<p>I don't like this one at all. I find the Snellville interchange very confusing to navigate. This doesn't seem to address the majority issue with Windy Hill traffic and more so on Cobb Pkwy which isn't as bad during rush hour.</p>	<p>Cheap version that probably should have been done in the last project. I like the quick return.</p>	<p>Since I live close to this area (Terrell Mill), this was my favorite option. Long term is a good idea. Area population trends are rising. This doesn't seem to fully address the issues at the intersection.</p>	<p>I was wondering if the Windy Hill Connector between Terrell Mill & W.H. will be completed when construction starts to help with some of the traffic flow issues when construction begins on Cobb Pkwy/Windy Hill. Has any research been done on traffic light management? Traffic 21 and in Surtrac in Philadelphia claims 45% increase in flow with no additional construction.</p>
<p>Alternative 1 is the best choice. Would prefer a below grade interchange, ideally Cobb pkwy go below grade and Windy Hill stay at grade. Less visually disruptive. Would like wide sidewalks, landscaping - make the interchange functional and attractive to walking or biking. Doesn't provide any improvement to Windy Hill - this is where the improvement is really needed</p>	<p>I like the overpass for it would dump traffic out at the Walmart. but not crazy about how an over pass would look. Also not my favorite because it doesn't improve the traffic situation on Windy Hill.</p>	<p>This seems like a very short-term solution that does not address safety. cheap route - no fix Provides some relief to Windy Hill.</p>	<p>cheap route - no fix Seems like the best solution to impact Windy Hill in the long run. The flyover seems to be the best of all the plans. This is mostly a commercial area and it would be outstanding if work could be done in this area on a 24 - 7 basis to curtail the interruption on the citizens that travel this area.</p>	<p>Long term, I'd love to see Cobb Parkway improvements (esp. north of the Cumberland/Battery area) that include limiting access to improve traffic flow, rather than big, expensive intersection projects.</p> <p>Landscaping Pedestrian friendly I need to drive through the intersection to run errands or get to work, but build it so that I will want to ride my bike through it too. Build to solve todays problem, make it attractive for a life time. This has been delayed for far too many years. Overall, was hoping these solutions would provide improvements for both Cobb Pkwy AND Windy Hill...not one or the other. Would consider new options that tackle problems on both roads. To the novice and the uniformed these were very difficult to read. It is a crime that no-one listened to the voices in the 1970's thru the end of the 20th Century that wanted to makes changes all thru out Cobb County and their voices felt on deaf ears.</p>
<p>You have done a good job with the intersection already. The only improvement I can suggest is an overpass one way of the other.</p>	<p>It would be nice if you could improve traffic on Windy Hill especially those cars going west to get to Cobb going North. Traffic get back up on the left thru lane. Please help.</p>			
<p>I attended the meeting on 3/16, and this option was not my first choice on the form I submitted then. However, after looking at it a bit more, I think this is a preferable alternative to the flyover ramp in Alternative 4. What I would suggest is that the county consider limiting access points along Windy Hill Rd. - esp. east of Cobb Parkway - to improve operations along Windy Hill and make it a more efficient route of access to</p>	<p>I don't think this option provides much safety improvement, particularly for pedestrians, and it also creates additional lane-change challenges north and south of the intersection that might cause accidents and delays. Cannot tell from diagram, how northbound traffic on Cobb Parkway will enter the continuous flow lane to turn onto Windy Hill Road. If there is a bridge or tunnel to move that traffic, then this alternative becomes the first choice alternative. If there is a stoplight involved to allow traffic to switch sides of the road, then this alternative becomes a very expensive way to simply move a traffic jam on Cobb Parkway slightly south of Windy Hill, and create even more of a mess in the Truist park area.</p>	<p>This seems like a short-term solution to a long-term problem, and not much improvement with regard to safety. Honestly, this alternative is an expensive way to buy maybe a year or two of relief (if that) before another discussion on this intersection would be needed. I think this is the best since none of the alternatives will truly solve this intersection's traffic. Since I think none of the alternatives will solve the problem, might as well go for the lowest cost and the minimal infrastructure improvement. Second best after Alt 1. It helps resolve Windy Hill traffic issues and may have good flow.</p>	<p>I think this is a really cool concept, and I know there's a lot of traffic moving between Windy Hill and Terrell Mill. But I would be concerned about cost, and the capacity of Terrell Mill and the I-75 express lane interchange to handle additional traffic. In addition, these elevated lanes seem to increase road noise quite substantially. In one direction, this looks like a very expensive option to help the tens, and tens of cars that want to get from Windy Hill Road to Terrill Mill Road. Surely, their cannot be enough traffic that wants to go that way to justify this alternative. At least put a traffic circle on Terrill Mill to allow the drivers that wanted to go north on Cobb Parkway, but accidentally ended up on Terrill Mill, to turn around safely. Speaking of safety... The left merge lane from the Terrill Mill Road bridge immediately conflicting with traffic trying to turn left from Windy Hill onto Village Parkway strikes me as a recipe for daily wrecks at that location. That left lane merge will almost certainly back up onto the bridge every rush hour. Please do not allow this alternative to be selected.</p>	<p>As I left the PIOH the other night, it had just started to rain - and I noticed a cyclist on Windy Hill Rd. westbound, riding in the right-hand traffic lane - despite the amount of traffic and poor visibility - because there is no protected space for cyclists. After turning north onto Cobb Pkwy toward Terrell Mill Rd., I saw a woman standing on the sidewalk waiting for a bus - with no shelter from the rain, nowhere to sit down, and very little protection from the cars zooming past along the roadway. If we can spend tens of millions of dollars improving one intersection for the safety and convenience of motorists, surely we can include thoughtful improvements for cyclists, pedestrians, and users of transit. This needs to be a priority in any project Cobb County undertakes.</p>
<p>Seems the most straightforward of the options. I would prefer there was a discourse on how rain runoff from the bridge would be addressed. I foresee flood areas at both ends of the bridge if nothing is done to plan for the water. If the county wants to spend a lot of money, then might as well have grade separation. Between Alternative 1 and 4, I think the grade separation of Cobb Parkway should take priority Best addressing the signal timing and intersection issues and safety issues. Better traffic flow.</p>	<p>This alternative looks unnecessarily confusing and complex. It also seems to undermine the most business and (upcoming) apartment complex in that local area. Trading tax-paying economically productive areas for non-tax-paying dead zones does not seem like a smart move to me. Too much widening, doesn't address the intersection and signal issues at all. Adding more lanes is the problem. Does not address the traffic flow issues.</p>		<p>Like with Alternative 1, if the county has a strong desire to spend a lot of money, then might as well have grade separation. I think grade separation between Terrell Mill and Windy Hill is a lower priority than grade separation through Cobb Parkway. Therefore, this alternative is lower priority for me than alternative 1. terrible worst alternative, doesn't solve issues and in the future will have same issues. This appears to offer the most benefits all around. I head eastbound on Windy Hill most days and also take that north left turn up to Terrell Mill. I'm looking for something that helps the Windy Hill drivers as well as Cobb Pkwy and this looks to be the best option for everyone. This solution seems to be one that can provide best outcome and improve traffic in the long-term as well as the present. The only question/concern I would have would be accessibility to the businesses/stores on the corner with the Chevron. This alternative I support because a flyover ramp will help relieve traffic congestion resulting from people wanting to turn from eastbound Windy Hill Road to Northbound Cobb Parkway and then onto eastbound Terrell Mill Road. Very Creative.</p>	<p>Disappointed that this study does not include alleviating traffic around Truist park. None of the alternatives included transit. Beloved cities in developed counties (ex. Tokyo, Paris, Berlin) have concluded transit is necessary to achieve safe and high capacity transportation system within dense areas. Please consider provisions for transit including transit access, pedestrian access, and density growth allowance. Don't widen too much, focus on the traffic signal and flow and resolve Windy Hill issues because most of the issues are actually at Wind Hill.</p>
<p>This alternative I support because a interchange will help relieve traffic on Cobb Parkway but people are going to have to be patient while it is under construction. Would be good to see widening along Windy Hill. Turn lanes tend to back up.</p>	<p>this design will be too confusing for drivers. drop this alternative NOW! Too confusing for drivers and restrictive to property owners.</p>	<p>this alternative will help in the short term but not in the long term.</p>		<p>What if anything can be done about the peddlers who stand on the median. I'm so afraid one of them could get injured plus they are a distraction on a very busy intersection. Dangerous.</p> <p>n/a</p>

Appendix C: Meeting Minutes

Meeting Minutes

Subject: PMT Kick-off Meeting
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: October 28, 2021; 9:30 AM

Attendees

Name	Organization / Role
Laura Beall	CCDOT / Project Manager, Planning
Yanlin Wu	CCDOT / Deputy Project Manager, Planning
Karyn Matthews	CCDOT / D2 and D3 Preconstruction Engineer
Kelly Patrick	CCDOT / Traffic Operations
Reginald James	ARC / Jurisdictional Representative
Eric Randall	City of Smyrna Engineer
Kristine Hansen-Dederick	Sycamore / Public Involvement Lead
Ahmet Urgan	Parsons / Project Manager
Boro Dedeitch	Parsons / Traffic and Planning Lead
Chase Whitfield	Parsons / Roadway Lead
Emilee Woods	Parsons / Deputy Project Manager

Discussion

- Introductions
- Study Goals & Deliverables
 - Attendees discussed that the goal of this study is to **Enhance Operations and Safety** of the intersection.
 - Additionally, maintaining future federal funding eligibility is a priority.
 - Final deliverables for this scoping study will be a final report with a preferred alternative and implementation plan.
- Stakeholder Steering Committee
 - The attendees discussed the prospective members of this committee. More detail on those members is below.

- From the City of Marietta, Mark Rice or designee (Marc Simmons, Transportation Engineer) will be invited.
- From the City of Smyrna, City Engineer Eric Randall will be invited.
 - Laura also suggested inviting the Community Development Representative for each City.
 - For the City of Smyrna, that is Rusty Martin. Eric will provide his contact information.
 - Parsons will coordinate with City of Marietta to invite their representative.
- From GDOT D7, District Engineer Paul DeNard, District Traffic Engineer Justin Hatch, and District Preconstruction Engineer Landon Perry should all be invited, although all may not choose to attend.
- From ARC, Regional Jurisdictional Representative Reginald James will be invited.
 - Laura will check with Reginald for any additional personnel he would like to include.
- From Cumberland CID, Kyethea Clark, Director of Planning and Projects will be invited to attend.
- Laura and Karyn will review to select a contact for KSU. Kristine will also coordinate to determine the best contact person. This individual will be invited to attend.
- The attendees did not have a contact name for Life University but agreed they should be invited due to proximity of the campus. Parsons will check with Mark Rice whether he has any contact and will reach out to other sources to identify personnel. This individual will be invited to attend.
- Members of the Cobb Chamber of Commerce will be invited to attend. Kristine will reach out to Commissioner Dana Johnson.
- For Dobbins ARB, James Hudgins may be able to get a contact name. Kristine will also reach out to the base to get contact names.
- The attendees discussed Lockheed Martin and determined that including Dobbins ARB should be adequate for this scoping study and to not include Lockheed.
- For Cobb County, in addition to Laura, Karyn, and Kelly, Laura requested that the following from Cobb County will be invited:
 - Phillip Westbrook
 - David Baggett (Construction)

- Will Collins (Water Authority)
- Andrea Ford (Transit)
- There was some discussion for utility personnel. Parsons noted that for the first two SSC meetings, concept alternatives are not likely to be developed as existing data collection is ongoing. These first two meetings will focus on stakeholder outreach and content to be shared as part of those efforts. The attendees agreed that utilities could be engaged later when it was more applicable.
 - Kelly mentioned reaching out to GDOT TMC to see if they were interested in participating. **The team will invite Alan Davis to gauge interest.**
- SSC Meeting Structure
 - Kristine proposes 2 meetings and 2 workshops for this committee.
 - The first two meetings will focus on public outreach preparation. The team will identify stakeholders to include in the outreach, vet outreach methods with the SSC, build outreach surveys with their input, review plans for the two public meetings, and obtain feedback from the committee on some high-level alternatives, when appropriate.
 - The team discussed holding two workshops in early 2022 to follow up on outreach, provide updates, and make adjustments as needed, as well as continuing discussions on alternatives as they become more developed.
 - Attendees agreed with this intended approach.
 - Due to time constraints, it was determined that the first two SSC meetings should be virtual on Microsoft Teams. Since they are being scheduled near holiday times, all felt that this would allow for more participation.
 - The workshops are tentatively in person events with space potentially provided by the City of Smyrna.
- Schedule
 - Parsons presented the intended schedule for this scoping study and went through some of the major milestones. The team noted that existing traffic data is being collected this week.
 - SSC Meeting #1 is to be held on November 17th. **Kristine will send the invitation to the committee members based on today's discussion.**
 - SSC Meeting #2 is to be held on December 15th. **Kristine will send the invitation to the committee members based on today's discussion.**

- The Existing Conditions Analysis Report will be submitted in December 2021, following collection of traffic volumes and analysis of the project area.
- Public Outreach #1 will be initiated in early December and is discussed more below.
- The Public Meeting will be tentatively scheduled for early February once concept alternatives have been developed.
- The Final Report will be submitted in July 2022, which will mark the conclusion of the study.
- Future PMT Meetings will reoccur on the 3rd Wednesday of each month at 3:00 PM
 - The first recurring meeting will be November 17th
- Public Meetings & Outreach
 - The first outreach effort is to be a Virtual Survey to gather information from the community, stakeholders, and business owners.
 - Kristine gave an overview of the survey format, noting that it would be virtual with accompanying graphics.
 - The specific graphics are still being developed and could potentially include Survey a map where respondents can add pins to areas of concern or other general project area maps. It will also include a set of questions for response and comment.
 - The team noted that due to the time constraints, expedited review of materials would be very helpful. Laura noted that they generally need one week to review the information but can expedite if possible.
 - Cobb County and the cities can send out social media blasts advertising the survey to the public and linking them to the site, which will be hosted by Cobb County.
 - **Kristine will coordinate with Brandy McDowell with Cobb County for website set up.**
 - The survey can run the month of December, with responses due in the middle of the month.
- The Parsons team gave a high-level overview of some concept alternatives that have been developed in the early stage. The team also noted that previous studies by others have also been reviewed and are considered. These alternatives may be revised or combined based on the outcome of traffic studies.
- The team also discussed future PMT meetings and agreed on the 3rd Wednesday of each month at 3 PM. **Parsons will send a recurring meeting invitation.**

Action Items

Laura Beall

- Laura will coordinate with Reginald James of ARC for any additional personnel he would like to include as part of the SSC.
- Laura and Karyn will review and select a contact for KSU, together with Kristine.

Eric Randall – City of Smyrna

- Eric will provide contact information for Rusty Martin to include in the SSC.

Parsons/Kristine

- Confirm Community Development Representative for City of Marietta.
- Parsons and Kristine will coordinate with the City of Marietta to invite their representatives to the SSC.
- Kristine will reach out to Commissioner Dana Johnson of Cobb Chamber of Commerce.
- Kristine will reach out to Dobbins ARB to get contact names..
- Kristine will coordinate with Laura and Karyn to determine the best contact for KSU to invite to be a member of the SSC.
- Parsons and Kristine will check with Mark Rice and others to get contacts and reach out Life University invite to the SSC.
- Kristine will send an introductory email for the committee, and follow up with meeting invitations for SSC Meeting #1 (November 17th) and SSC Meeting #2 (December 15th).
- Parsons will end reoccurring meeting invitation for PMT meeting, 3rd Wednesday of each month.
- Kristine will coordinate with Brandy McDowell (Cobb County) regarding webpage set up.

Meeting Minutes

Subject: PMT Monthly Meeting
 Windy Hill/Cobb Parkway Scoping Study
 X2540
 Location: Microsoft Teams
 Date: November 17, 2021; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT - PM
Ahmet Urgan	Parsons - PM
Emilee Woods	Parsons - Deputy PM
Chase Whitfield	Parsons - Roadway Design Lead
Boro Dedeitch	Parsons - Traffic Analysis Lead
Kristine Hansen Dederick	Sycamore - Public Involvement Lead
Karyn Matthews	CCDOT Preconstruction
Eric Randall	City of Smyrna
Yanlin Wu	CCDOT Planning
Kelly Patrick	CCDOT Traffic
Reggie James	ARC

Discussion

- Existing Conditions – Status Update
 - Traffic Data Collection was completed and results are being provided to Parsons.
 - Traffic Analysis
 - Traffic analysis efforts are ongoing based on data received. Boro provided an overview of the efforts being done so far along with some volume diagrams of the study area intersections, showing the counts collected.
 - This analysis will be presented and summarized in the Existing Conditions Report.
 - Laura mentioned that the Cobb County CTP will not be approved until January. Parsons will call Laura to discuss the contents and how to best include data from the draft CTP into the Existing Conditions Analysis Report, such as future BRT plans and other adjacent developments/improvements that could impact the study area.
- Public Outreach

- SSC Meeting #1 was held today at 2 PM.
 - 31 individuals attended the meeting, including representatives from CCDOT, Cobb County, City of Smyrna, City of Marietta, Cumberland CID, Atlanta Regional Commission, Dobbins Air Reserve Base, GDOT District 7, Georgia Commute Options, and CobbLinc.
 - The PMT received feedback on existing problems at the intersection and along the corridor from the stakeholder perspectives. This included some anecdotal accounts and information about Dobbins ARB flight paths.
- Virtual Survey
 - Parsons presented the draft survey questions to the group. These will also be distributed to CCDOT for their review and approval before publishing on the website.
 - The comment period will run from December 1 to December 22.
- Website Publishing
 - Kristine is coordinating to get the survey published on the CCDOT Webpage.
- Upcoming Schedule
 - SSC Meeting #2 – December 15 at 2 PM
 - PMT Monthly Meeting – December 15 at 3 PM
 - Virtual Survey Comment Period Closes – December 22
 - Existing Conditions Report – December 17
 - SSC Workshop #1 – February 2 at 2 PM
 - Eric Randall with City of Smyrna has secured the banquet room in Brawner Hall for this meeting. Placeholder invites will be sent to the SSC.

Action Items

Parsons/Kristine

- Parsons to call Laura 11/19 to discuss the CTP and how to implement into the Existing Conditions Analysis Report.
- Parsons to continue work on Existing Conditions Analysis Report.
- Kristine to continue to coordinate to get the survey published by 12/1.
- Kristine to send invite for SSC Workshop on 2/2/22

Eric Randall/City of Smyrna

- Eric to check availability at Brawner Hall and book the large conference room for the SSC Workshop.

Laura/CCDOT

- CCDOT to review draft survey questions and provide feedback and approval.

Meeting Minutes

Subject: Stakeholder Steering Meeting
 Windy Hill/Cobb Parkway Scoping Study
 X2540
 Location: Microsoft Teams
 Date: November 17, 2021; 2:00 PM

Attendees

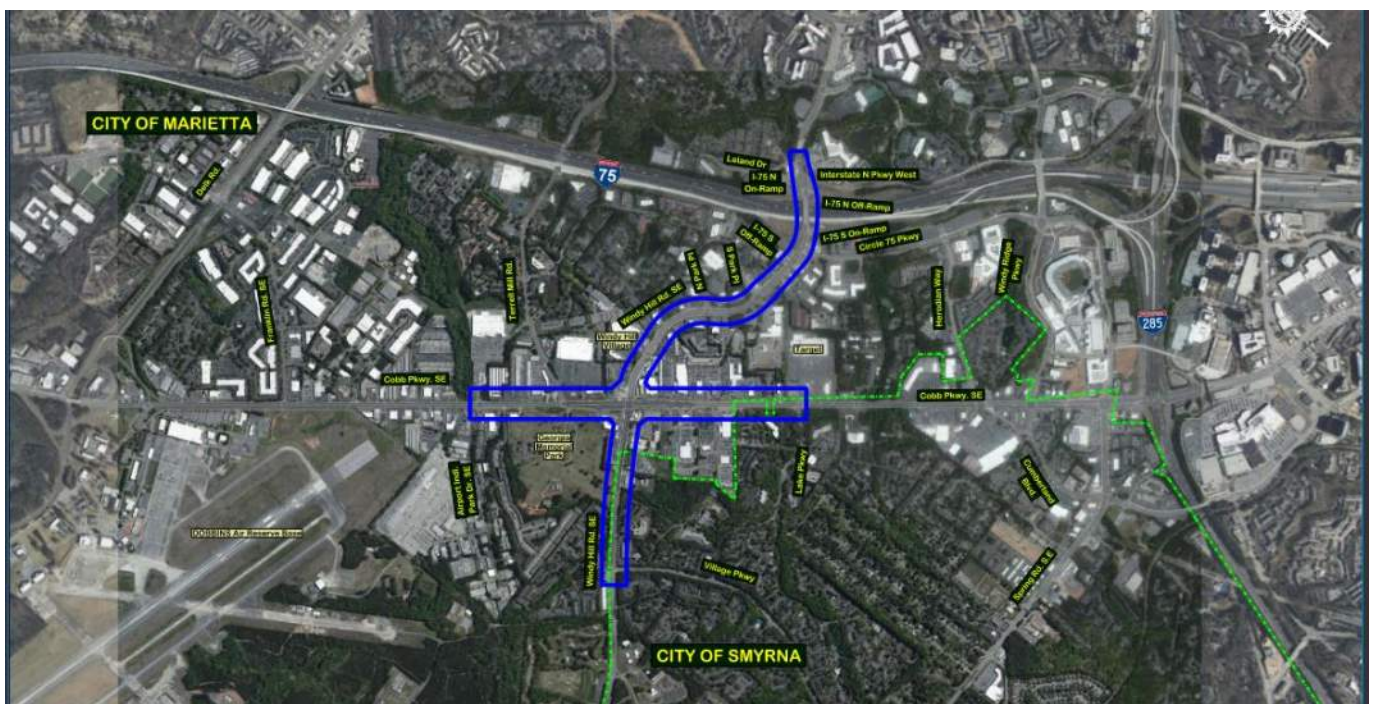
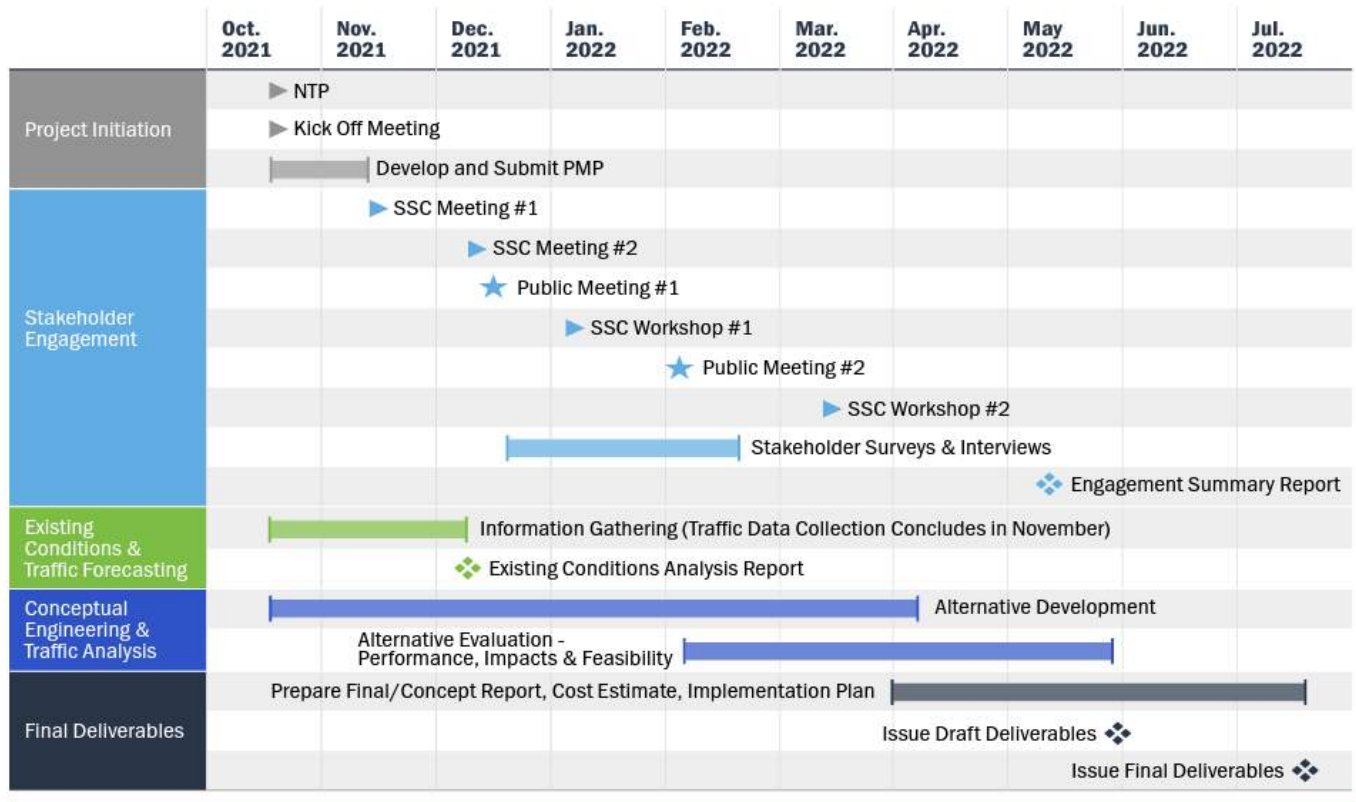
Name	Organization / Role
Laura Beall	Cobb County DOT Project Manager
Ahmet Urgan	Parsons - Project Manager
Emilee Woods	Parsons - Deputy Project Manager
Chase Whitfield	Parsons - Roadway Design Lead
Boro Deteitch	Parsons - Traffic Analysis Lead
Kristine Hansen-Dederick	Sycamore - Public Involvement Lead
Challa Bonja	Metro Trafix
Kyetha Clark	Cumberland CID
Phillip Westbrook	Cobb County Community Development
Mark Rice	City of Marietta
Eric Meyer	District 2 Representative
Master Sgt. Michael McGhee	94 th Airlift Wing, Public Affairs
Daniel Cummings	City of Marietta
Ali Nuckles	Georgia Commute Options
Landon Perry	GDOT D7 Construction
Reginald James	Atlanta Regional Commission
Russell Martin	City of Smyrna Community Development Director
Eric Randall	City of Smyrna City Engineer
Karyn Matthews	Cobb County DOT
Michael Francis	Cobb County DOT
Rustavius Ford	Cobb DOT, Pre-Construction
Will Mallory	Dobbins ARB
Valerie Olsson	Dobbins ARB
Osman Ercin	Dobbins ARB (Jacobs)
Will Powell	Dobbins ARB
Bijan Raouf	Dobbins ARB
Parker Johnson	Dobbins ARB
David Baggett	Cobb County DOT
Andrea Foard	CobbLinc
Kelly Patrick	Cobb County DOT
Kate D'Ambrosio Shearin	GDOT

Discussion

- Welcome (Cobb DOT)
- Introduction of Project Staff
 - Laura Beall – Cobb County DOT Project Manager
 - Ahmet Urgan – Parsons Project Manager
 - Emilee Woods – Parsons Deputy Project Manager
 - Chase Whitfield – Parsons Roadway Design Lead
 - Boro Dedeitch – Parsons Traffic Analysis Lead
 - Kristine Hansen-Dederick – Public Involvement Lead
- Overview of Project – Scope, Schedules, Milestones
 - Project Location – Cobb Parkway and Windy Hill Road Intersection
 - This corridor has been long identified as needing improvements due to notable congestion and safety issues as well as a high crash history.
 - Evaluating options for grade separation or other intersection improvements
 - Goal is to improve safety and operations
 - This is a scoping study only to develop an implementation plan as well as a preferred alternative.
 - Schedule and Project Location Map attached below.
- Overview of Outreach
 - Stakeholder Steering Committee - 2 Virtual Meetings and 2 Workshops
 - Information sharing, brainstorming, feedback
 - Second Meeting – December 15th at 2 PM
 - Workshops - January and March 2022
 - Initial Outreach: Online Public Survey
 - Open from Early December to December 22
 - Collect input on experience, issues and ideas
 - Distributing through SSC
 - Final Outreach: Public Meeting
 - In-person event to present concept alternatives and obtain feedback
 - Expected in Spring 2022
- Discussion
 - Kyetha Clark (Cumberland CID) – Getting through the intersection is timely, whichever leg you approach from, especially in the AM Peak

Hour. Even utilizing the express lanes on Terrill Mill to get onto Cobb Pkwy, there is a significant amount of time to get through the intersection.

- Eric Meyer (GDOT District 2 Representative) – In terms of goals of the project, where does public transit fit in? The BRT Route from the approved NEPA document (2015) shows a path going through Cobb Pkwy.
 - Boro Dedeitch (Parsons) spoke to this question. The existing queue jump lanes are being included in the analysis of the intersection. The goal of the study is to see how safety and traffic operations can improve at this location.
 - Parsons will evaluate this NEPA document and continue the analysis accordingly.
 - Laura Beall (CCDOT PM) mentioned BRT Routes are planned to continue routing along Cobb Pkwy.
- Eric Randall – There's such a high volume, especially the left turn at Cobb Pkwy onto Windy Hill (AM and PM), all signal progressions seem to be lost during these times.
 - Challa Bonja (Metro Traftix) - While the analysis can be conducted for the future improvements, Challa will pass on the information to the GDOT SigOps team for timing adjustments, where needed, for immediate improvements.
- Parker Johnson (Dobbins ARB) – Dobbins would like to see intersection improvements, but along the corridor in general safety improvements for pedestrians is a need. In 2019, there was a pedestrian fatality along the corridor, so safety especially for pedestrians should be evaluated and improved if possible.
 - Regarding Public Involvement, is technology to track and provide the survey to drivers utilizing the intersection? (Facebook)



Meeting Minutes

Subject: Stakeholder Steering Meeting #2
 Windy Hill/Cobb Parkway Scoping Study
 X2540

Location: Microsoft Teams

Date: December 15, 2021; 2:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT Project Manager
Ahmet Urgan	Parsons Project Manager
Emilee Woods	Parsons Deputy PM
Boro Dedeitch	Parsons Traffic Lead
Chase Whitfield	Parsons Roadway Lead
Tom Daniel	Parsons Design
Kristine Hansen-Dederick	Public Involvement Lead
Challa Bonja	MetroTrafix
Wilson Collins	Cobb Water Systems
Ali Nuckles	Georgia Commute Options
Megan Wilson	District 7 Traffic Ops
Byron Rushing	ARC
Yanlin Wu	Cobb County DOT (CCDOT)
William Mallory	Dobbins ARB
Valerie Olsson	Dobbins ARB
William Powell	Dobbins ARB
Osom Ercin	Dobbins ARB
Alex Chung	CCID / Jacobs
Kofi Wakhisi	ARC
Reginald James	ARC
Tejas Kotak	ARC
Josh Montefusco	District 7 Traffic Ops
Eric Meyer	District 2
Tyrone Smiley	Kennesaw State
Kate Shearin	GDOT SigOps
Eric Randall	City of Smyrna
Landon Perry	GDOT Preconstruction
Daniel Cummings	City of Marietta
Ashley White	City of Smyrna
Dana Johnson	Cobb County Chamber of Commerce
David Baggett	CCDOT
Michael Francis	CCDOT

Kelly Patrick	CCDOT
Karyn Matthews	CCDOT

Discussion

- Welcome – Emilee Woods (Parsons Deputy Project Manager)
- Update on Outreach – Kristine Hansen-Dederick (Public Involvement Lead)
 - Published Advertisement
 - Public Survey Launched December 2, 2021
 - As of December 14, there have been 550 responses.
 - This survey has been published in both English and Spanish.
 - The survey has been extended until December 31, 2021.
 - Preliminary Results
 - Top Issues: Congestion and Delay in travel times
 - Biggest Safety Issues: Signal timing and left turns/driver behavior
 - Needed Improvements: Congestion relief and increased capacity
 - Biggest Challenges to Implementation: Construction disruption to traffic, ROW/Cost
- Update on Existing Conditions Analysis
 - Preliminary Findings
 - Traffic
 - As shown by data collection, numbers have bounced back to pre-COVID volumes, and in some cases have even begun to exceed those volumes.
 - Vehicular, heavy truck, bicycle, and pedestrian volumes were collected and analyzed.
 - The west leg of Windy Hill Road has the heaviest volumes.
 - There is a drop in volume north of Terrell Mill, which means there is a lot of traffic traveling from the west leg of Windy Hill and turning right onto Terrell Mill.
 - All left turn movements at Cobb Pwky / Windy Hill are performing at unsatisfactory level of services (LOS E or F).
 - Crash rates at this intersections are well above the statewide averages.
 - Critical Areas & Stakeholder Feedback
 - Environmental
 - Georgia Memorial Park is one of four eligible environmental resources..
 - No ecology or species are anticipated.
 - Utilities
 - Transmission lines, water mains, AGL duct banks are located throughout the study area and will be costly to relocated.
 - ROW
 - Of the 90 parcels located within the study area, almost half have a cost of over \$1M/acre.
 - Stakeholder Feedback
 - Regarding transit ridership, Eric Meyer (District 2) mentioned that Route 10 and Rapid 10 are the most heavily used bus routes in Cobb County. It was mentioned that boarding data is available.
 - Parsons will coordinate with CobbLinc and Cobb Transit Division to gather boarding data.

- Megan Wilson (District 7 Traffic Ops) asked about queue length during peak hours.
 - The queue during peak hours can get as long as 732-feet, which correlates to almost 13 minutes of delay. This also ties back to insufficient storage length.
 - Megan also asked if there is grid lock/queue blocking during peak hours.
 - The nearest signalized intersections are not impacted by the congestion at Cobb Pwky / Windy Hill, so no grid lock / queue blocking has been observed.
- Explanation of Potential Alternatives
 - Grade Separation
 - Elevating one roadway or part of a roadway over the other.
 - Continuous Flow Intersection (CFI) / Displaced Left-Turn
 - Tejas Kotak (ARC) mentioned that the CFI in Snellville has provided good congestion relief but has made pedestrian movements more difficult.
 - Landon Perry (GDOT Preconstruction) inquired about pedestrian movement counts.
 - Pedestrian counts were taken at each of the 12 intersections located in the project study area. The counts were relatively low, although pre-pandemic numbers were assumed to be higher.
- Upcoming Milestones
 - End of Survey Period – December 31, 2021
 - SSC Workshop #1 – February 2, 2022 at 2PM – Brawner Hall Banquet Room, Smyrna
 - Another workshop will be held in early April – this will be scheduled and shared soon.
- Questions / Discussion
 - Tejas asked if retiming the signal is being considered as a potential alternative, rather than modifying the infrastructure.
 - This alternative is being studied, although it seems that the signal is as optimized as possible in its current timing pattern.

Meeting Minutes

Subject: PMT Monthly Meeting
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: December 15, 2021; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Reginald James	ARC
Karyn Matthews	CCDOT
Kelly Patrick	CCDOT
Yanlin Wu	CCDOT
Eric Randall	City of Smyrna
Kristine Hansen-Dederick	Sycamore - Public Involvement
Ahmet Urgan	Parsons PM
Emilee Woods	Parsons Deputy PM
Boro Dedeitch	Parsons Traffic Lead
Chase Whitfield	Parsons Roadway Lead
Tom Daniel	Parsons - Design

Discussion

- Existing Conditions – Status Update
 - Traffic Analysis update was given in detail at the SSC Meeting. Data collection and analysis is complete.
 - Parsons previously met with Laura to discuss which elements of the CTP were critical to this study. Laura is sharing information for adjacent projects accordingly.
 - Laura will forward email from Kimley-Horn regarding CTP update, to be included in the Report.
 - A question was brought up during the SSC Meeting regarding transit ridership. Bus schedules have been received by Parsons, but no ridership data.

- CCDOT will provide the data to Parsons to include in the Existing Conditions Report. Submittal is shifted to 12/20 to allow time for incorporation.
- Report will be submitted Monday (12/20)
 - This date was shifted from 12/17 to allow time to incorporate transit ridership data.
- Public Outreach
 - SSC Meeting #2 – Debrief
 - There were over 30 attendees at this meeting.
 - Good discussion regarding the existing conditions study,
 - There was discussion about other features in the area, including a 50-inch water main.
 - There was also discussion regarding transit ridership and future plans for the transit routes.
 - Stakeholder Steering Committee Workshop #1 was announced, and calendar invites will be sent to all members.
 - Virtual Survey Update
 - There will be efforts to increase Transit rider responses. Per discussion, there is not time to put up posters.
 - Flyers will be handed out near transit stops to increase responses.
 - As of 12/14/2021 – there have been 550 responses to the survey.
 - The survey will close on 12/31/2021.
 - Website / Postings
 - Spanish version is up-and-running as of 12/15/2021.

- Other organizations have posted the survey including the Cities of Marietta and Smyrna, and it has helped increase the number of responses.
- Alternative Development
 - Efforts Starting Now
 - Creating short-list of ideas / potential options to further evaluate.
 - High-Level Alternatives for SSC Workshop (2/2/2022)
 - Hoping to get good feedback from the committee that we will consider when further developing these alternatives and selecting a preferred alternative.
- Upcoming Schedule
 - Existing Conditions Report – December 20
 - Virtual Survey Comment Period Closes – December 31
 - Monthly PMT Meeting – January 19
 - SSC Workshop – February 2
 - After SSC Workshop, complete Public Outreach #2 in late March to get the public’s feedback. SSC Workshop 2 will be in April.
 - Parsons will send potential dates and subsequent calendar invites.

Action Items

Parsons/Kristine

- Submit Existing Conditions Report by 12/17/2021.
- Continue outreach efforts to increase responses to the public survey.
- Send dates for Public Outreach #2 & SSC Workshop #2.
- Continue developing conceptual alternatives to be presented at SSC Workshop #1 on 2/2/2021.

Laura/CCDOT

- Forward email regarding CTP update.
- Follow up on data regarding transit ridership.

Meeting Minutes

Subject: PMT Monthly Meeting
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: January 19, 2022; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Reginald James	ARC
Karyn Matthews	CCDOT
Kelly Patrick	CCDOT
Yanlin Wu	CCDOT
Eric Randall	City of Smyrna
Kristine Hansen-Dederick	Sycamore - Public Involvement
Ahmet Urgan	Parsons PM
Emilee Woods	Parsons Deputy PM
Chase Whitfield	Parsons Roadway Lead
Tom Daniel	Parsons
Abby Meadows	Parsons

Discussion

- Existing Conditions Review
 - V1 of the report was submitted 12/21/2021
 - V2 will be submitted this week after incorporating transit ridership and results from online survey.
 - Laura mentioned that the CPT has been officially released. Parsons will verify adjacent project information before resubmittal.
- Public Outreach
 - Virtual Survey Debrief
 - There were 873 respondents who commented on a wide range of issues.
 - Most of the respondents live in the Smyrna zip code.
 - Congestion and capacity were noted as the biggest issues.

- These responses and results are being considered for the alternative development and analysis, which is ongoing.
 - Upcoming SSC Workshop #3 – February 2, 2022
 - This meeting is proposed to be in person at Brawner Hall where the team will present some conceptual alternatives to stakeholders.
 - After discussion, Kristine will send out a survey to the SSC to see whether they will attend an in-person meeting (with social distancing and masking), or if we should swivel to a virtual approach. The group agreed to do one or the other in lieu of a hybrid approach.
 - Materials for the meeting will be shared with CCDOT in advance for approval.
- Alternative Development
 - High-Level Alternatives for SSC Workshop were presented during the meeting.
 - Alternative #1: SPUI – Single Point Urban Interchange
 - A single traffic signal at the center of the interchange controls all left turns
 - Can be constructed where there would not be room for a standard interchange—ideal for urban areas
 - Can allow more vehicles to make a turn and clear the interchange in a single traffic signal cycle
 - Can be interconnected with cross-street signal systems
 - Allows long, gradual turns so larger vehicles have more room to navigate
 - Alternative #2: CFI – Continuous Flow Intersection
 - AKA Displaced Left Turn
 - Allows left turns and through movements of one or both approaches to occur at the same time
 - Alternative #3: At-Grade Improvements
 - Additional through lane in each direction on Windy Hill
 - Alternative #4: Flyover Ramp
 - Carries the EB (left leg) of Windy Hill overhead directly to Terrell Mill
 - The outcome of the Existing Conditions Report brought to light that this movement, EB Windy Hill to Terrell Mill, has the highest volumes of any other movement through or near the intersection.

- Karyn Matthews inquired combining elements of Alternatives #3 and #4.
Parsons agreed to investigate this option.
 - Evaluating potential impacts and developing evaluation matrix.
- Upcoming Schedule
 - SSC Workshop – February 2 @ 2PM
 - PMT Monthly Meeting – February 16 @ 3PM
 - PMT Monthly Meeting – March 9 @ 3PM
 - Public Meeting – March 16 @ 5PM

Action Items

Parsons/Kristine

- Submit Existing Conditions Report v2 by 1/21/2022.
- Send survey to SSC to decide whether the workshop will be in-person or virtual.
- Continue developing conceptual alternatives to be presented at SSC Workshop #1 on 2/2/2021.

Laura/CCDOT

- Review Existing Conditions Report v2.

Meeting Minutes

Subject: Meeting with Arcadis to Discuss their Grade-Separation Concept
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: February 10, 2022; 4:00 PM

Attendees

Name	Organization / Role
Karyn Matthews	CCDOT
James Hudgins	Arcadis
Chase Whitfield	Parsons Roadway Lead
Boro Dedeitch	Parsons Traffic Lead
Tom Daniel	Parsons
Abby Meadows	Parsons

Discussion

- The purpose of this meeting was to discuss the previous concept for the single-point urban interchange presented in the draft Existing Conditions Report.
- The draft Existing Conditions Report indicates that the previous concept proposes Cobb Parkway elevated over Windy Hill Road. In actuality, the previous concept (prepared by Arcadis for Cobb County in 2012) proposed Cobb Parkway depressed under Windy Hill Road and elevated over Terrell Mill Road. This profile was derived because Cobb Parkway is at an appreciable higher elevation at Windy Hill Road than at Terrell Mill Road to the north.
- At that time, Arcadis coordinated with the Cobb Water Authority during their design and installation of a 54" waterline that runs along Cobb Parkway to ensure the waterline is deep enough so as to not conflict with the potential roadway tunnel under Windy Hill Road. The waterline is approximately 80' deep at Windy Hill Road and would not conflict with the roadway tunnel.
- Arcadis did not propose elevating Cobb Parkway over Windy Hill Road because an excessive profile grade would be required to match the existing Cobb Parkway south of Windy Hill Road, where Cobb Parkway descends at a 6% grade.

- Arcadis did not consider the potential need for MEP (mechanical-electric-plumbing) in the tunnel, which would increase the required vertical clearance. However, the MEP requirements could be eliminated if the “red” portions of the proposed bridge in the concept drawing are not constructed, thereby keeping the covered portion of the roadway to less than 300’ in length.
- Arcadis developed a concept for the staged construction of the bridge in the Cobb/Windy Hill Interchange. To minimize the ROW impact, during construction lanes were temporarily narrowed to 11’ wide, only 2 thru lanes in each direction were proposed, and double left and right turns were reduced to one lane. Cobb Parkway now has 3 thru lanes in each direction across Windy Hill and dual left turns for both NB and SB Cobb Parkway onto Windy Hill Road. There are also 2 existing right-turn lanes from SB Cobb Parkway to WB Windy Hill Road; and 1 existing right turn lane from NB Cobb Parkway to EB Windy Hill Road. The additional number of lanes since the previous concept was developed might render the previous concept obsolete. Nevertheless, Arcadis will check and provide the previously developed staging plans, if available. The previous concept does not indicate that additional ROW would be required for the staged construction.
- The previous concept indicates signals would be required on Cobb Parkway to enable traffic on the proposed frontage roads to merge into Cobb Parkway north of Terrell Mill Road and south of Windy Hill Road.
- The signal north of Terrell Mill Road is needed to enable trucks to safely merge from the northbound frontage road onto Cobb Parkway and then turn left onto Airport Industrial Park Drive. A significant amount to trucks (including tandem trucks), travel from a freight yard located along Airport Industrial Park Drive, then turn right onto SB Cobb Parkway then left onto EB Windy Hill Road as well as the reverse movement from Windy Hill Road to the freight yard. The signal south of Windy Hill Road might not be required.
- Arcadis also considered the possibility of elevating Windy Hill Road above Cobb Parkway. However, they concluded that this would not be feasible from a traffic standpoint because Windy Hill Road would not return to grade until approximately the intersection with Village Parkway and because this concept would require a considerable (and prohibitively costly) amount of ROW along Windy Hill Road.

Meeting Minutes

Subject: PMT Monthly Meeting
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: February 16, 2022; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Reginald James	ARC
Karyn Matthews	CCDOT
Eric Randall	City of Smyrna
Mark Rice	City of Marietta
Ahmet Urgan	Parsons PM
Emilee Woods	Parsons Deputy PM
Boro Dedeitch	Parsons Traffic Lead
Chase Whitfield	Parsons Roadway Lead
Tom Daniel	Parsons
Kristine Hansen-Dederick	Sycamore – Public Involvement

Discussion

- Existing Conditions Review
 - V2 of the report was submitted 1/20/2022
 - V3 will be submitted after incorporating comments received from CCDOT yesterday on 2/15/2022.
- Public and Stakeholder Outreach
 - SSC Workshop #1 held 2/2/22
 - No feedback on the presentation and alternatives has been received from Marietta or GDOT D7 as of yet.
 - Smyrna is checking internally and will capture any remaining comments.
 - Marietta will send their feedback in next few days.
 - Laura asked comments from ARC as well.
 - Laura is following up with GDOT D7, Paul and Landon, to get their feedback.

- Upcoming Public Meeting – March 16, 2022
 - The meeting will be held at Windy Hill Community Center from 5PM to 7PM.
 - The Legal Ad has been completed, and other materials are currently under development.
 - The Legal Ad was submitted to Marietta Daily Journal and will be advertised each Friday leading up to the meeting.
 - Kristine is sending flyer and website content to Laura for approval.
 - Kristine will also coordinate with Brandy to get updates pushed through.
 - Kristine and Parsons will develop social media content and request help with posting from stakeholders.
 - Laura will complete the form for Kelly Patrick on roadway signage.
 - Meeting Format (presentation & open review)
 - If large number of people gathered all at once for the presentation, the team will space people out and still make the presentation meaningful.
 - Laura agrees with format. It will be similar to Cobb County town hall meeting. The presentation to attendees will be played by ear and flexible on timing based on volume of arrival.
 - Kristine suggested avoiding handouts but allow pictures. Attendees on the call agreed with this approach.
 - Laura emphasized to note that everything is preliminary/draft at the meeting. Eric Randall echoed importance of this.
 - The advertising flyer should just mention that this is a high-level scoping study and provide the goal of the study.
 - Comment cards will be available at the meeting. The team decided to not post comment cards online.
 - Streamlined Alternatives will be presented at the meeting.
 - A PMT Meeting will be scheduled for March 2 at 3PM to review Public Meeting material.
- Alternatives Development
 - Alternatives 1-4 are being refined and optimized based on feedback received from the stakeholder steering committee.
 - Additional Alternatives are being drafted, including 1B (tunnel) and 4B (at-grade improvements + flyover ramp).

- Evaluation Metrics are being adjusting based on feedback from the PMT and Stakeholders.
- Cost estimates have been initiated and are underway.
- FAA Coordination
 - Parsons is actively checking conceptual profile and structure depths for potential maximum elevations.
 - Parsons will schedule a meeting with CCDOT Intermodal Deputy Director – Karl Von Hagel.
 - Per Laura, he is willing to meet, and Laura will share his contact information. Parsons just needs to give him some context to comments being received so he can assist in interpreting FAA requirements and expectations.
 - Parsons will coordinate scheduling with him directly and keep Laura copied.
 - Parsons will also schedule a future meeting with Dobbins ARB Representatives.
- Upcoming Schedule
 - PMT Meeting/Public Meeting Prep –March 2 @ 3 PM
 - PMT Monthly Meeting – March 9 @ 3PM
 - Public Meeting – March 16 @ 5PM
 - SSC Workshop #2 – April 13 @ 10AM – 12PM, Brawner Hall

Action Items

Parsons

- Submit Existing Conditions Report v3 after incorporating comments from CCDOT.
- Continue refining alternatives and evaluation metrics.
- Initiate coordination / schedule meeting with Karl Von Hagel to discuss FAA compliance before coordinating directly with Dobbins.

Sycamore

- Send flyer and website content to Laura for approval.
- Coordinate with Brandy to get updates pushed through.
- Develop social media content to get help with postings from stakeholders.

Laura/CCDOT

- Follow up with GDOT D7, Paul, and Landon, to get feedback on the SSC Workshop material.
- Provide Karl Von Hagel's contact information to Parsons.
- Complete form for roadway signage for Kelly Patrick.

Eric Randall / City of Smyrna

- Provide feedback from the City of Smyrna on SSC Workshop Materials.

Mark Rice / City of Marietta

- Provide feedback from the City of Marietta on SSC Workshop Materials.

Reginald James / ARC

- Provide feedback from ARC on SSC Workshop Materials.

Meeting Minutes

Subject: Meeting to Discuss FAA Requirements
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: February 24, 2022; 11:00 AM

Attendees

Name	Organization / Role
Karl Von Hagel	Cobb County
Laura Beall	Cobb County – Project Manager
Ahmet Urgan	Parsons – Project Manager
Emilee Woods	Parsons – Deputy Project Manager
Chase Whitfield	Parsons – Roadway Lead
Boro Dedeitch	Parsons – Traffic Lead
Tom Daniel	Parsons – Roadway SME
Abby Meadows	Parsons – Engineer

Discussion

- The purpose of this meeting was the discuss whether draft concepts to improve the operation of the Cobb Parkway / Windy Hill Road intersection would comply with FAA and Department of Defense (DoD) regulations for construction in flight paths from Dobbins.
- Emilee explained what the scope of this project (study) is: to evaluate several alternatives to resolve the congestion and safety issues at this intersection and to eventually provide a preferred alternative to the County.
- Parsons presented three concepts (layouts and profiles) that propose elevated structures that would need to be checked.
 - Option 1A - Cobb Parkway's intersections with Windy Hill Road and Terrell Mill Road would be converted into modified single-point urban interchanges (SPUI) that are connected by frontage roads. Cobb Parkway would be elevated over at-grade intersections with Windy Hill Road and Terrell Mill Road.
 - Option 1B - Cobb Parkway's intersections with Windy Hill Road and Terrell Mill Road would be converted into modified SPUIs that are connected by frontage roads. Cobb Parkway would be depressed under an at-grade intersection with Windy Hill Road and elevated over an at-grade intersection with Terrell Mill Road.
 - Option 4 - Flyover ramp (multi-span bridge) that would allow continuous, uninterrupted movement from EB Windy Hill Road to EB Terrell Mill Road and the reciprocal movement from WB Terrell Mill Road to WB Windy Hill Road.
- Karl mentioned 3 parameters that FAA uses:

- Using alternative 4 to measure, from the runway to the nearest point of the roadway is approximately 3,300 feet.
 - The first step in the process is to check whether a FAA Form 7460-1, Notice of Proposed Construction or Alteration, must be submitted.
 - Form 7460-1 would need to be filed if proposed construction (bridges, light poles, power poles, etc.) and/or temporary objects (mobile objects such as trucks/traffic on the road, construction cranes, etc.) would encroach above an obstruction zone approximately defined by a 100:1 slope beginning 200' in front of the beginning of the runway.
 - Parsons presented a graphic (attached) which indicates the elevations of the zone. Options 1A, 1B and 4 all encroach above the zone and would require the submission of Form 7460-1.
 - FAA would likely accept cranes encroaching within the zone if work is limited to between 11:00 PM and 7:00 AM when Dobbins is closed.
 - If construction encroaches within the 50:1 slope, then the potential obstructions to operational impacts as defined by Terminal Instrument Procedures (TERPS) must be checked.
 - The characteristics of the required approach to a runway could vary between airports but it is likely that all construction should be below a zone defined by a 50:1 slope beginning 200' in front of the runway.
 - Objects such as towers or light poles that extend above the 50:1 zone could be mitigated if red lights are installed on top. **However, all obstructions must remain beneath a 34:1 zone.**
(Post Meeting Note: Dobbins Air Base appears to be a Precision Instrument Runway with an Approach Slope requirement of 40:1. The 34:1 is the requirement for Non-Precision Instrument Runways.)
 - All three of the aforementioned concepts are close to exceeding the 50:1 zone based on concept study results. At a minimum the FAA 7460-1 Notice of Proposed Construction or Alteration will need to be applied for prior to construction of any of the concepts.
- Submission of Form 7460-1
 - Concepts are being refined and analyzed. A refined concept has not yet been recommended.
 - Typically, FAA will respond in about 3 months.
 - Parsons' scope concludes in July/August with the submission of a concept report.
 - The concepts that were presented are in sufficient detail as an attachment to Form 7460-1.
 - Although Form 7460-1 would typically be submitted during the preliminary design phase, it might be desirable to submit the form once a concept is recommended to confirm whether the concept is feasible or what the thresholds of acceptance would be.
- By Chase's study, both Alternatives 1 and 4 are encroaching the 100:1 slope and likely close to the 50:1 slope as well.
 - Karl concurred, the 34:1 (TERPS) is the key.

Meeting Minutes

Subject: PMT Meeting – Public Meeting Strategy
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: March 2, 2022; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Kelly Patrick	CCDOT
Reginald James	ARC
Kristine Hansen-Dederick	Sycamore – Public Involvement Lead
Eric Randall	City of Smyrna
Ahmet Urgan	Parsons PM
Chase Whitfield	Parsons Roadway Lead
Boro Dedeitch	Parsons Traffic Lead
Emilee Woods	Parsons Deputy PM
Tom Daniel	Parsons Roadway SME
Abby Meadows	Parsons Engineer

Discussion

- Existing Conditions Review
 - V3 submitted 2/22/2022, addressing all comments received.
 - Laura is finalizing her review and plans to sign v3 off as the final report in the next few days.
- PMP and Stakeholder Engagement Strategy were provided to Laura.
 - Laura is finalizing her review and will let Parsons know if there are any comments to address.
- Public and Stakeholder Outreach
 - The upcoming Public Meeting is scheduled for March 16, 2022 at the Windy Hill Community Center from 5PM – 7PM
 - Legal Ad Completed, social media and other Postings
 - Kristine provided an update on the social media, flyers, and signs.

- All social media postings are up and running, flyers are being distributed, and Kelly Patrick confirmed that the signs were installed today (3/2/2022).
 - Eric Randall confirmed the City of Smyrna is also posting this on their social media.
 - Meeting Format (Presentation/Open Discussion)
 - The presentation will mention the alternatives and how they are (being) evaluated per our metrics.
 - The rest of the meeting will be more “open house” style, where we can speak to the attendees individually and discuss their thoughts and concerns.
 - The team will arrive early to set up and get ready, and Laura can bring directional signs to post outside if needed.
 - Laura confirmed a court reporter is not required.
 - Parsons can bring a Spanish translator if needed.
 - Streamlined Alternatives
 - We are planning to present Alternatives 2 (CFI), 3 (At-Grade Improvements), and 4A/B (Flyover Ramp).
 - Based on LOS evaluation, Alternative 1 (SPUI) is seeming to fall behind the others.
- Alternatives Development
 - FAA Coordination
 - Met with Karl Von Hagel to discuss FAA requirements. Based on this meeting, we are using the critical slopes (50:1 and 34:1) to evaluate the magnitude of coordination and mitigation required for the FAA.
 - Laura concurred that we are at a point that a meeting can be scheduled with Dobbins. We will include Karl and *CCDOT Director*.
 - Alternatives 1-4 have been fine-tuned and optimizations.
 - Two Additional Alternatives have been developed and evaluated: 1B (tunnel) and 4B (at-grade improvements + flyover ramp)
 - Draft Evaluation Matrix – based on the need and purpose of this scoping study, along with feedback from the public, the metrics have been weighted based on priority and are being scored by the Parsons’ team. The goal is to use these metrics to rank the alternatives in order of preference based on these weighted metrics.

- Upcoming Schedule
 - PMT Monthly Meeting – March 9 @ 3PM
 - The goal of this meeting is to review public meeting materials and finalize presentation and strategy for the meeting.
 - Public Meeting – March 16 @ 5PM
 - SSC Workshop #2 – April 13 @ 10AM – 12PM, Brawner Hall
 - This will be the last stakeholder meeting for this project.

Action Items

Laura Beall / CCDOT

- Confirm that v3 of the Existing Conditions Report can be considered final.
- Review PMP and Stakeholder Engagement Strategy provided by Parsons.

Parsons

- Schedule meeting with Dobbins in the last weeks of March.

Meeting Minutes

Subject: Monthly PMT Meeting
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Microsoft Teams

Date: March 9, 2022; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Karyn Matthews	CCDOT
Kelly Patrick	CCDOT
Reginald James	ARC
Kristine Hansen-Dederick	Sycamore - Public Involvement Lead
Eric Randall	City of Smyrna
Mark Rice	City of Marietta
Ahmet Urgan	Parsons PM
Chase Whitfield	Parsons Roadway Lead
Boro Dedeitch	Parsons Traffic Lead
Emilee Woods	Parsons Deputy PM
Abby Meadows	Parsons Engineer

Discussion

- Existing Conditions Report - V3 submitted 2/22/2022.
 - Laura confirmed this version can be considered final.
- Public and Stakeholder Outreach
 - Upcoming Public Meeting - March 16, 2022
 - Windy Hill Community Center, 5PM - 7PM
 - Legal Ad Completed
 - Social Media Posts up & running
 - Flyers have been distributed
 - Signs have been installed
 - Suggest seating enough to allow people to fill out comment cards, but not required for all attendees.
 - There is A/V equipment at the meeting location.
- Alternatives Development & Evaluation Matrix
 - Presentation for Update on Current Status

- Alternative development is continuing
- Evaluation Matrix under development
- Suggestions for Public Meeting
 - Laura voiced that the county would like to show four options being considered.
 - SPUI/Tunnel (1B), CFI (2), At-Grade Improvements (3), Flyover Ramp (4B)
 - We need to provide some education on what these options are, and how they're being evaluated, and what the results of the evaluation are showing.
 - This will be very high-level detail rather than granular data, numbers, etc.
 - Feedback we would like to get from the public would be concerns, preferences, and they can rank the options if they like.
- Final Report / Implementation Plan
 - Laura mentioned the point of these items is to recognize and highlight how complex implementation of the preferred alternative could be.
 - Laura said it might be nice to know if this is an implementation that could be completed in segments, any sequential elements of delivery, etc., especially since multiple funding sources will be pursued.
 - Parsons will have separate conversation with Laura to get more clarity on the potential partners and sources of funding after further investigation.
- Potential Implementation Partners
 - Local, State, Federal
- Implementation Phases
- Sources of Funding
- Upcoming Schedule
 - Public Meeting – March 16 @ 5PM
 - SSC Workshop #2 – April 13 @ 10AM – 12PM, Brawner Hall

Action Items

Laura

- Provide dates to schedule meeting with Dobbins.

Parsons

- Finalize meeting material for Public Meeting.
- Continue preparing final report.

Meeting Minutes

Subject: Meeting to Discuss FAA Requirements
 Windy Hill/Cobb Parkway Scoping Study
 X2540

Location: Microsoft Teams

Date: March 23, 2022; 11:00 AM

Attendees

Name	Organization / Role
Tony Wilmot	Dobbins ARB
Laura Beall	CCDOT – Project Manager (Planning)
Karl von Hagel	CCDOT – Deputy Director
Drew Raessler	CCDOT – Director
Karyn Matthews	CCDOT – Engineer
Emilee Woods	Parsons – Deputy Project Manager
Chase Whitfield	Parsons – Roadway Lead
Boro Dedeitch	Parsons – Traffic Lead
Abby Meadows	Parsons – Engineer

Discussion

DISCUSSION:

- **Meeting Purpose:**
 - Provide update on FAA-related coordination to date
 - Determine next steps for FAA/DoD coordination for grade-separated alternatives during this scoping study stage
- **Grade-Separated Alternatives**
 - Option 1 – SPUIs where Cobb Pkwy is depressed under Windy Hill Road and elevated over Terrell Mill Road
 - Option 4 - Flyover ramp (multi-span bridge) from EB Windy Hill directly to Terrell Mill Rd
- **Imaginary Surface Impacts**
 - Previous Coordination with Karl von Hagel to understand FAA requirements
 - 100:1 slope – Coordination with FAA (No Objection)
 - Both Alternatives will encroach this slope.
 - 50:1 slope – Imaginary Surface (Conditional Determination with Mitigation Measures)
 - Both Alternatives will encroach this slope.
 - 34:1 / 40:1 slope – Objectionable (Obstruction)

- Alternatives will NOT encroach this slope.
- Tony relayed that FAA controls the airspace. DoD controls the air base itself as well as vehicles, but FAA regulations will rule in regard to this scoping study.
- Parsons shared the layouts for both the SPUI and the Flyover Ramp, which show the imaginary surface overlayed on the profile.
 - Dobbins Air Reserve Base – Joint Land Use Study
 - Federal Aviation Regulation Part 77
 - Imaginary Surface - General elevation of 1068 MSL
 - Both alternatives fall below the imaginary surface, but they both do encroach the 100:1 slope which means either option will require coordination with FAA up-front and during construction.
 - Tony said he has his TERPS staff gauge the elevation where their operations would initially be impacted. They estimated 100-ft from the highest elevation along Windy Hill.
 - Tony confirmed that from Dobbins' perspective, having seen the surface projected on the profile, there is no longer a major concern.
- **Next Steps:**
 - Tony will take the layouts with the imaginary surface back and have his TERPS staff confirm the elevations.
 - Initiate early coordination with FAA.

Meeting Minutes

Subject: Stakeholder Steering Committee Workshop #2
Windy Hill/Cobb Parkway Scoping Study
X2540

Location: Brawner Hall, Smyrna

Date: April 13, 2022; 10:00 AM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Michael Francis	CCDOT
Eric Randall	City of Smyrna
Laura Nesbitt	GDOT Roundabout and Alternative Intersection Design Group
Landon Perry	GDOT District 7 Preconstruction
Ali Nuckles	GA Commute Options
Kyetha Clark	Cumberland CID
Anthony Wilmot	USAF Dobbins
Challa Bonja	Metro Traftix
Tyler Kohman	GDOT RAID Group
Osmon Ercin	Dobbins ARB
James Hudgins	CCDOT
Ahmet Urgan	Parsons PM
Chase Whitfield	Parsons Roadway Lead
Boro Dedeitch	Parsons Traffic Lead
Tom Daniel	Parsons Principal Engineer
Abby Meadows	Parsons Engineer
Suresh Butttagandla	Parsons Engineer

Discussion

- Presentation material, which included a Powerpoint presentation and layouts of Options 1C, 2B, 2D (alternative suggested by GDOT) and 4B, are attached to these minutes.
- Options
 - Three design alternative options were discussed. These options include one each from 3 primary concepts (i.e., SPUI, CFI and flyover) that operate best in the 2050 Design Year. These options include:

- SPUI (1C) - Cobb Parkway's intersections with Windy Hill Road and Terrell Mill Road are converted into modified SPUIs and also connected by frontage roads. Cobb Parkway's northbound and southbound through lanes are elevated over an at-grade Terrell Mill Road and depressed under an at-grade intersection with Windy Hill Road.
 - CFI (2B) - Includes displaced left turns in both directions along Cobb Parkway approaching Windy Hill Road.
 - Flyover (4B) - Includes a multi-span flyover that would allow continuous, uninterrupted movement from EB Windy Hill Road to EB Terrell Mill Road, and the reverse movement from WB Terrell Mill Road to WB Windy Hill Road.
- Options 1C and 2B differ from what had been presented at the Public Information Open House (PIOH) on 3/23/22 in that, like Option 4B, they include an additional through lane in each direction along Windy Hill Road through and west of its intersection with Cobb Parkway.
- Traffic Operations – Options 1C, 2B and 4B
 - Synchro software was used for the traffic analysis.
 - Tables were presented that summarize the forecast delay, LOS, and annual peak hour savings at:
 - The at-grade Cobb Parkway/Windy Hill Road intersection,
 - The at-grade Cobb Parkway/Terrell Mill Road Intersection, and
 - The weighted network average when considering both intersections.
 - The tables included forecasts/estimates in the Design Year 2050 for:
 - Base Network (no-build)
 - Option 1C
 - Option 2B
 - Option 4B
 - Only Option 4B has acceptable forecast LOS (LOS E or better) for both intersections
 - Option 1C is forecast to fail at the Cobb Parkway/Windy Hill Road during the PM peak
 - Option 2B is forecast to fail at the Cobb Parkway/Terrell Mill Road during the PM peak. This is even worse than the no-build, which would be expected to operate at LOS C. The reason that the Cobb Parkway/Terrell Mill Road intersection is forecast to fail is because this signalized intersection would also be used to merge left-turning traffic from SB Cobb Parkway onto EB Windy Hill Road.
 - A discussion followed about other disadvantages of Option 2B, which included:

- It would restrict direct access to parcels along NB Cobb Parkway (north of Windy Hill Road) and along SB Cobb Parkway (south of Windy Hill Road). Many vehicles intending to access these properties would need to drive longer, indirect routes that include a U-turn. In general, the public expressed concern with this option during the PIOH both verbally and on comment sheets mostly due to loss of direct access.
 - It would significantly impact transit users' transfer activities because several existing transit stops would need to be relocated. This impacts all three of CobbLinc's routes in this area..
 - Cost Comparison
 - Preliminary estimates of the construction, utility relocation and ROW costs of Options 1C, 2B and 4B were presented.
 - These costs are in 2022 dollars and do not include program costs such as preliminary engineering, CEI, mobilization, escalation, contingency, financing, etc.
 - Option 2B is the least costly. Option 1C is the costliest.
 - Action items:
 - Parsons - Refine and provide the cost estimates (including other costs listed above) to Cobb County for review and comment by 4/15/22.
 - Cobb County - Provide feedback about the estimates, including any proposed modifications to the unit costs, by 4/22/22.
 - Evaluation Metrics
 - The evaluation metrics that were agreed per the feedback from the previous Stakeholder Steering Committee Meeting were presented.
 - These metrics are being used to objectively compare the three options.
 - The development of the matrix is ongoing but the preliminary results indicate that, when considering all the evaluation metrics, Option 4B is preferred.
 - Dobbins AFB voiced their concurrence with the three shortlisted options, but eventual FAA coordination is required.
 - Discussion of Alternative CFI Designs
 - Based on comments from a representative of GDOT's Roundabout & Alternative Intersection Design Department (during a 4/4/22 phone call), additional CFI alternatives have been evaluated.

- These consisted of “L”-shaped CFI with displaced left turns along the northbound Cobb Parkway and eastbound Windy Hill Road approaches to the Cobb Parkway / Windy Hill Road intersection. This option was investigated with both 2 and 3 through lanes in each direction along Windy Hill Road across and west of the Cobb Parkway intersection. The option with 3 through lanes in each direction was presented for everyone’s review.
 - The option with 3 lanes would be expected to operate at an acceptable LOS during the Design Year 2050 at both the Cobb Parkway/Windy Hill Road intersection and the Cobb Parkway/Terrell Mill Road intersection.
 - Despite the good traffic operations, the following significant disadvantages of the “L” shaped CFI were raised:
 - Like Option 2B, this alternative would have a significant impact on transit along Cobb Parkway.
 - Due to the high volume of traffic turning right from SB Cobb Parkway onto Windy Hill Road, it could be unsafe for pedestrians to cross Windy Hill Road at this intersection. This could be mitigated potentially using a rapid flashing beacon or a pedestrian hybrid beacon (PHB). Nevertheless, stopping the vehicles to allow pedestrians to cross could result in queues backing up along SB Cobb Parkway.
 - To mitigate the concerns, GDOT requested that an additional option is investigated with the following features:
 - Single-Leg CFI that includes displaced left turns only along Windy Hill Road west of Cobb Parkway
 - Pedestrian overpass across Windy Hill Road
 - Action item:
 - Parsons to investigate the single-leg CFI
- Upcoming Meetings
 - PMT Monthly Meeting 4/20/2022

Meeting Minutes

Subject: Monthly PMT Meeting
 Windy Hill/Cobb Parkway Scoping Study
 X2540

Location: Microsoft Teams

Date: April 20, 2022; 3:00 PM

Attendees

Name	Organization / Role
Laura Beall	CCDOT PM
Rustavious Ford	GDOT
Michael Francis	GDOT
Kelly Patrick	CCDOT
Brooke?	CCDOT
Karyn Matthews	CCDOT
James Hudgins	CCDOT
Reggie James	ARC
Eric Randall	City of Smyrna
Kristine Hansen-Dederick	Sycamore – Public Involvement Lead
Ahmet Urgan	Parsons PM
Chase Whitfield	Parsons Roadway Lead
Boro Dedeitch	Parsons Traffic Lead
Tom Daniel	Parsons Principal Engineer
Abby Meadows	Parsons Engineer
Zuhair Elhassy	Parsons Engineer

Discussion

- Stakeholder Outreach
 - Public Meeting Held 3/16/2022
 - SSC Workshop Held 4/13/2022
- Options
 - Three options were presented and discussed (exhibits are attached to these minutes). These options include one each from three primary concepts (i.e., SPUI, CFI and flyover) that operate best in the 2050 Design Year. Each include an additional lane in each direction along Windy Hill Road through and west of its intersection with Cobb Parkway. These options consist of:

- SPUI (1C) - Cobb Parkway's intersections with Windy Hill Road and Terrell Mill Road are converted into modified SPUIs that are connected by frontage roads. Cobb Parkway's northbound and southbound through lanes are elevated over an at-grade Terrell Mill Road and depressed under an at-grade intersection with Windy Hill Road.
 - CFI (2B) - Includes displaced left turns in both directions along Cobb Parkway approaching Windy Hill Road.
 - Flyover (4B) - Includes a multi-span flyover that would allow continuous, uninterrupted movement from EB Windy Hill Road to EB Terrell Mill Road, and the reverse movement from WB Terrell Mill Road to WB Windy Hill Road
- ROW
 - The constraints at the Georgia Memorial Park cemetery were discussed. None of the options require ROW from the cemetery parcel.
 - The impacts of the options on the QuikTrip gas station and convenience store as well as the Windy Hill Multifamily Complex, which is under construction, were also discussed. Just west of Cobb Parkway, the Infinity car dealer is on the north side of Windy Hill Road and the Windy Hill Multifamily Complex is on the south side. Since all options include widening along Windy Hill Road, it is inevitable that ROW will be required from the Infinity dealer and/or the Windy Hill Multifamily Complex. All options maintain the existing alignment of Windy Hill Road and require ROW from both. However, in the next phase, a possible realignment of Windy Hill Road should be investigated to determine whether it would be more cost effective to realign Windy Hill Road to the north and avoid any potentially prohibitively costly encroachment into the brand new multifamily complex (i.e., conflicts with its 5-story apartment buildings and concrete parking deck).
- Discussion of Alternative CFI Designs
 - Based on comments that GDOT's Roundabout & Alternative Intersection Design Department (GDOT) raised during a phone call and at the SSC Workshop on 4/13, additional CFI alternatives were evaluated.
 - The option which GDOT requested during the SSC Workshop was presented. It consists of a Single-Leg CFI that includes displaced left turns only along Windy Hill Road west of Cobb Parkway and a pedestrian overpass across Windy Hill Road. Boro explained that this alternative requires an additional signalized intersection that would enable the southbound Cobb Parkway right turns to merge onto WB Windy Hill Road,

while at the same time EB Windy Hill left turns access the CFI dual turn lanes to turn north onto Cobb Parkway. This new signalized intersection was located as far to the west as possible but avoids impacts to the cemetery.































- Both suggested options that include EB displaced left turns along Windy Hill Road experience lengthy queues on the dual southbound Cobb Parkway to westbound Windy Hill Road right-turn lanes which would backup onto the SB through lanes of Cobb Parkway.
 - CCDOT directed Parsons to continue the report and evaluation without considering these alternatives. CCDOT will coordinate internally and with GDOT to discuss the results.
- Evaluation Matrix
 - Each of the three shortlisted options discussed above (Options 1C, 2B and 4B) were evaluated against each other using a matrix with 10 weighted metrics which were derived based on previous feedback from the PMT and the SSC.
 - The matrix and cost estimate breakdowns will be provided to CCDOT for review and cross checks.
 - The matrix indicates that when collectively considering all metrics, Option 4B is preferred.
 - Dobbins AFB voiced their concurrence with the three shortlisted options, but there is ongoing correspondence and study of FAA requirements. There may need to be some additional follow-up on this item once internal CCDOT issues are worked out.
 - Schedule
 - Issue Draft Final Report – Beginning of June. Parsons has already started preparing the report and is approximately 50% complete. The submission of the draft report might be moved forward.
 - Approval and Issue Final Report – Mid-July
 - Upcoming Meetings
 - PMT Monthly Meeting 5/18/2022

Appendix D: Synchro Capacity Analysis Reports

No Build Conditions – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

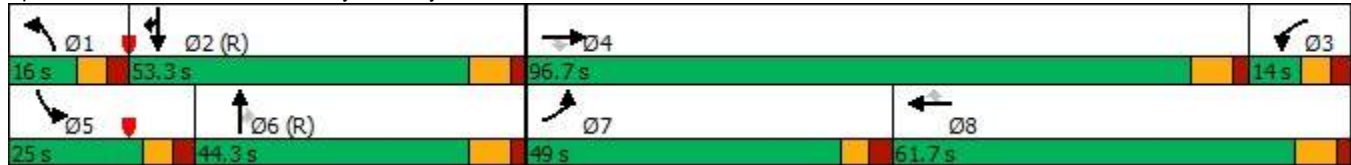
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 		
Traffic Volume (vph)	513	1030	166	90	587	266	103	532	116	170	665	362
Future Volume (vph)	513	1030	166	90	587	266	103	532	116	170	665	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	735		185	390		0	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.99			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3400	3505	1568	3303	3406	1568	3367	4848	1583	3400	3406	2760
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3397	3505	1568	3303	3406	1545	3367	4848	1562	3398	3406	2760
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			159			155			202			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			1055	
Travel Time (s)		25.2			17.5			11.6			16.0	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Adj. Flow (vph)	836	1678	270	120	956	354	168	708	154	226	884	590
Shared Lane Traffic (%)												
Lane Group Flow (vph)	836	1678	270	120	956	354	168	708	154	226	884	590
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot
Protected Phases	7	4		3	8		1	6		5	2	2
Permitted Phases			4			8			6			
Total Split (s)	49.0	96.7	96.7	14.0	61.7	61.7	16.0	44.3	44.3	25.0	53.3	53.3
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	7.6
Act Effect Green (s)	42.0	89.0	89.0	7.0	54.0	54.0	9.0	38.4	38.4	16.3	45.7	45.7
Actuated g/C Ratio	0.23	0.49	0.49	0.04	0.30	0.30	0.05	0.21	0.21	0.09	0.25	0.25
v/c Ratio	1.05	0.97	0.32	0.94	0.94	0.62	1.00	0.68	0.31	0.74	1.02	0.84
Control Delay	111.3	59.1	11.5	147.1	77.4	34.7	151.4	69.4	3.4	97.2	93.1	68.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.3	59.1	11.5	147.1	77.4	34.7	151.4	69.4	3.4	97.2	93.1	68.4
LOS	F	E	B	F	E	C	F	E	A	F	F	E
Approach Delay		70.2			72.7			72.9			85.1	
Approach LOS		E			E			E			F	
Queue Length 50th (ft)	~553	1000	71	74	583	207	104	287	0	125	~571	313
Queue Length 95th (ft)	#689	#1176	138	#147	#713	328	#192	341	18	180	#715	442
Internal Link Dist (ft)		1213			818			687			975	
Turn Bay Length (ft)	735		185	390			400		540	530		625
Base Capacity (vph)	793	1733	855	128	1021	572	168	1034	492	340	864	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.97	0.32	0.94	0.94	0.62	1.00	0.68	0.31	0.66	1.02	0.84

Intersection Summary
















Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 125 (69%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 74.7 Intersection LOS: E
 Intersection Capacity Utilization 107.9% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	451	170	783	494	178	794
Future Volume (vph)	451	170	783	494	178	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor		0.99		0.99	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1599	3438	1583	1787	3438
Flt Permitted	0.950				0.124	
Satd. Flow (perm)	3433	1577	3438	1561	233	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		233		678		
Link Speed (mph)	35		45			45
Link Distance (ft)	776		1055			1370
Travel Time (s)	15.1		16.0			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	619	233	1075	678	244	1090
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	233	1075	678	244	1090
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	36.5	36.5	37.5	37.5	16.0	53.5
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	20.9	20.9	37.8	37.8	56.1	55.8
Actuated g/C Ratio	0.23	0.23	0.42	0.42	0.62	0.62
v/c Ratio	0.78	0.43	0.74	0.65	0.71	0.51
Control Delay	39.3	6.2	23.1	10.0	26.2	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	6.2	23.1	10.0	26.2	12.8
LOS	D	A	C	A	C	B
Approach Delay	30.2		18.0			15.2
Approach LOS	C		B			B
Queue Length 50th (ft)	171	0	390	228	125	338
Queue Length 95th (ft)	210	52	m407	m245	161	210
Internal Link Dist (ft)	696		975			1290
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	1144	681	1443	1048	350	2132
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.34	0.74	0.65	0.70	0.51

Intersection Summary
























Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	44 (49%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	19.7
Intersection LOS:	B
Intersection Capacity Utilization	74.3%
ICU Level of Service	D
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.604			0.694			0.101			0.163		
Satd. Flow (perm)	1135	1900	1599	1268	1756	0	188	3438	1548	310	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				187			187
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		442			522			748			1959	
Travel Time (s)		10.0			11.9			11.3			29.7	
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	20.6	47.0	47.0	14.2	40.6		15.0	44.6	44.6	14.2	43.8	43.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	55.3	46.8	46.8	43.4	35.1		49.8	44.4	44.4	46.2	37.9	37.9
Actuated g/C Ratio	0.46	0.39	0.39	0.36	0.29		0.42	0.37	0.37	0.38	0.32	0.32
v/c Ratio	0.50	0.13	0.96	0.08	0.17		0.95	0.69	0.09	0.12	0.97	0.16
Control Delay	24.4	26.3	45.8	19.0	20.5		82.3	36.7	0.3	20.6	62.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	26.3	45.8	19.0	20.5		82.3	36.7	0.3	20.6	62.4	0.6
LOS	C	C	D	B	C		F	D	A	C	E	A
Approach Delay		38.7			20.0			42.3			56.0	
Approach LOS		D			C			D			E	
Queue Length 50th (ft)	148	52	~479	16	30		97	323	0	12	419	0
Queue Length 95th (ft)	218	93	#724	37	72		#248	403	0	30	#563	0
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	602	740	814	490	540		197	1271	689	222	1075	631
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.13	0.96	0.08	0.17		0.95	0.69	0.09	0.12	0.97	0.16

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	44.8
Intersection LOS:	D
Intersection Capacity Utilization:	92.6%
ICU Level of Service:	F
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

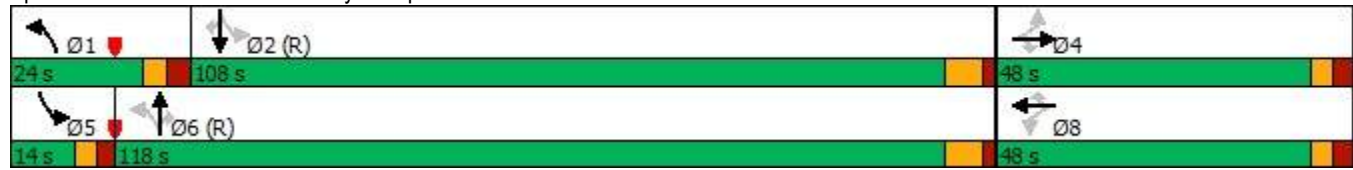
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.960		0.950			0.950			0.950		
Satd. Flow (prot)	0	1491	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.761		0.719			0.191			0.224		
Satd. Flow (perm)	0	1182	1396	1298	1267	1524	333	3471	1488	394	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			95			52			90
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	48	10	64	64	3	46	125	1206	64	57	1236	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	64	64	3	46	125	1206	64	57	1236	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	24.0	118.0	118.0	14.0	108.0	108.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		12.6	12.6	12.6	12.6	12.6	154.7	146.4	146.4	144.6	138.7	138.7
Actuated g/C Ratio		0.07	0.07	0.07	0.07	0.07	0.86	0.81	0.81	0.80	0.77	0.77
v/c Ratio		0.71	0.34	0.71	0.03	0.24	0.35	0.43	0.05	0.16	0.47	0.07
Control Delay		120.6	8.4	118.2	75.0	2.8	4.0	2.5	0.3	3.7	8.8	1.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		120.6	8.4	118.2	75.0	2.8	4.0	2.5	0.3	3.7	8.8	1.3
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		61.8			70.1			2.5			8.1	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)		68	0	76	3	0	4	32	0	7	251	0
Queue Length 95th (ft)		119	15	128	15	0	m15	386	m6	18	366	16
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		275	398	302	295	428	417	2823	1220	385	2649	1205
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.21	0.16	0.21	0.01	0.11	0.30	0.43	0.05	0.15	0.47	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 152 (84%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 10.0 Intersection LOS: B
 Intersection Capacity Utilization 63.5% ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

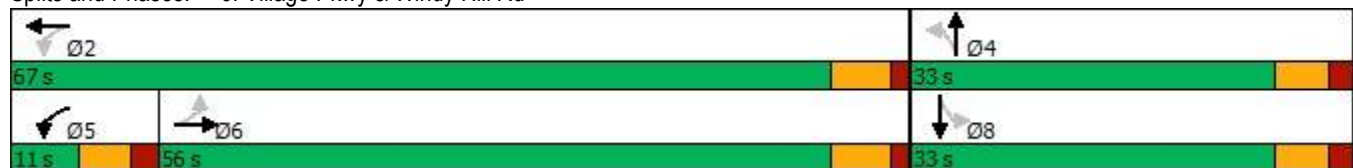


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969			0.994			0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3439	0	1770	1593	0	0	1754	0
Flt Permitted	0.117			0.071			0.615					0.481
Satd. Flow (perm)	200	3410	0	134	3439	0	1145	1593	0	0	866	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			8			101				12
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1614	0	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	56.0	56.0		11.0	67.0		33.0	33.0		33.0		33.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effect Green (s)	50.2	50.2		61.3	61.3		20.7	20.7				20.7
Actuated g/C Ratio	0.53	0.53		0.65	0.65		0.22	0.22				0.22
v/c Ratio	0.31	1.60		1.37	0.72		0.48	0.61				0.96
Control Delay	24.5	294.6		217.4	14.1		38.0	25.8				88.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	24.5	294.6		217.4	14.1		38.0	25.8				88.4
LOS	C	F		F	B		D	C				F
Approach Delay		291.6			40.3			29.7				88.4
Approach LOS		F			D			C				F
Queue Length 50th (ft)	11	~1376		~144	315		62	85				106
Queue Length 95th (ft)	42	#1607		#314	458		116	165				#226
Internal Link Dist (ft)		700			1292			609				412
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	106	1844		175	2244		330	531				258
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.31	1.60		1.37	0.72		0.36	0.49				0.74

Intersection Summary

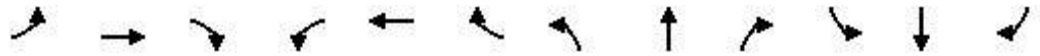
Area Type:	Other		
Cycle Length:	100		
Actuated Cycle Length:	94		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.60		
Intersection Signal Delay:	179.8	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

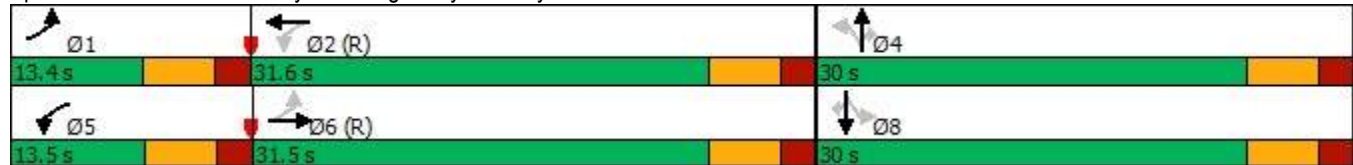


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.190			0.098				0.764			0.711	
Satd. Flow (perm)	361	5008	0	186	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		898			1245			657				706
Travel Time (s)		17.5			24.3			14.9				16.0
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	52.4	47.7		54.3	50.7			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.70	0.64		0.72	0.68			0.11	0.11		0.11	0.11
v/c Ratio	0.15	0.53		0.45	0.39			0.26	0.22		0.11	0.05
Control Delay	4.3	11.0		12.2	8.3			34.7	2.0		31.4	0.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.3	11.0		12.2	8.3			34.7	2.0		31.4	0.4
LOS	A	B		B	A			C	A		C	A
Approach Delay		10.7			8.6			14.9				15.4
Approach LOS		B			A			B				B
Queue Length 50th (ft)	6	172		13	119			18	0		6	0
Queue Length 95th (ft)	16	246		56	165			45	3		22	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	394	3188		303	3327			464	587		394	563
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.15	0.53		0.44	0.39			0.09	0.11		0.04	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	10.0
Intersection LOS:	B
Intersection Capacity Utilization	64.2%
ICU Level of Service	C
Analysis Period (min)	15































Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



No Build Conditions – PM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

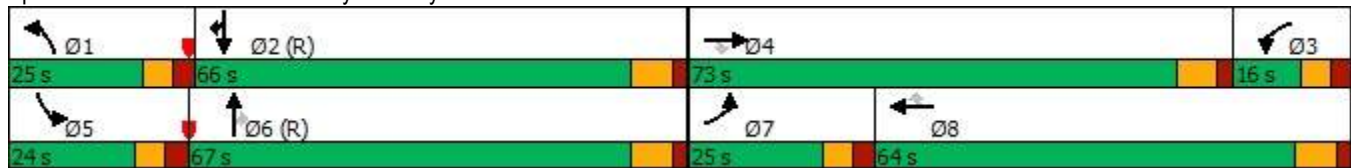
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 		
Traffic Volume (vph)	498	736	167	121	816	250	517	1096	124	238	862	962
Future Volume (vph)	498	736	167	121	816	250	517	1096	124	238	862	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	735		185	390		0	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3505	1583	3433	3539	1568	3433	5085	1583	3433	3505	2814
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3432	3505	1583	3433	3539	1548	3429	5085	1562	3432	3505	2814
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			117			152			160			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			906			815			1055	
Travel Time (s)		25.2			17.6			12.3			16.0	
Confl. Peds. (#/hr)	1						1	2		1	1	2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Adj. Flow (vph)	811	1199	272	161	1329	332	842	1458	165	317	1146	1567
Shared Lane Traffic (%)												
Lane Group Flow (vph)	811	1199	272	161	1329	332	842	1458	165	317	1146	1567
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Prot
Protected Phases	7	4		3	8		1	6		5	2	2
Permitted Phases			4			8			6			
Total Split (s)	25.0	73.0	73.0	16.0	64.0	64.0	25.0	67.0	67.0	24.0	66.0	66.0
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	7.6
Act Effect Green (s)	18.0	64.7	64.7	9.6	56.3	56.3	18.0	59.4	59.4	17.0	58.4	58.4
Actuated g/C Ratio	0.10	0.36	0.36	0.05	0.31	0.31	0.10	0.33	0.33	0.09	0.32	0.32
v/c Ratio	2.36	0.95	0.42	0.88	1.20	0.56	2.45	0.87	0.27	0.98	1.01	1.72
Control Delay	649.8	56.4	27.8	124.0	150.8	31.0	691.3	63.4	7.1	111.3	76.0	359.1
Queue Delay	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	650.4	56.4	27.8	124.0	150.8	31.1	691.3	63.4	7.1	111.3	76.0	359.1
LOS	F	E	C	F	F	C	F	E	A	F	E	F
Approach Delay		264.1			126.6			274.1			226.1	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~808	608	102	100	~997	179	~844	595	4	194	~716	~1548
Queue Length 95th (ft)	m#686	m452	m88	#180	#1136	291	#980	659	61	m#267	m#873	#1698
Internal Link Dist (ft)		1213			826			735			975	
Turn Bay Length (ft)	735		185	390			400		540	530		625
Base Capacity (vph)	343	1271	648	182	1106	588	343	1678	622	324	1137	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	20	0	0	0	0	1	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.51	0.94	0.42	0.88	1.20	0.57	2.45	0.87	0.27	0.98	1.01	1.72

Intersection Summary













Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 40 (22%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 2.45
 Intersection Signal Delay: 228.6 Intersection LOS: F
 Intersection Capacity Utilization 136.9% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

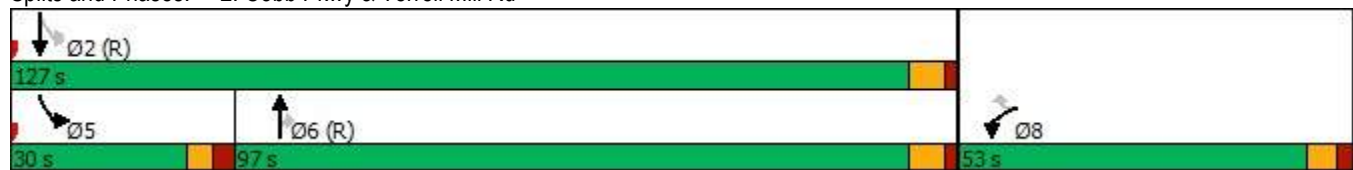
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	632	181	1218	683	185	1470
Future Volume (vph)	632	181	1218	683	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.98			0.97		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3505	1599	1770	3539
Flt Permitted	0.950				0.040	
Satd. Flow (perm)	3405	1583	3505	1558	75	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		235		469		
Link Speed (mph)	35		45			45
Link Distance (ft)	864		1055			1370
Travel Time (s)	16.8		16.0			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	1620	908	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	1620	908	246	1955
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	53.0	53.0	97.0	97.0	30.0	127.0
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	45.5	45.5	92.7	92.7	121.5	121.2
Actuated g/C Ratio	0.25	0.25	0.52	0.52	0.68	0.67
v/c Ratio	0.96	0.42	0.90	0.88	0.95	0.82
Control Delay	87.8	8.5	15.8	10.9	80.2	19.2
Queue Delay	0.0	0.0	6.3	4.2	0.0	0.1
Total Delay	87.8	8.5	22.1	15.1	80.2	19.4
LOS	F	A	C	B	F	B
Approach Delay	70.1		19.6			26.2
Approach LOS	E		B			C
Queue Length 50th (ft)	505	5	713	633	226	712
Queue Length 95th (ft)	#630	82	m201	m133	m#300	818
Internal Link Dist (ft)	784		975			1290
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	895	583	1804	1029	271	2383
Starvation Cap Reductn	0	0	156	73	0	44
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.41	0.98	0.95	0.91	0.84

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 28 (16%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 31.5 Intersection LOS: C
 Intersection Capacity Utilization 96.4% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1619	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.231			0.704			0.062			0.069		
Satd. Flow (perm)	439	1900	1576	1233	1619	0	117	3539	1558	130	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		503			490			464			1912	
Travel Time (s)		11.4			11.1			7.0			29.0	
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.3	38.9	38.9	14.4	39.0		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	36.5	28.1	28.1	36.7	28.2		95.7	81.1	81.1	67.0	58.3	58.3
Actuated g/C Ratio	0.24	0.19	0.19	0.24	0.19		0.64	0.54	0.54	0.45	0.39	0.39
v/c Ratio	0.64	0.22	0.71	0.74	0.87		0.91	0.97	0.24	0.69	1.01	0.15
Control Delay	57.6	51.6	20.7	62.5	77.5		70.7	48.2	10.4	53.4	71.4	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.6	51.6	20.7	62.5	77.5		70.7	48.2	10.4	53.4	71.4	1.6
LOS	E	D	C	E	E		E	D	B	D	E	A
Approach Delay		32.5			70.7			48.4			65.5	
Approach LOS		C			E			D			E	
Queue Length 50th (ft)	87	65	73	196	245		324	~950	54	48	~714	0
Queue Length 95th (ft)	137	111	191	275	350		#575	#1150	108	#141	#878	12
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	183	418	572	326	381		425	1913	891	154	1362	710
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 No Build

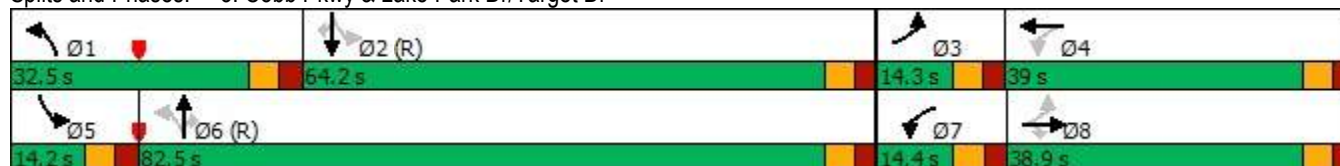


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.64	0.19	0.65	0.74	0.75		0.91	0.97	0.24	0.69	1.01	0.15

Intersection Summary
























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	54.2
Intersection LOS:	D
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

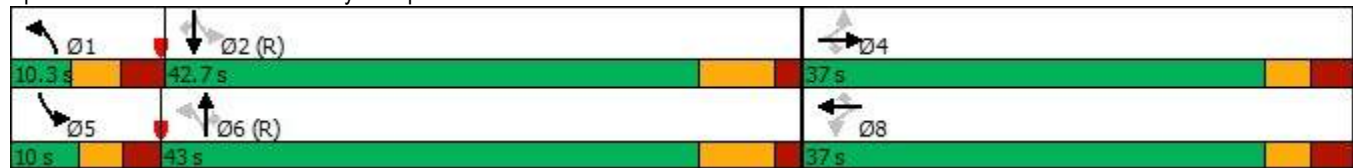
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.99	1.00		0.99			0.99			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.697			0.091			0.082		
Satd. Flow (perm)	0	1325	1546	1296	1900	1546	153	3505	1561	150	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			126			103			103
Link Speed (mph)		30			30			45				45
Link Distance (ft)		651			696			1370				834
Travel Time (s)		14.8			15.8			20.8				12.6
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4	4	8	8	8	6		6	2		2
Total Split (s)	37.0	37.0	37.0	37.0	37.0	37.0	10.3	43.0	43.0	10.0	42.7	42.7
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		18.0	18.0	18.0	18.0	18.0	49.5	44.1	44.1	59.2	50.1	50.1
Actuated g/C Ratio		0.20	0.20	0.20	0.20	0.20	0.55	0.49	0.49	0.66	0.56	0.56
v/c Ratio		0.35	0.21	0.79	0.04	0.38	0.33	0.91	0.18	0.63	0.90	0.08
Control Delay		32.7	3.5	54.9	25.8	10.7	13.9	26.5	7.8	27.0	29.0	1.5
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		32.7	3.5	54.9	25.8	10.7	13.9	26.5	7.8	27.0	29.0	1.5
LOS		C	A	D	C	B	B	C	A	C	C	A
Approach Delay		19.0			35.3			24.5				27.9
Approach LOS		B			D			C				C
Queue Length 50th (ft)		46	0	112	8	15	14	448	42	40	468	0
Queue Length 95th (ft)		81	18	170	22	58	m28	#1215	m64	#139	#782	11
Internal Link Dist (ft)		571			616			1290			754	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		456	607	446	654	615	161	1716	817	267	1970	848
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.14	0.46	0.03	0.26	0.33	0.91	0.18	0.63	0.90	0.08

Intersection Summary

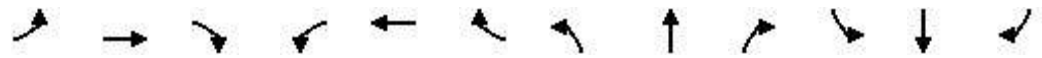
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	26.8
Intersection LOS:	C
Intersection Capacity Utilization:	85.3%
ICU Level of Service:	E
Analysis Period (min):	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

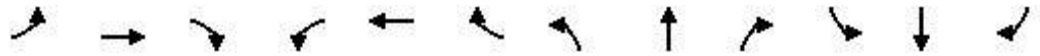
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983			0.991			0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3451	0	1787	3511	0	1787	1637	0	0	2012	0
Flt Permitted	0.045			0.042			0.590					0.353
Satd. Flow (perm)	83	3451	0	79	3511	0	1110	1637	0	0	728	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			8			180				3
Link Speed (mph)		35			35			45				30
Link Distance (ft)		717			1356			444				405
Travel Time (s)		14.0			26.4			6.7				9.2
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3232	0	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	95.0	95.0		39.0	134.0		46.0	46.0		46.0		46.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effct Green (s)	89.0	89.0		128.0	128.0		40.0	40.0				40.0
Actuated g/C Ratio	0.49	0.49		0.71	0.71		0.22	0.22				0.22
v/c Ratio	0.76	1.21		1.27	1.29		0.96	0.56				1.17
Control Delay	123.3	137.9		175.5	147.2		116.1	26.0				180.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	123.3	137.9		175.5	147.2		116.1	26.0				180.0
LOS	F	F		F	F		F	C				F
Approach Delay		137.7			150.8			67.3				180.0
Approach LOS		F			F			E				F
Queue Length 50th (ft)	29	~1554		~646	~2553		281	103				~267
Queue Length 95th (ft)	#109	#1677		m281	m332		#469	209				#447
Internal Link Dist (ft)		637			1276			364				325
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	41	1711		369	2499		246	503				164
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0

Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.76	1.21		1.27	1.29		0.96	0.56				1.17

Intersection Summary

Area Type: Other

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 27 (15%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 140.8 Intersection LOS: F

Intersection Capacity Utilization 146.8% ICU Level of Service H

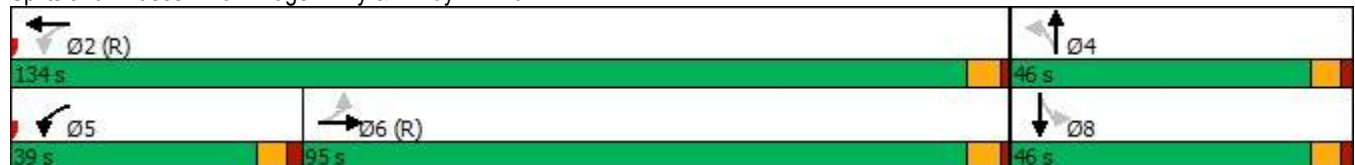
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 No Build

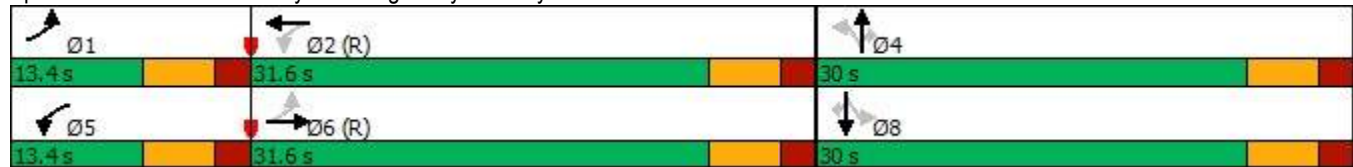


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.105			0.152				0.755			0.752	
Satd. Flow (perm)	200	5026	0	289	5050	0	0	1432	1594	0	1427	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.6		13.4	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	49.7	45.0		49.7	45.0			11.1	11.1		11.2	11.2
Actuated g/C Ratio	0.66	0.60		0.66	0.60			0.15	0.15		0.15	0.15
v/c Ratio	0.26	0.46		0.22	0.54			0.04	0.06		0.23	0.22
Control Delay	8.4	12.8		7.4	14.4			23.4	0.3		28.0	2.4
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	8.4	12.8		7.4	14.4			23.4	0.3		28.0	2.4
LOS	A	B		A	B			C	A		C	A
Approach Delay		12.6			14.1			7.0			12.3	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	8	131		8	164			4	0		21	0
Queue Length 95th (ft)	36	264		36	#365			13	0		39	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	290	3015		340	3034			458	599		456	598
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.26	0.46		0.22	0.54			0.02	0.04		0.11	0.13

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	13.3
Intersection LOS:	B
Intersection Capacity Utilization	61.1%
ICU Level of Service	B
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

























Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 1A/1B – AM Peak Hour

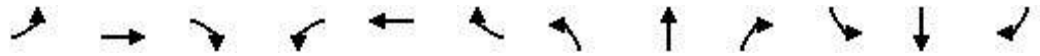
Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	513	1030	166	90	587	266	103	261	116	170	273	362
Future Volume (vph)	513	1030	166	90	587	266	103	261	116	170	273	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	735		185	390		0	400		325	390		315
Storage Lanes	2		1	2		1	2		1	1		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	*0.80	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.88
Ped Bike Factor	1.00					0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2804	3491	1555	3303	3392	1555	3367	3293	1507	1752	3324	2693
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2799	3491	1555	3303	3392	1531	3367	3293	1489	1751	3324	2693
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			117			207			206			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			1055	
Travel Time (s)		25.2			17.5			11.6			16.0	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	836	1678	270	120	956	354	168	347	154	226	363	590
Shared Lane Traffic (%)												
Lane Group Flow (vph)	836	1678	270	120	956	354	168	347	154	226	363	590
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			Free			
Total Split (s)	50.0	90.0	90.0	13.0	53.0	53.0	21.0	52.0		25.0	56.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6		7.0	7.6	
Act Effct Green (s)	43.0	82.3	82.3	6.0	45.3	45.3	14.0	44.4	180.0	18.0	48.4	98.4
Actuated g/C Ratio	0.24	0.46	0.46	0.03	0.25	0.25	0.08	0.25	1.00	0.10	0.27	0.55
v/c Ratio	1.25	1.05	0.35	1.09	1.12	0.66	0.64	0.43	0.10	1.29	0.41	0.40
Control Delay	177.9	83.9	18.4	187.0	128.6	30.5	92.6	59.0	0.1	225.3	31.0	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.9	83.9	18.4	187.0	128.6	30.5	92.6	59.0	0.1	225.3	31.0	22.9
LOS	F	F	B	F	F	C	F	E	A	F	C	C
Approach Delay		105.8			109.2			53.9			64.2	
Approach LOS		F			F			D			E	
Queue Length 50th (ft)	~765	~1132	112	~81	~681	160	101	183	0	~326	166	330
Queue Length 95th (ft)	#930	#1264	187	#158	#821	285	145	237	0	m#506	149	307
Internal Link Dist (ft)		1213			818			687			975	
Turn Bay Length (ft)	735		185	390			400		325	390		315
Base Capacity (vph)	669	1596	774	110	853	540	261	812	1489	175	893	1472
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI

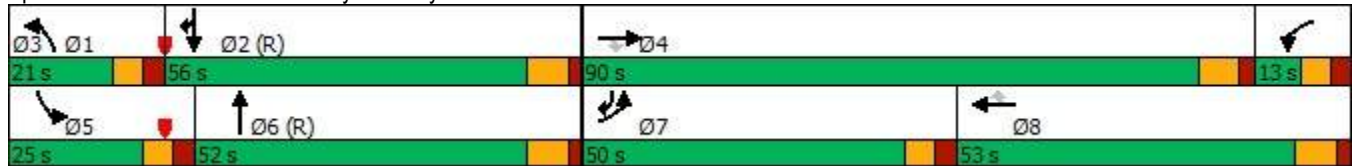


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.25	1.05	0.35	1.09	1.12	0.66	0.64	0.43	0.10	1.29	0.41	0.40

Intersection Summary












Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	138 (77%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.29
Intersection Signal Delay:	92.8
Intersection LOS:	F
Intersection Capacity Utilization	112.9%
ICU Level of Service	H
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

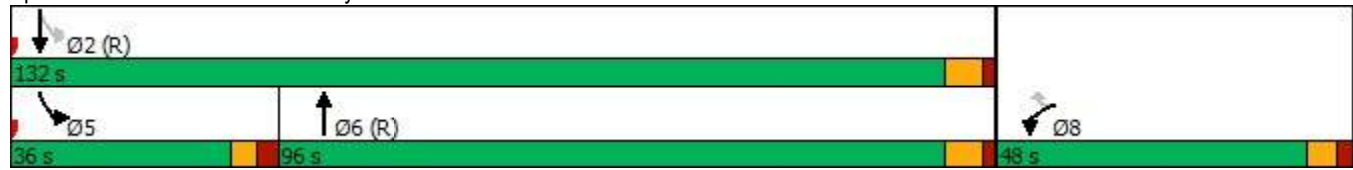
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	451	170	546	494	178	183
Future Volume (vph)	451	170	546	494	178	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	660	
Storage Lanes	2	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor		0.98	0.99			
Frt		0.850	0.929			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1599	3213	0	1787	3438
Flt Permitted	0.950				0.094	
Satd. Flow (perm)	3433	1574	3213	0	177	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		233	180			
Link Speed (mph)	35		45			45
Link Distance (ft)	776		1055			1370
Travel Time (s)	15.1		16.0			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	619	233	749	678	244	251
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	233	1427	0	244	251
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8			2	
Total Split (s)	48.0	48.0	96.0		36.0	132.0
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.8
Act Effect Green (s)	36.3	36.3	103.4		130.7	130.4
Actuated g/C Ratio	0.20	0.20	0.57		0.73	0.72
v/c Ratio	0.90	0.46	0.74		0.78	0.10
Control Delay	86.3	9.1	11.6		51.8	8.1
Queue Delay	0.0	0.0	0.3		0.0	0.0
Total Delay	86.3	9.1	11.9		51.8	8.1
LOS	F	A	B		D	A
Approach Delay	65.2		11.9			29.6
Approach LOS	E		B			C
Queue Length 50th (ft)	370	0	224		184	41
Queue Length 95th (ft)	433	77	m700		303	71
Internal Link Dist (ft)	696		975			1290
Turn Bay Length (ft)		595			660	
Base Capacity (vph)	791	542	1921		392	2491
Starvation Cap Reductn	0	0	107		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.78	0.43	0.79		0.62	0.10

Intersection Summary
























Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	164 (91%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	31.4
Intersection LOS:	C
Intersection Capacity Utilization	86.4%
ICU Level of Service	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.089			0.203		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	166	3438	1548	386	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				187			187
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		442			522			748			1959	
Travel Time (s)		10.0			11.9			11.3			29.7	
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	20.6	47.0	47.0	14.2	40.6		15.0	44.6	44.6	14.2	43.8	43.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	49.4	41.2	41.2	32.6	26.1		50.2	45.0	45.0	46.4	38.0	38.0
Actuated g/C Ratio	0.43	0.36	0.36	0.29	0.23		0.44	0.39	0.39	0.41	0.33	0.33
v/c Ratio	0.51	0.14	1.00	0.10	0.21		0.94	0.65	0.09	0.10	0.92	0.16
Control Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
LOS	C	C	E	B	C		E	C	A	B	D	A
Approach Delay		46.2			20.7			39.5			46.4	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	148	52	~479	16	30		~104	323	0	12	419	0
Queue Length 95th (ft)	218	93	#724	37	72		#260	403	0	30	#563	0
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	589	685	777	395	560		200	1352	722	259	1133	655
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.14	1.00	0.10	0.16		0.94	0.65	0.09	0.10	0.92	0.16

Intersection Summary
























Area Type:	Other	
Cycle Length:	120	
Actuated Cycle Length:	114.3	
Control Type:	Actuated-Uncoordinated	
Maximum v/c Ratio:	1.00	
Intersection Signal Delay:	43.3	Intersection LOS: D
Intersection Capacity Utilization	92.6%	ICU Level of Service F
Analysis Period (min)	15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.		

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.196			0.234		
Satd. Flow (perm)	0	1185	1396	1300	1267	1524	342	3471	1474	411	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			95			52			90
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	25.0	118.0	118.0	14.0	107.0	107.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		14.0	14.0	14.0	14.0	14.0	153.4	143.4	143.4	142.3	134.5	134.5
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.08	0.85	0.80	0.80	0.79	0.75	0.75
v/c Ratio		0.61	0.32	0.61	0.03	0.22	0.32	0.42	0.05	0.15	0.47	0.07
Control Delay		106.1	7.0	104.3	73.7	2.4	3.1	3.9	0.2	3.8	10.4	1.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		106.1	7.0	104.3	73.7	2.4	3.1	3.9	0.2	3.8	10.4	1.4
LOS		F	A	F	E	A	A	A	A	A	B	A
Approach Delay		54.0			61.8			3.6			9.5	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		65	0	72	3	0	9	134	0	8	265	0
Queue Length 95th (ft)		117	14	126	15	0	m15	153	m0	19	393	17
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		276	398	303	295	428	428	2765	1185	389	2568	1171
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.16	0.20	0.01	0.11	0.28	0.42	0.05	0.14	0.47	0.07

Intersection Summary

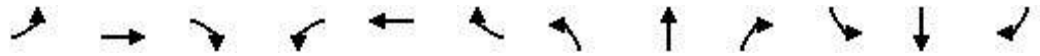
Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	121 (67%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	10.6
Intersection LOS:	B
Intersection Capacity Utilization:	63.5%
ICU Level of Service:	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

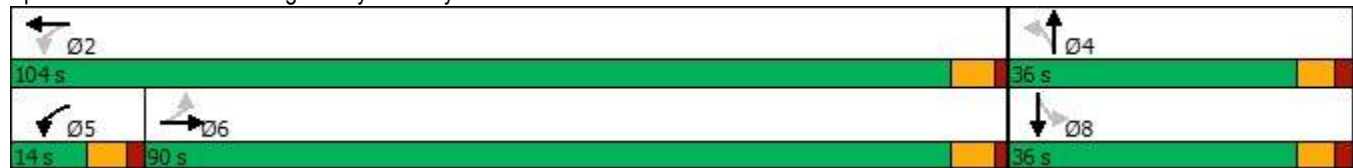


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969			0.994			0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3439	0	1770	1592	0	0	1754	0
Flt Permitted	0.122			0.044			0.598					0.403
Satd. Flow (perm)	209	3410	0	83	3439	0	1113	1592	0	0	725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42			8			99				8
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1614	0	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	90.0	90.0		14.0	104.0		36.0	36.0		36.0		36.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effect Green (s)	84.0	84.0		98.0	98.0		30.0	30.0				30.0
Actuated g/C Ratio	0.60	0.60		0.70	0.70		0.21	0.21				0.21
v/c Ratio	0.26	1.43		1.54	0.67		0.50	0.63				1.19
Control Delay	20.1	222.5		301.5	13.5		56.9	37.9				174.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	20.1	222.5		301.5	13.5		56.9	37.9				174.6
LOS	C	F		F	B		E	D				F
Approach Delay		220.2			50.7			43.9				174.6
Approach LOS		F			D			D				F
Queue Length 50th (ft)	14	~1911		~255	398		97	136				~203
Queue Length 95th (ft)	39	#2025		#432	468		166	235				#364
Internal Link Dist (ft)		700			1292			609				412
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	125	2062		155	2409		238	418				161
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.26	1.43		1.54	0.67		0.50	0.63				1.19

Intersection Summary

Area Type:	Other		
Cycle Length:	140		
Actuated Cycle Length:	140		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.54		
Intersection Signal Delay:	148.1	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

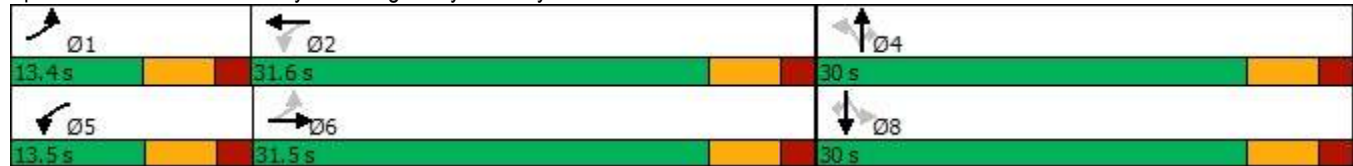


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		898			1245			657				706
Travel Time (s)		17.5			24.3			14.9				16.0
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.14	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.4			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	6	172		13	119			13	0		4	0
Queue Length 95th (ft)	16	237		46	166			38	5		18	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.14	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization	64.2%
ICU Level of Service	C
Analysis Period (min)	15































Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 1A/1B – PM Peak Hour

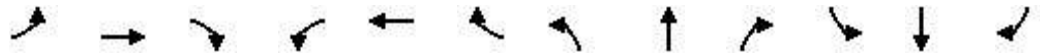
Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	 		 		
Traffic Volume (vph)	498	736	167	121	816	250	517	515	124	238	232	962
Future Volume (vph)	498	736	167	121	816	250	517	515	124	238	232	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	735		185	390		0	440		325	390		315
Storage Lanes	2		1	2		1	2		1	1		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	*0.80	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2831	3491	1571	3433	3525	1555	3433	3454	1507	1770	3421	2747
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2830	3491	1571	3433	3525	1535	3421	3454	1489	1768	3421	2747
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			121			152			211			
Link Speed (mph)		35			35			45				45
Link Distance (ft)		1293			906			815				1055
Travel Time (s)		25.2			17.6			12.3				16.0
Confl. Peds. (#/hr)	1						1	2		1	1	2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	811	1199	272	161	1329	332	842	685	165	317	309	1567
Shared Lane Traffic (%)												
Lane Group Flow (vph)	811	1199	272	161	1329	332	842	685	165	317	309	1567
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			Free			
Total Split (s)	34.0	76.0	76.0	18.0	60.0	60.0	31.0	45.0		37.0	51.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6		7.0	7.6	
Act Effct Green (s)	27.0	66.4	66.4	12.9	52.3	52.3	24.0	37.4	176.0	30.0	43.4	77.4
Actuated g/C Ratio	0.15	0.38	0.38	0.07	0.30	0.30	0.14	0.21	1.00	0.17	0.25	0.44
v/c Ratio	1.87	0.91	0.41	0.64	1.27	0.59	1.80	0.93	0.11	1.05	0.37	1.30
Control Delay	425.8	28.4	5.0	91.7	177.2	32.4	406.4	88.1	0.1	122.5	44.4	179.0
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	426.1	28.4	5.0	91.7	177.2	32.8	406.4	88.1	0.1	122.5	44.4	179.0
LOS	F	C	A	F	F	C	F	F	A	F	D	F
Approach Delay		167.0			143.4			237.9				151.8
Approach LOS		F			F			F				F
Queue Length 50th (ft)	~882	657	73	96	~1012	180	~748	414	0	~391	163	~1315
Queue Length 95th (ft)	m#738	m492	m60	#151	#1152	294	#884	#534	0	m#537	m187	m#1464
Internal Link Dist (ft)		1213			826			735				975
Turn Bay Length (ft)	735		185	390			440		325	390		315
Base Capacity (vph)	434	1354	683	251	1047	562	468	733	1489	301	843	1208
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	15	0	0	0	0	45	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI

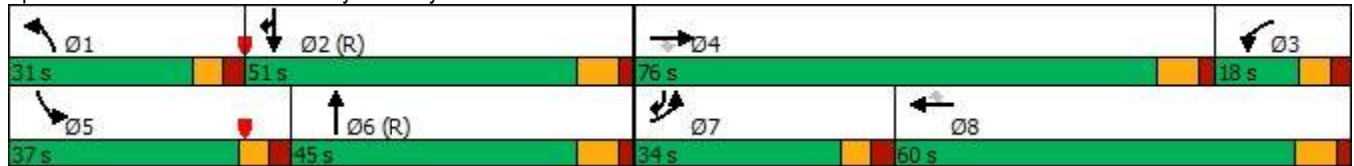


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.94	0.89	0.40	0.64	1.27	0.64	1.80	0.93	0.11	1.05	0.37	1.30

Intersection Summary















Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	4 (2%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.87
Intersection Signal Delay:	172.5
Intersection LOS:	F
Intersection Capacity Utilization	132.5%
ICU Level of Service	H
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

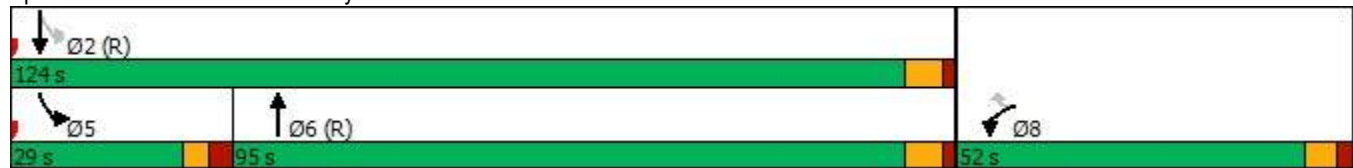
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	632	181	580	683	185	741
Future Volume (vph)	632	181	580	683	185	741
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	660	
Storage Lanes	2	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	0.98		0.99			
Frt		0.850	0.919			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3210	0	1770	3539
Flt Permitted	0.950				0.041	
Satd. Flow (perm)	3406	1583	3210	0	76	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		241	242			
Link Speed (mph)	35		45			45
Link Distance (ft)	864		1055			1370
Travel Time (s)	16.8		16.0			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	771	908	246	985
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	1679	0	246	985
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8			2	
Total Split (s)	52.0	52.0	95.0		29.0	124.0
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.8
Act Effect Green (s)	44.5	44.5	90.3		118.5	118.2
Actuated g/C Ratio	0.25	0.25	0.51		0.67	0.67
v/c Ratio	0.96	0.42	0.95		0.96	0.41
Control Delay	86.1	7.6	10.8		101.8	11.6
Queue Delay	0.0	0.0	1.9		0.0	0.0
Total Delay	86.1	7.6	12.8		101.8	11.6
LOS	F	A	B		F	B
Approach Delay	68.6		12.8			29.6
Approach LOS	E		B			C
Queue Length 50th (ft)	494	0	419		254	175
Queue Length 95th (ft)	#618	73	m91		#418	258
Internal Link Dist (ft)	784		975			1290
Turn Bay Length (ft)		595			660	
Base Capacity (vph)	896	587	1764		268	2377
Starvation Cap Reductn	0	0	35		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.94	0.41	0.97		0.92	0.41

Intersection Summary

Area Type: Other
 Cycle Length: 176
 Actuated Cycle Length: 176
 Offset: 3 (2%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 33.1 Intersection LOS: C
 Intersection Capacity Utilization 102.4% ICU Level of Service G
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



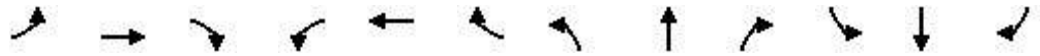
Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1619	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.237			0.704			0.062			0.068		
Satd. Flow (perm)	450	1900	1576	1233	1619	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45				45
Link Distance (ft)		503			490			464				1912
Travel Time (s)		11.4			11.1			7.0				29.0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.3	38.9	38.9	14.4	39.0		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	35.5	27.1	27.1	35.7	27.2		91.0	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.25	0.19	0.19	0.25	0.19		0.63	0.53	0.53	0.46	0.40	0.40
v/c Ratio	0.62	0.22	0.71	0.73	0.87		1.01	0.99	0.25	0.69	0.97	0.14
Control Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
LOS	D	D	C	E	E		F	D	B	D	E	A
Approach Delay		31.7			68.3			54.3			55.2	
Approach LOS		C			E			D			E	
Queue Length 50th (ft)	84	63	70	189	237		~337	895	52	47	669	0
Queue Length 95th (ft)	137	111	191	275	350		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	190	435	583	330	395		382	1882	878	154	1418	733
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI

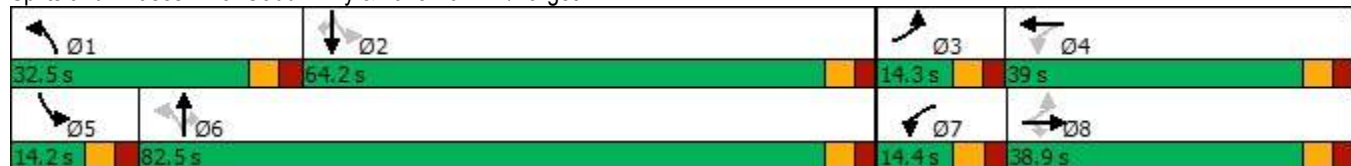


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.62	0.18	0.64	0.73	0.72		1.01	0.99	0.25	0.69	0.97	0.14

Intersection Summary
























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	144.3
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	53.5
Intersection LOS:	D
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

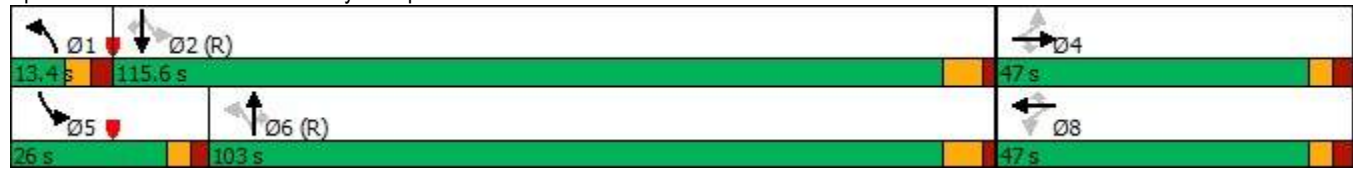
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.656			0.078			0.092		
Satd. Flow (perm)	0	1323	1544	1218	1900	1544	131	3505	1542	168	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			97			157			92			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		651			696			1370				617
Travel Time (s)		14.8			15.8			20.8				9.3
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	13.4	103.0	103.0	26.0	115.6	115.6
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		31.8	31.8	31.8	31.8	31.8	118.6	112.8	112.8	132.5	121.8	121.8
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.67	0.64	0.64	0.75	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.40	0.69	0.15	0.70	0.73	0.06
Control Delay		66.6	7.3	115.9	55.8	10.0	14.4	17.2	3.3	30.9	21.0	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		66.6	7.3	115.9	55.8	10.0	14.4	17.2	3.3	30.9	21.0	2.7
LOS		E	A	F	E	A	B	B	A	C	C	A
Approach Delay		38.8			69.3			15.9			21.3	
Approach LOS		D			E			B			C	
Queue Length 50th (ft)		96	0	236	16	0	9	289	1	50	664	0
Queue Length 95th (ft)		150	34	327	39	64	m19	m648	m19	148	904	21
Internal Link Dist (ft)		571			616			1290			537	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		308	434	283	442	480	148	2245	1021	309	2449	1018
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.72	0.04	0.33	0.36	0.69	0.15	0.55	0.73	0.06

Intersection Summary

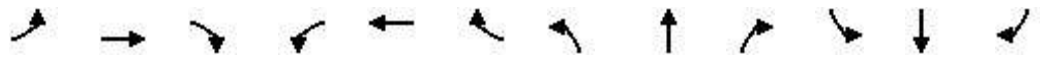
Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	32 (18%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	24.0
Intersection LOS:	C
Intersection Capacity Utilization:	85.3%
ICU Level of Service:	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

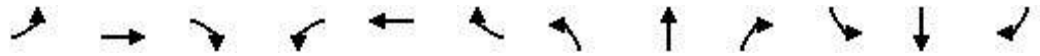
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983			0.991			0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3451	0	1787	3511	0	1787	1637	0	0	2012	0
Flt Permitted	0.046			0.043			0.590					0.354
Satd. Flow (perm)	85	3451	0	81	3511	0	1110	1637	0	0	730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			9			184				3
Link Speed (mph)		35			35			45				30
Link Distance (ft)		717			1356			444				405
Travel Time (s)		14.0			26.4			6.7				9.2
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3232	0	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	93.0	93.0		38.0	131.0		45.0	45.0		45.0		45.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effct Green (s)	87.0	87.0		125.0	125.0		39.0	39.0				39.0
Actuated g/C Ratio	0.49	0.49		0.71	0.71		0.22	0.22				0.22
v/c Ratio	0.74	1.21		1.28	1.29		0.97	0.55				1.17
Control Delay	117.3	137.3		175.7	155.2		115.8	24.7				179.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	117.3	137.3		175.7	155.2		115.8	24.7				179.0
LOS	F	F		F	F		F	C				F
Approach Delay		137.0			157.8			66.4				179.0
Approach LOS		F			F			E				F
Queue Length 50th (ft)	28	~1520		~635	~2551		274	96				~261
Queue Length 95th (ft)	#105	#1644		m327	m979		#464	201				#440
Internal Link Dist (ft)		637			1276			364				325
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	42	1711		367	2496		245	505				164
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0

Lanes, Volumes, Timings
 6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI



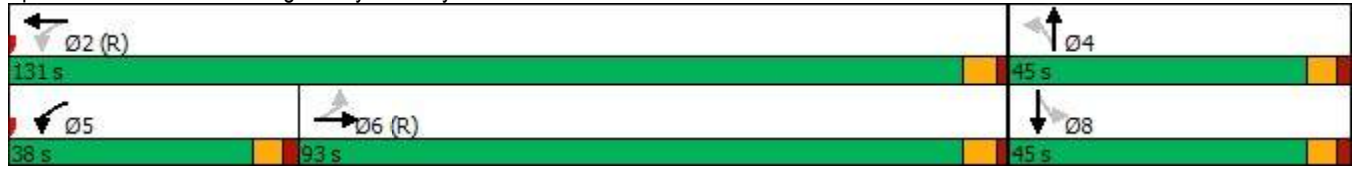
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.74	1.21		1.28	1.29		0.97	0.55				1.17

Intersection Summary

Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	108 (61%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.29
Intersection Signal Delay:	144.4
Intersection LOS:	F
Intersection Capacity Utilization	146.8%
ICU Level of Service	H
Analysis Period (min)	15

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.126			0.150				0.737			0.752	
Satd. Flow (perm)	239	5026	0	285	5050	0	0	1398	1594	0	1427	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.6		13.4	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.8	33.2		35.8	33.2			10.3	10.3		10.3	10.3
Actuated g/C Ratio	0.61	0.57		0.61	0.57			0.18	0.18		0.18	0.18
v/c Ratio	0.22	0.48		0.20	0.56			0.04	0.06		0.19	0.20
Control Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.0			14.5			6.0			10.1	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	7	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	264		36	#365			13	0		39	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	349	2860		372	2878			588	747		600	746
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.22	0.48		0.20	0.56			0.02	0.03		0.08	0.10

Intersection Summary

Area Type:	Other		
Cycle Length:	75		
Actuated Cycle Length:	58.4		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.56		
Intersection Signal Delay:	13.6	Intersection LOS:	B
Intersection Capacity Utilization:	61.1%	ICU Level of Service:	B
Analysis Period (min):	15		
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			




































Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 1C – AM Peak Hour

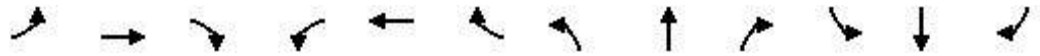
Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		  	  		 	 			 	 
Traffic Volume (vph)	513	1030	166	90	587	266	103	261	116	170	273	362
Future Volume (vph)	513	1030	166	90	587	266	103	261	116	170	273	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	695		185	390		255	400		325	390		315
Storage Lanes	2		1	2		1	2		1	1		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	*0.80	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.88
Ped Bike Factor	1.00					0.99			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2804	5022	1555	3303	4880	1555	3367	3293	1507	1752	3324	2693
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2801	5022	1555	3303	4880	1535	3367	3293	1487	1751	3324	2693
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			128			227			160			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			1055	
Travel Time (s)		25.2			17.5			11.6			16.0	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	836	1678	270	120	956	354	168	347	154	226	363	590
Shared Lane Traffic (%)												
Lane Group Flow (vph)	836	1678	270	120	956	354	168	347	154	226	363	590
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			Free			6			
Total Split (s)	52.0	83.7	83.7	18.0	49.7		21.0	51.3	51.3	27.0	57.3	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7		7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)	45.0	73.5	73.5	11.8	40.3	180.0	15.7	43.7	43.7	21.7	49.7	101.7
Actuated g/C Ratio	0.25	0.41	0.41	0.07	0.22	1.00	0.09	0.24	0.24	0.12	0.28	0.56
v/c Ratio	1.19	0.82	0.38	0.56	0.87	0.23	0.57	0.43	0.32	1.08	0.40	0.39
Control Delay	155.8	51.0	19.9	92.3	77.2	0.3	87.9	59.7	7.9	145.3	60.3	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	155.8	51.0	19.9	92.3	77.2	0.3	87.9	59.7	7.9	145.3	60.3	16.3
LOS	F	D	B	F	E	A	F	E	A	F	E	B
Approach Delay		79.5			59.5			54.9			54.6	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)	~741	628	111	72	399	0	101	184	0	~317	215	214
Queue Length 95th (ft)	#906	687	190	111	457	0	145	239	58	#502	264	258
Internal Link Dist (ft)		1213			818			687			975	
Turn Bay Length (ft)	695		185	390		255	400		325	390		315
Base Capacity (vph)	701	2120	730	216	1138	1535	293	799	482	210	917	1521
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUJ with Capacity Improvement

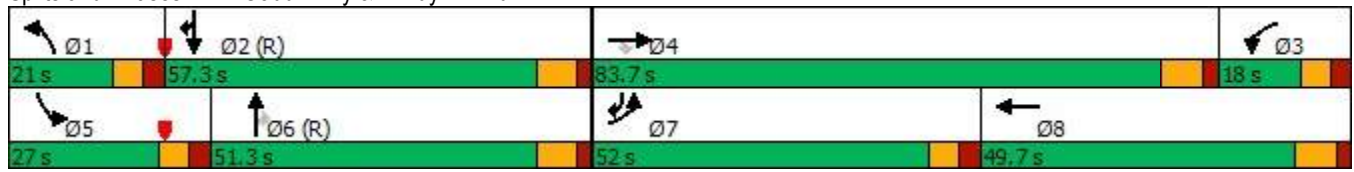


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.19	0.79	0.37	0.56	0.84	0.23	0.57	0.43	0.32	1.08	0.40	0.39

Intersection Summary
















Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	3 (2%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	67.2
Intersection LOS:	E
Intersection Capacity Utilization	107.6%
ICU Level of Service	G
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPU with Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	451	170	546	494	178	183
Future Volume (vph)	451	170	546	494	178	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	355	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor		0.99		0.99	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1599	3438	1583	1787	3438
Flt Permitted	0.950				0.259	
Satd. Flow (perm)	3433	1577	3438	1561	487	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		233		678		
Link Speed (mph)	35		45			45
Link Distance (ft)	776		1055			1370
Travel Time (s)	15.1		16.0			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	619	233	749	678	244	251
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	233	749	678	244	251
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	36.5	36.5	36.5	36.5	17.0	53.5
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	20.9	20.9	40.0	40.0	56.1	55.8
Actuated g/C Ratio	0.23	0.23	0.44	0.44	0.62	0.62
v/c Ratio	0.78	0.43	0.49	0.63	0.56	0.12
Control Delay	39.3	6.2	14.2	10.1	15.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.3	6.2	14.2	10.1	15.3	9.1
LOS	D	A	B	B	B	A
Approach Delay	30.2		12.3			12.1
Approach LOS	C		B			B
Queue Length 50th (ft)	171	0	262	424	126	62
Queue Length 95th (ft)	210	52	m324	m371	102	43
Internal Link Dist (ft)	696		975			1290
Turn Bay Length (ft)		595			355	
Base Capacity (vph)	1144	681	1528	1070	465	2132
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.34	0.49	0.63	0.52	0.12

Timing Plan: AM Peak Hour

Synchro 10 Report

Intersection Summary
























Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	17.8
Intersection LOS:	B
Intersection Capacity Utilization:	68.9%
ICU Level of Service:	C
Analysis Period (min):	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

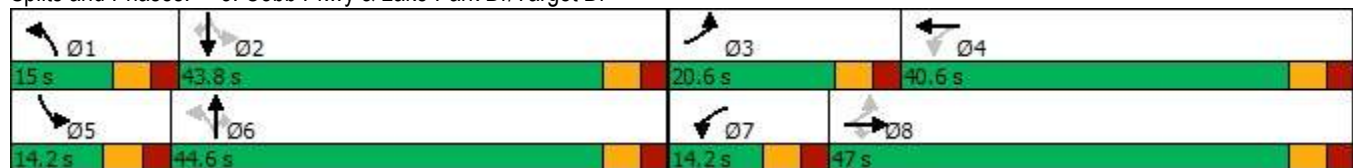
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.089			0.203		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	166	3438	1548	386	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				187			187
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		442			522			748			1959	
Travel Time (s)		10.0			11.9			11.3			29.7	
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	20.6	47.0	47.0	14.2	40.6		15.0	44.6	44.6	14.2	43.8	43.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	49.4	41.2	41.2	32.6	26.1		50.2	45.0	45.0	46.4	38.0	38.0
Actuated g/C Ratio	0.43	0.36	0.36	0.29	0.23		0.44	0.39	0.39	0.41	0.33	0.33
v/c Ratio	0.51	0.14	1.00	0.10	0.21		0.94	0.65	0.09	0.10	0.92	0.16
Control Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
LOS	C	C	E	B	C		E	C	A	B	D	A
Approach Delay		46.2			20.7			39.5			46.4	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	148	52	~479	16	30		~104	323	0	12	419	0
Queue Length 95th (ft)	218	93	#724	37	72		#260	403	0	30	#563	0
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	589	685	777	395	560		200	1352	722	259	1133	655
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.14	1.00	0.10	0.16		0.94	0.65	0.09	0.10	0.92	0.16

Intersection Summary

Area Type:	Other		
Cycle Length:	120		
Actuated Cycle Length:	114.3		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	43.3	Intersection LOS:	D
Intersection Capacity Utilization:	92.6%	ICU Level of Service:	F
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.196			0.234		
Satd. Flow (perm)	0	1185	1396	1300	1267	1524	342	3471	1474	411	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			95			52			90
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	25.0	118.0	118.0	14.0	107.0	107.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		14.0	14.0	14.0	14.0	14.0	153.4	143.4	143.4	142.3	134.5	134.5
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.08	0.85	0.80	0.80	0.79	0.75	0.75
v/c Ratio		0.61	0.32	0.61	0.03	0.22	0.32	0.42	0.05	0.15	0.47	0.07
Control Delay		106.1	7.0	104.3	73.7	2.4	4.0	3.4	0.1	3.8	10.4	1.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		106.1	7.0	104.3	73.7	2.4	4.0	3.4	0.1	3.8	10.4	1.4
LOS		F	A	F	E	A	A	A	A	A	B	A
Approach Delay		54.0			61.8			3.3			9.5	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		65	0	72	3	0	8	73	0	8	265	0
Queue Length 95th (ft)		117	14	126	15	0	15	148	0	19	393	17
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		276	398	303	295	428	428	2765	1185	389	2568	1171
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.16	0.20	0.01	0.11	0.28	0.42	0.05	0.14	0.47	0.07

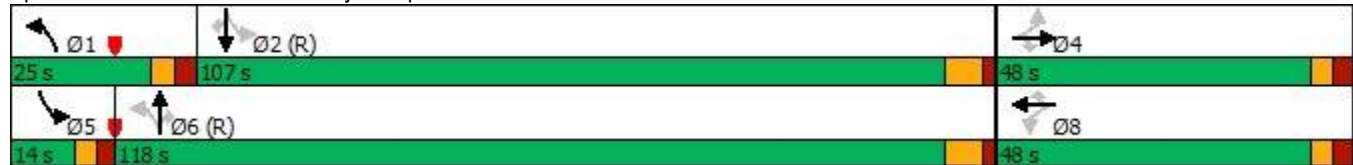
Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI with Capacity Improvement

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	25 (14%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	10.4
Intersection LOS:	B
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPU with Capacity Improvement

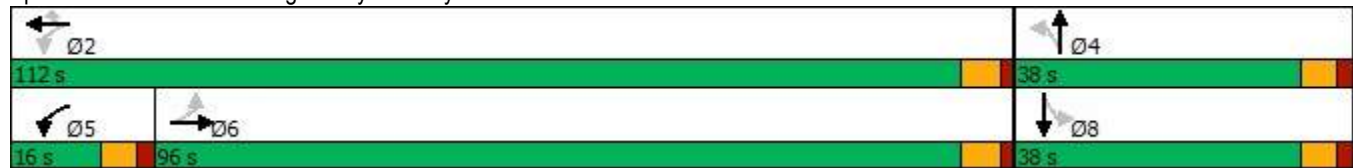


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969				0.850		0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.139			0.042			0.596					0.392
Satd. Flow (perm)	238	3410	0	79	3471	1442	1109	1592	0	0	706	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40				69		114				8
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4				8	
Total Split (s)	96.0	96.0		16.0	112.0	112.0	38.0	38.0		38.0	38.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effect Green (s)	90.0	90.0		106.0	106.0	106.0	32.0	32.0		32.0	32.0	
Actuated g/C Ratio	0.60	0.60		0.71	0.71	0.71	0.21	0.21		0.21	0.21	
v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61		0.61	1.22	
Control Delay	19.2	223.4		250.2	13.1	1.5	60.7	36.3		36.3	190.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	19.2	223.4		250.2	13.1	1.5	60.7	36.3		36.3	190.7	
LOS	B	F		F	B	A	E	D		D	F	
Approach Delay		221.2			43.2			44.0			190.7	
Approach LOS		F			D			D			F	
Queue Length 50th (ft)	14	~2051		~262	386	0	105	132		132	~223	
Queue Length 95th (ft)	38	#2158		#445	450	15	175	233		233	#389	
Internal Link Dist (ft)		700			1292			609		609	412	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	142	2062		169	2452	1039	236	429		429	156	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61		0.61	1.22	

Intersection Summary

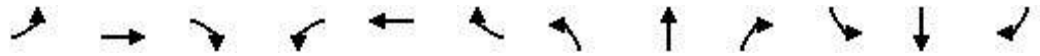
Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	150		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.43		
Intersection Signal Delay:	146.6	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

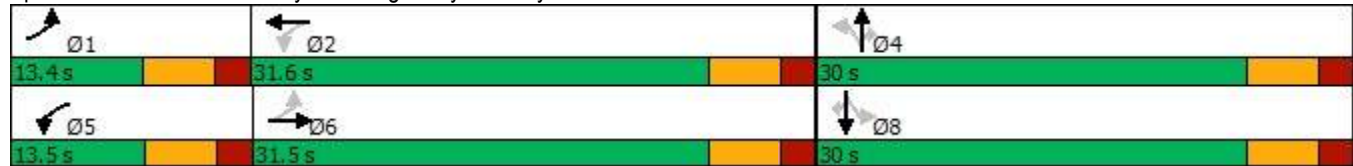


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		898			1245			657				706
Travel Time (s)		17.5			24.3			14.9				16.0
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.14	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.4			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	6	172		13	119			13	0		4	0
Queue Length 95th (ft)	16	237		46	166			38	5		18	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.14	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization	64.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

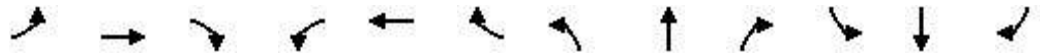
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	498	736	167	121	816	250	517	515	124	238	232	962
Future Volume (vph)	498	736	167	121	816	250	517	515	124	238	232	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	695		185	390		255	400		325	390		315
Storage Lanes	2		1	2		1	2		1	1		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	*0.80	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	1.00	0.95	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2831	5022	1571	3433	5072	1555	3433	3454	1507	1770	3421	2747
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2831	5022	1571	3433	5072	1536	3426	3454	1487	1769	3421	2747
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			162			211			165			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			906			815			1055	
Travel Time (s)		25.2			17.6			12.3			16.0	
Confl. Peds. (#/hr)	1					1	2		1	1		2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	811	1199	272	161	1329	332	842	685	165	317	309	1567
Shared Lane Traffic (%)												
Lane Group Flow (vph)	811	1199	272	161	1329	332	842	685	165	317	309	1567
Turn Type	Prot	NA	Perm	Prot	NA	Free	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	2.7
Permitted Phases			4			Free			6			
Total Split (s)	39.0	68.0	68.0	21.0	50.0		35.0	48.0	48.0	39.0	52.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7		7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)	32.0	53.6	53.6	20.7	42.3	176.0	28.0	40.4	40.4	32.0	44.4	83.4
Actuated g/C Ratio	0.18	0.30	0.30	0.12	0.24	1.00	0.16	0.23	0.23	0.18	0.25	0.47
v/c Ratio	1.58	0.78	0.46	0.40	1.09	0.22	1.54	0.86	0.35	0.99	0.36	1.20
Control Delay	297.7	29.9	5.7	76.9	114.4	0.3	297.8	77.4	9.0	109.1	49.8	140.6
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	297.8	29.9	5.7	76.9	114.4	0.3	297.8	77.4	9.0	109.1	49.8	140.6
LOS	F	C	A	E	F	A	F	E	A	F	D	F
Approach Delay		122.2			90.3			180.4			123.3	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~821	383	77	90	~629	0	~701	404	0	352	161	~1250
Queue Length 95th (ft)	m#676	m303	m61	137	#727	0	#836	486	67	m#570	m194	#1402
Internal Link Dist (ft)		1213			826			735			975	
Turn Bay Length (ft)	695		185	390		255	400		325	390		315
Base Capacity (vph)	514	1720	644	404	1219	1536	546	792	468	321	863	1301
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	4	0	0	0	0	39	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Option 1C – PM Peak Hour

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI with Capacity Improvement

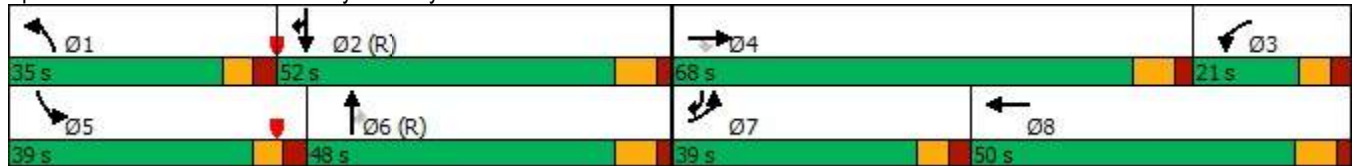


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.59	0.70	0.42	0.40	1.09	0.22	1.54	0.86	0.35	0.99	0.36	1.20

Intersection Summary
















Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	156 (89%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.58
Intersection Signal Delay:	127.6
Intersection LOS:	F
Intersection Capacity Utilization	123.7%
ICU Level of Service	H
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	632	181	580	683	185	741
Future Volume (vph)	632	181	580	683	185	741
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	355	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.98			0.97		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3505	1599	1770	3539
Flt Permitted	0.950				0.278	
Satd. Flow (perm)	3406	1583	3505	1558	518	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		241		879		
Link Speed (mph)	35		45			45
Link Distance (ft)	864		1055			1370
Travel Time (s)	16.8		16.0			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	771	908	246	985
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	771	908	246	985
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	60.0	60.0	89.0	89.0	27.0	116.0
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	47.1	47.1	95.5	95.5	115.9	115.6
Actuated g/C Ratio	0.27	0.27	0.54	0.54	0.66	0.66
v/c Ratio	0.91	0.40	0.41	0.73	0.56	0.42
Control Delay	75.9	6.8	8.9	11.6	11.3	8.9
Queue Delay	0.0	0.0	0.0	4.0	0.0	0.0
Total Delay	75.9	6.8	8.9	15.6	11.3	8.9
LOS	E	A	A	B	B	A
Approach Delay	60.5		12.5			9.3
Approach LOS	E		B			A
Queue Length 50th (ft)	484	0	40	198	73	170
Queue Length 95th (ft)	545	68	m207	m750	68	121
Internal Link Dist (ft)	784		975			1290
Turn Bay Length (ft)		595			355	
Base Capacity (vph)	1053	648	1902	1247	487	2323
Starvation Cap Reductn	0	0	0	255	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.37	0.41	0.92	0.51	0.42

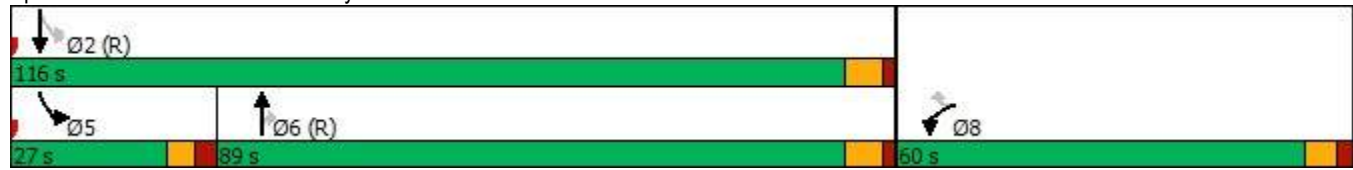
Timing Plan: PM Peak Hour

Synchro 10 Report

Intersection Summary

Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	2 (1%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	24.5
Intersection LOS:	C
Intersection Capacity Utilization	79.6%
ICU Level of Service	D
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



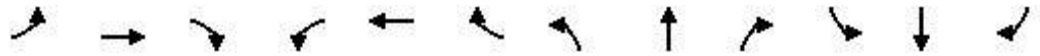
Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1619	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.237			0.704			0.062			0.068		
Satd. Flow (perm)	450	1900	1576	1233	1619	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45				45
Link Distance (ft)		503			490			464				1912
Travel Time (s)		11.4			11.1			7.0				29.0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.3	38.9	38.9	14.4	39.0		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	35.5	27.1	27.1	35.7	27.2		91.0	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.25	0.19	0.19	0.25	0.19		0.63	0.53	0.53	0.46	0.40	0.40
v/c Ratio	0.62	0.22	0.71	0.73	0.87		1.01	0.99	0.25	0.69	0.97	0.14
Control Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
LOS	D	D	C	E	E		F	D	B	D	E	A
Approach Delay		31.7			68.3			54.3			55.2	
Approach LOS		C			E			D			E	
Queue Length 50th (ft)	84	63	70	189	237		~337	895	52	47	669	0
Queue Length 95th (ft)	137	111	191	275	350		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	190	435	583	330	395		382	1882	878	154	1418	733
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - SPUI with Capacity Improvement

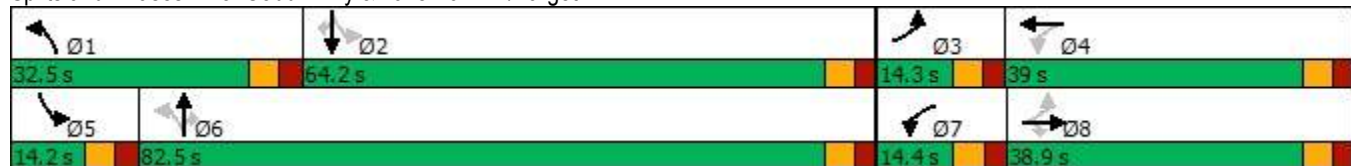


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.62	0.18	0.64	0.73	0.72		1.01	0.99	0.25	0.69	0.97	0.14

Intersection Summary
























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	144.3
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	53.5
Intersection LOS:	D
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

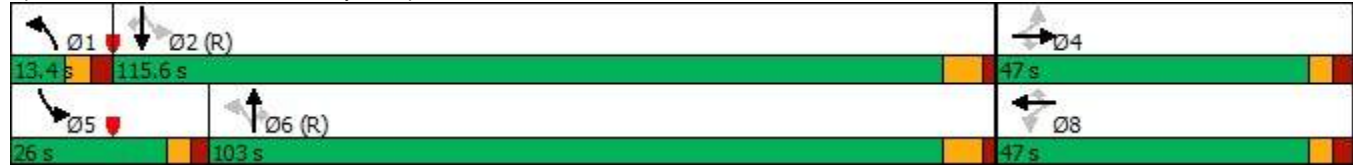
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.656			0.078			0.092		
Satd. Flow (perm)	0	1323	1544	1218	1900	1544	131	3505	1542	168	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			97			157			92			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		651			696			1370				617
Travel Time (s)		14.8			15.8			20.8				9.3
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	13.4	103.0	103.0	26.0	115.6	115.6
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		31.8	31.8	31.8	31.8	31.8	118.6	112.8	112.8	132.5	121.8	121.8
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.67	0.64	0.64	0.75	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.40	0.69	0.15	0.70	0.73	0.06
Control Delay		66.6	7.3	115.9	55.8	10.0	19.8	14.9	2.7	30.9	21.0	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		66.6	7.3	115.9	55.8	10.0	19.8	14.9	2.7	30.9	21.0	2.7
LOS		E	A	F	E	A	B	B	A	C	C	A
Approach Delay		38.8			69.3			14.0			21.3	
Approach LOS		D			E			B			C	
Queue Length 50th (ft)		96	0	236	16	0	8	257	1	50	664	0
Queue Length 95th (ft)		150	34	327	39	64	43	390	24	148	904	21
Internal Link Dist (ft)		571			616			1290			537	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		308	434	283	442	480	148	2245	1021	309	2449	1018
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.72	0.04	0.33	0.36	0.69	0.15	0.55	0.73	0.06

Intersection Summary

Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	168 (95%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	23.2
Intersection LOS:	C
Intersection Capacity Utilization	85.3%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



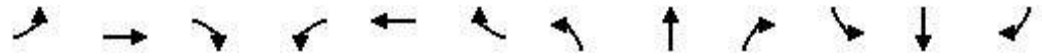
Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPU with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869			0.971	
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1752	3451	0	1787	3539	1615	1787	1637	0	0	2012	0
Flt Permitted	0.046			0.043			0.590				0.354	
Satd. Flow (perm)	85	3451	0	81	3539	1615	1110	1637	0	0	730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				90		184			3	
Link Speed (mph)		35			35			45			30	
Link Distance (ft)		717			1356			444			405	
Travel Time (s)		14.0			26.4			6.7			9.2	
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	93.0	93.0		38.0	131.0	131.0	45.0	45.0		45.0	45.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effct Green (s)	87.0	87.0		125.0	125.0	125.0	39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.49	0.49		0.71	0.71	0.71	0.22	0.22		0.22	0.22	
v/c Ratio	0.74	1.21		1.28	1.21	0.16	0.97	0.55		0.55	1.17	
Control Delay	117.3	137.3		175.9	114.4	2.4	115.8	24.7		24.7	179.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	117.3	137.3		175.9	114.4	2.4	115.8	24.7		24.7	179.0	
LOS	F	F		F	F	A	F	C		C	F	
Approach Delay		137.0			116.6			66.4		66.4	179.0	
Approach LOS		F			F			E		E	F	
Queue Length 50th (ft)	28	~1520		~612	~2246	21	274	96		96	~261	
Queue Length 95th (ft)	#105	#1644		m#417	m1246	m12	#464	201		201	#440	
Internal Link Dist (ft)		637			1276			364		364	325	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	42	1711		367	2513	1173	245	505		505	164	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	

Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement

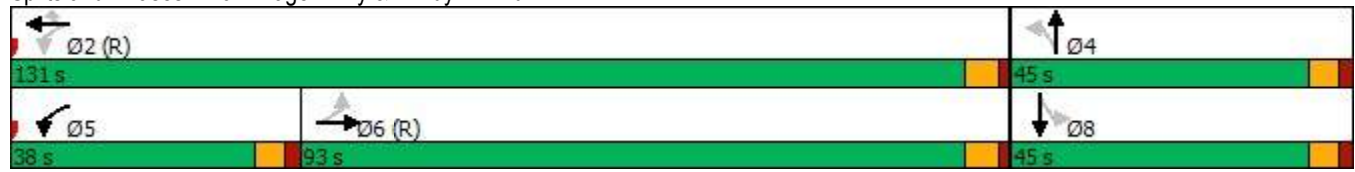


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.74	1.21		1.28	1.21	0.16	0.97	0.55			1.17	

Intersection Summary

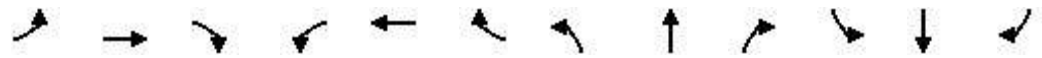
Area Type: Other
 Cycle Length: 176
 Actuated Cycle Length: 176
 Offset: 80 (45%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 121.0 Intersection LOS: F
 Intersection Capacity Utilization 141.0% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - SPUI with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.126			0.150				0.737			0.752	
Satd. Flow (perm)	239	5026	0	285	5050	0	0	1398	1594	0	1427	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.6		13.4	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.8	33.2		35.8	33.2			10.3	10.3		10.3	10.3
Actuated g/C Ratio	0.61	0.57		0.61	0.57			0.18	0.18		0.18	0.18
v/c Ratio	0.22	0.48		0.20	0.56			0.04	0.06		0.19	0.20
Control Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.0			14.5			6.0			10.1	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	7	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	264		36	#365			13	0		39	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	349	2860		372	2878			588	747		600	746
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.22	0.48		0.20	0.56			0.02	0.03		0.08	0.10

Intersection Summary

Area Type:	Other		
Cycle Length:	75		
Actuated Cycle Length:	58.4		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.56		
Intersection Signal Delay:	13.6	Intersection LOS:	B
Intersection Capacity Utilization:	61.1%	ICU Level of Service:	B
Analysis Period (min):	15		
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			






























Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 2A – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

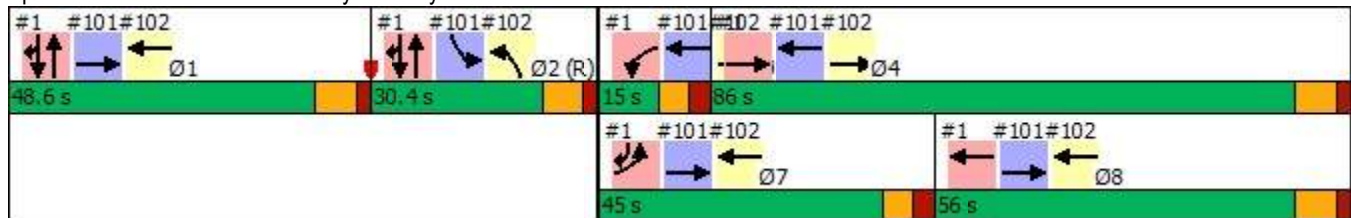
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 			  			  	 
Traffic Volume (vph)	496	1047	0	84	593	0	0	521	127	0	659	368
Future Volume (vph)	496	1047	0	84	593	0	0	521	127	0	659	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		475	0		450
Storage Lanes	2		0	2		0	0		1	0		2
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.88
Ped Bike Factor	1.00								0.99			
Frt									0.850			0.850
Flt Protected	0.950			0.950								
Satd. Flow (prot)	3400	3505	0	3303	3406	0	0	4848	1583	0	4893	2760
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	3397	3505	0	3303	3406	0	0	4848	1564	0	4893	2760
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)									205			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		150			150			866			1054	
Travel Time (s)		2.9			2.9			13.1			16.0	
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	129%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	0%	6%	6%	3%	0%	7%	2%	0%	6%	3%
Adj. Flow (vph)	808	1705	0	112	966	0	0	693	169	0	876	599
Shared Lane Traffic (%)												
Lane Group Flow (vph)	808	1705	0	112	966	0	0	693	169	0	876	599
Turn Type	Prot	NA		Prot	NA			NA	Free		NA	pt+ov
Protected Phases	7	4		3	8			1 2			1 2	1 2 7
Permitted Phases									Free			
Total Split (s)	45.0	86.0		15.0	56.0							
Total Lost Time (s)	7.0	7.7		7.0	7.7							
Act Effect Green (s)	38.0	78.3		8.0	48.3			71.4	180.0		71.4	116.4
Actuated g/C Ratio	0.21	0.44		0.04	0.27			0.40	1.00		0.40	0.65
v/c Ratio	1.13	1.12		0.77	1.06			0.36	0.11		0.45	0.34
Control Delay	128.7	78.8		151.3	85.2			38.9	0.1		32.7	6.9
Queue Delay	3.1	0.0		70.7	14.7			0.0	0.0		0.0	0.2
Total Delay	131.8	78.8		222.0	99.9			38.9	0.1		32.7	7.1
LOS	F	E		F	F			D	A		C	A
Approach Delay		95.8			112.6			31.3			22.3	
Approach LOS		F			F			C			C	
Queue Length 50th (ft)	~550	~1215		60	~655			210	0		157	45
Queue Length 95th (ft)	#687	#1350		#114	#799			249	0		m180	m92
Internal Link Dist (ft)		70			70			786			974	
Turn Bay Length (ft)									475			450
Base Capacity (vph)	717	1524		146	913			1923	1564		1940	1784
Starvation Cap Reductn	245	0		57	0			0	0		0	0
Spillback Cap Reductn	0	0		0	31			0	0		0	501
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	1.71	1.12		1.26	1.10			0.36	0.11		0.45	0.47

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Total Split (s)	48.6	30.4
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.13
Intersection Signal Delay:	71.2
Intersection LOS:	E
Intersection Capacity Utilization:	84.4%
ICU Level of Service:	E
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI



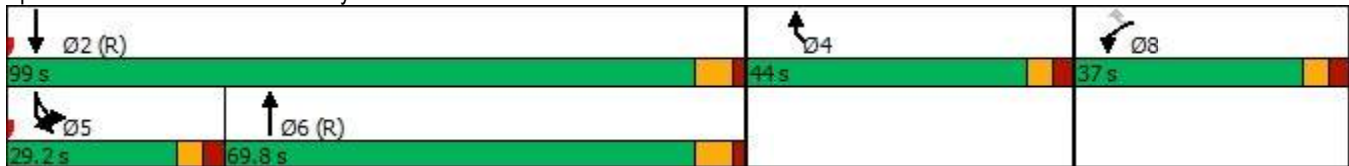
Lane Group	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	451	170	783	482	178	170	624	0	199	67
Future Volume (vph)	451	170	783	482	178	170	624	0	199	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0		315		0	0	
Storage Lanes	2	1		0		2		0	1	
Taper Length (ft)	25					50		50		
Lane Util. Factor	0.97	1.00	0.91	0.91	1.00	1.00	0.95	1.00	1.00	1.00
Frt		0.850	0.943						0.865	
Flt Protected	0.950				0.950	0.950				
Satd. Flow (prot)	3433	1583	4654	0	1770	1752	3406	0	1596	0
Flt Permitted	0.950				0.950	0.950				
Satd. Flow (perm)	3433	1583	4654	0	1770	1752	3406	0	1596	0
Right Turn on Red		Yes								No
Satd. Flow (RTOR)		226								
Link Speed (mph)	35		45				45	45		
Link Distance (ft)	1372		1054				886	208		
Travel Time (s)	26.7		16.0				13.4	3.2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	7%	2%	2%	3%	6%	0%	3%	3%
Adj. Flow (vph)	600	226	1041	641	237	226	830	0	265	89
Shared Lane Traffic (%)										
Lane Group Flow (vph)	600	226	1682	0	237	226	830	0	354	0
Turn Type	Prot	Perm	NA		Prot	Prot	NA		Prot	
Protected Phases	8		6		5	5	2		4	
Permitted Phases		8								
Total Split (s)	37.0	37.0	69.8		29.2	29.2	99.0		44.0	
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.5	6.8		6.5	
Act Effct Green (s)	30.5	30.5	63.0		22.7	22.7	92.2		37.5	
Actuated g/C Ratio	0.17	0.17	0.35		0.13	0.13	0.51		0.21	
v/c Ratio	1.03	0.50	1.14dr		1.06	1.03	0.48		1.07	
Control Delay	116.5	10.9	56.1		156.6	149.9	25.8		132.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	116.5	10.9	56.1		156.6	149.9	25.8		132.4	
LOS	F	B	E		F	F	C		F	
Approach Delay	87.6		56.1				71.4	132.4		
Approach LOS	F		E				E	F		
Queue Length 50th (ft)	~389	0	~755		~313	~289	239		~459	
Queue Length 95th (ft)	#518	83	m#476		#510	#482	320		#677	
Internal Link Dist (ft)	1292		974				806	128		
Turn Bay Length (ft)		595			315	315				
Base Capacity (vph)	581	455	1628		223	220	1744		332	
Starvation Cap Reductn	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0		0	0	0		0	
Reduced v/c Ratio	1.03	0.50	1.03		1.06	1.03	0.48		1.07	

Intersection Summary

Lanes, Volumes, Timings
 2: Cobb Pkwy & Terrel Mill Rd
























Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 172 (96%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 73.6 Intersection LOS: E
 Intersection Capacity Utilization 84.8% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.106			0.291		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	197	3438	1548	553	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			350		37				134			134
Link Speed (mph)		30			30			45				45
Link Distance (ft)		521			530			1026				565
Travel Time (s)		11.8			12.0			15.5				8.6
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	18.8	45.0	45.0	14.2	40.4		15.0	46.6	46.6	14.2	45.8	45.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	46.6	39.2	39.2	32.4	25.9		47.0	47.0	47.0	40.0	40.0	40.0
Actuated g/C Ratio	0.41	0.34	0.34	0.28	0.23		0.41	0.41	0.41	0.35	0.35	0.35
v/c Ratio	0.55	0.15	1.00	0.10	0.21		0.91	0.62	0.09	0.10	0.88	0.16
Control Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
LOS	C	C	D	C	C		E	C	A	C	D	A
Approach Delay		45.8			21.1			36.9			41.2	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	153	53	~451	17	30		~109	314	0	14	408	0
Queue Length 95th (ft)	225	95	#695	38	72		#262	393	0	36	#539	21
Internal Link Dist (ft)		441			450			946			485	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	552	652	778	393	557		206	1413	715	284	1193	645
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	1.00	0.10	0.16		0.91	0.62	0.09	0.10	0.88	0.16

Intersection Summary
























Area Type:	Other		
Cycle Length:	120		
Actuated Cycle Length:	114.3		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	40.6	Intersection LOS:	D
Intersection Capacity Utilization:	92.6%	ICU Level of Service:	F
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

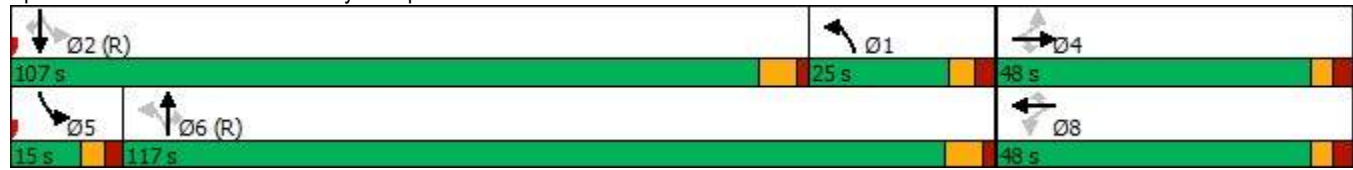
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.229			0.214		
Satd. Flow (perm)	0	1185	1396	1300	1267	1524	399	3471	1474	376	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			99			52			84
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	25.0	117.0	117.0	15.0	107.0	107.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		12.2	12.2	12.2	12.2	12.2	147.0	146.4	146.4	144.6	143.2	143.2
Actuated g/C Ratio		0.07	0.07	0.07	0.07	0.07	0.82	0.81	0.81	0.80	0.80	0.80
v/c Ratio		0.70	0.33	0.70	0.04	0.23	0.33	0.41	0.05	0.16	0.44	0.07
Control Delay		121.0	6.6	118.9	75.3	2.7	1.6	1.0	0.0	5.2	6.6	1.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		121.0	6.6	118.9	75.3	2.7	1.6	1.0	0.0	5.2	6.6	1.0
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		60.9			70.2			1.0			6.2	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)		66	0	73	3	0	4	19	0	12	212	0
Queue Length 95th (ft)		118	10	127	15	0	m4	m20	m0	26	281	14
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		276	401	303	295	431	486	2823	1208	370	2735	1240
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.15	0.20	0.01	0.10	0.25	0.41	0.05	0.15	0.44	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	102 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	8.4
Intersection LOS:	A
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

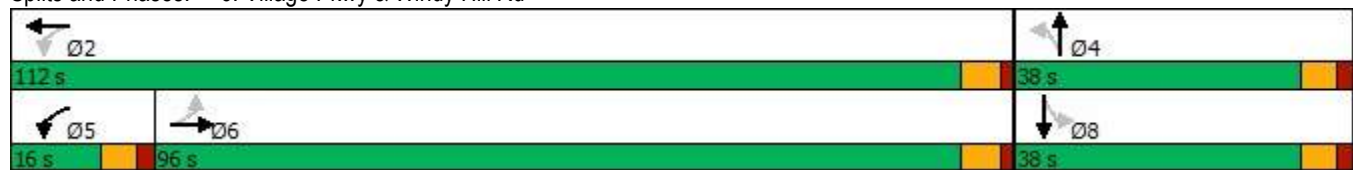


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969			0.994			0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3439	0	1770	1592	0	0	1754	0
Flt Permitted	0.125			0.042			0.596					0.392
Satd. Flow (perm)	214	3410	0	79	3439	0	1109	1592	0	0	706	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40			7			114				8
Link Speed (mph)		35			35			45				30
Link Distance (ft)		778			2080			488				427
Travel Time (s)		15.2			40.5			7.4				9.7
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1614	0	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	96.0	96.0		16.0	112.0		38.0	38.0		38.0		38.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effect Green (s)	90.0	90.0		106.0	106.0		32.0	32.0				32.0
Actuated g/C Ratio	0.60	0.60		0.71	0.71		0.21	0.21				0.21
v/c Ratio	0.26	1.43		1.41	0.66		0.51	0.61				1.22
Control Delay	20.7	223.4		250.2	13.8		60.7	36.3				190.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	20.7	223.4		250.2	13.8		60.7	36.3				190.7
LOS	C	F		F	B		E	D				F
Approach Delay		221.2			44.3			44.0				190.7
Approach LOS		F			D			D				F
Queue Length 50th (ft)	15	~2051		~262	421		105	132				~223
Queue Length 95th (ft)	40	#2158		#445	489		175	233				#389
Internal Link Dist (ft)		698			2000			408				347
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	128	2062		169	2432		236	429				156
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.26	1.43		1.41	0.66		0.51	0.61				1.22

Intersection Summary

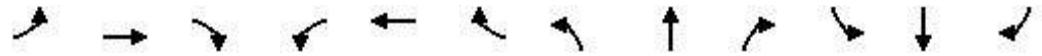
Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	150		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.43		
Intersection Signal Delay:	147.0	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		655			1256			692				693
Travel Time (s)		12.8			24.5			15.7				15.8
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	77	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.19	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.3			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	8	172		13	119			13	0		4	0
Queue Length 95th (ft)	20	237		46	166			38	5		18	0
Internal Link Dist (ft)		575			1176			612			613	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.19	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization:	64.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1 13.4 s	 Ø2 31.6 s	 Ø4 30 s
 Ø5 13.5 s	 Ø6 31.5 s	 Ø8 30 s

Lanes, Volumes, Timings
101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations		↑↑↑	↑↑↑	↗	↘						
Traffic Volume (vph)	0	1174	677	266	170	0					
Future Volume (vph)	0	1174	677	266	170	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Lane Util. Factor	1.00	0.91	0.86	1.00	1.00	1.00					
Fr _t				0.850							
Fl _t Protected					0.950						
Satd. Flow (prot)	0	5036	6166	1568	1752	0					
Fl _t Permitted					0.950						
Satd. Flow (perm)	0	5036	6166	1568	1752	0					
Right Turn on Red				Yes		Yes					
Satd. Flow (RTOR)				243							
Link Speed (mph)		35	35		45						
Link Distance (ft)		150	244		909						
Travel Time (s)		2.9	4.8		13.8						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	129%	129%	158%	129%	129%	129%					
Heavy Vehicles (%)	3%	3%	6%	3%	3%	3%					
Adj. Flow (vph)	0	1561	1103	354	226	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1561	1103	354	226	0					
Turn Type		NA	NA	Free	Prot						
Protected Phases		1 7 8	3 4		2		1	3	4	7	8
Permitted Phases				Free							
Total Split (s)					30.4		48.6	15.0	86.0	45.0	56.0
Total Lost Time (s)					7.6						
Act Effct Green (s)		142.0	94.0	180.0	22.8						
Actuated g/C Ratio		0.79	0.52	1.00	0.13						
v/c Ratio		0.39	0.34	0.23	1.02						
Control Delay		0.4	25.4	0.3	85.2						
Queue Delay		8.4	0.1	0.0	0.0						
Total Delay		8.8	25.5	0.3	85.2						
LOS		A	C	A	F						
Approach Delay		8.8	19.4		85.2						
Approach LOS		A	B		F						
Queue Length 50th (ft)		11	216	0	~136						
Queue Length 95th (ft)		m10	243	0	m#128						
Internal Link Dist (ft)		70	164		829						
Turn Bay Length (ft)											
Base Capacity (vph)		3972	3220	1568	221						
Starvation Cap Reductn		2379	0	0	0						
Spillback Cap Reductn		0	758	0	0						
Storage Cap Reductn		0	0	0	0						
Reduced v/c Ratio		0.98	0.45	0.23	1.02						

Intersection Summary

Area Type: Other

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 54.1%

ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

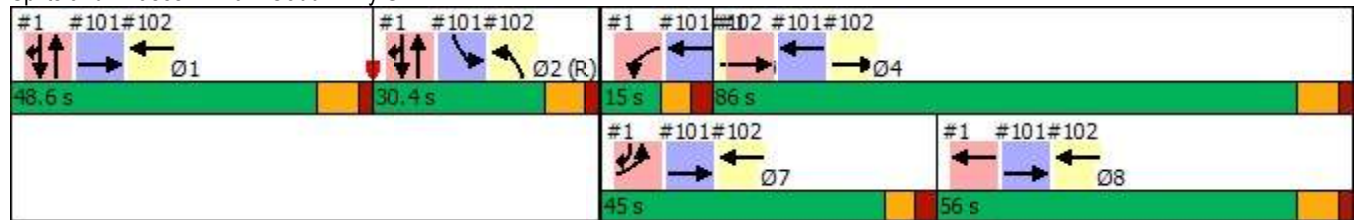
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.







m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Cobb Pkwy SBL



Lanes, Volumes, Timings
102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

							Ø1	Ø3	Ø4	Ø7	Ø8
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	↑↑↑↑	↑		↑↑	↑↑						
Traffic Volume (vph)	1543	181	0	961	103	0					
Future Volume (vph)	1543	181	0	961	103	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Storage Length (ft)		185	0		0	0					
Storage Lanes		1	0		2	0					
Taper Length (ft)			50		50						
Lane Util. Factor	0.86	1.00	1.00	0.95	0.97	1.00					
Frt		0.850									
Flt Protected					0.950						
Satd. Flow (prot)	6346	1568	0	3406	3367	0					
Flt Permitted					0.950						
Satd. Flow (perm)	6346	1568	0	3406	3367	0					
Right Turn on Red		Yes				Yes					
Satd. Flow (RTOR)		68									
Link Speed (mph)	35			35	45						
Link Distance (ft)	592			150	744						
Travel Time (s)	11.5			2.9	11.3						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	158%	158%	129%	158%	158%	129%					
Heavy Vehicles (%)	3%	3%	6%	6%	4%	2%					
Adj. Flow (vph)	2513	295	0	1565	168	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2513	295	0	1565	168	0					
Turn Type	NA	Free		NA	Prot						
Protected Phases	3 4			1 7 8	2		1	3	4	7	8
Permitted Phases		Free									
Total Split (s)					30.4		48.6	15.0	86.0	45.0	56.0
Total Lost Time (s)					7.6						
Act Effct Green (s)	94.0	180.0		142.0	22.8						
Actuated g/C Ratio	0.52	1.00		0.79	0.13						
v/c Ratio	0.76	0.19		0.58	0.39						
Control Delay	35.9	0.3		6.0	48.8						
Queue Delay	29.3	0.0		2.5	0.0						
Total Delay	65.2	0.3		8.6	48.8						
LOS	E	A		A	D						
Approach Delay	58.4			8.6	48.8						
Approach LOS	E			A	D						
Queue Length 50th (ft)	671	0		171	59						
Queue Length 95th (ft)	708	0		m180	91						
Internal Link Dist (ft)	512			70	664						
Turn Bay Length (ft)		185									
Base Capacity (vph)	3314	1568		2686	426						
Starvation Cap Reductn	0	0		958	0						
Spillback Cap Reductn	939	0		0	0						
Storage Cap Reductn	0	0		0	0						
Reduced v/c Ratio	1.06	0.19		0.91	0.39						

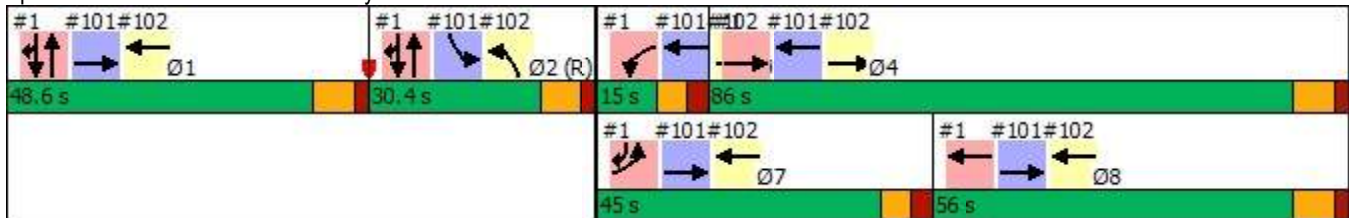
Intersection Summary

Lanes, Volumes, Timings
 102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.13
Intersection Signal Delay:	40.8
Intersection LOS:	D
Intersection Capacity Utilization	63.0%
ICU Level of Service	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	
















Splits and Phases: 102: Cobb Pkwy NBL



Option 2A – PM Peak Hour

Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	103	648	743	0	0	181
Future Volume (vph)	103	648	743	0	0	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3367	4848	4893	0	0	1596
Flt Permitted	0.950					
Satd. Flow (perm)	3367	4848	4893	0	0	1596
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						69
Link Speed (mph)		45	45		45	
Link Distance (ft)		1335	866		190	
Travel Time (s)		20.2	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	4%	7%	6%	0%	0%	3%
Adj. Flow (vph)	168	862	988	0	0	241
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	862	988	0	0	241
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	42.0		48.0			42.0
Total Lost Time (s)	5.0		5.0			5.0
Act Effct Green (s)	15.7	90.0	64.3			15.7
Actuated g/C Ratio	0.17	1.00	0.71			0.17
v/c Ratio	0.29	0.18	0.28			0.72
Control Delay	32.0	0.1	5.9			36.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	32.0	0.1	5.9			36.4
LOS	C	A	A			D
Approach Delay		5.3	5.9		36.4	
Approach LOS		A	A		D	
Queue Length 50th (ft)	43	0	125			93
Queue Length 95th (ft)	64	0	184			129
Internal Link Dist (ft)		1255	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1384	4848	3497			696
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.12	0.18	0.28			0.35

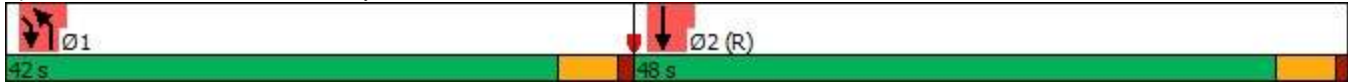
Intersection Summary

Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

Area Type:	Other		
Cycle Length:	90		
Actuated Cycle Length:	90		
Offset:	43 (48%), Referenced to phase 2:SBT, Start of 1st Green		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.72		
Intersection Signal Delay:	8.9	Intersection LOS:	A
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Splits and Phases: 103: Cobb Pkwy



Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

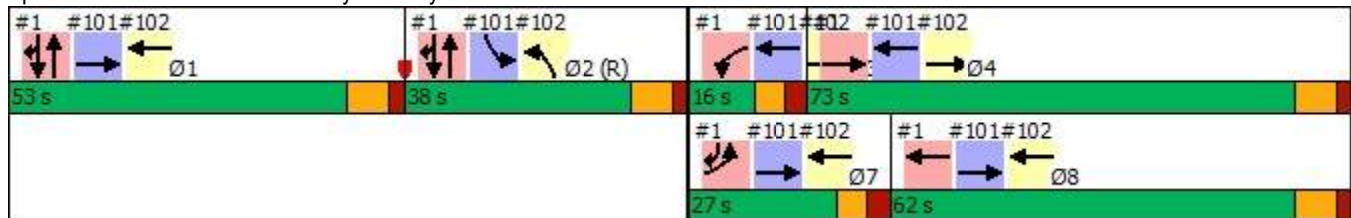
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	424	810	0	119	818	0	0	1054	166	0	853	971
Future Volume (vph)	424	810	0	119	818	0	0	1054	166	0	853	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		475	0		450
Storage Lanes	2		0	2		0	0		1	0		2
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.88
Ped Bike Factor	1.00								0.99			
Frt									0.850			0.850
Flt Protected	0.950			0.950								
Satd. Flow (prot)	3433	3505	0	3433	3539	0	0	5085	1583	0	5036	2814
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	3431	3505	0	3433	3539	0	0	5085	1564	0	5036	2814
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)									205			
Link Speed (mph)		35			35			45				45
Link Distance (ft)		150			150			866				1054
Travel Time (s)		2.9			2.9			13.1				16.0
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	0%	2%	2%	0%	0%	2%	2%	0%	3%	1%
Adj. Flow (vph)	691	1319	0	158	1332	0	0	1402	221	0	1134	1582
Shared Lane Traffic (%)												
Lane Group Flow (vph)	691	1319	0	158	1332	0	0	1402	221	0	1134	1582
Turn Type	Prot	NA		Prot	NA			NA	Free		NA	pt+ov
Protected Phases	7	4		3	8			1 2			1 2	1 2 7
Permitted Phases									Free			
Total Split (s)	27.0	73.0		16.0	62.0							
Total Lost Time (s)	7.0	7.7		7.0	7.7							
Act Effct Green (s)	20.0	65.3		9.0	54.3			83.4	180.0		83.4	110.4
Actuated g/C Ratio	0.11	0.36		0.05	0.30			0.46	1.00		0.46	0.61
v/c Ratio	1.81	1.04		0.92	1.25			0.60	0.14		0.49	0.92
Control Delay	417.9	49.8		168.9	146.1			37.1	0.2		30.5	21.5
Queue Delay	3.6	0.0		56.2	0.0			0.0	0.0		0.0	47.0
Total Delay	421.5	49.8		225.1	146.1			37.1	0.2		30.5	68.5
LOS	F	D		F	F			D	A		C	E
Approach Delay		177.6			154.4			32.0			52.7	
Approach LOS		F			F			C			D	
Queue Length 50th (ft)	~613	~865		87	~1031			446	0		245	564
Queue Length 95th (ft)	#748	#1005		#167	#1172			494	0		m279	m739
Internal Link Dist (ft)		70			70			786			974	
Turn Bay Length (ft)									475			450
Base Capacity (vph)	381	1271		171	1067			2356	1564		2333	1725
Starvation Cap Reductn	105	0		72	0			0	0		0	44
Spillback Cap Reductn	0	0		0	0			0	0		0	698
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	2.50	1.04		1.60	1.25			0.60	0.14		0.49	1.54

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Total Split (s)	53.0	38.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.81
Intersection Signal Delay:	99.8
Intersection LOS:	F
Intersection Capacity Utilization:	102.3%
ICU Level of Service:	G
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

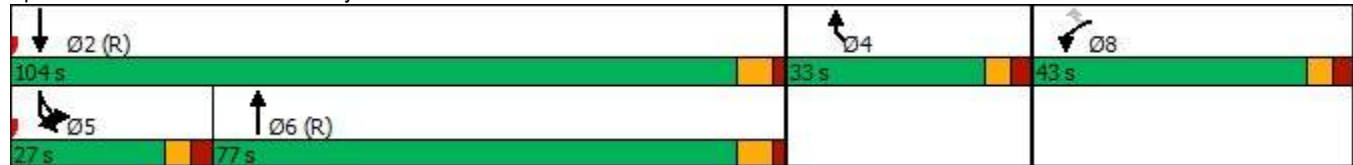


Lane Group	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	632	181	1218	747	185	238	1232	0	187	63
Future Volume (vph)	632	181	1218	747	185	238	1232	0	187	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0		315		0	0	
Storage Lanes	2	1		0		2		0	1	
Taper Length (ft)	25					50		50		
Lane Util. Factor	0.97	1.00	0.91	0.91	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor	0.99	0.98	0.99		1.00	1.00				
Frt		0.850	0.943						0.865	
Flt Protected	0.950				0.950	0.950				
Satd. Flow (prot)	3467	1583	4737	0	1770	1770	3539	0	1596	0
Flt Permitted	0.950				0.950	0.950				
Satd. Flow (perm)	3430	1548	4737	0	1769	1769	3539	0	1596	0
Right Turn on Red		Yes								No
Satd. Flow (RTOR)		216								
Link Speed (mph)	35		45				45	45		
Link Distance (ft)	1372		1054				886	208		
Travel Time (s)	26.7		16.0				13.4	3.2		
Confl. Peds. (#/hr)	6	6		7	7	7			7	7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%	2%	0%	3%	3%
Adj. Flow (vph)	840	241	1620	993	246	317	1638	0	249	84
Shared Lane Traffic (%)										
Lane Group Flow (vph)	840	241	2613	0	246	317	1638	0	333	0
Turn Type	Prot	Perm	NA		Prot	Prot	NA		Prot	
Protected Phases	8		6		5	5	2		4	
Permitted Phases		8								
Total Split (s)	43.0	43.0	77.0		27.0	27.0	104.0		33.0	
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.5	6.8		6.5	
Act Effct Green (s)	36.5	36.5	70.2		20.5	20.5	97.2		26.5	
Actuated g/C Ratio	0.20	0.20	0.39		0.11	0.11	0.54		0.15	
v/c Ratio	1.19	0.50	1.58dr		1.22	1.58	0.86		1.42	
Control Delay	159.5	13.7	215.7		198.6	327.5	29.2		263.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.4		0.0	
Total Delay	159.5	13.7	215.7		198.6	327.5	29.6		263.5	
LOS	F	B	F		F	F	C		F	
Approach Delay	127.0		215.7				91.4	263.5		
Approach LOS	F		F				F	F		
Queue Length 50th (ft)	~615	24	~1483		~352	~527	762		~527	
Queue Length 95th (ft)	#751	114	m#1256		#561	#754	612		#740	
Internal Link Dist (ft)	1292		974				806	128		
Turn Bay Length (ft)		595			315	315				
Base Capacity (vph)	703	486	1847		201	201	1911		234	
Starvation Cap Reductn	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0	0	45		0	
Storage Cap Reductn	0	0	0		0	0	0		0	
Reduced v/c Ratio	1.19	0.50	1.41		1.22	1.58	0.88		1.42	

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 157 (87%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.58
 Intersection Signal Delay: 158.9 Intersection LOS: F
 Intersection Capacity Utilization 118.1% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1787	1735	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.217			0.704			0.062			0.068		
Satd. Flow (perm)	412	1900	1576	1321	1735	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		521			530			1026			568	
Travel Time (s)		11.8			12.0			15.5			8.6	
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.2	39.0	39.0	14.3	39.1		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	33.9	25.6	25.6	34.1	25.7		90.9	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.24	0.18	0.18	0.24	0.18		0.64	0.54	0.54	0.47	0.41	0.41
v/c Ratio	0.65	0.23	0.72	0.70	0.85		1.00	0.97	0.24	0.68	0.96	0.14
Control Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
LOS	E	D	C	E	E		F	D	A	D	E	A
Approach Delay		33.0			65.7			51.4			52.8	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	84	63	70	187	233		~316	862	50	45	650	0
Queue Length 95th (ft)	137	111	190	271	342		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		441			450			946			488	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	179	441	587	343	428		386	1902	887	156	1434	739
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.18	0.64	0.70	0.67		1.00	0.97	0.24	0.68	0.96	0.14

Intersection Summary
























Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	142.7		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	51.2	Intersection LOS:	D
Intersection Capacity Utilization:	100.4%	ICU Level of Service:	G
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr

Ø1 32.5 s	Ø2 64.2 s	Ø3 14.2 s	Ø4 39.1 s
Ø5 14.2 s	Ø6 82.5 s	Ø7 14.3 s	Ø8 39 s

Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

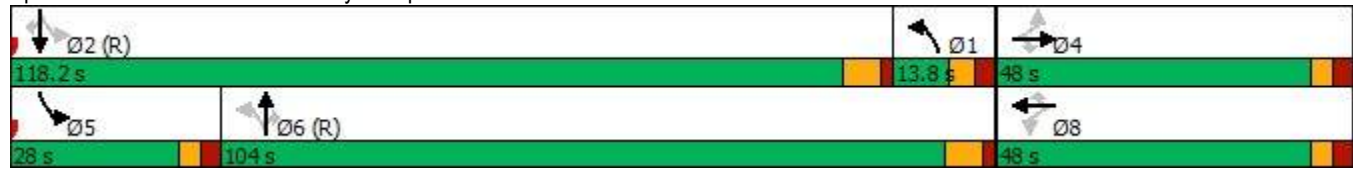
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.653			0.090			0.082		
Satd. Flow (perm)	0	1323	1544	1213	1900	1544	151	3505	1541	150	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			157			52			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	13.8	104.0	104.0	28.0	118.2	118.2
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		32.6	32.6	32.6	32.6	32.6	114.4	113.8	113.8	126.1	124.7	124.7
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.64	0.63	0.63	0.70	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.38	0.70	0.15	0.71	0.73	0.06
Control Delay		67.9	6.7	117.9	57.1	10.0	14.6	14.5	6.3	39.5	21.4	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		67.9	6.7	117.9	57.1	10.0	14.6	14.5	6.3	39.5	21.4	2.7
LOS		E	A	F	E	A	B	B	A	D	C	A
Approach Delay		39.2			70.5			13.8				22.3
Approach LOS		D			E			B				C
Queue Length 50th (ft)		98	0	241	17	0	11	177	13	81	672	0
Queue Length 95th (ft)		153	33	332	39	64	m10	m149	m8	183	923	21
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		308	436	283	443	480	157	2216	993	303	2452	1019
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.72	0.04	0.33	0.34	0.70	0.15	0.56	0.73	0.06

Intersection Summary

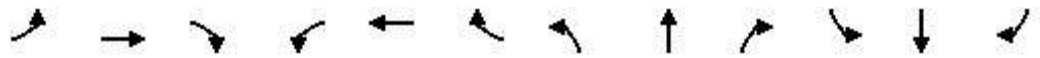
Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	159 (88%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	23.8
Intersection LOS:	C
Intersection Capacity Utilization:	85.3%
ICU Level of Service:	E
Analysis Period (min):	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

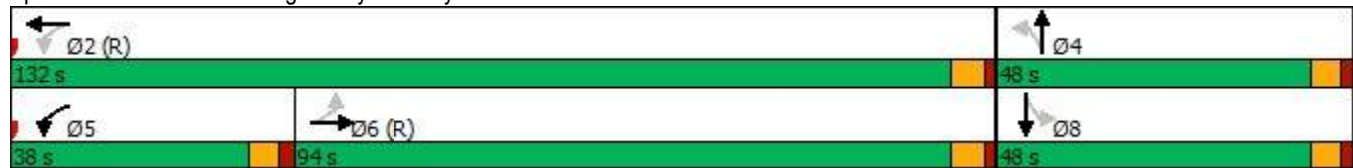


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983			0.991			0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3448	0	1787	3511	0	1787	1637	0	0	1775	0
Flt Permitted	0.045			0.043			0.593					0.376
Satd. Flow (perm)	83	3448	0	81	3511	0	1116	1637	0	0	685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			8			183				2
Link Speed (mph)		35			35			45				30
Link Distance (ft)		704			2060			435				402
Travel Time (s)		13.7			40.1			6.6				9.1
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3232	0	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	94.0	94.0		38.0	132.0		48.0	48.0		48.0		48.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effect Green (s)	88.0	88.0		126.0	126.0		42.0	42.0				42.0
Actuated g/C Ratio	0.49	0.49		0.70	0.70		0.23	0.23				0.23
v/c Ratio	0.78	1.22		1.31	1.31		0.91	0.54				1.19
Control Delay	129.0	144.1		185.5	165.2		103.2	24.2				187.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	129.0	144.1		185.5	165.2		103.2	24.2				187.1
LOS	F	F		F	F		F	C				F
Approach Delay		143.9			167.8			60.5				187.1
Approach LOS		F			F			E				F
Queue Length 50th (ft)	30	~1568		~637	~2574		276	98				~271
Queue Length 95th (ft)	#109	#1690		m#446	m#1854		#452	202				#452
Internal Link Dist (ft)		624			1980			355				322
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	40	1691		359	2460		260	522				161
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.78	1.22		1.31	1.31		0.91	0.54				1.19

Intersection Summary

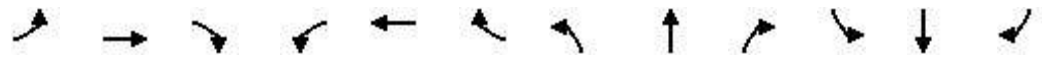
Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 136 (76%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 152.1 Intersection LOS: F
 Intersection Capacity Utilization 146.8% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5028	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.125			0.162				0.715			0.752	
Satd. Flow (perm)	238	5028	0	308	5050	0	0	1358	1615	0	1429	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		649			1250			423			489	
Travel Time (s)		12.6			24.4			9.6			11.1	
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	119	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.5	31.6		13.4	31.5		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	33.5		35.1	30.9			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.64	0.59		0.62	0.54			0.14	0.14		0.14	0.14
v/c Ratio	0.33	0.46		0.19	0.59			0.05	0.06		0.24	0.22
Control Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
LOS	A	B		A	B			C	A		C	A
Approach Delay		10.7			13.1			6.8			12.0	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	185		20	230			14	0		42	12
Internal Link Dist (ft)		569			1170			343			409	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	362	2975		388	2759			580	764		610	764
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.33	0.46		0.19	0.59			0.02	0.03		0.08	0.10

Intersection Summary

Lanes, Volumes, Timings
 8: Windy Hill Village Dwy & Windy Hill Rd

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.7
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization:	60.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1	 Ø2	 Ø4
13.5 s	31.5 s	30 s
 Ø5	 Ø6	 Ø8
13.4 s	31.6 s	30 s

Lanes, Volumes, Timings
101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations		↑↑↑	↑↑↑	↗	↘						
Traffic Volume (vph)	0	976	937	250	238	0					
Future Volume (vph)	0	976	937	250	238	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Lane Util. Factor	1.00	0.91	0.86	1.00	1.00	1.00					
Fr _t				0.850							
Fl _t Protected					0.950						
Satd. Flow (prot)	0	5036	6408	1568	1752	0					
Fl _t Permitted					0.950						
Satd. Flow (perm)	0	5036	6408	1568	1752	0					
Right Turn on Red				Yes		Yes					
Satd. Flow (RTOR)				165							
Link Speed (mph)		35	35		45						
Link Distance (ft)		150	248		909						
Travel Time (s)		2.9	4.8		13.8						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	129%	129%	158%	129%	129%	129%					
Heavy Vehicles (%)	3%	3%	2%	3%	3%	3%					
Adj. Flow (vph)	0	1298	1526	332	317	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1298	1526	332	317	0					
Turn Type		NA	NA	Free	Prot						
Protected Phases		1 7 8	3 4		2		1	3	4	7	8
Permitted Phases				Free							
Total Split (s)					38.0		53.0	16.0	73.0	27.0	62.0
Total Lost Time (s)					7.6						
Act Effct Green (s)		134.4	82.0	180.0	30.4						
Actuated g/C Ratio		0.75	0.46	1.00	0.17						
v/c Ratio		0.35	0.52	0.21	1.07						
Control Delay		1.0	35.8	0.3	54.6						
Queue Delay		3.0	0.9	0.0	0.0						
Total Delay		3.9	36.8	0.3	54.6						
LOS		A	D	A	D						
Approach Delay		3.9	30.2		54.6						
Approach LOS		A	C		D						
Queue Length 50th (ft)		19	372	0	~425						
Queue Length 95th (ft)		m19	406	0	m0						
Internal Link Dist (ft)		70	168		829						
Turn Bay Length (ft)											
Base Capacity (vph)		3760	2919	1568	295						
Starvation Cap Reductn		2312	0	0	0						
Spillback Cap Reductn		0	1014	0	0						
Storage Cap Reductn		0	0	0	0						
Reduced v/c Ratio		0.90	0.80	0.21	1.07						

Intersection Summary

Area Type: Other

Cycle Length: 180

Actuated Cycle Length: 180

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.81

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 54.0%

ICU Level of Service A

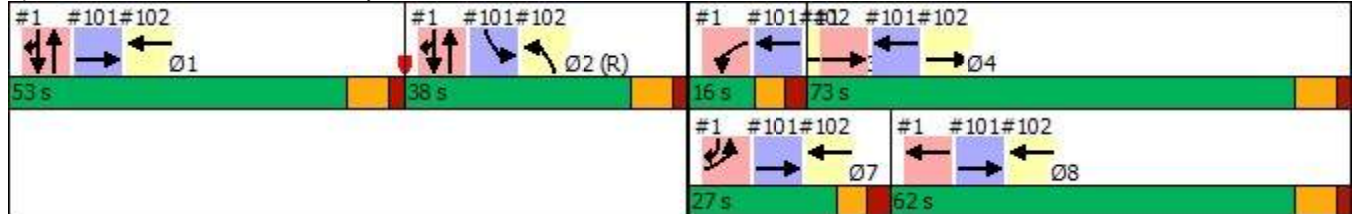
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.







m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Cobb Pkwy SBL



Lanes, Volumes, Timings
102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

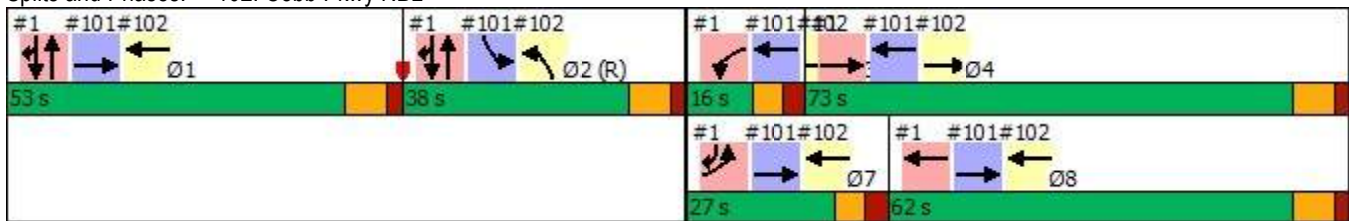
							Ø1	Ø3	Ø4	Ø7	Ø8
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR					
Lane Configurations	↑↑↑↑	↗		↑↑	↘↗						
Traffic Volume (vph)	1234	177	0	1789	517	0					
Future Volume (vph)	1234	177	0	1789	517	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Storage Length (ft)		185	0		0	0					
Storage Lanes		1	0		2	0					
Taper Length (ft)			50		50						
Lane Util. Factor	0.86	1.00	1.00	0.95	0.97	1.00					
Frt		0.850									
Flt Protected					0.950						
Satd. Flow (prot)	6346	1583	0	3406	3367	0					
Flt Permitted					0.950						
Satd. Flow (perm)	6346	1583	0	3406	3367	0					
Right Turn on Red		Yes				Yes					
Satd. Flow (RTOR)		83									
Link Speed (mph)	35			35	45						
Link Distance (ft)	583			150	744						
Travel Time (s)	11.4			2.9	11.3						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	158%	158%	129%	158%	158%	129%					
Heavy Vehicles (%)	3%	2%	6%	6%	4%	2%					
Adj. Flow (vph)	2010	288	0	2914	842	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2010	288	0	2914	842	0					
Turn Type	NA	Free		NA	Prot						
Protected Phases	3 4			1 7 8	2		1	3	4	7	8
Permitted Phases		Free									
Total Split (s)					38.0		53.0	16.0	73.0	27.0	62.0
Total Lost Time (s)					7.6						
Act Effct Green (s)	82.0	180.0		134.4	30.4						
Actuated g/C Ratio	0.46	1.00		0.75	0.17						
v/c Ratio	0.70	0.18		1.15	1.48						
Control Delay	22.5	0.0		87.4	261.2						
Queue Delay	45.1	0.0		0.5	0.0						
Total Delay	67.7	0.0		87.9	261.2						
LOS	E	A		F	F						
Approach Delay	59.2			87.9	261.2						
Approach LOS	E			F	F						
Queue Length 50th (ft)	239	0		~2121	~672						
Queue Length 95th (ft)	m182	m0		m#1827	#815						
Internal Link Dist (ft)	503			70	664						
Turn Bay Length (ft)		185									
Base Capacity (vph)	2890	1583		2543	568						
Starvation Cap Reductn	0	0		501	0						
Spillback Cap Reductn	1053	0		0	0						
Storage Cap Reductn	0	0		0	0						
Reduced v/c Ratio	1.09	0.18		1.43	1.48						
Intersection Summary											

Lanes, Volumes, Timings
 102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI
















Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.81
 Intersection Signal Delay: 101.1 Intersection LOS: F
 Intersection Capacity Utilization 114.1% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Cobb Pkwy NBL



Lanes, Volumes, Timings
103:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	517	1220	972	0	0	177
Future Volume (vph)	517	1220	972	0	0	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5085	5036	0	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5085	5036	0	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (mph)		45	45		45	
Link Distance (ft)		1332	866		190	
Travel Time (s)		20.2	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	3%	0%	0%	2%
Adj. Flow (vph)	842	1622	1293	0	0	235
Shared Lane Traffic (%)						
Lane Group Flow (vph)	842	1622	1293	0	0	235
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	45.0		45.0			45.0
Total Lost Time (s)	5.0		5.0			5.0
Act Effct Green (s)	29.1	90.0	50.9			29.1
Actuated g/C Ratio	0.32	1.00	0.57			0.32
v/c Ratio	0.76	0.32	0.45			0.44
Control Delay	31.7	0.2	7.2			22.6
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	31.7	0.2	7.2			22.6
LOS	C	A	A			C
Approach Delay		10.9	7.2		22.6	
Approach LOS		B	A		C	
Queue Length 50th (ft)	218	0	169			124
Queue Length 95th (ft)	253	0	208			150
Internal Link Dist (ft)		1252	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1525	5085	2849			727
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.55	0.32	0.45			0.32

Intersection Summary

Lanes, Volumes, Timings
103:

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 40 (44%), Referenced to phase 2:SBT, Start of 1st Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 10.4 Intersection LOS: B
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15
































Splits and Phases: 103:



Option 2B – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  			  			  	 
Traffic Volume (vph)	496	1047	0	84	593	0	0	521	127	0	659	368
Future Volume (vph)	496	1047	0	84	593	0	0	521	127	0	659	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		475	0		450
Storage Lanes	2		0	2		0	0		1	0		2
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91	0.88
Ped Bike Factor	1.00								0.99			
Frt									0.850			0.850
Flt Protected	0.950			0.950								
Satd. Flow (prot)	3400	5036	0	3303	4893	0	0	4848	1583	0	4893	2760
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	3397	5036	0	3303	4893	0	0	4848	1562	0	4893	2760
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)									169			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		150			150			866			1054	
Travel Time (s)		2.9			2.9			13.1			16.0	
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	129%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	0%	6%	6%	3%	0%	7%	2%	0%	6%	3%
Adj. Flow (vph)	808	1705	0	112	966	0	0	693	169	0	876	599
Shared Lane Traffic (%)												
Lane Group Flow (vph)	808	1705	0	112	966	0	0	693	169	0	876	599
Turn Type	Prot	NA		Prot	NA			NA	Perm		NA	pt+ov
Protected Phases	7	4		3	8			1 2			1 2	1 2 7
Permitted Phases									1 2			
Total Split (s)	46.0	76.7		22.0	52.7							
Total Lost Time (s)	7.0	7.7		7.0	7.7							
Act Effect Green (s)	39.0	69.0		15.0	45.0			73.7	73.7		73.7	119.7
Actuated g/C Ratio	0.22	0.38		0.08	0.25			0.41	0.41		0.41	0.66
v/c Ratio	1.10	0.88		0.41	0.79			0.35	0.23		0.44	0.33
Control Delay	109.1	24.1		81.9	42.9			37.3	4.8		32.6	6.4
Queue Delay	2.8	0.0		53.1	11.5			0.0	0.0		0.0	0.1
Total Delay	111.9	24.1		135.0	54.4			37.3	4.8		32.6	6.5
LOS	F	C		F	D			D	A		C	A
Approach Delay		52.4			62.7			30.9			22.0	
Approach LOS		D			E			C			C	
Queue Length 50th (ft)	~532	688		40	395			206	0		160	44
Queue Length 95th (ft)	#669	753		68	452			243	51		m183	m90
Internal Link Dist (ft)		70			70			786			974	
Turn Bay Length (ft)									475			450
Base Capacity (vph)	736	1930		275	1223			1984	739		2003	1835
Starvation Cap Reductn	181	0		166	245			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	320
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	1.46	0.88		1.03	0.99			0.35	0.23		0.44	0.40

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

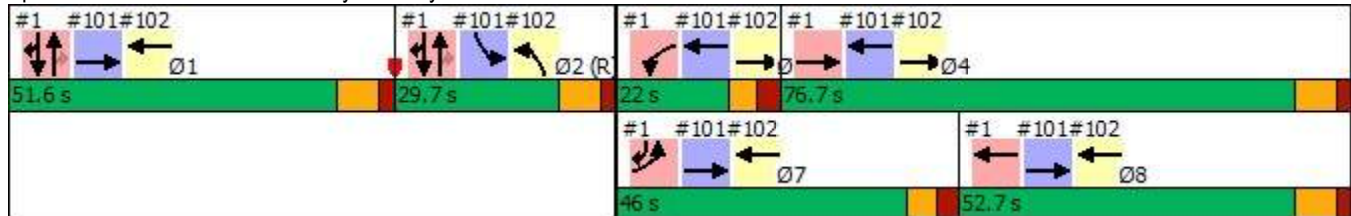
Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Total Split (s)	51.6	29.7
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.10
Intersection Signal Delay:	43.6
Intersection LOS:	D
Intersection Capacity Utilization:	77.3%
ICU Level of Service:	D
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement



Lane Group	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	451	170	783	482	178	170	624	0	199	67
Future Volume (vph)	451	170	783	482	178	170	624	0	199	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0		315		0	0	
Storage Lanes	2	1		0		2		0	1	
Taper Length (ft)	25					50		50		
Lane Util. Factor	0.97	1.00	0.91	0.91	1.00	1.00	0.95	1.00	1.00	1.00
Frt		0.850	0.943						0.865	
Flt Protected	0.950				0.950	0.950				
Satd. Flow (prot)	3433	1583	4654	0	1770	1752	3406	0	1596	0
Flt Permitted	0.950				0.950	0.950				
Satd. Flow (perm)	3433	1583	4654	0	1770	1752	3406	0	1596	0
Right Turn on Red		Yes								No
Satd. Flow (RTOR)		226								
Link Speed (mph)	35		45				45	45		
Link Distance (ft)	1372		1054				886	208		
Travel Time (s)	26.7		16.0				13.4	3.2		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	7%	2%	2%	3%	6%	0%	3%	3%
Adj. Flow (vph)	600	226	1041	641	237	226	830	0	265	89
Shared Lane Traffic (%)										
Lane Group Flow (vph)	600	226	1682	0	237	226	830	0	354	0
Turn Type	Prot	Perm	NA		Prot	Prot	NA		Prot	
Protected Phases	8		6		5	5	2		4	
Permitted Phases		8								
Total Split (s)	37.0	37.0	69.8		29.2	29.2	99.0		44.0	
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.5	6.8		6.5	
Act Effct Green (s)	30.5	30.5	63.0		22.7	22.7	92.2		37.5	
Actuated g/C Ratio	0.17	0.17	0.35		0.13	0.13	0.51		0.21	
v/c Ratio	1.03	0.50	1.14dr		1.06	1.03	0.48		1.07	
Control Delay	116.5	10.9	57.9		156.6	149.9	25.8		132.4	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	116.5	10.9	57.9		156.6	149.9	25.8		132.4	
LOS	F	B	E		F	F	C		F	
Approach Delay	87.6		57.9				71.4	132.4		
Approach LOS	F		E				E	F		
Queue Length 50th (ft)	~389	0	~756		~313	~289	239		~459	
Queue Length 95th (ft)	#518	83	m#600		#510	#482	320		#677	
Internal Link Dist (ft)	1292		974				806	128		
Turn Bay Length (ft)		595			315	315				
Base Capacity (vph)	581	455	1628		223	220	1744		332	
Starvation Cap Reductn	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0	0	0		0	
Storage Cap Reductn	0	0	0		0	0	0		0	
Reduced v/c Ratio	1.03	0.50	1.03		1.06	1.03	0.48		1.07	

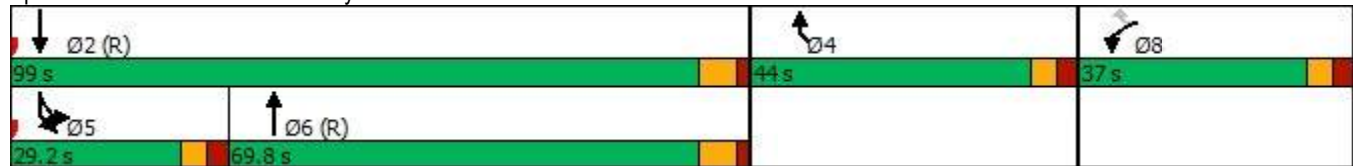
Intersection Summary

Lanes, Volumes, Timings
 2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement
























Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 172 (96%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 74.4 Intersection LOS: E
 Intersection Capacity Utilization 84.8% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.106			0.291		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	197	3438	1548	553	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			350		37				134			134
Link Speed (mph)		30			30			45				45
Link Distance (ft)		521			530			1026				565
Travel Time (s)		11.8			12.0			15.5				8.6
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	18.8	45.0	45.0	14.2	40.4		15.0	46.6	46.6	14.2	45.8	45.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	46.6	39.2	39.2	32.4	25.9		47.0	47.0	47.0	40.0	40.0	40.0
Actuated g/C Ratio	0.41	0.34	0.34	0.28	0.23		0.41	0.41	0.41	0.35	0.35	0.35
v/c Ratio	0.55	0.15	1.00	0.10	0.21		0.91	0.62	0.09	0.10	0.88	0.16
Control Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
LOS	C	C	D	C	C		E	C	A	C	D	A
Approach Delay		45.8			21.1			36.9			41.2	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	153	53	~451	17	30		~109	314	0	14	408	0
Queue Length 95th (ft)	225	95	#695	38	72		#262	393	0	36	#539	21
Internal Link Dist (ft)		441			450			946			485	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	552	652	778	393	557		206	1413	715	284	1193	645
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	1.00	0.10	0.16		0.91	0.62	0.09	0.10	0.88	0.16

Intersection Summary
























Area Type:	Other	
Cycle Length:	120	
Actuated Cycle Length:	114.3	
Control Type:	Actuated-Uncoordinated	
Maximum v/c Ratio:	1.00	
Intersection Signal Delay:	40.6	Intersection LOS: D
Intersection Capacity Utilization	92.6%	ICU Level of Service F
Analysis Period (min)	15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.		

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

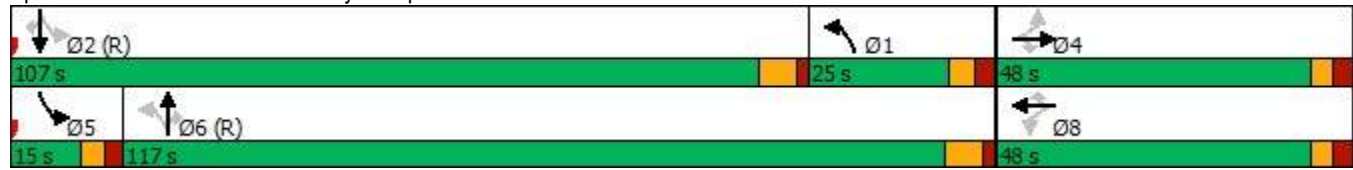
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.229			0.214		
Satd. Flow (perm)	0	1185	1396	1300	1267	1524	399	3471	1474	376	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			99			52			84
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	25.0	117.0	117.0	15.0	107.0	107.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		12.2	12.2	12.2	12.2	12.2	147.0	146.4	146.4	144.6	143.2	143.2
Actuated g/C Ratio		0.07	0.07	0.07	0.07	0.07	0.82	0.81	0.81	0.80	0.80	0.80
v/c Ratio		0.70	0.33	0.70	0.04	0.23	0.33	0.41	0.05	0.16	0.44	0.07
Control Delay		121.0	6.6	118.9	75.3	2.7	1.6	1.0	0.0	5.2	6.6	1.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		121.0	6.6	118.9	75.3	2.7	1.6	1.0	0.0	5.2	6.6	1.0
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		60.9			70.2			1.0			6.2	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)		66	0	73	3	0	4	19	0	12	212	0
Queue Length 95th (ft)		118	10	127	15	0	m4	m20	m0	26	281	14
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		276	401	303	295	431	486	2823	1208	370	2735	1240
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.20	0.15	0.20	0.01	0.10	0.25	0.41	0.05	0.15	0.44	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	102 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	8.4
Intersection LOS:	A
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

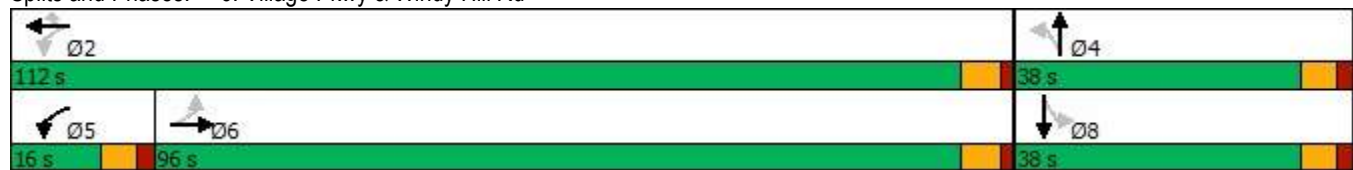


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969				0.850		0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.139			0.042			0.596					0.392
Satd. Flow (perm)	238	3410	0	79	3471	1442	1109	1592	0	0	706	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40				69		114				8
Link Speed (mph)		35			35			45				30
Link Distance (ft)		778			2123			488				427
Travel Time (s)		15.2			41.4			7.4				9.7
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	96.0	96.0		16.0	112.0	112.0	38.0	38.0		38.0		38.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0		6.0
Act Effect Green (s)	90.0	90.0		106.0	106.0	106.0	32.0	32.0		32.0		32.0
Actuated g/C Ratio	0.60	0.60		0.71	0.71	0.71	0.21	0.21		0.21		0.21
v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61		0.61		1.22
Control Delay	19.2	223.4		250.2	13.1	1.5	60.7	36.3		36.3		190.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	19.2	223.4		250.2	13.1	1.5	60.7	36.3		36.3		190.7
LOS	B	F		F	B	A	E	D		D		F
Approach Delay		221.2			43.2			44.0				190.7
Approach LOS		F			D			D				F
Queue Length 50th (ft)	14	~2051		~262	386	0	105	132		132		~223
Queue Length 95th (ft)	38	#2158		#445	450	15	175	233		233		#389
Internal Link Dist (ft)		698			2043			408				347
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	142	2062		169	2452	1039	236	429		429		156
Starvation Cap Reductn	0	0		0	0	0	0	0		0		0
Spillback Cap Reductn	0	0		0	0	0	0	0		0		0
Storage Cap Reductn	0	0		0	0	0	0	0		0		0
Reduced v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61		0.61		1.22

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.43
Intersection Signal Delay:	146.6
Intersection LOS:	F
Intersection Capacity Utilization:	139.7%
ICU Level of Service:	H
Analysis Period (min):	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

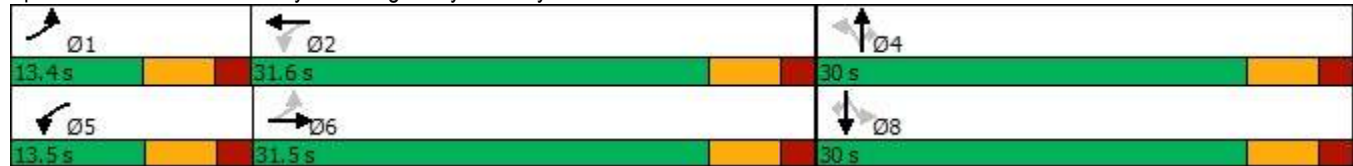


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		655			1256			692				693
Travel Time (s)		12.8			24.5			15.7				15.8
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	77	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.19	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.3			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	8	172		13	119			13	0		4	0
Queue Length 95th (ft)	20	237		46	166			38	5		18	0
Internal Link Dist (ft)		575			1176			612			613	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.19	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

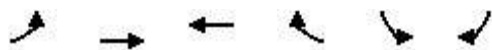
Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization:	64.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Lanes, Volumes, Timings
101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations		↑↑↑	↑↑↑↑	↗	↘						
Traffic Volume (vph)	0	1174	677	266	170	0					
Future Volume (vph)	0	1174	677	266	170	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Lane Util. Factor	1.00	0.91	0.81	1.00	1.00	1.00					
Fr _t				0.850							
Fl _t Protected					0.950						
Satd. Flow (prot)	0	5036	7259	1568	1752	0					
Fl _t Permitted					0.950						
Satd. Flow (perm)	0	5036	7259	1568	1752	0					
Right Turn on Red				Yes		Yes					
Satd. Flow (RTOR)				286							
Link Speed (mph)		35	35		45						
Link Distance (ft)		150	244		909						
Travel Time (s)		2.9	4.8		13.8						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	129%	129%	158%	129%	129%	129%					
Heavy Vehicles (%)	3%	3%	6%	3%	3%	3%					
Adj. Flow (vph)	0	1561	1103	354	226	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1561	1103	354	226	0					
Turn Type		NA	NA	Free	Prot						
Protected Phases		1 7 8	3 4		2		1	3	4	7	8
Permitted Phases				Free							
Total Split (s)					29.7		51.6	22.0	76.7	46.0	52.7
Total Lost Time (s)					7.6						
Act Effct Green (s)		142.7	91.7	180.0	22.1						
Actuated g/C Ratio		0.79	0.51	1.00	0.12						
v/c Ratio		0.39	0.30	0.23	1.05						
Control Delay		0.5	25.8	0.3	97.4						
Queue Delay		1.2	0.1	0.0	0.0						
Total Delay		1.8	25.9	0.3	97.4						
LOS		A	C	A	F						
Approach Delay		1.8	19.7		97.4						
Approach LOS		A	B		F						
Queue Length 50th (ft)		11	183	0	~153						
Queue Length 95th (ft)		12	205	0	m#144						
Internal Link Dist (ft)		70	164		829						
Turn Bay Length (ft)											
Base Capacity (vph)		3992	3698	1568	215						
Starvation Cap Reductn		2102	0	0	0						
Spillback Cap Reductn		0	1081	0	0						
Storage Cap Reductn		0	0	0	0						
Reduced v/c Ratio		0.83	0.42	0.23	1.05						

Intersection Summary

Area Type: Other

Cycle Length: 180

Actuated Cycle Length: 180

Lanes, Volumes, Timings
 101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 54.1%

ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

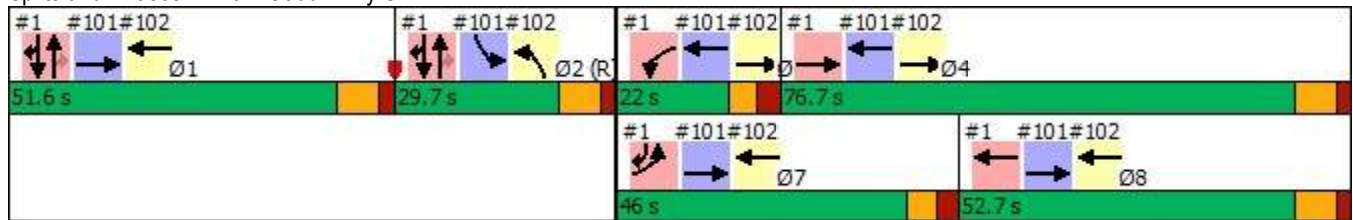
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.







m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Cobb Pkwy SBL



Lanes, Volumes, Timings
102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

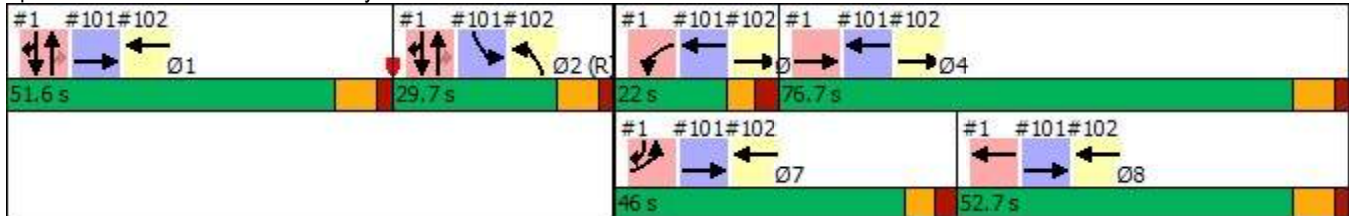
											
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations	↑↑↑↑	↗		↑↑↑	↘						
Traffic Volume (vph)	1543	181	0	961	103	0					
Future Volume (vph)	1543	181	0	961	103	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Storage Length (ft)		185	0		0	0					
Storage Lanes		1	0		2	0					
Taper Length (ft)			50		50						
Lane Util. Factor	0.81	1.00	1.00	0.91	0.97	1.00					
Frt		0.850									
Flt Protected					0.950						
Satd. Flow (prot)	7471	1568	0	4893	3367	0					
Flt Permitted					0.950						
Satd. Flow (perm)	7471	1568	0	4893	3367	0					
Right Turn on Red		Yes				Yes					
Satd. Flow (RTOR)		80									
Link Speed (mph)	35			35	45						
Link Distance (ft)	549			150	744						
Travel Time (s)	10.7			2.9	11.3						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	158%	158%	129%	158%	158%	129%					
Heavy Vehicles (%)	3%	3%	6%	6%	4%	2%					
Adj. Flow (vph)	2513	295	0	1565	168	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2513	295	0	1565	168	0					
Turn Type	NA	Free		NA	Prot						
Protected Phases	3 4			1 7 8	2		1	3	4	7	8
Permitted Phases		Free									
Total Split (s)					29.7		51.6	22.0	76.7	46.0	52.7
Total Lost Time (s)					7.6						
Act Effct Green (s)	91.7	180.0		142.7	22.1						
Actuated g/C Ratio	0.51	1.00		0.79	0.12						
v/c Ratio	0.66	0.19		0.40	0.41						
Control Delay	33.7	0.3		3.8	50.3						
Queue Delay	0.7	0.0		0.7	0.0						
Total Delay	34.4	0.3		4.5	50.3						
LOS	C	A		A	D						
Approach Delay	30.8			4.5	50.3						
Approach LOS	C			A	D						
Queue Length 50th (ft)	534	0		119	54						
Queue Length 95th (ft)	560	0		119	138						
Internal Link Dist (ft)	469			70	664						
Turn Bay Length (ft)		185									
Base Capacity (vph)	3806	1568		3879	413						
Starvation Cap Reductn	0	0		1787	0						
Spillback Cap Reductn	846	0		0	0						
Storage Cap Reductn	0	0		0	0						
Reduced v/c Ratio	0.85	0.19		0.75	0.41						
Intersection Summary											

Lanes, Volumes, Timings
 102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement
















Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.10
Intersection Signal Delay:	22.5
Intersection LOS:	C
Intersection Capacity Utilization	50.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 102: Cobb Pkwy NBL



Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	103	648	743	0	0	181
Future Volume (vph)	103	648	743	0	0	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3367	4848	4893	0	0	1596
Flt Permitted	0.950					
Satd. Flow (perm)	3367	4848	4893	0	0	1596
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						69
Link Speed (mph)		45	45		45	
Link Distance (ft)		1335	866		190	
Travel Time (s)		20.2	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	4%	7%	6%	0%	0%	3%
Adj. Flow (vph)	168	862	988	0	0	241
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	862	988	0	0	241
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	42.0		48.0			42.0
Total Lost Time (s)	5.0		5.0			5.0
Act Effct Green (s)	15.7	90.0	64.3			15.7
Actuated g/C Ratio	0.17	1.00	0.71			0.17
v/c Ratio	0.29	0.18	0.28			0.72
Control Delay	32.0	0.1	5.2			36.4
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	32.0	0.1	5.2			36.4
LOS	C	A	A			D
Approach Delay		5.3	5.2		36.4	
Approach LOS		A	A		D	
Queue Length 50th (ft)	43	0	140			93
Queue Length 95th (ft)	64	0	185			129
Internal Link Dist (ft)		1255	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1384	4848	3497			696
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.12	0.18	0.28			0.35

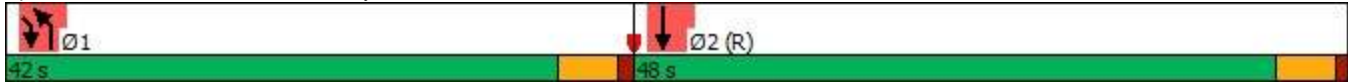
Intersection Summary

Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

Area Type:	Other		
Cycle Length:	90		
Actuated Cycle Length:	90		
Offset:	26 (29%), Referenced to phase 2:SBT, Start of 1st Green		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.72		
Intersection Signal Delay:	8.6	Intersection LOS:	A
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Splits and Phases: 103: Cobb Pkwy



Option 2B – PM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	424	810	0	119	818	0	0	1054	166	0	853	971
Future Volume (vph)	424	810	0	119	818	0	0	1054	166	0	853	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		475	0		450
Storage Lanes	2		0	2		0	0		1	0		2
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91	0.88
Ped Bike Factor	1.00								0.99			
Frt									0.850			0.850
Flt Protected	0.950			0.950								
Satd. Flow (prot)	3433	5036	0	3433	5085	0	0	5085	1583	0	5036	2814
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	3431	5036	0	3433	5085	0	0	5085	1562	0	5036	2814
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)									208			
Link Speed (mph)		35			35			45				45
Link Distance (ft)		150			150			866				1054
Travel Time (s)		2.9			2.9			13.1				16.0
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	129%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	0%	2%	2%	0%	0%	2%	2%	0%	3%	1%
Adj. Flow (vph)	691	1319	0	158	1332	0	0	1402	221	0	1134	1582
Shared Lane Traffic (%)												
Lane Group Flow (vph)	691	1319	0	158	1332	0	0	1402	221	0	1134	1582
Turn Type	Prot	NA		Prot	NA			NA	Perm		NA	pt+ov
Protected Phases	7	4		3	8			1 2			1 2	1 2 7
Permitted Phases									1 2			
Total Split (s)	33.0	66.7		19.0	52.7							
Total Lost Time (s)	7.0	7.7		7.0	7.7							
Act Effect Green (s)	26.0	59.0		12.0	45.0			86.7	86.7		86.7	119.7
Actuated g/C Ratio	0.14	0.33		0.07	0.25			0.48	0.48		0.48	0.66
v/c Ratio	1.40	0.80		0.69	1.05			0.57	0.26		0.47	0.85
Control Delay	240.5	19.0		127.9	69.3			34.5	4.4		30.6	13.5
Queue Delay	1.9	0.1		70.7	0.0			0.0	0.0		0.0	48.4
Total Delay	242.4	19.1		198.7	69.3			34.5	4.4		30.6	61.9
LOS	F	B		F	E			C	A		C	E
Approach Delay		95.9			83.1			30.4			48.8	
Approach LOS		F			F			C			D	
Queue Length 50th (ft)	~535	595		76	~624			430	8		219	187
Queue Length 95th (ft)	#669	647		115	#722			476	57		m245	m619
Internal Link Dist (ft)		70			70			786			974	
Turn Bay Length (ft)									475			450
Base Capacity (vph)	495	1650		228	1271			2449	860		2425	1871
Starvation Cap Reductn	95	27		114	0			0	0		0	75
Spillback Cap Reductn	0	0		0	0			0	0		0	780
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	1.73	0.81		1.39	1.05			0.57	0.26		0.47	1.45

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

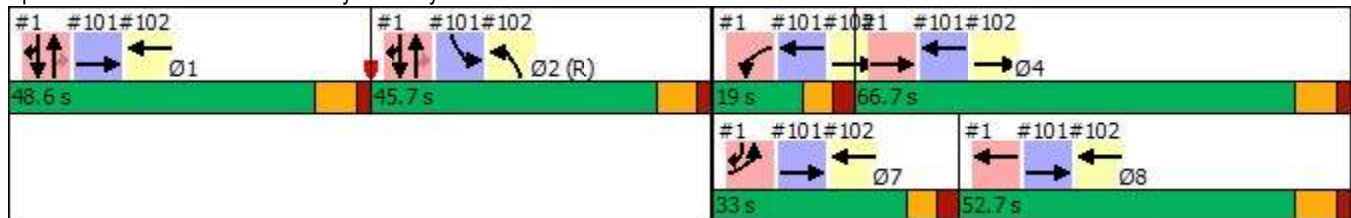
Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement

Lane Group	Ø1	Ø2
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Growth Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	1	2
Permitted Phases		
Total Split (s)	48.6	45.7
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.40
Intersection Signal Delay:	63.6
Intersection LOS:	E
Intersection Capacity Utilization:	92.6%
ICU Level of Service:	F
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

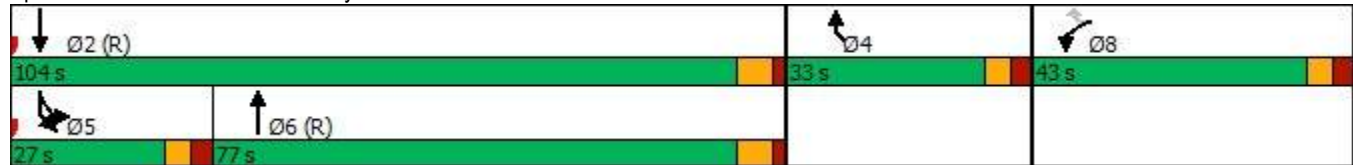


Lane Group	WBL	WBR	NBT	NBR	SBL2	SBL	SBT	NWL	NWR	NWR2
Lane Configurations										
Traffic Volume (vph)	632	181	1218	747	185	238	1232	0	187	63
Future Volume (vph)	632	181	1218	747	185	238	1232	0	187	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0		315		0	0	
Storage Lanes	2	1		0		2		0	1	
Taper Length (ft)	25					50		50		
Lane Util. Factor	0.97	1.00	0.91	0.91	1.00	1.00	0.95	1.00	1.00	1.00
Ped Bike Factor	0.99	0.98	0.99		1.00	1.00				
Frt		0.850	0.943						0.865	
Flt Protected	0.950				0.950	0.950				
Satd. Flow (prot)	3467	1583	4737	0	1770	1770	3539	0	1596	0
Flt Permitted	0.950				0.950	0.950				
Satd. Flow (perm)	3430	1548	4737	0	1769	1769	3539	0	1596	0
Right Turn on Red		Yes								No
Satd. Flow (RTOR)		216								
Link Speed (mph)	35		45				45	45		
Link Distance (ft)	1372		1054				886	208		
Travel Time (s)	26.7		16.0				13.4	3.2		
Confl. Peds. (#/hr)	6	6		7	7	7			7	7
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%	2%	0%	3%	3%
Adj. Flow (vph)	840	241	1620	993	246	317	1638	0	249	84
Shared Lane Traffic (%)										
Lane Group Flow (vph)	840	241	2613	0	246	317	1638	0	333	0
Turn Type	Prot	Perm	NA		Prot	Prot	NA		Prot	
Protected Phases	8		6		5	5	2		4	
Permitted Phases		8								
Total Split (s)	43.0	43.0	77.0		27.0	27.0	104.0		33.0	
Total Lost Time (s)	6.5	6.5	6.8		6.5	6.5	6.8		6.5	
Act Effect Green (s)	36.5	36.5	70.2		20.5	20.5	97.2		26.5	
Actuated g/C Ratio	0.20	0.20	0.39		0.11	0.11	0.54		0.15	
v/c Ratio	1.19	0.50	1.58dr		1.22	1.58	0.86		1.42	
Control Delay	159.5	13.7	219.0		198.6	327.5	29.2		263.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Total Delay	159.5	13.7	219.0		198.6	327.5	29.3		263.5	
LOS	F	B	F		F	F	C		F	
Approach Delay	127.0		219.0				91.2	263.5		
Approach LOS	F		F				F	F		
Queue Length 50th (ft)	~615	24	~1495		~352	~527	762		~527	
Queue Length 95th (ft)	#751	114	m#1370		#561	#754	612		#740	
Internal Link Dist (ft)	1292		974				806	128		
Turn Bay Length (ft)		595			315	315				
Base Capacity (vph)	703	486	1847		201	201	1911		234	
Starvation Cap Reductn	0	0	0		0	0	0		0	
Spillback Cap Reductn	0	0	0		0	0	4		0	
Storage Cap Reductn	0	0	0		0	0	0		0	
Reduced v/c Ratio	1.19	0.50	1.41		1.22	1.58	0.86		1.42	

Intersection Summary
























Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 170 (94%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.58
 Intersection Signal Delay: 160.2 Intersection LOS: F
 Intersection Capacity Utilization 118.1% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr









Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1787	1735	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.217			0.704			0.062			0.068		
Satd. Flow (perm)	412	1900	1576	1321	1735	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		521			530			1026			568	
Travel Time (s)		11.8			12.0			15.5			8.6	
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.2	39.0	39.0	14.3	39.1		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	33.9	25.6	25.6	34.1	25.7		90.9	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.24	0.18	0.18	0.24	0.18		0.64	0.54	0.54	0.47	0.41	0.41
v/c Ratio	0.65	0.23	0.72	0.70	0.85		1.00	0.97	0.24	0.68	0.96	0.14
Control Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
LOS	E	D	C	E	E		F	D	A	D	E	A
Approach Delay		33.0			65.7			51.4			52.8	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	84	63	70	187	233		~316	862	50	45	650	0
Queue Length 95th (ft)	137	111	190	271	342		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		441			450			946			488	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	179	441	587	343	428		386	1902	887	156	1434	739
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.18	0.64	0.70	0.67		1.00	0.97	0.24	0.68	0.96	0.14

Intersection Summary
























Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	142.7		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	51.2	Intersection LOS:	D
Intersection Capacity Utilization:	100.4%	ICU Level of Service:	G
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr

 Ø1	 Ø2	 Ø3	 Ø4
32.5 s	64.2 s	14.2 s	39.1 s
 Ø5	 Ø6	 Ø7	 Ø8
14.2 s	82.5 s	14.3 s	39 s

Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

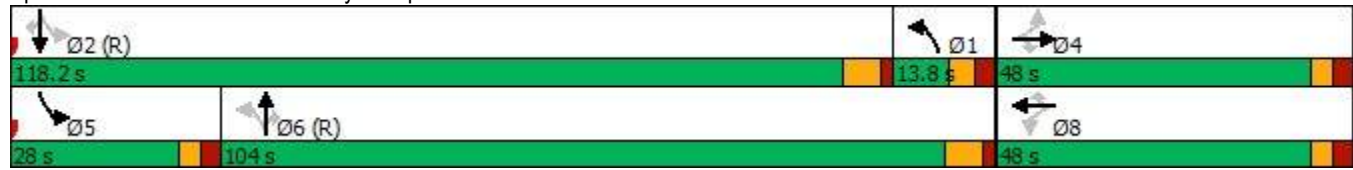
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.653			0.090			0.082		
Satd. Flow (perm)	0	1323	1544	1213	1900	1544	151	3505	1541	150	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99			157			52			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	48.0	48.0	48.0	48.0	48.0	48.0	13.8	104.0	104.0	28.0	118.2	118.2
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		32.6	32.6	32.6	32.6	32.6	114.4	113.8	113.8	126.1	124.7	124.7
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.64	0.63	0.63	0.70	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.38	0.70	0.15	0.71	0.73	0.06
Control Delay		67.9	6.7	117.9	57.1	10.0	14.6	14.5	6.3	39.5	21.4	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		67.9	6.7	117.9	57.1	10.0	14.6	14.5	6.3	39.5	21.4	2.7
LOS		E	A	F	E	A	B	B	A	D	C	A
Approach Delay		39.2			70.5			13.8				22.3
Approach LOS		D			E			B				C
Queue Length 50th (ft)		98	0	241	17	0	11	177	13	81	672	0
Queue Length 95th (ft)		153	33	332	39	64	m10	m149	m8	183	923	21
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		308	436	283	443	480	157	2216	993	303	2452	1019
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.72	0.04	0.33	0.34	0.70	0.15	0.56	0.73	0.06

Intersection Summary

Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	172 (96%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	23.8
Intersection LOS:	C
Intersection Capacity Utilization:	85.3%
ICU Level of Service:	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

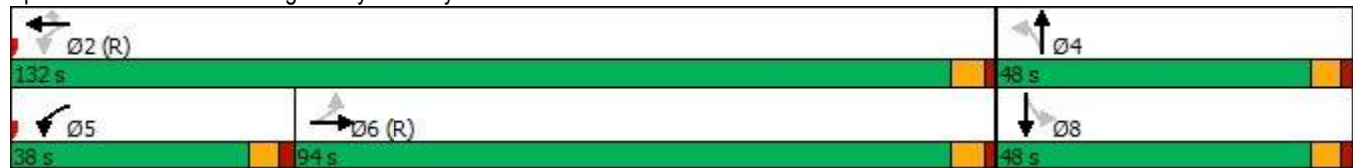


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3448	0	1787	3539	1615	1787	1637	0	0	1775	0
Flt Permitted	0.045			0.043			0.593					0.376
Satd. Flow (perm)	83	3448	0	81	3539	1615	1116	1637	0	0	685	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				85		183				2
Link Speed (mph)		35			35			45				30
Link Distance (ft)		704			2098			435				402
Travel Time (s)		13.7			40.9			6.6				9.1
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	94.0	94.0		38.0	132.0	132.0	48.0	48.0		48.0		48.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0		6.0
Act Effect Green (s)	88.0	88.0		126.0	126.0	126.0	42.0	42.0		42.0		42.0
Actuated g/C Ratio	0.49	0.49		0.70	0.70	0.70	0.23	0.23		0.23		0.23
v/c Ratio	0.78	1.22		1.31	1.23	0.16	0.91	0.54		0.54		1.19
Control Delay	129.0	144.1		194.2	124.6	3.2	103.2	24.2		24.2		187.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	129.0	144.1		194.2	124.6	3.2	103.2	24.2		24.2		187.1
LOS	F	F		F	F	A	F	C		C		F
Approach Delay		143.9			127.3			60.5				187.1
Approach LOS		F			F			E				F
Queue Length 50th (ft)	30	~1568		~656	~2322	12	276	98		98		~271
Queue Length 95th (ft)	#109	#1690		m#779	m#2251	m31	#452	202		202		#452
Internal Link Dist (ft)		624			2018			355				322
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	40	1691		359	2477	1156	260	522		522		161
Starvation Cap Reductn	0	0		0	0	0	0	0		0		0
Spillback Cap Reductn	0	0		0	0	0	0	0		0		0
Storage Cap Reductn	0	0		0	0	0	0	0		0		0
Reduced v/c Ratio	0.78	1.22		1.31	1.23	0.16	0.91	0.54		0.54		1.19

Intersection Summary

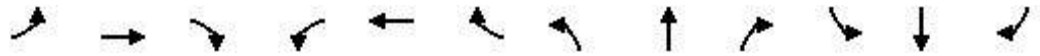
Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 56 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 129.1 Intersection LOS: F
 Intersection Capacity Utilization 141.0% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5028	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.125			0.162				0.715			0.752	
Satd. Flow (perm)	238	5028	0	308	5050	0	0	1358	1615	0	1429	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		659			1250			423			489	
Travel Time (s)		12.8			24.4			9.6			11.1	
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	119	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.5	31.6		13.4	31.5		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	33.5		35.1	30.9			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.64	0.59		0.62	0.54			0.14	0.14		0.14	0.14
v/c Ratio	0.33	0.46		0.19	0.59			0.05	0.06		0.24	0.22
Control Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
LOS	A	B		A	B			C	A		C	A
Approach Delay		10.7			13.1			6.8			12.0	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	185		20	230			14	0		42	12
Internal Link Dist (ft)		579			1170			343			409	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	362	2975		388	2759			580	764		610	764
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.33	0.46		0.19	0.59			0.02	0.03		0.08	0.10







Intersection Summary

Lanes, Volumes, Timings
 8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.7
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization:	60.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1	 Ø2	 Ø4
13.5 s	31.5 s	30 s
 Ø5	 Ø6	 Ø8
13.4 s	31.6 s	30 s

Lanes, Volumes, Timings
101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations		↑↑↑	↑↑↑↑	↗	↘						
Traffic Volume (vph)	0	976	937	250	238	0					
Future Volume (vph)	0	976	937	250	238	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Lane Util. Factor	1.00	0.91	0.81	1.00	1.00	1.00					
Fr _t				0.850							
Fl _t Protected					0.950						
Satd. Flow (prot)	0	5036	7544	1568	1752	0					
Fl _t Permitted					0.950						
Satd. Flow (perm)	0	5036	7544	1568	1752	0					
Right Turn on Red				Yes		Yes					
Satd. Flow (RTOR)				194							
Link Speed (mph)		35	35		45						
Link Distance (ft)		150	238		909						
Travel Time (s)		2.9	4.6		13.8						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	129%	129%	158%	129%	129%	129%					
Heavy Vehicles (%)	3%	3%	2%	3%	3%	3%					
Adj. Flow (vph)	0	1298	1526	332	317	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	1298	1526	332	317	0					
Turn Type		NA	NA	Free	Prot						
Protected Phases		1 7 8	3 4		2		1	3	4	7	8
Permitted Phases				Free							
Total Split (s)					45.7		48.6	19.0	66.7	33.0	52.7
Total Lost Time (s)					7.6						
Act Effct Green (s)		126.7	78.7	180.0	38.1						
Actuated g/C Ratio		0.70	0.44	1.00	0.21						
v/c Ratio		0.37	0.46	0.21	0.86						
Control Delay		1.4	36.3	0.3	26.8						
Queue Delay		1.0	0.2	0.0	0.0						
Total Delay		2.3	36.5	0.3	26.8						
LOS		A	D	A	C						
Approach Delay		2.3	30.0		26.8						
Approach LOS		A	C		C						
Queue Length 50th (ft)		23	312	0	148						
Queue Length 95th (ft)		25	340	0	m3						
Internal Link Dist (ft)		70	158		829						
Turn Bay Length (ft)											
Base Capacity (vph)		3544	3298	1568	370						
Starvation Cap Reductn		1857	0	0	0						
Spillback Cap Reductn		0	817	0	0						
Storage Cap Reductn		0	0	0	0						
Reduced v/c Ratio		0.77	0.62	0.21	0.86						

Intersection Summary

Area Type: Other

Cycle Length: 180

Actuated Cycle Length: 180

Lanes, Volumes, Timings
 101: Cobb Pkwy SBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement

Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.40

Intersection Signal Delay: 19.4

Intersection LOS: B

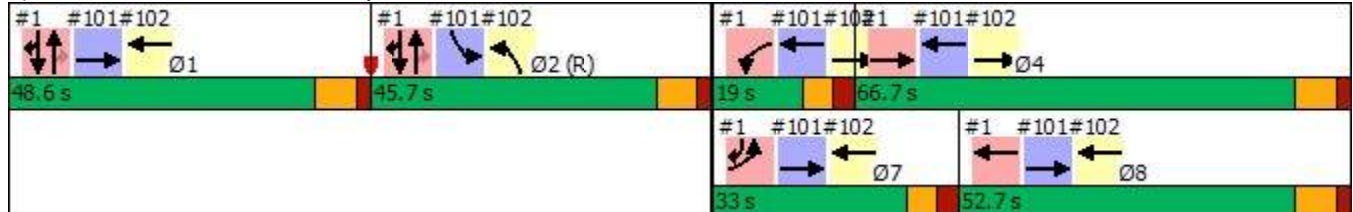
Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15







m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Cobb Pkwy SBL



Lanes, Volumes, Timings
102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

											
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø1	Ø3	Ø4	Ø7	Ø8
Lane Configurations	↑↑↑↑	↗		↑↑↑	↖						
Traffic Volume (vph)	1234	177	0	1789	517	0					
Future Volume (vph)	1234	177	0	1789	517	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Storage Length (ft)		185	0		0	0					
Storage Lanes		1	0		2	0					
Taper Length (ft)			50		50						
Lane Util. Factor	0.81	1.00	1.00	0.91	0.97	1.00					
Frt		0.850									
Flt Protected					0.950						
Satd. Flow (prot)	7471	1583	0	4893	3367	0					
Flt Permitted					0.950						
Satd. Flow (perm)	7471	1583	0	4893	3367	0					
Right Turn on Red		Yes				Yes					
Satd. Flow (RTOR)		98									
Link Speed (mph)	35			35	45						
Link Distance (ft)	545			150	744						
Travel Time (s)	10.6			2.9	11.3						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	158%	158%	129%	158%	158%	129%					
Heavy Vehicles (%)	3%	2%	6%	6%	4%	2%					
Adj. Flow (vph)	2010	288	0	2914	842	0					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	2010	288	0	2914	842	0					
Turn Type	NA	Free		NA	Prot						
Protected Phases	3 4			1 7 8	2		1	3	4	7	8
Permitted Phases		Free									
Total Split (s)					45.7		48.6	19.0	66.7	33.0	52.7
Total Lost Time (s)					7.6						
Act Effct Green (s)	78.7	180.0		126.7	38.1						
Actuated g/C Ratio	0.44	1.00		0.70	0.21						
v/c Ratio	0.62	0.18		0.85	1.18						
Control Delay	52.8	0.0		14.4	133.7						
Queue Delay	0.8	0.0		46.6	0.0						
Total Delay	53.6	0.0		61.0	133.7						
LOS	D	A		E	F						
Approach Delay	46.9			61.0	133.7						
Approach LOS	D			E	F						
Queue Length 50th (ft)	591	0		451	~614						
Queue Length 95th (ft)	m498	m0		m1086	#722						
Internal Link Dist (ft)	465			70	664						
Turn Bay Length (ft)		185									
Base Capacity (vph)	3266	1583		3444	712						
Starvation Cap Reductn	0	0		1145	0						
Spillback Cap Reductn	853	0		0	0						
Storage Cap Reductn	0	0		0	0						
Reduced v/c Ratio	0.83	0.18		1.27	1.18						

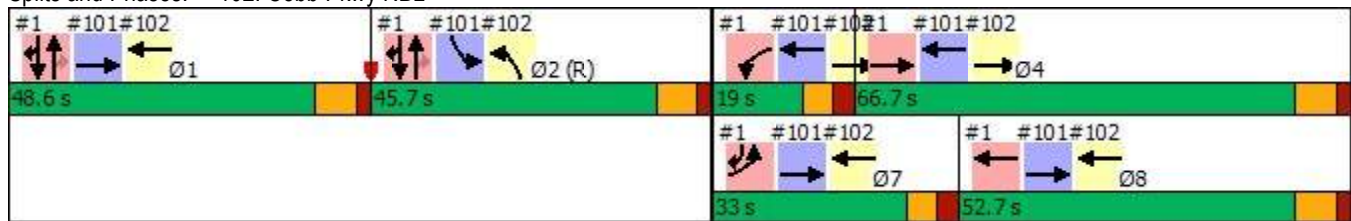
Intersection Summary

Lanes, Volumes, Timings
 102: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Partial CFI with Capacity Improvement
















Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.40
 Intersection Signal Delay: 65.7 Intersection LOS: E
 Intersection Capacity Utilization 90.6% ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Cobb Pkwy NBL



Lanes, Volumes, Timings
103:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	517	1220	972	0	0	177
Future Volume (vph)	517	1220	972	0	0	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5085	5036	0	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5085	5036	0	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						21
Link Speed (mph)		45	45		45	
Link Distance (ft)		1332	866		190	
Travel Time (s)		20.2	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	3%	0%	0%	2%
Adj. Flow (vph)	842	1622	1293	0	0	235
Shared Lane Traffic (%)						
Lane Group Flow (vph)	842	1622	1293	0	0	235
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	45.0		45.0			45.0
Total Lost Time (s)	5.0		5.0			5.0
Act Effct Green (s)	29.1	90.0	50.9			29.1
Actuated g/C Ratio	0.32	1.00	0.57			0.32
v/c Ratio	0.76	0.32	0.45			0.44
Control Delay	31.7	0.2	7.9			22.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	31.7	0.2	7.9			22.9
LOS	C	A	A			C
Approach Delay		10.9	7.9		22.9	
Approach LOS		B	A		C	
Queue Length 50th (ft)	218	0	178			140
Queue Length 95th (ft)	253	0	220			169
Internal Link Dist (ft)		1252	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1525	5085	2849			727
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.55	0.32	0.45			0.32

Intersection Summary

Lanes, Volumes, Timings
103:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Partial CFI with Capacity Improvement

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 43 (48%), Referenced to phase 2:SBT, Start of 1st Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 10.6 Intersection LOS: B
Intersection Capacity Utilization 55.9% ICU Level of Service B
Analysis Period (min) 15













Splits and Phases: 103:



Option 2C – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

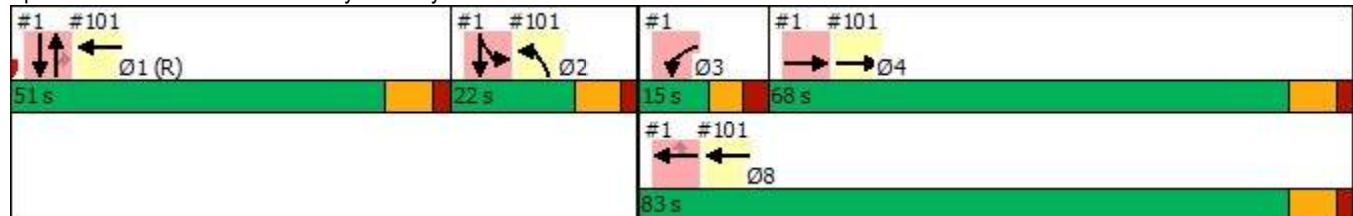
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔↔	↑↑↑	↔		↑↑↑	↔	↔↔	↑↑↑	
Traffic Volume (vph)	0	1047	0	84	593	266	0	521	127	170	659	0
Future Volume (vph)	0	1047	0	84	593	266	0	521	127	170	659	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	390		255	0		475	385		0
Storage Lanes	0		0	2		1	0		1	2		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor						0.98			0.99	1.00		
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	5036	0	3303	4893	1568	0	4848	1583	3400	4893	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	5036	0	3303	4893	1544	0	4848	1563	3398	4893	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)						300			135			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		150			610			866			401	
Travel Time (s)		2.9			11.9			13.1			6.1	
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Adj. Flow (vph)	0	1705	0	112	966	354	0	693	169	226	876	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1705	0	112	966	354	0	693	169	226	876	0
Turn Type		NA		Prot	NA	Perm		NA	Perm	Prot	NA	
Protected Phases		4		3	8			1		2	1 2	
Permitted Phases						8			1			
Total Split (s)		68.0		15.0	83.0	83.0		51.0	51.0	22.0		
Total Lost Time (s)		7.7		7.0	7.7	7.7		7.6	7.6	7.6		
Act Effect Green (s)		60.4		7.9	75.3	75.3		43.4	43.4	14.4	65.4	
Actuated g/C Ratio		0.39		0.05	0.48	0.48		0.28	0.28	0.09	0.42	
v/c Ratio		0.88		0.67	0.41	0.39		0.51	0.32	0.72	0.43	
Control Delay		4.4		91.9	26.7	5.7		49.0	12.6	75.5	27.1	
Queue Delay		0.0		0.0	0.0	0.0		0.1	0.0	0.0	0.2	
Total Delay		4.4		91.9	26.7	5.7		49.2	12.6	75.5	27.3	
LOS		A		F	C	A		D	B	E	C	
Approach Delay		4.4			26.6			42.0			37.2	
Approach LOS		A			C			D			D	
Queue Length 50th (ft)		4		58	228	29		219	26	120	117	
Queue Length 95th (ft)		34		#99	267	95		264	90	169	110	
Internal Link Dist (ft)		70			530			786			321	
Turn Bay Length (ft)				390		255			475	385		
Base Capacity (vph)		1948		169	2361	900		1348	532	313	2051	
Starvation Cap Reductn		0		0	0	0		0	0	0	449	
Spillback Cap Reductn		0		0	0	6		105	0	0	0	
Storage Cap Reductn		0		0	0	0		0	0	0	0	
Reduced v/c Ratio		0.88		0.66	0.41	0.40		0.56	0.32	0.72	0.55	

Intersection Summary
















Area Type: Other
 Cycle Length: 156
 Actuated Cycle Length: 156
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 24.0 Intersection LOS: C
 Intersection Capacity Utilization 102.7% ICU Level of Service G
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

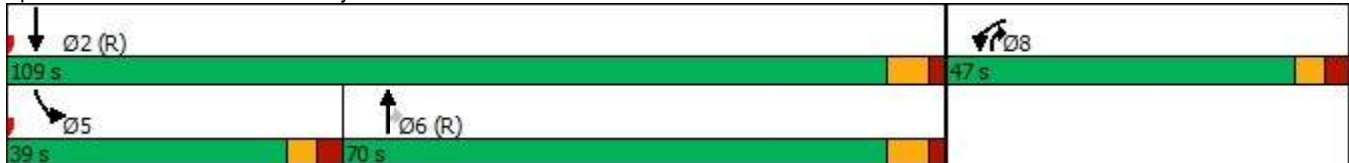
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	451	170	783	549	178	624
Future Volume (vph)	451	170	783	549	178	624
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	315	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				50	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3374	1583	1770	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1583	3374	1583	1770	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		226		247		
Link Speed (mph)	35		45			45
Link Distance (ft)	1372		653			886
Travel Time (s)	26.7		9.9			13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	7%	2%	2%	6%
Adj. Flow (vph)	600	226	1041	730	237	830
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	226	1041	730	237	830
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	8		6	8	5	2
Permitted Phases		Free		6		
Total Split (s)	47.0		70.0	47.0	39.0	109.0
Total Lost Time (s)	6.5		6.8	6.5	6.5	6.8
Act Effct Green (s)	30.9	156.0	80.9	118.7	24.3	111.8
Actuated g/C Ratio	0.20	1.00	0.52	0.76	0.16	0.72
v/c Ratio	0.88	0.14	0.59	0.58	0.86	0.34
Control Delay	75.7	0.2	12.5	7.8	94.8	8.6
Queue Delay	0.0	0.0	0.4	0.1	0.0	0.0
Total Delay	75.7	0.2	12.8	7.9	94.8	8.6
LOS	E	A	B	A	F	A
Approach Delay	55.0		10.8			27.7
Approach LOS	E		B			C
Queue Length 50th (ft)	309	0	260	271	256	144
Queue Length 95th (ft)	363	0	311	280	337	203
Internal Link Dist (ft)	1292		573			806
Turn Bay Length (ft)		595			315	
Base Capacity (vph)	891	1583	1750	1345	368	2439
Starvation Cap Reductn	0	0	249	64	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.14	0.69	0.57	0.64	0.34
Intersection Summary						

Lanes, Volumes, Timings
 2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement
























Area Type:	Other
Cycle Length:	156
Actuated Cycle Length:	156
Offset:	107 (69%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	25.7
Intersection LOS:	C
Intersection Capacity Utilization	73.7%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.106			0.291		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	197	3438	1548	553	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			350		37				134			134
Link Speed (mph)		30			30			45				45
Link Distance (ft)		521			530			1026				1193
Travel Time (s)		11.8			12.0			15.5				18.1
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	18.8	45.0	45.0	14.2	40.4		15.0	46.6	46.6	14.2	45.8	45.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	46.6	39.2	39.2	32.4	25.9		47.0	47.0	47.0	40.0	40.0	40.0
Actuated g/C Ratio	0.41	0.34	0.34	0.28	0.23		0.41	0.41	0.41	0.35	0.35	0.35
v/c Ratio	0.55	0.15	1.00	0.10	0.21		0.91	0.62	0.09	0.10	0.88	0.16
Control Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
LOS	C	C	D	C	C		E	C	A	C	D	A
Approach Delay		45.8			21.1			36.9			41.2	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	153	53	~451	17	30		~109	314	0	14	408	0
Queue Length 95th (ft)	225	95	#695	38	72		#262	393	0	36	#539	21
Internal Link Dist (ft)		441			450			946			1113	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	552	652	778	393	557		206	1413	715	284	1193	645
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	1.00	0.10	0.16		0.91	0.62	0.09	0.10	0.88	0.16

Intersection Summary

Area Type:	Other	
Cycle Length:	120	
Actuated Cycle Length:	114.3	
Control Type:	Actuated-Uncoordinated	
Maximum v/c Ratio:	1.00	
Intersection Signal Delay:	40.6	Intersection LOS: D
Intersection Capacity Utilization	92.6%	ICU Level of Service F
Analysis Period (min)	15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.		

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.229			0.209		
Satd. Flow (perm)	0	1185	1396	1300	1267	1524	399	3471	1475	368	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			114			59			84
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	22.0	96.0	96.0	14.0	88.0	88.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		11.2	11.2	11.2	11.2	11.2	124.1	123.5	123.5	122.3	120.9	120.9
Actuated g/C Ratio		0.07	0.07	0.07	0.07	0.07	0.80	0.79	0.79	0.78	0.78	0.78
v/c Ratio		0.66	0.30	0.67	0.03	0.21	0.34	0.42	0.05	0.17	0.45	0.07
Control Delay		103.0	3.7	101.2	64.7	2.2	3.6	1.4	0.1	5.4	7.0	1.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		103.0	3.7	101.2	64.7	2.2	3.6	1.4	0.1	5.4	7.0	1.1
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		50.9			59.7			1.5			6.5	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		57	0	63	3	0	5	29	0	11	198	0
Queue Length 95th (ft)		105	0	113	14	0	11	42	m0	25	268	14
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		303	442	333	324	475	472	2747	1180	359	2664	1210
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.18	0.14	0.19	0.01	0.09	0.26	0.42	0.05	0.15	0.45	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	156
Actuated Cycle Length:	156
Offset:	50 (32%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	8.0
Intersection LOS:	A
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

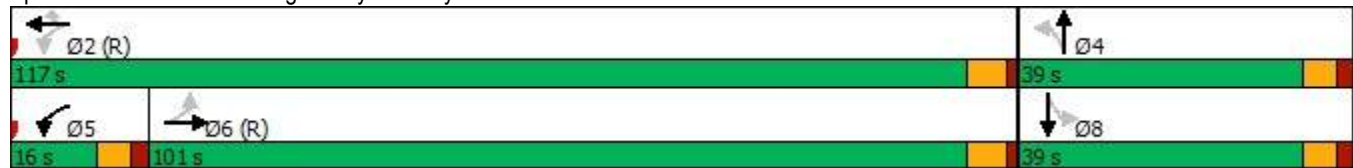


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99			1.00	
Frt		0.969				0.850		0.857			0.973	
Flt Protected	0.950			0.950			0.950				0.974	
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.139			0.040			0.595				0.383	
Satd. Flow (perm)	238	3410	0	75	3471	1442	1107	1592	0	0	689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		39				69		109			7	
Link Speed (mph)		35			35			45			30	
Link Distance (ft)		778			1525			488			427	
Travel Time (s)		15.2			29.7			7.4			9.7	
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4			8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	101.0	101.0		16.0	117.0	117.0	39.0	39.0		39.0	39.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effect Green (s)	95.0	95.0		111.0	111.0	111.0	33.0	33.0		33.0	33.0	
Actuated g/C Ratio	0.61	0.61		0.71	0.71	0.71	0.21	0.21		0.21	0.21	
v/c Ratio	0.23	1.41		1.47	0.63	0.07	0.51	0.62		0.62	1.26	
Control Delay	18.9	215.0		278.5	6.5	0.4	63.3	39.1		39.1	207.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	18.9	215.0		278.5	6.5	0.4	63.3	39.1		39.1	207.4	
LOS	B	F		F	A	A	E	D		D	F	
Approach Delay		212.8			41.4			46.7			207.4	
Approach LOS		F			D			D			F	
Queue Length 50th (ft)	15	~2118		~285	147	0	109	143			~239	
Queue Length 95th (ft)	38	#2221		#474	180	m3	182	246			#408	
Internal Link Dist (ft)		698			1445			408			347	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	144	2091		163	2469	1045	234	422			151	
Starvation Cap Reductn	0	0		0	0	0	0	0			0	
Spillback Cap Reductn	0	0		0	0	0	0	0			0	
Storage Cap Reductn	0	0		0	0	0	0	0			0	
Reduced v/c Ratio	0.23	1.41		1.47	0.63	0.07	0.51	0.62			1.26	

Intersection Summary

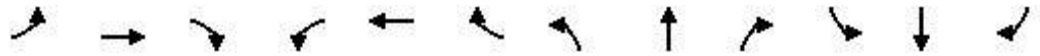
Area Type:	Other
Cycle Length:	156
Actuated Cycle Length:	156
Offset:	108 (69%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.47
Intersection Signal Delay:	142.1
Intersection LOS:	F
Intersection Capacity Utilization	139.7%
ICU Level of Service	H
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement









Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		439			1256			692				693
Travel Time (s)		8.6			24.5			15.7				15.8
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	77	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.19	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.3			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	8	172		13	119			13	0		4	0
Queue Length 95th (ft)	20	237		46	166			38	5		18	0
Internal Link Dist (ft)		359			1176			612			613	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.19	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary







Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization:	64.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1 13.4 s	 Ø2 31.6 s	 Ø4 30 s
 Ø5 13.5 s	 Ø6 31.5 s	 Ø8 30 s

Lanes, Volumes, Timings
101: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

									
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø1	Ø3	Ø8
Lane Configurations	↑↑↑	↑		↑↑↑	↑↑				
Traffic Volume (vph)	1047	181	0	593	103	0			
Future Volume (vph)	1047	181	0	593	103	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Storage Length (ft)		185	0		0	0			
Storage Lanes		1	0		2	0			
Taper Length (ft)			50		50				
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00			
Frt		0.850							
Flt Protected					0.950				
Satd. Flow (prot)	5036	1568	0	4893	3367	0			
Flt Permitted					0.950				
Satd. Flow (perm)	5036	1568	0	4893	3367	0			
Right Turn on Red		Yes				No			
Satd. Flow (RTOR)		91							
Link Speed (mph)	35			35	45				
Link Distance (ft)	1147			150	744				
Travel Time (s)	22.3			2.9	11.3				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Growth Factor	158%	158%	129%	158%	158%	129%			
Heavy Vehicles (%)	3%	3%	6%	6%	4%	2%			
Adj. Flow (vph)	1705	295	0	966	168	0			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	1705	295	0	966	168	0			
Turn Type	NA	Free		NA	Prot				
Protected Phases	4			1 8	2		1	3	8
Permitted Phases		Free							
Total Split (s)	68.0				22.0		51.0	15.0	83.0
Total Lost Time (s)	7.7				7.6				
Act Effct Green (s)	60.4	156.0		126.4	14.4				
Actuated g/C Ratio	0.39	1.00		0.81	0.09				
v/c Ratio	0.88	0.19		0.24	0.54				
Control Delay	48.0	0.2		0.2	90.1				
Queue Delay	0.0	0.0		0.2	0.0				
Total Delay	48.0	0.2		0.4	90.1				
LOS	D	A		A	F				
Approach Delay	40.9			0.4	90.1				
Approach LOS	D			A	F				
Queue Length 50th (ft)	651	0		0	93				
Queue Length 95th (ft)	693	0		0	136				
Internal Link Dist (ft)	1067			70	664				
Turn Bay Length (ft)		185							
Base Capacity (vph)	1948	1568		3964	310				
Starvation Cap Reductn	0	0		1932	0				
Spillback Cap Reductn	0	0		0	0				
Storage Cap Reductn	0	0		0	0				
Reduced v/c Ratio	0.88	0.19		0.48	0.54				

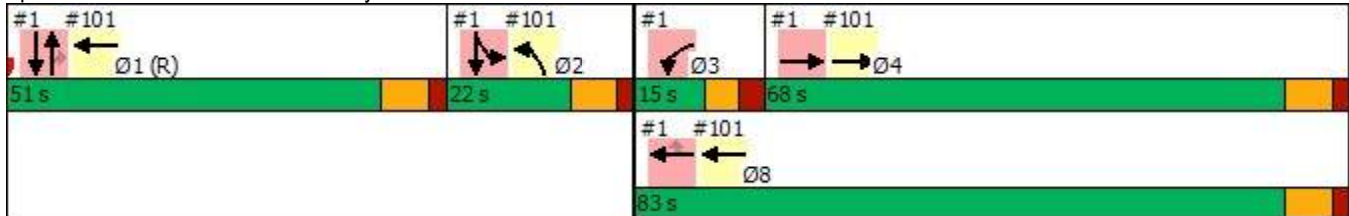
Intersection Summary

Lanes, Volumes, Timings
 101: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type:	Other
Cycle Length:	156
Actuated Cycle Length:	156
Offset:	0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	31.1
Intersection LOS:	C
Intersection Capacity Utilization	53.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 101: Cobb Pkwy NBL



Lanes, Volumes, Timings
102: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø4	Ø8
Lane Configurations	↶↶			↑↑↑	↑↑↑	↷↷				
Traffic Volume (vph)	496	0	0	787	829	368				
Future Volume (vph)	496	0	0	787	829	368				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900				
Storage Length (ft)	0	0	0			450				
Storage Lanes	2	0	0			2				
Taper Length (ft)	25		25							
Lane Util. Factor	*0.80	1.00	1.00	0.91	0.91	0.88				
Frt						0.850				
Flt Protected	0.950									
Satd. Flow (prot)	2804	0	0	4848	4893	2760				
Flt Permitted	0.950									
Satd. Flow (perm)	2804	0	0	4848	4893	2760				
Right Turn on Red		No				Yes				
Satd. Flow (RTOR)						599				
Link Speed (mph)	35			45	45					
Link Distance (ft)	658			401	653					
Travel Time (s)	12.8			6.1	9.9					
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97				
Growth Factor	158%	158%	129%	129%	129%	158%				
Heavy Vehicles (%)	3%	3%	4%	7%	6%	3%				
Adj. Flow (vph)	808	0	0	1047	1102	599				
Shared Lane Traffic (%)										
Lane Group Flow (vph)	808	0	0	1047	1102	599				
Turn Type	Prot			NA	NA	Free				
Protected Phases	4 8			1 2	1 2		1	2	4	8
Permitted Phases						Free				
Total Split (s)							50.5	22.5	83.0	83.0
Total Lost Time (s)										
Act Effct Green (s)	54.0			93.0	93.0	156.0				
Actuated g/C Ratio	0.35			0.60	0.60	1.00				
v/c Ratio	0.83			0.36	0.38	0.22				
Control Delay	54.0			7.4	17.4	0.2				
Queue Delay	0.0			0.4	0.0	0.0				
Total Delay	54.0			7.8	17.4	0.2				
LOS	D			A	B	A				
Approach Delay	54.0			7.8	11.3					
Approach LOS	D			A	B					
Queue Length 50th (ft)	547			55	172	0				
Queue Length 95th (ft)	536			361	228	0				
Internal Link Dist (ft)	578			321	573					
Turn Bay Length (ft)						450				
Base Capacity (vph)	1410			2888	2915	2760				
Starvation Cap Reductn	0			1192	0	0				
Spillback Cap Reductn	0			11	0	0				
Storage Cap Reductn	0			0	0	0				
Reduced v/c Ratio	0.57			0.62	0.38	0.22				





Intersection Summary

Lanes, Volumes, Timings
 102: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement
















Area Type:	Other
Cycle Length:	156
Actuated Cycle Length:	156
Offset:	24 (15%), Referenced to phase 1:NBSB, Start of Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	20.0
Intersection LOS:	C
Intersection Capacity Utilization:	50.5%
ICU Level of Service:	A
Analysis Period (min):	15
* User Entered Value	

Splits and Phases: 102: Windy Hill Rd EBL

 Ø1 (R)	 Ø2	 Ø4
50.5 s	22.5 s	83 s
		 Ø8
		83 s

Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	103	648	743	0	0	181
Future Volume (vph)	103	648	743	0	0	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3367	4848	4893	0	0	1596
Flt Permitted	0.950					
Satd. Flow (perm)	3367	4848	4893	0	0	1596
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						1091
Link Speed (mph)		45	45		45	
Link Distance (ft)		707	866		190	
Travel Time (s)		10.7	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	4%	7%	6%	0%	0%	3%
Adj. Flow (vph)	168	862	988	0	0	241
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	862	988	0	0	241
Turn Type	Prot	NA	NA			Perm
Protected Phases	1	Free	2			
Permitted Phases						2
Total Split (s)	25.0		53.0			53.0
Total Lost Time (s)	5.0		5.0			5.0
Act Effct Green (s)	9.2	78.0	58.8			58.8
Actuated g/C Ratio	0.12	1.00	0.75			0.75
v/c Ratio	0.42	0.18	0.27			0.16
Control Delay	34.7	0.1	1.0			0.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	34.7	0.1	1.0			0.2
LOS	C	A	A			A
Approach Delay		5.7	1.0		0.2	
Approach LOS		A	A		A	
Queue Length 50th (ft)	39	0	17			0
Queue Length 95th (ft)	66	0	30			0
Internal Link Dist (ft)		627	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	863	4848	3686			1471
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.19	0.18	0.27			0.16

Intersection Summary

Lanes, Volumes, Timings
103: Cobb Pkwy

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type:	Other		
Cycle Length:	78		
Actuated Cycle Length:	78		
Offset:	18 (23%), Referenced to phase 2:SBT, Start of 1st Green		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.42		
Intersection Signal Delay:	3.1	Intersection LOS:	A
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Splits and Phases: 103: Cobb Pkwy



Lanes, Volumes, Timings
104:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑			↗
Traffic Volume (vph)	496	1228	593	0	0	368
Future Volume (vph)	496	1228	593	0	0	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3400	5036	4893	0	0	1596
Flt Permitted	0.950					
Satd. Flow (perm)	3400	5036	4893	0	0	1596
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						16
Link Speed (mph)		35	35		35	
Link Distance (ft)		1525	1147		754	
Travel Time (s)		29.7	22.3		14.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	158%	158%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	6%	3%	3%	3%
Adj. Flow (vph)	808	2000	966	0	0	599
Shared Lane Traffic (%)						
Lane Group Flow (vph)	808	2000	966	0	0	599
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	Free	8			
Permitted Phases						7
Total Split (s)	49.0		29.0			49.0
Total Lost Time (s)	4.5		4.5			4.5
Act Effct Green (s)	36.8	78.0	32.2			36.8
Actuated g/C Ratio	0.47	1.00	0.41			0.47
v/c Ratio	0.50	0.40	0.48			0.79
Control Delay	16.7	0.0	11.6			25.1
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	16.7	0.0	11.6			25.1
LOS	B	A	B			C
Approach Delay		4.8	11.6		25.1	
Approach LOS		A	B		C	
Queue Length 50th (ft)	212	0	104			401
Queue Length 95th (ft)	m118	m0	165			422
Internal Link Dist (ft)		1445	1067		674	
Turn Bay Length (ft)	400					
Base Capacity (vph)	1939	5036	2019			917
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.42	0.40	0.48			0.65

Intersection Summary

Lanes, Volumes, Timings

104:

Cobb Parkway at Windy Hill Scoping Study

Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type:	Other		
Cycle Length:	78		
Actuated Cycle Length:	78		
Offset:	16 (21%), Referenced to phase 8:WBT, Start of Green		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.79		
Intersection Signal Delay:	9.1	Intersection LOS:	A
Intersection Capacity Utilization:	61.6%	ICU Level of Service:	B
Analysis Period (min):	15		
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 104:



Option 2C – PM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

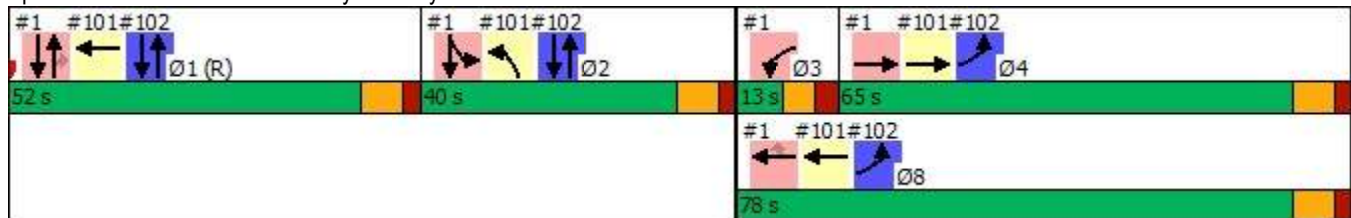
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑↑	↑		↑↑↑	↑	↑↑	↑↑↑	
Traffic Volume (vph)	0	1234	0	119	818	250	0	1054	166	238	853	0
Future Volume (vph)	0	1234	0	119	818	250	0	1054	166	238	853	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	390		255	0		475	385		0
Storage Lanes	0		0	2		1	0		1	2		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor						0.98			0.99	1.00		
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	5036	0	3433	5085	1568	0	5085	1583	3433	5036	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	5036	0	3433	5085	1544	0	5085	1562	3432	5036	0
Right Turn on Red			No			Yes			Yes			No
Satd. Flow (RTOR)						275			124			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		150			609			866			404	
Travel Time (s)		2.9			11.9			13.1			6.1	
Confl. Peds. (#/hr)	3					3			1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Adj. Flow (vph)	0	2010	0	158	1332	332	0	1402	221	317	1134	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2010	0	158	1332	332	0	1402	221	317	1134	0
Turn Type		NA		Prot	NA	Perm		NA	Perm	Prot	NA	
Protected Phases		4		3	8			1		2	1 2	
Permitted Phases						8			1			
Total Split (s)		65.0		13.0	78.0	78.0		52.0	52.0	40.0		
Total Lost Time (s)		7.7		7.0	7.7	7.7		7.6	7.6	7.6		
Act Effect Green (s)		57.3		6.0	70.3	70.3		44.4	44.4	32.4	84.4	
Actuated g/C Ratio		0.34		0.04	0.41	0.41		0.26	0.26	0.19	0.50	
v/c Ratio		1.18		1.31	0.63	0.42		1.06	0.44	0.48	0.45	
Control Delay		95.6		242.8	41.3	8.1		99.3	25.2	32.4	2.7	
Queue Delay		0.0		0.0	0.0	0.0		18.2	0.0	0.0	0.1	
Total Delay		95.6		242.8	41.3	8.1		117.5	25.2	32.4	2.8	
LOS		F		F	D	A		F	C	C	A	
Approach Delay		95.6			52.7			104.9			9.3	
Approach LOS		F			D			F			A	
Queue Length 50th (ft)		~945		~115	430	39		~623	88	168	10	
Queue Length 95th (ft)		m#37		#198	482	117		#720	176	215	18	
Internal Link Dist (ft)		70			529			786			324	
Turn Bay Length (ft)				390		255			475	385		
Base Capacity (vph)		1697		121	2102	799		1328	499	654	2500	
Starvation Cap Reductn		0		0	0	0		0	0	0	371	
Spillback Cap Reductn		0		0	0	6		116	0	0	0	
Storage Cap Reductn		0		0	0	0		0	0	0	0	
Reduced v/c Ratio		1.18		1.31	0.63	0.42		1.16	0.44	0.48	0.53	

Intersection Summary
















Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 68.3 Intersection LOS: E
 Intersection Capacity Utilization 109.9% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

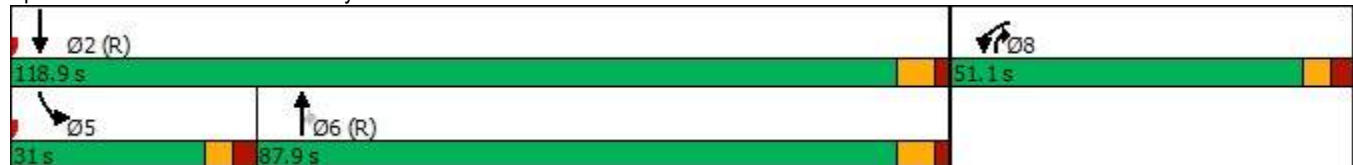
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	632	181	1218	810	185	1470
Future Volume (vph)	632	181	1218	810	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	315	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				50	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99	0.99		0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3505	1599	1770	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3432	1562	3505	1561	1767	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		241		114		
Link Speed (mph)	35		45			45
Link Distance (ft)	1372		650			886
Travel Time (s)	26.7		9.8			13.4
Confl. Peds. (#/hr)	6	6		7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	1620	1077	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	1620	1077	246	1955
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	8		6	8	5	2
Permitted Phases		Free		6		
Total Split (s)	51.1		87.9	51.1	31.0	118.9
Total Lost Time (s)	6.5		6.8	6.5	6.5	6.8
Act Effect Green (s)	42.9	170.0	82.6	125.8	24.7	113.8
Actuated g/C Ratio	0.25	1.00	0.49	0.74	0.15	0.67
v/c Ratio	0.96	0.15	0.95	0.90	0.96	0.83
Control Delay	84.2	0.2	32.7	21.9	119.5	15.4
Queue Delay	0.0	0.0	4.1	0.0	0.0	0.0
Total Delay	84.2	0.2	36.9	21.9	119.5	15.4
LOS	F	A	D	C	F	B
Approach Delay	65.5		30.9			27.1
Approach LOS	E		C			C
Queue Length 50th (ft)	473	0	797	253	283	354
Queue Length 95th (ft)	#592	0	#1071	1183	#472	464
Internal Link Dist (ft)	1292		570			806
Turn Bay Length (ft)		595			315	
Base Capacity (vph)	909	1562	1702	1209	259	2368
Starvation Cap Reductn	0	0	58	0	0	14
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.15	0.99	0.89	0.95	0.83

Intersection Summary
























Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 132 (78%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 35.7 Intersection LOS: D
 Intersection Capacity Utilization 96.7% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

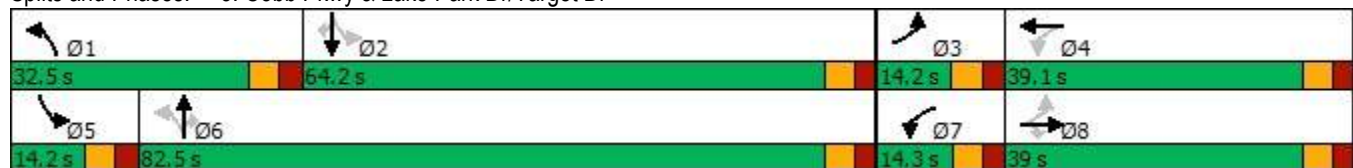
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1787	1735	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.217			0.704			0.062			0.068		
Satd. Flow (perm)	412	1900	1576	1321	1735	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		521			530			1026			1214	
Travel Time (s)		11.8			12.0			15.5			18.4	
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.2	39.0	39.0	14.3	39.1		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	33.9	25.6	25.6	34.1	25.7		90.9	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.24	0.18	0.18	0.24	0.18		0.64	0.54	0.54	0.47	0.41	0.41
v/c Ratio	0.65	0.23	0.72	0.70	0.85		1.00	0.97	0.24	0.68	0.96	0.14
Control Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
LOS	E	D	C	E	E		F	D	A	D	E	A
Approach Delay		33.0			65.7			51.4			52.8	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	84	63	70	187	233		~316	862	50	45	650	0
Queue Length 95th (ft)	137	111	190	271	342		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		441			450			946			1134	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	179	441	587	343	428		386	1902	887	156	1434	739
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.18	0.64	0.70	0.67		1.00	0.97	0.24	0.68	0.96	0.14

Intersection Summary
























Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	142.7		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	51.2	Intersection LOS:	D
Intersection Capacity Utilization:	100.4%	ICU Level of Service:	G
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.661			0.088			0.080		
Satd. Flow (perm)	0	1323	1544	1228	1900	1544	148	3505	1542	146	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			105			157			55			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		684			818			455				801
Travel Time (s)		15.5			18.6			6.9				12.1
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	46.0	46.0	46.0	46.0	46.0	46.0	13.0	98.0	98.0	26.0	111.0	111.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		30.7	30.7	30.7	30.7	30.7	107.4	106.8	106.8	117.9	116.5	116.5
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.63	0.63	0.63	0.69	0.69	0.69
v/c Ratio		0.39	0.22	0.92	0.05	0.39	0.38	0.71	0.15	0.73	0.73	0.07
Control Delay		64.3	5.1	111.3	53.8	9.8	9.5	6.1	1.2	41.5	21.4	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		64.3	5.1	111.3	53.8	9.8	9.5	6.1	1.2	41.5	21.4	2.7
LOS		E	A	F	D	A	A	A	A	D	C	A
Approach Delay		36.6			66.6			5.8			22.5	
Approach LOS		D			E			A			C	
Queue Length 50th (ft)		92	0	227	16	0	3	45	0	82	672	0
Queue Length 95th (ft)		145	27	315	38	63	m4	m60	m0	178	891	21
Internal Link Dist (ft)		604			738			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		311	443	288	447	483	151	2202	989	292	2425	1008
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.71	0.04	0.33	0.35	0.71	0.15	0.58	0.73	0.07

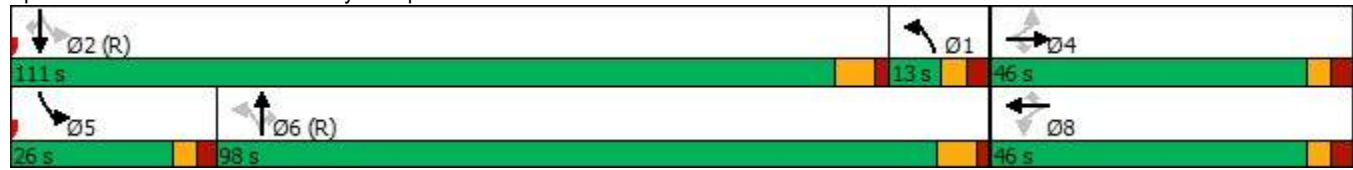
Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Intersection Summary

Area Type:	Other
Cycle Length:	170
Actuated Cycle Length:	170
Offset:	154 (91%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	20.1
Intersection LOS:	C
Intersection Capacity Utilization:	85.3%
ICU Level of Service:	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

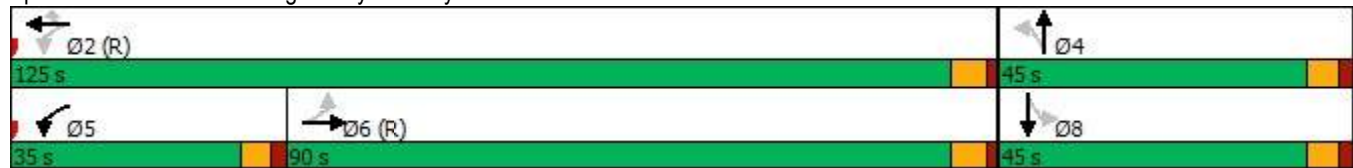


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3448	0	1787	3539	1615	1787	1637	0	0	1775	0
Flt Permitted	0.048			0.044			0.592					0.374
Satd. Flow (perm)	89	3448	0	83	3539	1615	1114	1637	0	0	681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				90		192				2
Link Speed (mph)		35			35			45				30
Link Distance (ft)		704			1494			435				402
Travel Time (s)		13.7			29.1			6.6				9.1
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4				8	
Total Split (s)	90.0	90.0		35.0	125.0	125.0	45.0	45.0		45.0	45.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effect Green (s)	84.0	84.0		119.0	119.0	119.0	39.0	39.0		39.0	39.0	
Actuated g/C Ratio	0.49	0.49		0.70	0.70	0.70	0.23	0.23		0.23	0.23	
v/c Ratio	0.72	1.21		1.35	1.23	0.16	0.93	0.54		0.54	1.22	
Control Delay	110.7	136.8		207.3	124.3	2.7	103.9	21.9		21.9	195.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	110.7	136.8		207.3	124.4	2.7	103.9	21.9		21.9	195.5	
LOS	F	F		F	F	A	F	C		C	F	
Approach Delay		136.4			128.8			59.5			195.5	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	26	~1467		~634	~2212	20	262	82			~260	
Queue Length 95th (ft)	#102	#1594		m#503	m#1614	m15	#441	184			#435	
Internal Link Dist (ft)		624			1414			355			322	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	43	1709		348	2477	1157	255	523			157	
Starvation Cap Reductn	0	0		0	46	0	0	0			0	
Spillback Cap Reductn	0	0		0	0	0	0	0			0	
Storage Cap Reductn	0	0		0	0	0	0	0			0	
Reduced v/c Ratio	0.72	1.21		1.35	1.25	0.16	0.93	0.54			1.22	

Intersection Summary

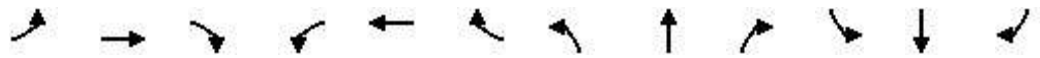
Area Type:	Other
Cycle Length:	170
Actuated Cycle Length:	170
Offset:	108 (64%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.35
Intersection Signal Delay:	127.7
Intersection LOS:	F
Intersection Capacity Utilization	141.0%
ICU Level of Service	H
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↑	↗		↖	↗
Traffic Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5028	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.125			0.162				0.715			0.752	
Satd. Flow (perm)	238	5028	0	308	5050	0	0	1358	1615	0	1429	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		438			1250			423				489
Travel Time (s)		8.5			24.4			9.6				11.1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	119	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.5	31.6		13.4	31.5		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	33.5		35.1	30.9			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.64	0.59		0.62	0.54			0.14	0.14		0.14	0.14
v/c Ratio	0.33	0.46		0.19	0.59			0.05	0.06		0.24	0.22
Control Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
LOS	A	B		A	B			C	A		C	A
Approach Delay		10.7			13.1			6.8			12.0	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	185		20	230			14	0		42	12
Internal Link Dist (ft)		358			1170			343			409	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	362	2975		388	2759			580	764		610	764
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.33	0.46		0.19	0.59			0.02	0.03		0.08	0.10







Intersection Summary

Lanes, Volumes, Timings
 8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement







Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.7
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	11.9
Intersection LOS:	B
Intersection Capacity Utilization:	60.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1 13.5 s	 Ø2 31.5 s	 Ø4 30 s
 Ø5 13.4 s	 Ø6 31.6 s	 Ø8 30 s

Lanes, Volumes, Timings
101: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

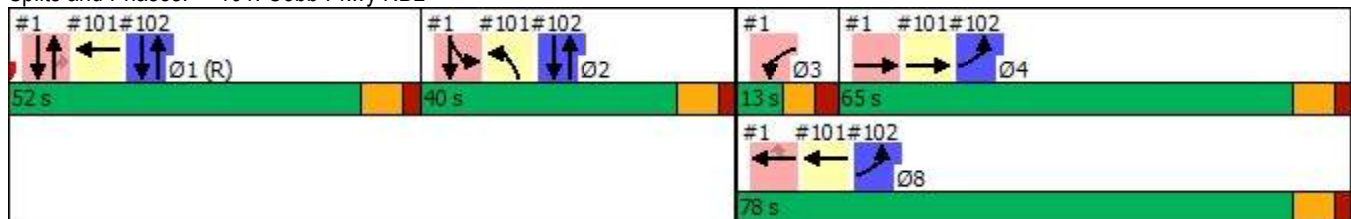
							Ø1	Ø3	Ø8
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑↑	↑		↑↑↑	↑↑				
Traffic Volume (vph)	1234	177	0	818	517	0			
Future Volume (vph)	1234	177	0	818	517	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Storage Length (ft)		185	0		0	0			
Storage Lanes		1	0		2	0			
Taper Length (ft)			50		50				
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00			
Frt		0.850							
Flt Protected					0.950				
Satd. Flow (prot)	5036	1583	0	5085	3433	0			
Flt Permitted					0.950				
Satd. Flow (perm)	5036	1583	0	5085	3433	0			
Right Turn on Red		Yes				No			
Satd. Flow (RTOR)		70							
Link Speed (mph)	35			35	45				
Link Distance (ft)	1149			150	744				
Travel Time (s)	22.4			2.9	11.3				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Growth Factor	158%	158%	129%	158%	158%	129%			
Heavy Vehicles (%)	3%	2%	2%	2%	2%	2%			
Adj. Flow (vph)	2010	288	0	1332	842	0			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	2010	288	0	1332	842	0			
Turn Type	NA	Free		NA	Prot				
Protected Phases	4			1 8	2		1	3	8
Permitted Phases		Free							
Total Split (s)	65.0				40.0		52.0	13.0	78.0
Total Lost Time (s)	7.7				7.6				
Act Effct Green (s)	57.3	170.0		122.4	32.4				
Actuated g/C Ratio	0.34	1.00		0.72	0.19				
v/c Ratio	1.18	0.18		0.36	1.29				
Control Delay	139.4	0.2		0.2	209.0				
Queue Delay	0.0	0.0		0.3	0.0				
Total Delay	139.5	0.2		0.5	209.0				
LOS	F	A		A	F				
Approach Delay	122.0			0.5	209.0				
Approach LOS	F			A	F				
Queue Length 50th (ft)	~998	0		0	~627				
Queue Length 95th (ft)	#1088	0		0	#765				
Internal Link Dist (ft)	1069			70	664				
Turn Bay Length (ft)		185							
Base Capacity (vph)	1697	1583		3661	654				
Starvation Cap Reductn	0	0		1472	0				
Spillback Cap Reductn	21	0		0	0				
Storage Cap Reductn	0	0		0	0				
Reduced v/c Ratio	1.20	0.18		0.61	1.29				
Intersection Summary									

Lanes, Volumes, Timings
 101: Cobb Pkwy NBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 102.2 Intersection LOS: F
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 101: Cobb Pkwy NBL



Lanes, Volumes, Timings
102: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø1	Ø2	Ø3	Ø4	Ø8
Lane Configurations	↶↶			↑↑↑	↑↑↑	↷↷					
Traffic Volume (vph)	424	0	0	1305	1091	971					
Future Volume (vph)	424	0	0	1305	1091	971					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900					
Storage Length (ft)	0	0	0			450					
Storage Lanes	2	0	0			2					
Taper Length (ft)	25		25								
Lane Util. Factor	*0.80	1.00	1.00	0.91	0.91	0.88					
Frt						0.850					
Flt Protected	0.950										
Satd. Flow (prot)	2831	0	0	5085	5036	2814					
Flt Permitted	0.950										
Satd. Flow (perm)	2831	0	0	5085	5036	2814					
Right Turn on Red		No				Yes					
Satd. Flow (RTOR)						1196					
Link Speed (mph)	35			45	45						
Link Distance (ft)	653			404	650						
Travel Time (s)	12.7			6.1	9.8						
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97					
Growth Factor	158%	158%	129%	129%	129%	158%					
Heavy Vehicles (%)	2%	2%	2%	2%	3%	1%					
Adj. Flow (vph)	691	0	0	1736	1451	1582					
Shared Lane Traffic (%)											
Lane Group Flow (vph)	691	0	0	1736	1451	1582					
Turn Type	Prot			NA	NA	Free					
Protected Phases	4 8			1 2	1 2		1	2	3	4	8
Permitted Phases						Free					
Total Split (s)							52.0	40.0	13.0	65.0	78.0
Total Lost Time (s)											
Act Effct Green (s)	70.3			84.4	84.4	170.0					
Actuated g/C Ratio	0.41			0.50	0.50	1.00					
v/c Ratio	0.59			0.69	0.58	0.56					
Control Delay	34.7			10.0	31.2	0.5					
Queue Delay	0.0			48.1	1.0	1.0					
Total Delay	34.7			58.0	32.2	1.5					
LOS	C			E	C	A					
Approach Delay	34.7			58.0	16.2						
Approach LOS	C			E	B						
Queue Length 50th (ft)	440			85	416	0					
Queue Length 95th (ft)	520			m97	447	0					
Internal Link Dist (ft)	573			324	570						
Turn Bay Length (ft)						450					
Base Capacity (vph)	1170			2524	2500	2814					
Starvation Cap Reductn	0			970	707	0					
Spillback Cap Reductn	0			182	0	893					
Storage Cap Reductn	0			0	0	0					
Reduced v/c Ratio	0.59			1.12	0.81	0.82					

Intersection Summary

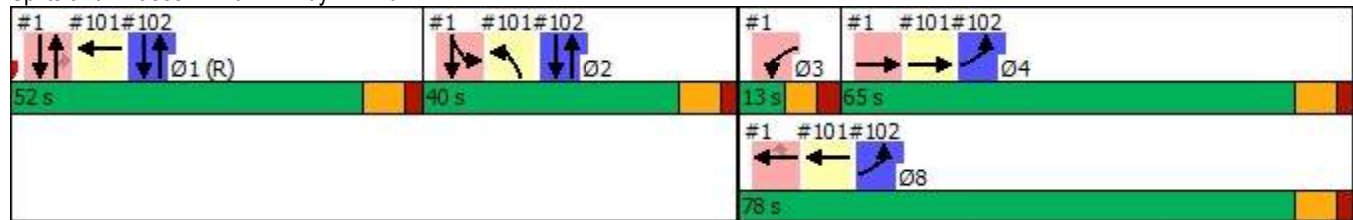
Lanes, Volumes, Timings
 102: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type: Other
 Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.31
 Intersection Signal Delay: 31.8 Intersection LOS: C
 Intersection Capacity Utilization 64.4% ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value
















m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Windy Hill Rd EBL



Lanes, Volumes, Timings
103:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

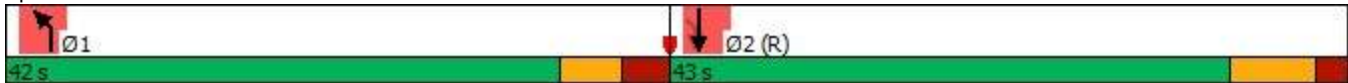
						
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	 	  	  			
Traffic Volume (vph)	517	1220	972	0	0	177
Future Volume (vph)	517	1220	972	0	0	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	50				50	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Frt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5085	5036	0	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5085	5036	0	0	1611
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						1091
Link Speed (mph)		45	45		45	
Link Distance (ft)		686	866		190	
Travel Time (s)		10.4	13.1		2.9	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	3%	1%	0%	2%
Adj. Flow (vph)	842	1622	1293	0	0	235
Shared Lane Traffic (%)						
Lane Group Flow (vph)	842	1622	1293	0	0	235
Turn Type	Prot	NA	NA			Perm
Protected Phases	1	Free	2			
Permitted Phases						2
Total Split (s)	42.0		43.0			43.0
Total Lost Time (s)	7.0		7.6			7.6
Act Effct Green (s)	26.9	85.0	43.5			43.5
Actuated g/C Ratio	0.32	1.00	0.51			0.51
v/c Ratio	0.77	0.32	0.50			0.17
Control Delay	31.2	0.2	7.1			0.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	31.2	0.2	7.1			0.3
LOS	C	A	A			A
Approach Delay		10.8	7.1		0.3	
Approach LOS		B	A		A	
Queue Length 50th (ft)	206	0	165			0
Queue Length 95th (ft)	243	0	m183			0
Internal Link Dist (ft)		606	786		110	
Turn Bay Length (ft)	250					
Base Capacity (vph)	1413	5085	2576			1357
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.60	0.32	0.50			0.17
Intersection Summary						

Lanes, Volumes, Timings
103:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 27 (32%), Referenced to phase 2:SBT, Start of 1st Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 9.0 Intersection LOS: A
Intersection Capacity Utilization 59.7% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103:



Lanes, Volumes, Timings
104:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - L-Shape CFI with Capacity Improvement



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔↔	↑↑↑	↑↑↑			↔
Traffic Volume (vph)	424	1412	818	0	0	971
Future Volume (vph)	424	1412	818	0	0	971
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			0	0	0
Storage Lanes	2			0	0	1
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	1.00
Flt						0.865
Flt Protected	0.950					
Satd. Flow (prot)	3433	5036	5085	0	0	1627
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5036	5085	0	0	1627
Right Turn on Red				No		Yes
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		1494	1149		771	
Travel Time (s)		29.1	22.4		15.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	1.00	0.97
Growth Factor	158%	158%	158%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	3%	2%	1%
Adj. Flow (vph)	691	2300	1332	0	0	1582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	691	2300	1332	0	0	1582
Turn Type	Prot	NA	NA			Perm
Protected Phases	7	Free	8			
Permitted Phases						7
Total Split (s)	128.0		42.0			128.0
Total Lost Time (s)	4.5		4.5			4.5
Act Effct Green (s)	123.5	170.0	37.5			123.5
Actuated g/C Ratio	0.73	1.00	0.22			0.73
v/c Ratio	0.28	0.46	1.19			1.34
Control Delay	3.2	0.2	129.0			184.3
Queue Delay	0.0	0.0	1.5			0.3
Total Delay	3.2	0.2	130.6			184.6
LOS	A	A	F			F
Approach Delay		0.9	130.6		184.6	
Approach LOS		A	F		F	
Queue Length 50th (ft)	61	0	~659			~2287
Queue Length 95th (ft)	m55	m0	m#621			#2556
Internal Link Dist (ft)		1414	1069		691	
Turn Bay Length (ft)	400					
Base Capacity (vph)	2493	5036	1121			1181
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	0	296			75
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.28	0.46	1.61			1.43

Intersection Summary

Lanes, Volumes, Timings

104:

Cobb Parkway at Windy Hill Scoping Study

Design Year 2050 Build - L-Shape CFI with Capacity Improvement

Area Type: Other

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 139 (82%), Referenced to phase 8:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.34

Intersection Signal Delay: 79.3

Intersection LOS: E

Intersection Capacity Utilization 127.5%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 104:



Option 2D – AM Peak Hour

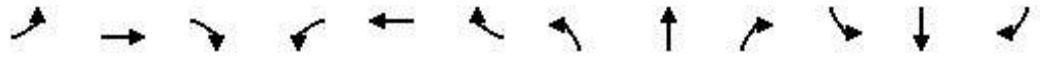
Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘↗	↑↑↑	↗	↘↗	↑↑↑	↗	↘↗	↑↑↑	
Traffic Volume (vph)	0	1030	166	90	587	266	103	532	116	170	665	0
Future Volume (vph)	0	1030	166	90	587	266	103	532	116	170	665	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		185	390		255	400		540	530		0
Storage Lanes	0		1	2		1	2		1	2		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor						0.99			0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	5022	1555	3303	4880	1555	3367	4770	1507	3400	4815	0
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	5022	1555	3303	4880	1533	3367	4770	1488	3395	4815	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			162			286			157			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		507			1049			1573			536	
Travel Time (s)		9.9			20.4			23.8			8.1	
Confl. Peds. (#/hr)	3						3		1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	0	1678	270	120	956	354	168	708	154	226	884	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1678	270	120	956	354	168	708	154	226	884	0
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		2	1		2	1	
Permitted Phases			4			8			1			
Total Split (s)		56.0	56.0	14.0	70.0	70.0	18.0	42.0	42.0	18.0	42.0	
Total Lost Time (s)		7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)		48.3	48.3	7.0	62.3	62.3	11.0	34.4	34.4	11.0	34.4	
Actuated g/C Ratio		0.37	0.37	0.05	0.48	0.48	0.08	0.26	0.26	0.08	0.26	
v/c Ratio		0.90	0.40	0.68	0.41	0.40	0.59	0.56	0.30	0.79	0.69	
Control Delay		56.4	23.0	79.6	22.6	5.9	66.5	43.3	6.9	43.8	17.7	
Queue Delay		5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		61.6	23.0	79.6	22.6	5.9	66.5	43.3	6.9	43.8	17.7	
LOS		E	C	E	C	A	E	D	A	D	B	
Approach Delay		56.3			23.2			41.6			23.0	
Approach LOS		E			C			D			C	
Queue Length 50th (ft)		550	131	52	186	31	71	189	0	101	35	
Queue Length 95th (ft)		602	214	#94	223	93	110	233	51	#157	91	
Internal Link Dist (ft)		427			969			1493			456	
Turn Bay Length (ft)			185	390		255	400		540	530		
Base Capacity (vph)		1865	679	177	2338	883	284	1262	509	287	1274	
Starvation Cap Reductn		148	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

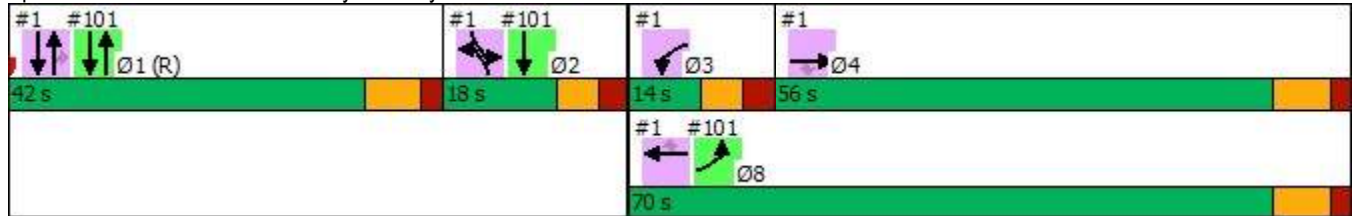


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.98	0.40	0.68	0.41	0.40	0.59	0.56	0.30	0.79	0.69	

Intersection Summary
















Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of 1st Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 38.3 Intersection LOS: D
 Intersection Capacity Utilization 80.4% ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

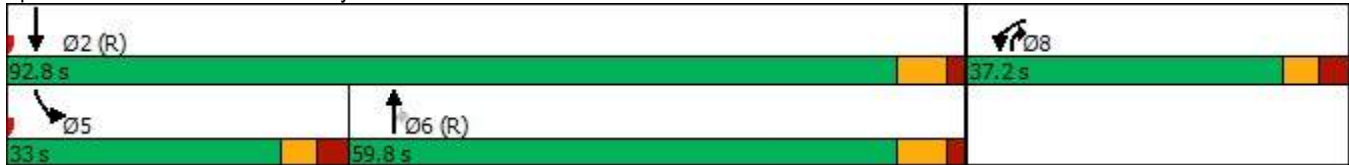
						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	451	170	783	494	178	794
Future Volume (vph)	451	170	783	494	178	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				50	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1583	3374	1583	1770	3406
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3433	1583	3374	1583	1770	3406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		226		239		
Link Speed (mph)	35		45			45
Link Distance (ft)	848		518			886
Travel Time (s)	16.5		7.8			13.4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	2%	7%	2%	2%	6%
Adj. Flow (vph)	600	226	1041	657	237	1056
Shared Lane Traffic (%)						
Lane Group Flow (vph)	600	226	1041	657	237	1056
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	8		6	8	5	2
Permitted Phases		Free		6		
Total Split (s)	37.2		59.8	37.2	33.0	92.8
Total Lost Time (s)	6.5		6.8	6.5	6.5	6.8
Act Effct Green (s)	25.9	130.0	63.9	96.5	20.5	90.8
Actuated g/C Ratio	0.20	1.00	0.49	0.74	0.16	0.70
v/c Ratio	0.88	0.14	0.63	0.53	0.85	0.44
Control Delay	65.3	0.2	15.8	8.0	85.6	8.4
Queue Delay	0.0	0.0	0.3	1.0	0.0	0.0
Total Delay	65.3	0.2	16.1	9.0	85.6	8.4
LOS	E	A	B	A	F	A
Approach Delay	47.5		13.3			22.5
Approach LOS	D		B			C
Queue Length 50th (ft)	254	0	217	150	206	144
Queue Length 95th (ft)	310	0	248	m166	301	240
Internal Link Dist (ft)	768		438			806
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	810	1583	1657	1287	360	2380
Starvation Cap Reductn	0	0	172	361	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.14	0.70	0.71	0.66	0.44
Intersection Summary						

Lanes, Volumes, Timings
 2: Cobb Pkwy & Terrel Mill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 88 (68%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings

Cobb Parkway at Windy Hill Scoping Study

3: Cobb Pkwy & Lake Park Dr/Target Dr Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.106			0.291		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	197	3438	1548	553	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			350		37				134			134
Link Speed (mph)		30			30			45				45
Link Distance (ft)		606			598			592				1193
Travel Time (s)		13.8			13.6			9.0				18.1
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	18.8	45.0	45.0	14.2	40.4		15.0	46.6	46.6	14.2	45.8	45.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	46.6	39.2	39.2	32.4	25.9		47.0	47.0	47.0	40.0	40.0	40.0
Actuated g/C Ratio	0.41	0.34	0.34	0.28	0.23		0.41	0.41	0.41	0.35	0.35	0.35
v/c Ratio	0.55	0.15	1.00	0.10	0.21		0.91	0.62	0.09	0.10	0.88	0.16
Control Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	28.4	54.9	20.4	21.4		73.1	31.7	0.2	29.4	45.3	2.6
LOS	C	C	D	C	C		E	C	A	C	D	A
Approach Delay		45.8			21.1			36.9			41.2	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	153	53	~451	17	30		~109	314	0	14	408	0
Queue Length 95th (ft)	225	95	#695	38	72		#262	393	0	36	#539	21
Internal Link Dist (ft)		526			518			512			1113	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	552	652	778	393	557		206	1413	715	284	1193	645
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.15	1.00	0.10	0.16		0.91	0.62	0.09	0.10	0.88	0.16

Intersection Summary
























Area Type:	Other		
Cycle Length:	120		
Actuated Cycle Length:	114.3		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	40.6	Intersection LOS:	D
Intersection Capacity Utilization:	92.6%	ICU Level of Service:	F
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1494	1417	1719	1267	1524	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.232			0.204		
Satd. Flow (perm)	0	1185	1397	1300	1267	1524	404	3471	1476	359	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137			137			71			84
Link Speed (mph)		30			30			45				45
Link Distance (ft)		595			599			455				801
Travel Time (s)		13.5			13.6			6.9				12.1
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	17.2	73.0	73.0	12.0	67.8	67.8
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		10.1	10.1	10.1	10.1	10.1	101.7	102.5	102.5	100.5	99.1	99.1
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.08	0.78	0.79	0.79	0.77	0.76	0.76
v/c Ratio		0.61	0.26	0.61	0.03	0.18	0.34	0.43	0.05	0.17	0.46	0.07
Control Delay		84.0	2.7	82.0	53.3	1.7	4.1	1.5	0.1	5.7	7.1	1.3
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		84.0	2.7	82.0	53.3	1.7	4.1	1.5	0.1	5.7	7.1	1.3
LOS		F	A	F	D	A	A	A	A	A	A	A
Approach Delay		41.3			48.4			1.6			6.6	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		47	0	52	2	0	5	28	0	10	181	0
Queue Length 95th (ft)		91	0	97	12	0	m10	40	m0	25	261	15
Internal Link Dist (ft)		515			519			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		355	515	390	380	553	441	2736	1178	343	2621	1192
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.16	0.12	0.16	0.01	0.08	0.27	0.43	0.05	0.16	0.46	0.07

Intersection Summary

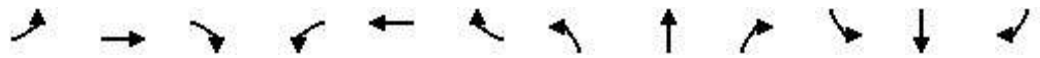
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	23 (18%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	7.3
Intersection LOS:	A
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969				0.850		0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.138			0.048			0.598					0.401
Satd. Flow (perm)	236	3410	0	90	3471	1442	1113	1592	0	0	722	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				69		94				9
Link Speed (mph)		35			35			45				30
Link Distance (ft)		610			2315			561				545
Travel Time (s)		11.9			45.1			8.5				12.4
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	84.0	84.0		13.0	97.0	97.0	33.0	33.0		33.0	33.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effect Green (s)	78.0	78.0		91.0	91.0	91.0	27.0	27.0		27.0	27.0	
Actuated g/C Ratio	0.60	0.60		0.70	0.70	0.70	0.21	0.21		0.21	0.21	
v/c Ratio	0.23	1.43		1.55	0.64	0.07	0.52	0.65		0.65	1.22	
Control Delay	17.4	220.9		306.3	7.0	0.2	54.9	38.1		38.1	183.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	17.4	220.9		306.3	7.0	0.2	54.9	38.1		38.1	183.3	
LOS	B	F		F	A	A	D	D		D	F	
Approach Delay		218.6			45.4			43.4			183.3	
Approach LOS		F			D			D			F	
Queue Length 50th (ft)	12	~1770		~230	175	0	91	131		131	~191	
Queue Length 95th (ft)	35	#1890		#403	174	1	158	229		229	#350	
Internal Link Dist (ft)		530			2235			481			465	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	141	2064		154	2429	1030	231	405		405	157	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.23	1.43		1.55	0.64	0.07	0.52	0.65		0.65	1.22	

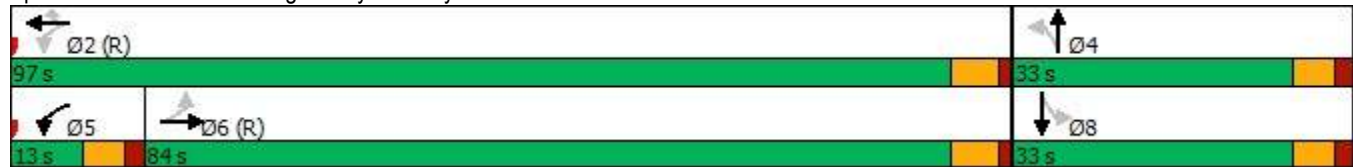
Lanes, Volumes, Timings
 6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 63 (48%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.55
 Intersection Signal Delay: 145.6 Intersection LOS: F
 Intersection Capacity Utilization 139.7% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings

Cobb Parkway at Windy Hill Scoping Study

8: Windy Hill Village Dwy & Windy Hill Rd Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↑	↗		↖	↗
Traffic Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	58	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		1049			934			616				619
Travel Time (s)		20.4			18.2			14.0				14.1
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	77	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.19	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	5.2	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.3			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	8	172		13	119			13	0		4	0
Queue Length 95th (ft)	20	237		46	166			38	5		18	0
Internal Link Dist (ft)		969			854			536			539	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.19	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

Area Type:	Other		
Cycle Length:	75		
Actuated Cycle Length:	56.4		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.61		
Intersection Signal Delay:	12.0	Intersection LOS:	B
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Lanes, Volumes, Timings
101: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2	Ø3	Ø4
Lane Configurations	↶↶			↑↑↑	↑↑↑	↷↷			
Traffic Volume (vph)	513	0	0	798	835	362			
Future Volume (vph)	513	0	0	798	835	362			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	*0.80	1.00	1.00	0.91	0.91	0.88			
Fr _t						0.850			
Fl _t Protected	0.950								
Satd. Flow (prot)	2804	0	0	4770	4815	2693			
Fl _t Permitted	0.950								
Satd. Flow (perm)	2804	0	0	4770	4815	2693			
Right Turn on Red		No				Yes			
Satd. Flow (RTOR)						442			
Link Speed (mph)	35			45	45				
Link Distance (ft)	353			536	518				
Travel Time (s)	6.9			8.1	7.8				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Growth Factor	158%	158%	129%	129%	129%	158%			
Heavy Vehicles (%)	3%	3%	4%	7%	6%	3%			
Bus Blockages (#/hr)	0	0	0	12	12	12			
Adj. Flow (vph)	836	0	0	1061	1110	590			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	836	0	0	1061	1110	590			
Turn Type	Prot			NA	NA	Free			
Protected Phases	8			1	1 2		2	3	4
Permitted Phases						Free			
Total Split (s)	70.0			42.0			18.0	14.0	56.0
Total Lost Time (s)	7.7			7.6					
Act Effct Green (s)	62.3			34.4	52.4	130.0			
Actuated g/C Ratio	0.48			0.26	0.40	1.00			
v/c Ratio	0.62			0.84	0.57	0.22			
Control Delay	31.5			25.2	39.0	0.2			
Queue Delay	0.0			0.0	0.3	0.0			
Total Delay	31.5			25.2	39.3	0.2			
LOS	C			C	D	A			
Approach Delay	31.5			25.2	25.7				
Approach LOS	C			C	C				
Queue Length 50th (ft)	471			109	310	0			
Queue Length 95th (ft)	551			132	284	0			
Internal Link Dist (ft)	273			456	438				
Turn Bay Length (ft)									
Base Capacity (vph)	1343			1262	1940	2693			
Starvation Cap Reductn	0			0	314	0			
Spillback Cap Reductn	0			4	0	0			
Storage Cap Reductn	0			0	0	0			
Reduced v/c Ratio	0.62			0.84	0.68	0.22			

Intersection Summary

Area Type: Other
Cycle Length: 130

Lanes, Volumes, Timings
 101: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Actuated Cycle Length: 130

Offset: 0 (0%), Referenced to phase 1:NBSB, Start of 1st Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 26.9

Intersection LOS: C

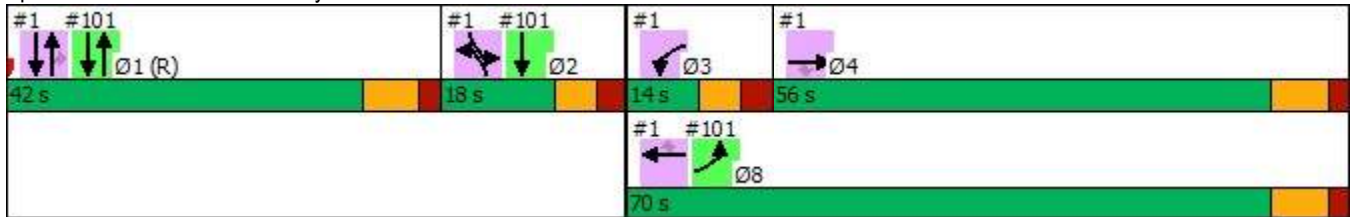
Intersection Capacity Utilization 56.7%

ICU Level of Service B

Analysis Period (min) 15

* User Entered Value

Splits and Phases: 101: Windy Hill Rd EBL



Lanes, Volumes, Timings
102:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑			↘↘
Traffic Volume (vph)	513	1196	587	0	0	362
Future Volume (vph)	513	1196	587	0	0	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			0	0	0
Storage Lanes	2			0	0	2
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.88
Frt						0.850
Flt Protected	0.950					
Satd. Flow (prot)	3400	5036	4893	0	0	2760
Flt Permitted	0.950					
Satd. Flow (perm)	3400	5036	4893	0	0	2760
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		2315	507		402	
Travel Time (s)		45.1	9.9		7.8	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	158%	158%	158%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	6%	3%	3%	3%
Adj. Flow (vph)	836	1948	956	0	0	590
Shared Lane Traffic (%)						
Lane Group Flow (vph)	836	1948	956	0	0	590
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	71.0		59.0			71.0
Total Lost Time (s)	4.5		4.5			4.5
Act Effct Green (s)	42.1	130.0	78.9			42.1
Actuated g/C Ratio	0.32	1.00	0.61			0.32
v/c Ratio	0.76	0.39	0.32			0.66
Control Delay	26.9	0.0	2.9			45.8
Queue Delay	0.0	0.1	0.0			0.0
Total Delay	26.9	0.1	2.9			45.8
LOS	C	A	A			D
Approach Delay		8.2	2.9		45.8	
Approach LOS		A	A		D	
Queue Length 50th (ft)	282	0	46			269
Queue Length 95th (ft)	m146	m0	138			252
Internal Link Dist (ft)		2235	427		322	
Turn Bay Length (ft)	400					
Base Capacity (vph)	1739	5036	2968			1411
Starvation Cap Reductn	0	0	0			0
Spillback Cap Reductn	0	1483	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.48	0.55	0.32			0.42

Intersection Summary

Lanes, Volumes, Timings

102:

Cobb Parkway at Windy Hill Scoping Study

Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 88 (68%), Referenced to phase 2:WBT, Start of 1st Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 12.1

Intersection LOS: B

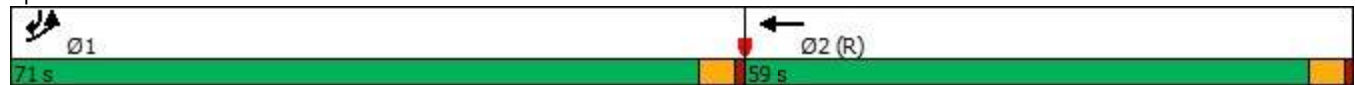
Intersection Capacity Utilization 48.5%

ICU Level of Service A

Analysis Period (min) 15













m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102:



Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

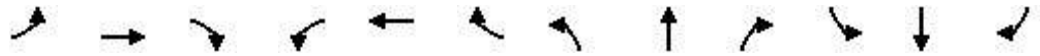
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘↗	↑↑↑	↗	↘↗	↑↑↑	↗	↘↗	↑↑↑	
Traffic Volume (vph)	0	736	167	121	816	250	517	1096	124	238	862	0
Future Volume (vph)	0	736	167	121	816	250	517	1096	124	238	862	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		185	390		255	400		540	530		0
Storage Lanes	0		1	2		1	2		1	2		0
Taper Length (ft)	50			50			50			50		
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Ped Bike Factor						0.98			0.99	1.00		
Frt			0.850			0.850			0.850			
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	5022	1571	3433	5072	1555	3433	5004	1507	3433	4955	0
Flt Permitted				0.950			0.950			0.950		
Satd. Flow (perm)	0	5022	1571	3433	5072	1531	3433	5004	1488	3432	4955	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			143			233			138			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		510			1047			1552			535	
Travel Time (s)		9.9			20.4			23.5			8.1	
Confl. Peds. (#/hr)	3						3		1	1		
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	0	1199	272	161	1329	332	842	1458	165	317	1146	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1199	272	161	1329	332	842	1458	165	317	1146	0
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4		3	8		2	1		2	1	
Permitted Phases			4			8			1			
Total Split (s)		52.7	52.7	13.0	65.7	65.7	44.0	66.3	66.3	44.0	66.3	
Total Lost Time (s)		7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)		45.0	45.0	6.0	58.0	58.0	37.0	58.7	58.7	37.0	58.7	
Actuated g/C Ratio		0.26	0.26	0.03	0.33	0.33	0.21	0.33	0.33	0.21	0.33	
v/c Ratio		0.93	0.54	1.38	0.80	0.50	1.17	0.87	0.28	0.44	0.69	
Control Delay		105.5	59.1	269.8	57.9	16.3	148.1	62.1	10.5	42.5	29.8	
Queue Delay		19.0	0.3	0.0	0.5	0.0	0.6	9.5	0.0	0.0	0.3	
Total Delay		124.5	59.4	269.8	58.4	16.3	148.7	71.6	10.5	42.5	30.1	
LOS		F	E	F	E	B	F	E	B	D	C	
Approach Delay		112.5			69.4			93.9			32.8	
Approach LOS		F			E			F			C	
Queue Length 50th (ft)		533	213	~126	513	86	~592	582	21	168	136	
Queue Length 95th (ft)		#597	315	#211	572	188	#728	646	82	218	165	
Internal Link Dist (ft)		430			967			1472			455	
Turn Bay Length (ft)			185	390		255	400		540	530		
Base Capacity (vph)		1284	508	117	1671	660	721	1668	588	721	1652	
Starvation Cap Reductn		124	33	0	0	0	0	0	0	0	116	
Spillback Cap Reductn		0	0	0	91	9	59	202	0	0	0	
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	

Option 2D – PM Peak Hour

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		1.03	0.57	1.38	0.84	0.51	1.27	0.99	0.28	0.44	0.75	

Intersection Summary

Area Type: Other

Cycle Length: 176

Actuated Cycle Length: 176

Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 79.1 Intersection LOS: E

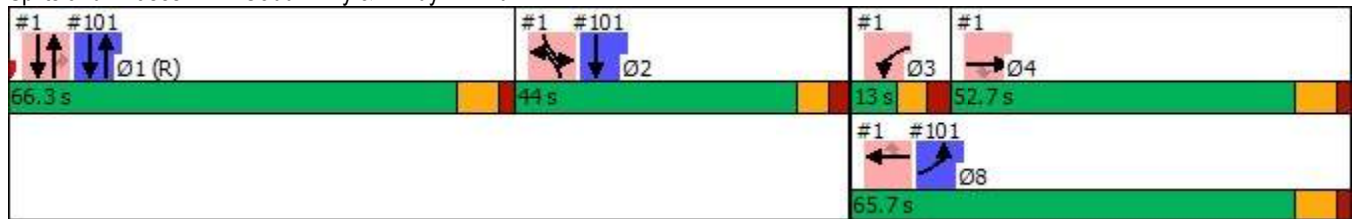
Intersection Capacity Utilization 96.1% ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
















95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrel Mill Rd

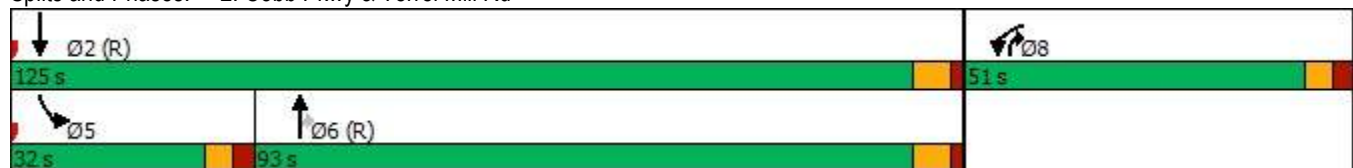
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	632	181	1218	683	185	1470
Future Volume (vph)	632	181	1218	683	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				50	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99	0.99		0.98	1.00	
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3505	1599	1770	3539
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	3430	1562	3505	1561	1767	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		241		115		
Link Speed (mph)	35		45			45
Link Distance (ft)	1011		519			886
Travel Time (s)	19.7		7.9			13.4
Confl. Peds. (#/hr)	6	6		7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	1620	908	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	1620	908	246	1955
Turn Type	Prot	Free	NA	pm+ov	Prot	NA
Protected Phases	8		6	8	5	2
Permitted Phases		Free		6		
Total Split (s)	51.0		93.0	51.0	32.0	125.0
Total Lost Time (s)	6.5		6.8	6.5	6.5	6.8
Act Effect Green (s)	43.8	176.0	87.2	131.3	25.2	118.9
Actuated g/C Ratio	0.25	1.00	0.50	0.75	0.14	0.68
v/c Ratio	0.97	0.15	0.93	0.75	0.97	0.82
Control Delay	89.7	0.2	16.8	11.9	125.8	15.4
Queue Delay	0.0	0.0	7.7	0.4	0.0	0.1
Total Delay	89.7	0.2	24.5	12.3	125.8	15.4
LOS	F	A	C	B	F	B
Approach Delay	69.8		20.1			27.8
Approach LOS	E		C			C
Queue Length 50th (ft)	497	0	414	322	292	362
Queue Length 95th (ft)	#630	0	m388	m261	#482	459
Internal Link Dist (ft)	931		439			806
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	876	1562	1737	1209	256	2391
Starvation Cap Reductn	0	0	112	62	0	22
Spillback Cap Reductn	0	0	0	0	0	4
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.15	1.00	0.79	0.96	0.83

Intersection Summary

Area Type: Other
 Cycle Length: 176
 Actuated Cycle Length: 176
 Offset: 117 (66%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.97
 Intersection Signal Delay: 32.2 Intersection LOS: C
 Intersection Capacity Utilization 96.7% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrel Mill Rd



Lanes, Volumes, Timings

Cobb Parkway at Windy Hill Scoping Study

3: Cobb Pkwy & Lake Park Dr/Target Dr Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1787	1735	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.217			0.704			0.062			0.068		
Satd. Flow (perm)	412	1900	1576	1321	1735	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45				45
Link Distance (ft)		586			622			1026				1214
Travel Time (s)		13.3			14.1			15.5				18.4
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.2	39.0	39.0	14.3	39.1		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	33.9	25.6	25.6	34.1	25.7		90.9	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.24	0.18	0.18	0.24	0.18		0.64	0.54	0.54	0.47	0.41	0.41
v/c Ratio	0.65	0.23	0.72	0.70	0.85		1.00	0.97	0.24	0.68	0.96	0.14
Control Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.2	51.0	21.3	57.5	72.5		90.9	48.0	10.0	51.7	56.8	1.5
LOS	E	D	C	E	E		F	D	A	D	E	A
Approach Delay		33.0			65.7			51.4			52.8	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	84	63	70	187	233		~316	862	50	45	650	0
Queue Length 95th (ft)	137	111	190	271	342		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		506			542			946			1134	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	179	441	587	343	428		386	1902	887	156	1434	739
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.18	0.64	0.70	0.67		1.00	0.97	0.24	0.68	0.96	0.14

Intersection Summary
























Area Type:	Other		
Cycle Length:	150		
Actuated Cycle Length:	142.7		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	51.2	Intersection LOS:	D
Intersection Capacity Utilization:	100.4%	ICU Level of Service:	G
Analysis Period (min):	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr

Ø1	Ø2	Ø3	Ø4
32.5 s	64.2 s	14.2 s	39.1 s
Ø5	Ø6	Ø7	Ø8
14.2 s	82.5 s	14.3 s	39 s

Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.97			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1716	1568	1770	1900	1568	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.656			0.089			0.081		
Satd. Flow (perm)	0	1323	1544	1218	1900	1544	150	3505	1542	148	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			157			53			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		612			587			455				801
Travel Time (s)		13.9			13.3			6.9				12.1
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	13.6	102.0	102.0	27.0	115.4	115.4
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effect Green (s)		31.8	31.8	31.8	31.8	31.8	111.7	111.1	111.1	122.8	121.4	121.4
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.63	0.63	0.63	0.70	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.38	0.70	0.15	0.72	0.73	0.07
Control Delay		66.6	6.2	115.9	55.8	10.0	10.0	8.0	2.0	40.5	21.4	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		66.6	6.2	115.9	55.8	10.0	10.0	8.0	2.0	40.5	21.4	2.7
LOS		E	A	F	E	A	B	A	A	D	C	A
Approach Delay		38.3			69.3			7.6			22.4	
Approach LOS		D			E			A			C	
Queue Length 50th (ft)		96	0	236	16	0	3	46	0	82	673	0
Queue Length 95th (ft)		150	30	327	39	64	m4	63	m0	181	908	21
Internal Link Dist (ft)		532			507			375			721	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		308	437	283	442	480	156	2212	992	297	2441	1015
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.30	0.19	0.72	0.04	0.33	0.34	0.70	0.15	0.57	0.73	0.07

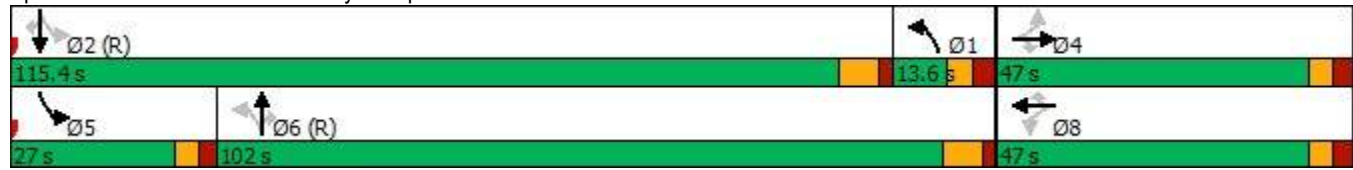
Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Intersection Summary

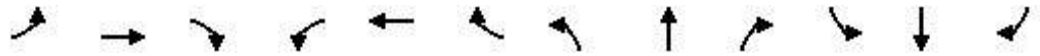
Area Type: Other
 Cycle Length: 176
 Actuated Cycle Length: 176
 Offset: 142 (81%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 21.1 Intersection LOS: C
 Intersection Capacity Utilization 85.3% ICU Level of Service E
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

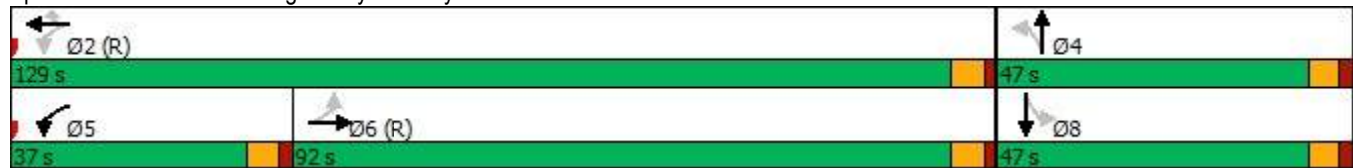


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↖			↕	
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869			0.971	
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1752	3448	0	1787	3539	1615	1787	1637	0	0	1775	0
Flt Permitted	0.047			0.043			0.593				0.377	
Satd. Flow (perm)	87	3448	0	81	3539	1615	1116	1637	0	0	686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				87		187			2	
Link Speed (mph)		35			35			45			30	
Link Distance (ft)		587			2283			581			581	
Travel Time (s)		11.4			44.5			8.8			13.2	
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4			8	
Permitted Phases	6			2		2	4			8		
Total Split (s)	92.0	92.0		37.0	129.0	129.0	47.0	47.0		47.0	47.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effect Green (s)	86.0	86.0		123.0	123.0	123.0	41.0	41.0		41.0	41.0	
Actuated g/C Ratio	0.49	0.49		0.70	0.70	0.70	0.23	0.23		0.23	0.23	
v/c Ratio	0.74	1.22		1.31	1.23	0.16	0.92	0.53		0.53	1.19	
Control Delay	117.4	143.8		191.5	122.2	2.3	102.5	23.1		23.1	186.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	117.4	143.8		191.5	122.2	2.3	102.5	23.1		23.1	186.1	
LOS	F	F		F	F	A	F	C		C	F	
Approach Delay		143.4			124.9			59.5			186.1	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	28	~1533		~648	~2267	18	270	91			~265	
Queue Length 95th (ft)	#105	#1657		m#611	m#2137	m16	#447	194			#444	
Internal Link Dist (ft)		507			2203			501			501	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	42	1690		357	2473	1154	259	524			161	
Starvation Cap Reductn	0	0		0	0	0	0	0			0	
Spillback Cap Reductn	0	0		0	0	0	0	0			0	
Storage Cap Reductn	0	0		0	0	0	0	0			0	
Reduced v/c Ratio	0.74	1.22		1.31	1.23	0.16	0.92	0.53			1.19	

Intersection Summary

Area Type:	Other
Cycle Length:	176
Actuated Cycle Length:	176
Offset:	83 (47%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.31
Intersection Signal Delay:	127.5
Intersection LOS:	F
Intersection Capacity Utilization	141.0%
ICU Level of Service	H
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings

Cobb Parkway at Windy Hill Scoping Study

8: Windy Hill Village Dwy & Windy Hill Rd Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	88	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5028	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.125			0.162				0.715			0.752	
Satd. Flow (perm)	238	5028	0	308	5050	0	0	1358	1615	0	1429	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1047			703			625			607	
Travel Time (s)		20.4			13.7			14.2			13.8	
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	119	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.5	31.6		13.4	31.5		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	33.5		35.1	30.9			8.1	8.1		8.1	8.1
Actuated g/C Ratio	0.64	0.59		0.62	0.54			0.14	0.14		0.14	0.14
v/c Ratio	0.33	0.46		0.19	0.59			0.05	0.06		0.24	0.22
Control Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	8.5	10.9		5.5	13.5			22.6	0.4		25.8	3.2
LOS	A	B		A	B			C	A		C	A
Approach Delay		10.7			13.1			6.8			12.0	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	12	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	185		20	230			14	0		42	12
Internal Link Dist (ft)		967			623			545			527	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	362	2975		388	2759			580	764		610	764
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.33	0.46		0.19	0.59			0.02	0.03		0.08	0.10

Intersection Summary

Lanes, Volumes, Timings

Cobb Parkway at Windy Hill Scoping Study

8: Windy Hill Village Dwy & Windy Hill Rd Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 56.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 11.9

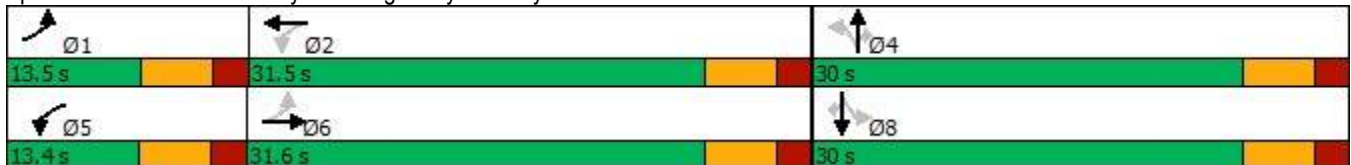
Intersection LOS: B

Intersection Capacity Utilization 60.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Lanes, Volumes, Timings
101: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø2	Ø3	Ø4
Lane Configurations	↶↶			↑↑↑	↑↑↑	↷↷			
Traffic Volume (vph)	498	0	0	1347	1100	962			
Future Volume (vph)	498	0	0	1347	1100	962			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Util. Factor	*0.80	1.00	1.00	0.91	0.91	0.88			
Fr _t						0.850			
Fl _t Protected	0.950								
Satd. Flow (prot)	2831	0	0	5004	4955	2747			
Fl _t Permitted	0.950								
Satd. Flow (perm)	2831	0	0	5004	4955	2747			
Right Turn on Red		No				Yes			
Satd. Flow (RTOR)						658			
Link Speed (mph)	35			45	45				
Link Distance (ft)	352			535	519				
Travel Time (s)	6.9			8.1	7.9				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Growth Factor	158%	158%	129%	129%	129%	158%			
Heavy Vehicles (%)	2%	2%	2%	2%	3%	1%			
Bus Blockages (#/hr)	0	0	0	12	12	12			
Adj. Flow (vph)	811	0	0	1791	1463	1567			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	811	0	0	1791	1463	1567			
Turn Type	Prot			NA	NA	Free			
Protected Phases	8			1	1 2		2	3	4
Permitted Phases						Free			
Total Split (s)	65.7			66.3			44.0	13.0	52.7
Total Lost Time (s)	7.7			7.6					
Act Effct Green (s)	58.0			58.7	102.7	176.0			
Actuated g/C Ratio	0.33			0.33	0.58	1.00			
v/c Ratio	0.87			1.07	0.51	0.57			
Control Delay	101.1			59.9	22.6	0.5			
Queue Delay	0.5			0.8	2.2	0.4			
Total Delay	101.6			60.7	24.9	0.9			
LOS	F			E	C	A			
Approach Delay	101.6			60.7	12.5				
Approach LOS	F			E	B				
Queue Length 50th (ft)	620			~826	382	0			
Queue Length 95th (ft)	703			#902	m386	m0			
Internal Link Dist (ft)	272			455	439				
Turn Bay Length (ft)									
Base Capacity (vph)	932			1668	2891	2747			
Starvation Cap Reductn	0			0	1238	0			
Spillback Cap Reductn	15			3	0	563			
Storage Cap Reductn	0			0	0	0			
Reduced v/c Ratio	0.88			1.08	0.89	0.72			

Intersection Summary

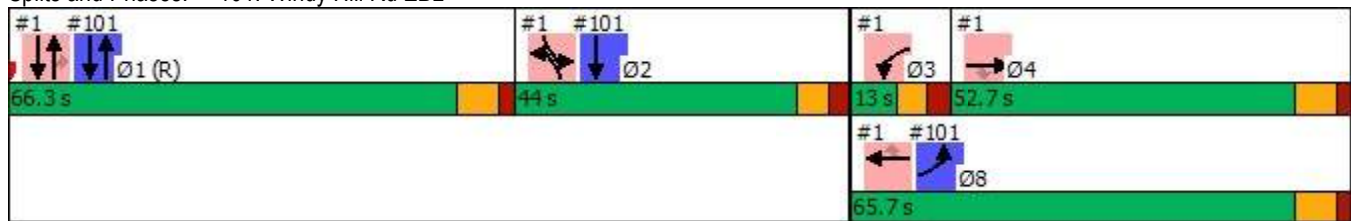
Area Type: Other
Cycle Length: 176

Lanes, Volumes, Timings
 101: Windy Hill Rd EBL

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Actuated Cycle Length: 176
 Offset: 0 (0%), Referenced to phase 1:NBSB, Start of Green, Master Intersection
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.38
 Intersection Signal Delay: 40.6 Intersection LOS: D
 Intersection Capacity Utilization 68.8% ICU Level of Service C
 Analysis Period (min) 15
 * User Entered Value
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 101: Windy Hill Rd EBL



Lanes, Volumes, Timings
102:

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖↖	↑↑↑	↑↑↑			↘↘
Traffic Volume (vph)	498	903	1333	0	0	962
Future Volume (vph)	498	903	1333	0	0	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400			0	0	0
Storage Lanes	2			0	0	2
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.91	0.91	1.00	1.00	0.88
Flt						0.850
Flt Protected	0.950					
Satd. Flow (prot)	3433	5036	5085	0	0	2814
Flt Permitted	0.950					
Satd. Flow (perm)	3433	5036	5085	0	0	2814
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		35	35		35	
Link Distance (ft)		2283	510		396	
Travel Time (s)		44.5	9.9		7.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	1.00	0.97
Growth Factor	158%	158%	158%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	3%	2%	1%
Adj. Flow (vph)	811	1471	2171	0	0	1567
Shared Lane Traffic (%)						
Lane Group Flow (vph)	811	1471	2171	0	0	1567
Turn Type	Prot	NA	NA			Over
Protected Phases	1	Free	2			1
Permitted Phases						
Total Split (s)	98.6		77.4			98.6
Total Lost Time (s)	4.5		4.5			4.5
Act Effct Green (s)	94.1	176.0	72.9			94.1
Actuated g/C Ratio	0.53	1.00	0.41			0.53
v/c Ratio	0.44	0.29	1.03			1.04
Control Delay	7.5	0.0	36.7			75.4
Queue Delay	0.0	0.1	2.3			2.9
Total Delay	7.5	0.2	39.0			78.3
LOS	A	A	D			E
Approach Delay		2.8	39.0		78.3	
Approach LOS		A	D		E	
Queue Length 50th (ft)	67	0	~951			~1121
Queue Length 95th (ft)	m63	m0	m#568			#1267
Internal Link Dist (ft)		2203	430		316	
Turn Bay Length (ft)	400					
Base Capacity (vph)	1835	5036	2106			1504
Starvation Cap Reductn	0	0	13			11
Spillback Cap Reductn	0	2132	0			0
Storage Cap Reductn	0	0	0			0
Reduced v/c Ratio	0.44	0.51	1.04			1.05

Intersection Summary

Lanes, Volumes, Timings

102:

Cobb Parkway at Windy Hill Scoping Study

Design Year 2050 Build - EB CFI with Capacity Improvement-Signalized SBR

Area Type: Other

Cycle Length: 176

Actuated Cycle Length: 176

Offset: 89 (51%), Referenced to phase 2:WBT, Start of 1st Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 35.5

Intersection LOS: D

Intersection Capacity Utilization 101.4%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.




































Splits and Phases: 102:



Option 3 – AM Peak Hour

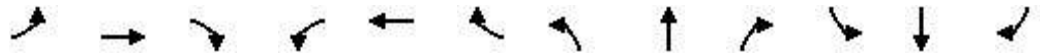
Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		 	 	
Traffic Volume (vph)	513	1030	166	90	587	266	103	532	116	170	665	362
Future Volume (vph)	513	1030	166	90	587	266	103	532	116	170	665	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	695		185	390		255	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	*0.80	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2804	5022	1555	3303	4880	1555	3367	4770	1507	3400	3324	2693
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2801	5022	1555	3303	4880	1532	3367	4770	1487	3398	3324	2693
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)			140						192			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			1055	
Travel Time (s)		25.2			17.5			11.6			16.0	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	836	1678	270	120	956	354	168	708	154	226	884	590
Shared Lane Traffic (%)												
Lane Group Flow (vph)	836	1678	270	120	956	354	168	708	154	226	884	590
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	2.7
Permitted Phases			4			8			6			
Total Split (s)	42.0	74.7	74.7	17.0	49.7	49.7	12.0	43.3	43.3	15.0	46.3	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)	35.0	64.3	64.3	10.5	39.8	39.8	7.2	35.7	35.7	10.2	38.7	80.7
Actuated g/C Ratio	0.23	0.43	0.43	0.07	0.27	0.27	0.05	0.24	0.24	0.07	0.26	0.54
v/c Ratio	1.28	0.78	0.36	0.52	0.74	0.87	1.04	0.62	0.31	0.98	1.03	0.41
Control Delay	177.6	33.6	13.6	75.9	54.0	74.5	145.8	54.0	3.9	114.1	80.1	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.6	33.6	13.6	75.9	54.0	74.5	145.8	54.0	3.9	114.1	80.1	19.7
LOS	F	C	B	E	D	E	F	D	A	F	F	B
Approach Delay		74.9			61.0			61.5			63.7	
Approach LOS		E			E			E			E	
Queue Length 50th (ft)	~643	361	53	59	308	326	~117	229	0	~139	~492	171
Queue Length 95th (ft)	m372	m222	m32	95	361	#488	#197	276	29	#230	#615	206
Internal Link Dist (ft)		1213			818			687			975	
Turn Bay Length (ft)	695		185	390		255	400		540	530		625
Base Capacity (vph)	654	2243	772	231	1366	428	162	1135	500	231	857	1448
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Capacity Improvement

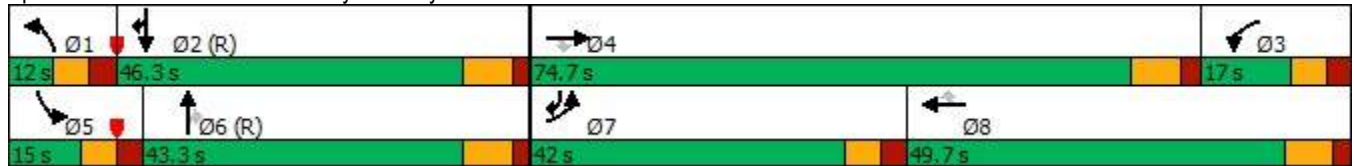


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.28	0.75	0.35	0.52	0.70	0.83	1.04	0.62	0.31	0.98	1.03	0.41

Intersection Summary













Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	17 (11%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.28
Intersection Signal Delay:	67.3
Intersection LOS:	E
Intersection Capacity Utilization	101.7%
ICU Level of Service	G
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.	Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

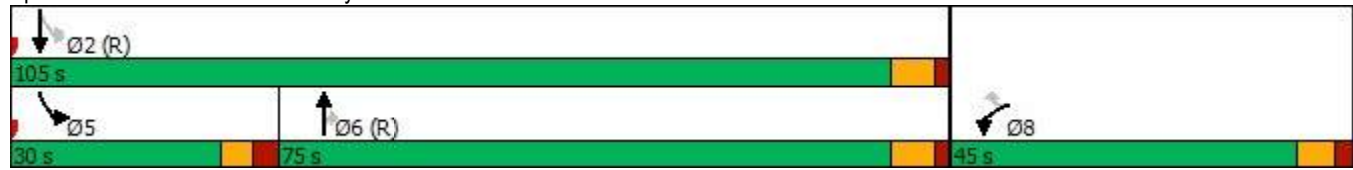
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	451	170	783	494	178	794
Future Volume (vph)	451	170	783	494	178	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor		0.99		0.98		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3433	1599	3438	1583	1787	3438
Flt Permitted	0.950				0.183	
Satd. Flow (perm)	3433	1575	3438	1559	344	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		233		580		
Link Speed (mph)	35		45			45
Link Distance (ft)	776		1055			1370
Travel Time (s)	15.1		16.0			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	619	233	1075	678	244	1090
Shared Lane Traffic (%)						
Lane Group Flow (vph)	619	233	1075	678	244	1090
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	45.0	45.0	75.0	75.0	30.0	105.0
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	31.6	31.6	86.4	86.4	105.4	105.1
Actuated g/C Ratio	0.21	0.21	0.58	0.58	0.70	0.70
v/c Ratio	0.86	0.45	0.54	0.59	0.68	0.45
Control Delay	69.2	8.1	13.4	2.4	18.0	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.2	8.1	13.4	2.4	18.0	7.8
LOS	E	A	B	A	B	A
Approach Delay	52.5		9.2			9.7
Approach LOS	D		A			A
Queue Length 50th (ft)	304	0	110	16	100	294
Queue Length 95th (ft)	355	68	m306	m14	66	73
Internal Link Dist (ft)	696		975			1290
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	881	577	1980	1144	467	2409
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.40	0.54	0.59	0.52	0.45

Intersection Summary
























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	16 (11%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	18.7
Intersection LOS:	B
Intersection Capacity Utilization	74.3%
ICU Level of Service	D
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.089			0.203		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	166	3438	1548	386	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				187			187
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		442			522			748			1959	
Travel Time (s)		10.0			11.9			11.3			29.7	
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	20.6	47.0	47.0	14.2	40.6		15.0	44.6	44.6	14.2	43.8	43.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	49.4	41.2	41.2	32.6	26.1		50.2	45.0	45.0	46.4	38.0	38.0
Actuated g/C Ratio	0.43	0.36	0.36	0.29	0.23		0.44	0.39	0.39	0.41	0.33	0.33
v/c Ratio	0.51	0.14	1.00	0.10	0.21		0.94	0.65	0.09	0.10	0.92	0.16
Control Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
LOS	C	C	E	B	C		E	C	A	B	D	A
Approach Delay		46.2			20.7			39.5			46.4	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	148	52	~479	16	30		~104	323	0	12	419	0
Queue Length 95th (ft)	218	93	#724	37	72		#260	403	0	30	#563	0
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	589	685	777	395	560		200	1352	722	259	1133	655
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.14	1.00	0.10	0.16		0.94	0.65	0.09	0.10	0.92	0.16

Intersection Summary

Area Type:	Other	
Cycle Length:	120	
Actuated Cycle Length:	114.3	
Control Type:	Actuated-Uncoordinated	
Maximum v/c Ratio:	1.00	
Intersection Signal Delay:	43.3	Intersection LOS: D
Intersection Capacity Utilization	92.6%	ICU Level of Service F
Analysis Period (min)	15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.		
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.		

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1445	1369	1662	1224	1473	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.198			0.231		
Satd. Flow (perm)	0	1145	1350	1257	1224	1473	345	3471	1489	406	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			114			62			108
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	21.0	93.0	93.0	12.0	84.0	84.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		11.2	11.2	11.2	11.2	11.2	125.4	117.9	117.9	117.7	111.9	111.9
Actuated g/C Ratio		0.07	0.07	0.07	0.07	0.07	0.84	0.79	0.79	0.78	0.75	0.75
v/c Ratio		0.66	0.30	0.66	0.03	0.21	0.34	0.43	0.05	0.15	0.47	0.07
Control Delay		100.3	3.7	97.8	61.7	2.2	6.4	7.5	2.8	3.6	8.8	0.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		100.3	3.7	97.8	61.7	2.2	6.4	7.5	2.8	3.6	8.8	0.7
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		49.6			57.7			7.2			8.1	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		54	0	60	3	0	7	175	2	7	216	0
Queue Length 95th (ft)		101	0	110	13	0	73	320	28	17	326	10
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		297	435	326	318	467	419	2727	1183	379	2563	1174
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

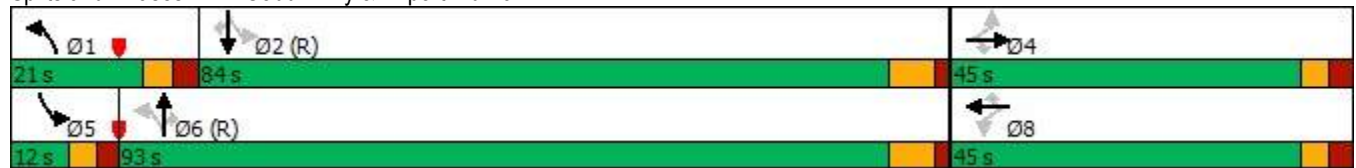
Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.19	0.14	0.19	0.01	0.10	0.29	0.43	0.05	0.15	0.47	0.07





















Intersection Summary	
Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	28 (19%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	11.2
Intersection LOS:	B
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

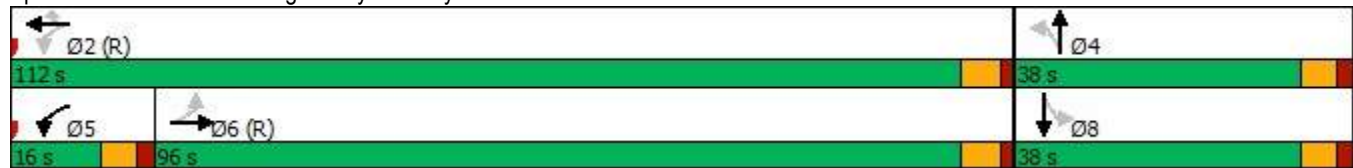
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969				0.850		0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.139			0.042			0.596					0.392
Satd. Flow (perm)	238	3410	0	79	3471	1442	1109	1592	0	0	706	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40				69		114				8
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	96.0	96.0		16.0	112.0	112.0	38.0	38.0		38.0		38.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0				6.0
Act Effect Green (s)	90.0	90.0		106.0	106.0	106.0	32.0	32.0				32.0
Actuated g/C Ratio	0.60	0.60		0.71	0.71	0.71	0.21	0.21				0.21
v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61				1.22
Control Delay	19.2	223.4		258.2	4.9	0.1	60.7	36.3				190.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	19.2	223.4		258.2	4.9	0.1	60.7	36.3				190.7
LOS	B	F		F	A	A	E	D				F
Approach Delay		221.2			37.4			44.0				190.7
Approach LOS		F			D			D				F
Queue Length 50th (ft)	14	~2051		~260	66	0	105	132				~223
Queue Length 95th (ft)	38	#2158		m#426	m98	m0	175	233				#389
Internal Link Dist (ft)		700			1292			609				412
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	142	2062		169	2452	1039	236	429				156
Starvation Cap Reductn	0	0		0	0	0	0	0				0
Spillback Cap Reductn	0	0		0	0	0	0	0				0
Storage Cap Reductn	0	0		0	0	0	0	0				0
Reduced v/c Ratio	0.23	1.43		1.41	0.63	0.07	0.51	0.61				1.22

Intersection Summary























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	149 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.43
Intersection Signal Delay:	144.6
Intersection LOS:	F
Intersection Capacity Utilization	139.7%
ICU Level of Service	H
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd







Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		898			1245			657			706	
Travel Time (s)		17.5			24.3			14.9			16.0	
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.14	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.4			10.4			11.3			11.5	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	6	172		13	119			13	0		4	0
Queue Length 95th (ft)	16	237		46	166			38	5		18	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.14	0.61		0.37	0.44			0.07	0.08		0.03	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization:	64.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1 13.4 s	 Ø2 31.6 s	 Ø4 30 s
 Ø5 13.5 s	 Ø6 31.5 s	 Ø8 30 s

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

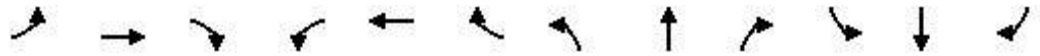
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	498	736	167	121	816	250	517	1096	124	238	862	962
Future Volume (vph)	498	736	167	121	816	250	517	1096	124	238	862	962
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	695		185	390		255	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	*0.80	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	2831	5022	1571	3433	5072	1555	3433	5004	1507	3433	3421	2747
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	2831	5022	1571	3433	5072	1535	3431	5004	1487	3432	3421	2747
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)			159						165			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			906			815			1055	
Travel Time (s)		25.2			17.6			12.3			16.0	
Confl. Peds. (#/hr)	1						1	2		1	1	2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Bus Blockages (#/hr)	0	2	2	0	2	2	0	12	12	0	12	12
Adj. Flow (vph)	811	1199	272	161	1329	332	842	1458	165	317	1146	1567
Shared Lane Traffic (%)												
Lane Group Flow (vph)	811	1199	272	161	1329	332	842	1458	165	317	1146	1567
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			6			
Total Split (s)	39.0	68.0	68.0	21.0	50.0	50.0	34.0	67.0	67.0	24.0	57.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effct Green (s)	32.0	54.2	54.2	20.1	42.3	42.3	27.0	59.4	59.4	17.0	49.4	88.4
Actuated g/C Ratio	0.18	0.30	0.30	0.11	0.24	0.24	0.15	0.33	0.33	0.09	0.27	0.49
v/c Ratio	1.61	0.79	0.47	0.42	1.12	0.92	1.64	0.88	0.27	0.98	1.22	1.16
Control Delay	311.9	31.8	7.4	79.9	124.6	97.6	338.6	64.5	6.5	111.4	156.7	116.9
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	312.3	31.8	7.4	79.9	124.6	97.6	338.6	64.5	6.5	111.4	156.7	116.9
LOS	F	C	A	E	F	F	F	E	A	F	F	F
Approach Delay		128.6			115.7			154.2			131.4	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~850	436	96	93	~656	388	~736	600	0	194	~871	~1240
Queue Length 95th (ft)	m#702	m336	m76	140	#753	#584	#872	663	57	m#267	m#1013	#1390
Internal Link Dist (ft)		1213			826			735			975	
Turn Bay Length (ft)	695		185	390		255	400		540	530		625
Base Capacity (vph)	503	1682	632	383	1191	360	514	1651	601	324	938	1349
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	22	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Option 3 – PM Peak Hour

Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Capacity Improvement

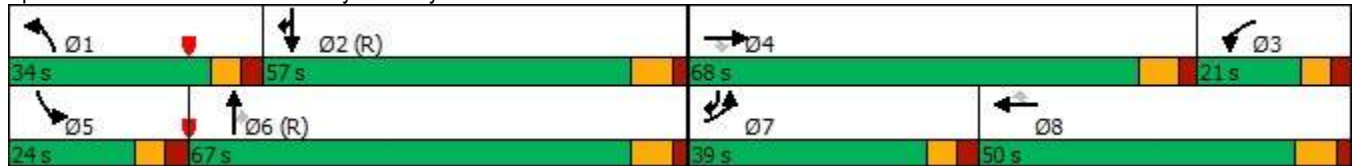


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	1.69	0.71	0.43	0.42	1.12	0.92	1.64	0.88	0.27	0.98	1.22	1.16

Intersection Summary
















Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	11 (6%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.64
Intersection Signal Delay:	133.6
Intersection LOS:	F
Intersection Capacity Utilization	126.1%
ICU Level of Service	H
Analysis Period (min)	15
* User Entered Value	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

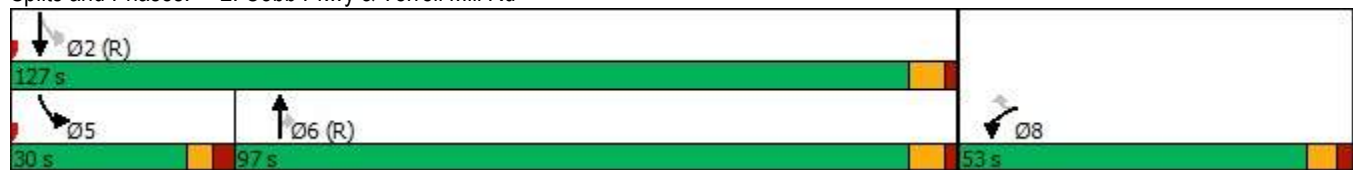
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	632	181	1218	683	185	1470
Future Volume (vph)	632	181	1218	683	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	595		0	140	
Storage Lanes	2	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor	0.98			0.97		
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	3467	1583	3505	1599	1770	3539
Flt Permitted	0.950				0.040	
Satd. Flow (perm)	3405	1583	3505	1558	75	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		235		469		
Link Speed (mph)	35		45			45
Link Distance (ft)	864		1055			1370
Travel Time (s)	16.8		16.0			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	840	241	1620	908	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	840	241	1620	908	246	1955
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases		8		6	2	
Total Split (s)	53.0	53.0	97.0	97.0	30.0	127.0
Total Lost Time (s)	6.5	6.5	6.8	6.8	6.5	6.8
Act Effect Green (s)	45.5	45.5	92.7	92.7	121.5	121.2
Actuated g/C Ratio	0.25	0.25	0.52	0.52	0.68	0.67
v/c Ratio	0.96	0.42	0.90	0.88	0.95	0.82
Control Delay	87.8	8.5	18.4	8.5	103.5	18.0
Queue Delay	0.0	0.0	2.4	8.2	0.0	0.1
Total Delay	87.8	8.5	20.8	16.7	103.5	18.1
LOS	F	A	C	B	F	B
Approach Delay	70.1		19.3			27.6
Approach LOS	E		B			C
Queue Length 50th (ft)	505	5	741	606	258	415
Queue Length 95th (ft)	#630	82	m557	m41	#420	560
Internal Link Dist (ft)	784		975			1290
Turn Bay Length (ft)		595			140	
Base Capacity (vph)	895	583	1804	1029	271	2383
Starvation Cap Reductn	0	0	99	101	0	22
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.41	0.95	0.98	0.91	0.83

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 5 (3%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 31.9 Intersection LOS: C
 Intersection Capacity Utilization 96.4% ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



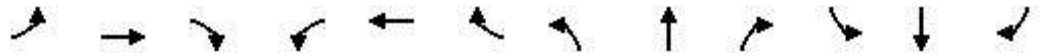
Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1619	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.237			0.704			0.062			0.068		
Satd. Flow (perm)	450	1900	1576	1233	1619	0	117	3539	1558	128	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			289		31				107			150
Link Speed (mph)		30			30			45				45
Link Distance (ft)		503			490			464				1912
Travel Time (s)		11.4			11.1			7.0				29.0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.3	38.9	38.9	14.4	39.0		32.5	82.5	82.5	14.2	64.2	64.2
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	35.5	27.1	27.1	35.7	27.2		91.0	76.7	76.7	66.7	58.4	58.4
Actuated g/C Ratio	0.25	0.19	0.19	0.25	0.19		0.63	0.53	0.53	0.46	0.40	0.40
v/c Ratio	0.62	0.22	0.71	0.73	0.87		1.01	0.99	0.25	0.69	0.97	0.14
Control Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	50.5	20.6	59.9	75.4		94.1	51.1	10.3	52.8	59.5	1.6
LOS	D	D	C	E	E		F	D	B	D	E	A
Approach Delay		31.7			68.3			54.3			55.2	
Approach LOS		C			E			D			E	
Queue Length 50th (ft)	84	63	70	189	237		~337	895	52	47	669	0
Queue Length 95th (ft)	137	111	191	275	350		#575	#1150	108	#143	#878	12
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	190	435	583	330	395		382	1882	878	154	1418	733
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Capacity Improvement

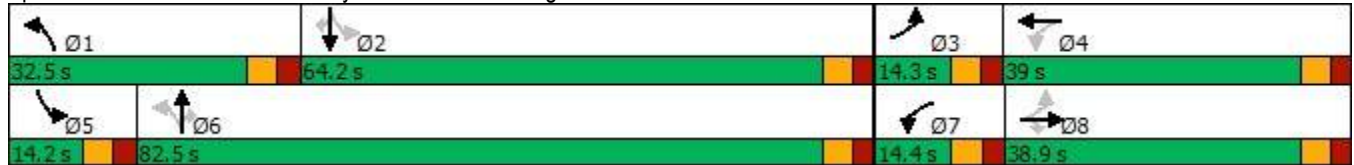


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.62	0.18	0.64	0.73	0.72		1.01	0.99	0.25	0.69	0.97	0.14

Intersection Summary
























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	144.3
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.01
Intersection Signal Delay:	53.5
Intersection LOS:	D
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1658	1516	1711	1837	1516	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.656			0.077			0.091		
Satd. Flow (perm)	0	1279	1492	1178	1837	1492	129	3505	1558	166	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			157			90			66
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		651			696			1370			617	
Travel Time (s)		14.8			15.8			20.8			9.3	
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4	4	8	8	8	6		6	2		2
Total Split (s)	49.0	49.0	49.0	49.0	49.0	49.0	13.0	105.0	105.0	26.0	118.0	118.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		33.5	33.5	33.5	33.5	33.5	120.6	114.8	114.8	134.9	124.2	124.2
Actuated g/C Ratio		0.19	0.19	0.19	0.19	0.19	0.67	0.64	0.64	0.75	0.69	0.69
v/c Ratio		0.39	0.23	0.94	0.05	0.39	0.41	0.70	0.15	0.70	0.73	0.07
Control Delay		67.3	7.7	117.7	56.3	9.9	16.5	7.0	0.9	32.6	21.7	2.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		67.3	7.7	117.7	56.3	9.9	16.5	7.0	0.9	32.6	21.7	2.7
LOS		E	A	F	E	A	B	A	A	C	C	A
Approach Delay		39.4			70.3			6.7			22.0	
Approach LOS		D			E			A			C	
Queue Length 50th (ft)		97	0	241	17	0	2	58	0	54	687	0
Queue Length 95th (ft)		152	36	333	39	64	m5	87	m1	155	926	21
Internal Link Dist (ft)		571			616			1290			537	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		305	428	281	438	475	142	2235	1026	303	2441	1015
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

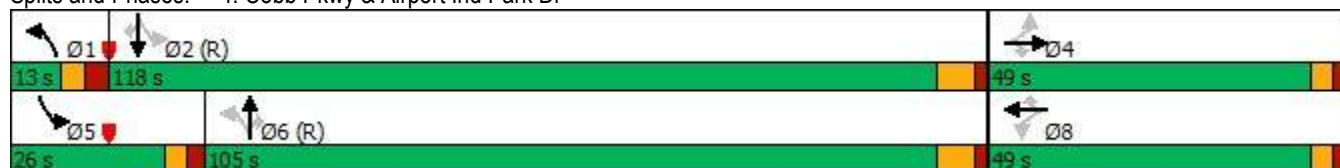
Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.30	0.19	0.73	0.04	0.33	0.37	0.70	0.15	0.56	0.73	0.07

Intersection Summary	
Area Type:	Other
Cycle Length:	180
Actuated Cycle Length:	180
Offset:	35 (19%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	20.7
Intersection LOS:	C
Intersection Capacity Utilization	85.3%
ICU Level of Service	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	360		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869			0.971	
Flt Protected	0.950			0.950			0.950				0.975	
Satd. Flow (prot)	1752	3451	0	1787	3539	1615	1787	1637	0	0	2012	0
Flt Permitted	0.045			0.042			0.590				0.353	
Satd. Flow (perm)	83	3451	0	79	3539	1615	1110	1637	0	0	728	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				88		180			3	
Link Speed (mph)		35			35			45			30	
Link Distance (ft)		717			1356			444			405	
Travel Time (s)		14.0			26.4			6.7			9.2	
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	95.0	95.0		39.0	134.0	134.0	46.0	46.0		46.0	46.0	
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Act Effct Green (s)	89.0	89.0		128.0	128.0	128.0	40.0	40.0		40.0	40.0	
Actuated g/C Ratio	0.49	0.49		0.71	0.71	0.71	0.22	0.22		0.22	0.22	
v/c Ratio	0.76	1.21		1.27	1.21	0.16	0.96	0.56		0.56	1.17	
Control Delay	123.3	137.9		174.6	114.1	2.4	116.1	26.0		26.0	180.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	123.3	137.9		174.6	114.1	2.4	116.1	26.0		26.0	180.0	
LOS	F	F		F	F	A	F	C		C	F	
Approach Delay		137.7			116.2			67.3			180.0	
Approach LOS		F			F			E			F	
Queue Length 50th (ft)	29	~1554		~626	~2308	21	281	103		103	~267	
Queue Length 95th (ft)	#109	#1677		m#425	m1275	m12	#469	209		209	#447	
Internal Link Dist (ft)		637			1276			364			325	
Turn Bay Length (ft)	140			360								
Base Capacity (vph)	41	1711		369	2516	1173	246	503		503	164	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	

Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement



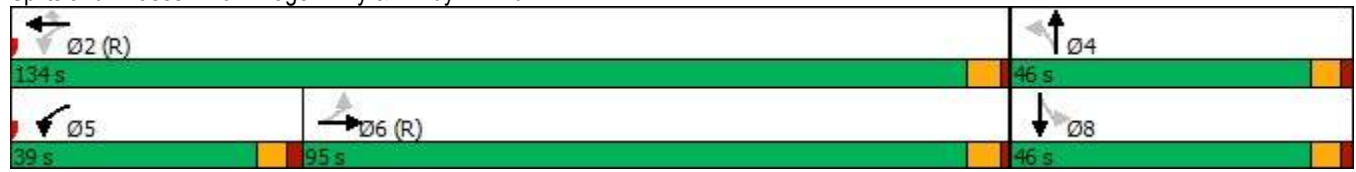
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.76	1.21		1.27	1.21	0.16	0.96	0.56				1.17

Intersection Summary

Area Type: Other
 Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 123 (68%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.27
 Intersection Signal Delay: 121.1 Intersection LOS: F
 Intersection Capacity Utilization 141.0% ICU Level of Service H
 Analysis Period (min) 15

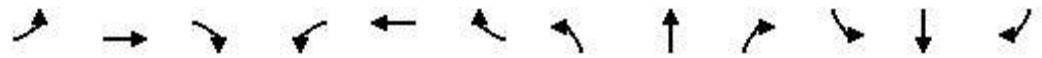
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.126			0.150				0.737			0.752	
Satd. Flow (perm)	239	5026	0	285	5050	0	0	1398	1594	0	1427	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.6		13.4	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.8	33.2		35.8	33.2			10.3	10.3		10.3	10.3
Actuated g/C Ratio	0.61	0.57		0.61	0.57			0.18	0.18		0.18	0.18
v/c Ratio	0.22	0.48		0.20	0.56			0.04	0.06		0.19	0.20
Control Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.0			14.5			6.0			10.1	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	7	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	264		36	#365			13	0		39	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	349	2860		372	2878			588	747		600	746
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.22	0.48		0.20	0.56			0.02	0.03		0.08	0.10

Intersection Summary

Area Type: Other
 Cycle Length: 75
 Actuated Cycle Length: 58.4
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 13.6 Intersection LOS: B
 Intersection Capacity Utilization 61.1% ICU Level of Service B
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

























Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 4A – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

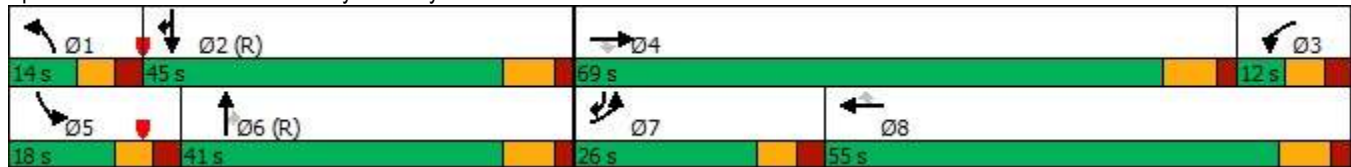
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	927	166	90	587	266	103	532	116	170	665	91
Future Volume (vph)	231	927	166	90	587	266	103	532	116	170	665	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	110		185	390		0	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3400	3505	1568	3303	3406	1568	3367	4848	1583	3400	3406	2760
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3396	3505	1568	3303	3406	1543	3367	4848	1562	3398	3406	2760
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			150			147			206			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			1055	
Travel Time (s)		25.2			17.5			11.6			16.0	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Adj. Flow (vph)	376	1510	270	120	956	354	168	708	154	226	884	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	1510	270	120	956	354	168	708	154	226	884	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			6			
Total Split (s)	26.0	69.0	69.0	12.0	55.0	55.0	14.0	41.0	41.0	18.0	45.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effect Green (s)	18.4	61.3	61.3	5.0	47.9	47.9	7.0	33.4	33.4	11.0	37.4	62.8
Actuated g/C Ratio	0.13	0.44	0.44	0.04	0.34	0.34	0.05	0.24	0.24	0.08	0.27	0.45
v/c Ratio	0.84	0.98	0.35	1.03	0.82	0.57	1.00	0.61	0.29	0.85	0.97	0.12
Control Delay	76.8	58.4	12.4	154.5	49.2	25.4	134.7	50.2	3.0	92.6	71.7	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	58.4	12.4	154.5	49.2	25.4	134.7	50.2	3.0	92.6	71.7	21.6
LOS	E	E	B	F	D	C	F	D	A	F	E	C
Approach Delay		55.8			52.2			56.9			69.6	
Approach LOS		E			D			E			E	
Queue Length 50th (ft)	174	705	66	~58	421	154	80	212	0	107	367	35
Queue Length 95th (ft)	#246	#878	134	#127	510	260	#159	258	19	#182	#555	69
Internal Link Dist (ft)		1213			818			687			975	
Turn Bay Length (ft)	110		185	390			400		540	530		625
Base Capacity (vph)	461	1534	770	117	1165	624	168	1156	529	267	909	1249
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.98	0.35	1.03	0.82	0.57	1.00	0.61	0.29	0.85	0.97	0.12

Intersection Summary












Area Type: Other
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 114 (81%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 58.1 Intersection LOS: E
 Intersection Capacity Utilization 101.2% ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	180	170	783	212	178	794
Future Volume (vph)	180	170	783	212	178	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	140	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99			0.98		
Frt	0.927			0.850		
Flt Protected	0.975				0.950	
Satd. Flow (prot)	3243	0	3438	1583	1787	3438
Flt Permitted	0.975				0.205	
Satd. Flow (perm)	3243	0	3438	1560	386	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	159			265		
Link Speed (mph)	35		45			45
Link Distance (ft)	776		1055			1370
Travel Time (s)	15.1		16.0			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	247	233	1075	291	244	1090
Shared Lane Traffic (%)						
Lane Group Flow (vph)	480	0	1075	291	244	1090
Turn Type	Prot		NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases				6	2	
Total Split (s)	39.0		70.0	70.0	31.0	101.0
Total Lost Time (s)	6.5		6.8	6.8	6.5	6.8
Act Effect Green (s)	19.0		90.8	90.8	108.0	107.7
Actuated g/C Ratio	0.14		0.65	0.65	0.77	0.77
v/c Ratio	0.83		0.48	0.26	0.61	0.41
Control Delay	51.8		7.5	2.0	17.4	2.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	51.8		7.5	2.0	17.4	2.2
LOS	D		A	A	B	A
Approach Delay	51.8		6.4			5.0
Approach LOS	D		A			A
Queue Length 50th (ft)	151		55	0	27	33
Queue Length 95th (ft)	204		350	m144	100	73
Internal Link Dist (ft)	696		975			1290
Turn Bay Length (ft)					140	
Base Capacity (vph)	874		2229	1104	542	2645
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.55		0.48	0.26	0.45	0.41

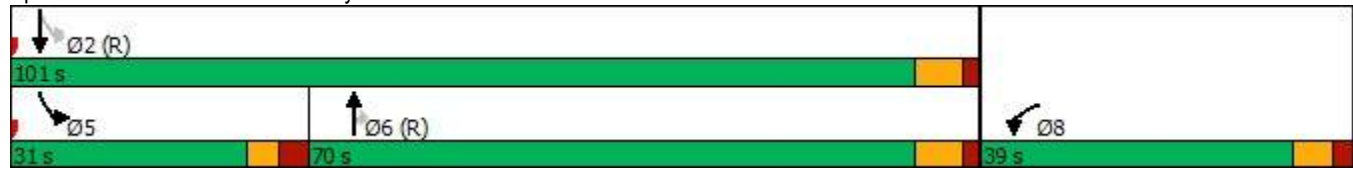
Timing Plan: AM Peak Hour

Synchro 10 Report

Intersection Summary
























Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	135 (96%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	12.7
Intersection LOS:	B
Intersection Capacity Utilization	71.5%
ICU Level of Service	C
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr


Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.561			0.694			0.121			0.180		
Satd. Flow (perm)	1055	1900	1599	1268	1756	0	225	3438	1549	342	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			392		42				160			160
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		442			522			748			1959	
Travel Time (s)		10.0			11.9			11.3			29.7	
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.3	39.0	39.0	14.2	38.9		14.2	32.6	32.6	14.2	32.6	32.6
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	37.8	33.1	33.1	31.1	24.6		37.8	33.1	33.1	35.2	26.9	26.9
Actuated g/C Ratio	0.40	0.35	0.35	0.33	0.26		0.40	0.35	0.35	0.37	0.29	0.29
v/c Ratio	0.57	0.15	0.96	0.08	0.18		0.83	0.72	0.10	0.10	1.08	0.18
Control Delay	24.2	23.4	39.4	15.2	15.0		53.1	34.5	0.3	18.6	85.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	23.4	39.4	15.2	15.0		53.1	34.5	0.3	18.6	85.8	1.8
LOS	C	C	D	B	B		D	C	A	B	F	A
Approach Delay		34.2			15.1			35.7			76.9	
Approach LOS		C			B			D			E	
Queue Length 50th (ft)	117	43	288	13	21		78	288	0	10	~414	0
Queue Length 95th (ft)	181	82	#562	31	57		#211	#415	0	27	#543	10
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	530	671	818	460	646		227	1209	648	258	971	568
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.14	0.95	0.08	0.14		0.83	0.72	0.10	0.10	1.08	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 94.1
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.08
 Intersection Signal Delay: 47.9 Intersection LOS: D
 Intersection Capacity Utilization 92.6% ICU Level of Service F
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr

 Ø1 14.2 s	 Ø2 32.6 s	 Ø3 14.3 s	 Ø4 38.9 s
 Ø5 14.2 s	 Ø6 32.6 s	 Ø7 14.2 s	 Ø8 39 s

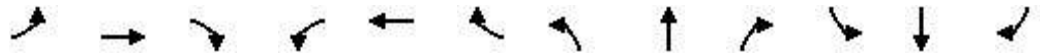
Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.960		0.950			0.950			0.950		
Satd. Flow (prot)	0	1441	1369	1662	1224	1473	1656	3471	1509	1671	3438	1538
Flt Permitted		0.761		0.719			0.183			0.220		
Satd. Flow (perm)	0	1142	1350	1255	1224	1473	319	3471	1489	387	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122			122			66			115
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	48	10	64	64	3	46	125	1206	64	57	1236	87
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	58	64	64	3	46	125	1206	64	57	1236	87
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	20.0	83.0	83.0	12.0	75.0	75.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		11.0	11.0	11.0	11.0	11.0	115.9	108.0	108.0	107.3	101.5	101.5
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.08	0.83	0.77	0.77	0.77	0.72	0.72
v/c Ratio		0.64	0.29	0.65	0.03	0.20	0.37	0.45	0.06	0.17	0.50	0.08
Control Delay		92.4	3.4	90.4	57.0	2.0	8.3	5.9	1.2	4.0	9.9	0.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		92.4	3.4	90.4	57.0	2.0	8.3	5.9	1.2	4.0	9.9	0.8
LOS		F	A	F	E	A	A	A	A	A	A	A
Approach Delay		45.7			53.5			5.9			9.0	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		52	0	58	3	0	27	197	4	7	230	0
Queue Length 95th (ft)		98	0	105	12	0	53	135	m3	18	343	9
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		318	464	349	340	498	396	2678	1163	361	2492	1146
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp



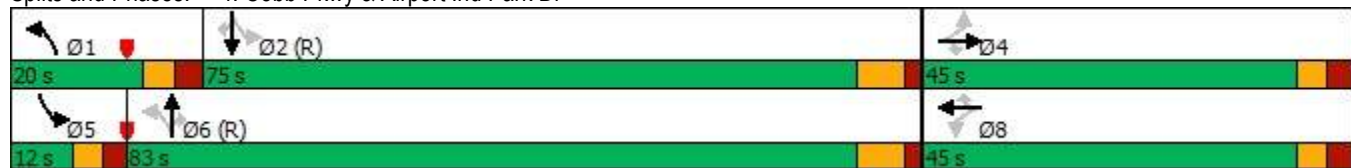
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.18	0.14	0.18	0.01	0.09	0.32	0.45	0.06	0.16	0.50	0.08

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	1 (1%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	10.8
Intersection LOS:	B
Intersection Capacity Utilization	63.5%
ICU Level of Service	B
Analysis Period (min)	15

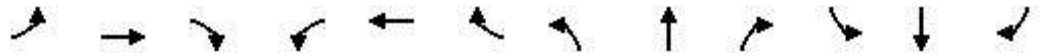
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

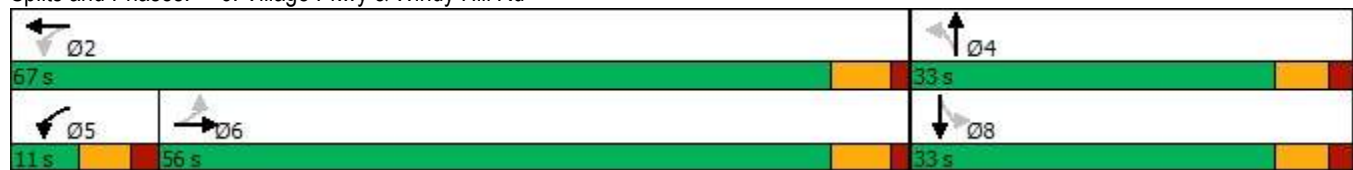


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969			0.994			0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3439	0	1770	1593	0	0	1754	0
Flt Permitted	0.117			0.071			0.615					0.481
Satd. Flow (perm)	200	3410	0	134	3439	0	1145	1593	0	0	866	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48			8			101				12
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1614	0	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	56.0	56.0		11.0	67.0		33.0	33.0		33.0		33.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effect Green (s)	50.2	50.2		61.3	61.3		20.7	20.7				20.7
Actuated g/C Ratio	0.53	0.53		0.65	0.65		0.22	0.22				0.22
v/c Ratio	0.31	1.60		1.37	0.72		0.48	0.61				0.96
Control Delay	24.5	294.6		217.4	14.1		38.0	25.8				88.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	24.5	294.6		217.4	14.1		38.0	25.8				88.4
LOS	C	F		F	B		D	C				F
Approach Delay		291.6			40.3			29.7				88.4
Approach LOS		F			D			C				F
Queue Length 50th (ft)	11	~1376		~144	315		62	85				106
Queue Length 95th (ft)	42	#1607		#314	458		116	165				#226
Internal Link Dist (ft)		700			1292			609				412
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	106	1844		175	2244		330	531				258
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0
Reduced v/c Ratio	0.31	1.60		1.37	0.72		0.36	0.49				0.74

Intersection Summary























Area Type:	Other		
Cycle Length:	100		
Actuated Cycle Length:	94		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.60		
Intersection Signal Delay:	179.8	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.189			0.144				0.828			0.897	
Satd. Flow (perm)	359	5008	0	274	4916	0	0	1573	1559	0	1555	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				140			140
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		898			1245			657			706	
Travel Time (s)		17.5			24.3			14.9			16.0	
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	26.6		13.4	26.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	30.4	26.0		31.8	30.7			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.53		0.65	0.63			0.16	0.16		0.16	0.16
v/c Ratio	0.13	0.63		0.32	0.42			0.16	0.17		0.06	0.04
Control Delay	4.8	14.3		7.9	10.5			21.8	1.4		20.5	0.2
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.8	14.3		7.9	10.5			21.8	1.4		20.5	0.2
LOS	A	B		A	B			C	A		C	A
Approach Delay		14.0			10.3			9.4			10.0	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)	6	172		13	119			12	0		4	0
Queue Length 95th (ft)	16	#275		38	168			34	3		17	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	447	2676		415	3098			788	851		779	812
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.13	0.63		0.32	0.42			0.05	0.07		0.02	0.02

Intersection Summary































Area Type:	Other		
Cycle Length:	70		
Actuated Cycle Length:	48.7		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.63		
Intersection Signal Delay:	12.2	Intersection LOS:	B
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

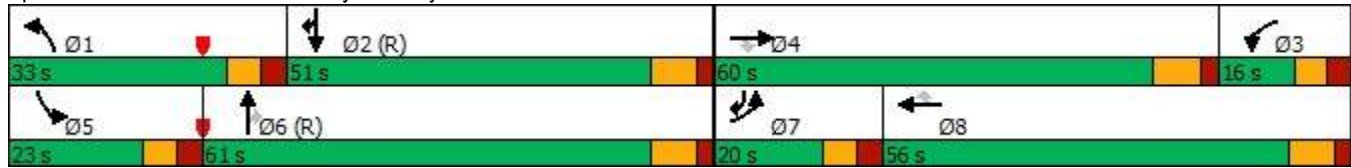
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 		 	  		 		
Traffic Volume (vph)	224	662	167	121	816	250	517	1096	124	238	862	583
Future Volume (vph)	224	662	167	121	816	250	517	1096	124	238	862	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	110		185	390		0	400		540	530		625
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.95	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3505	1583	3433	3539	1568	3433	5085	1583	3433	3505	2814
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3432	3505	1583	3433	3539	1547	3430	5085	1562	3432	3505	2814
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			179			175			180			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			906			815			1055	
Travel Time (s)		25.2			17.6			12.3			16.0	
Confl. Peds. (#/hr)	1					1	2		1	1		2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Adj. Flow (vph)	365	1078	272	161	1329	332	842	1458	165	317	1146	950
Shared Lane Traffic (%)												
Lane Group Flow (vph)	365	1078	272	161	1329	332	842	1458	165	317	1146	950
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			6			
Total Split (s)	20.0	60.0	60.0	16.0	56.0	56.0	33.0	61.0	61.0	23.0	51.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effect Green (s)	13.0	51.9	51.9	9.4	48.3	48.3	26.0	53.4	53.4	16.0	43.4	63.4
Actuated g/C Ratio	0.08	0.32	0.32	0.06	0.30	0.30	0.16	0.33	0.33	0.10	0.27	0.40
v/c Ratio	1.31	0.95	0.43	0.80	1.24	0.56	1.51	0.86	0.26	0.92	1.21	0.85
Control Delay	199.0	29.6	3.2	101.0	163.5	25.4	282.2	56.0	4.5	104.9	146.0	43.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	199.0	29.6	3.2	101.0	163.5	25.4	282.2	56.0	4.5	104.9	146.0	43.9
LOS	F	C	A	F	F	C	F	E	A	F	F	D
Approach Delay		61.5			132.8			129.8			100.4	
Approach LOS		E			F			F			F	
Queue Length 50th (ft)	~249	490	45	87	~906	138	~628	523	0	173	~761	434
Queue Length 95th (ft)	m#200	m367	m34	#153	#1046	245	#761	586	43	m#265	#905	587
Internal Link Dist (ft)		1213			826			735			975	
Turn Bay Length (ft)	110		185	390			400		540	530		625
Base Capacity (vph)	278	1145	637	202	1068	589	557	1697	641	343	950	1115
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.94	0.43	0.80	1.24	0.56	1.51	0.86	0.26	0.92	1.21	0.85

Option 4A – PM Peak Hour

Intersection Summary















Area Type: Other
 Cycle Length: 160
 Actuated Cycle Length: 160
 Offset: 52 (33%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.51
 Intersection Signal Delay: 108.1 Intersection LOS: F
 Intersection Capacity Utilization 124.2% ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	253	181	1218	409	185	1470
Future Volume (vph)	253	181	1218	409	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	140	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99			0.98		
Frt	0.937			0.850		
Flt Protected	0.972				0.950	
Satd. Flow (prot)	3310	0	3505	1599	1770	3539
Flt Permitted	0.972				0.061	
Satd. Flow (perm)	3279	0	3505	1560	114	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	100			338		
Link Speed (mph)	35		45			45
Link Distance (ft)	864		1055			1370
Travel Time (s)	16.8		16.0			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	336	241	1620	544	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	577	0	1620	544	246	1955
Turn Type	Prot		NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases				6	2	
Total Split (s)	37.0		92.0	92.0	31.0	123.0
Total Lost Time (s)	6.5		6.8	6.8	6.5	6.8
Act Effect Green (s)	27.1		93.0	93.0	119.9	119.6
Actuated g/C Ratio	0.17		0.58	0.58	0.75	0.75
v/c Ratio	0.90		0.80	0.52	0.84	0.74
Control Delay	71.0		9.4	0.9	73.2	8.2
Queue Delay	0.0		0.2	0.0	0.0	0.0
Total Delay	71.0		9.6	0.9	73.2	8.2
LOS	E		A	A	E	A
Approach Delay	71.0		7.4			15.5
Approach LOS	E		A			B
Queue Length 50th (ft)	257		105	3	200	246
Queue Length 95th (ft)	325		m121	m0	m301	307
Internal Link Dist (ft)	784		975			1290
Turn Bay Length (ft)					140	
Base Capacity (vph)	711		2037	1048	339	2645
Starvation Cap Reductn	0		65	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.81		0.82	0.52	0.73	0.74

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	27 (17%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	18.4
Intersection LOS:	B
Intersection Capacity Utilization	89.8%
ICU Level of Service	E
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



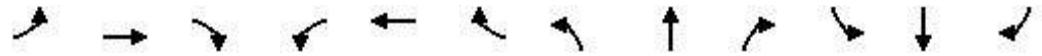
Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.98			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1620	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.304			0.703			0.088			0.101		
Satd. Flow (perm)	577	1900	1576	1232	1620	0	166	3539	1560	190	3505	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			237		42				134			187
Link Speed (mph)		30			30			45				45
Link Distance (ft)		503			490			464				1912
Travel Time (s)		11.4			11.1			7.0				29.0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.2	38.9	38.9	14.3	39.0		21.5	52.6	52.6	14.2	45.3	45.3
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	30.1	21.8	21.8	30.3	21.9		61.1	46.9	46.9	47.9	39.5	39.5
Actuated g/C Ratio	0.28	0.20	0.20	0.28	0.20		0.56	0.43	0.43	0.44	0.36	0.36
v/c Ratio	0.46	0.21	0.74	0.64	0.80		1.19	1.22	0.29	0.52	1.08	0.15
Control Delay	31.9	36.7	23.9	38.8	51.8		141.7	134.9	9.9	26.8	84.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	36.7	23.9	38.8	51.8		141.7	134.9	9.9	26.8	84.4	0.5
LOS	C	D	C	D	D		F	F	A	C	F	A
Approach Delay		27.3			45.8			124.9			74.9	
Approach LOS		C			D			F			E	
Queue Length 50th (ft)	58	46	88	130	164		~276	~837	34	33	~564	0
Queue Length 95th (ft)	101	86	196	200	260		#530	#1115	98	85	#804	0
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	253	576	643	375	522		325	1520	746	205	1270	696
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.46	0.14	0.58	0.64	0.55		1.19	1.22	0.29	0.52	1.08	0.15

Intersection Summary
























Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	109.1
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.22
Intersection Signal Delay:	90.6
Intersection LOS:	F
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



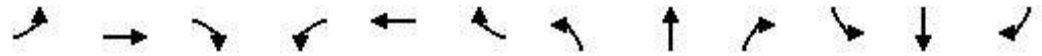
Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.98	1.00		0.98			0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1658	1516	1711	1837	1516	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.671			0.073			0.087		
Satd. Flow (perm)	0	1279	1493	1205	1837	1493	123	3505	1559	159	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107			154			101			66
Link Speed (mph)		30			30			45				45
Link Distance (ft)		651			696			1370				617
Travel Time (s)		14.8			15.8			20.8				9.3
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4	4	8	8	8	6		6	2		2
Total Split (s)	44.0	44.0	44.0	44.0	44.0	44.0	13.0	92.0	92.0	24.0	103.0	103.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		29.5	29.5	29.5	29.5	29.5	105.3	99.6	99.6	118.8	108.2	108.2
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.66	0.62	0.62	0.74	0.68	0.68
v/c Ratio		0.39	0.23	0.92	0.05	0.39	0.41	0.71	0.15	0.70	0.74	0.07
Control Delay		60.6	4.9	106.5	50.2	10.2	18.9	19.4	6.3	32.7	21.5	2.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		60.6	4.9	106.5	50.2	10.2	18.9	19.4	6.3	32.7	21.5	2.8
LOS		E	A	F	D	B	B	B	A	C	C	A
Approach Delay		34.5			64.1			18.3			21.8	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		86	0	212	15	3	12	257	10	55	635	0
Queue Length 95th (ft)		138	26	301	36	65	m22	360	m30	148	868	21
Internal Link Dist (ft)		571			616			1290			537	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		303	436	286	436	472	143	2181	1008	300	2392	996
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp



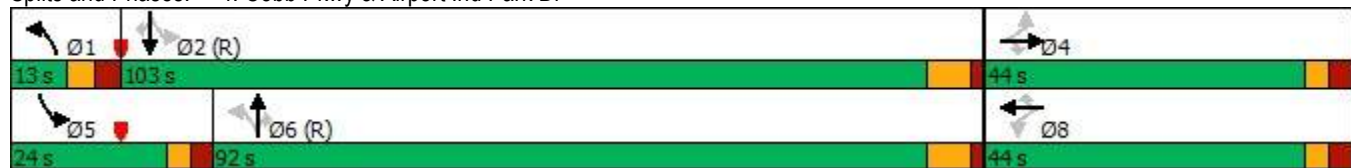
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.31	0.19	0.72	0.04	0.33	0.37	0.71	0.15	0.56	0.74	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	44 (28%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	24.6
Intersection LOS:	C
Intersection Capacity Utilization	85.3%
ICU Level of Service	E
Analysis Period (min)	15

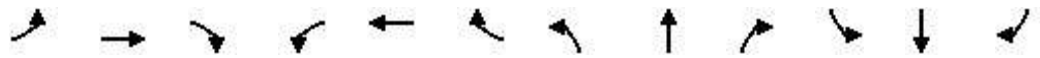
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	210		0	0		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983			0.991			0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3451	0	1787	3511	0	1787	1637	0	0	2012	0
Flt Permitted	0.051			0.047			0.590					0.359
Satd. Flow (perm)	94	3451	0	88	3511	0	1110	1637	0	0	741	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			9			202				3
Link Speed (mph)		35			35			45				30
Link Distance (ft)		717			1356			444				405
Travel Time (s)		14.0			26.4			6.7				9.2
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3232	0	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2			4			8		
Total Split (s)	85.0	85.0		34.0	119.0		41.0	41.0		41.0		41.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0				6.0
Act Effct Green (s)	79.0	79.0		113.0	113.0		35.0	35.0				35.0
Actuated g/C Ratio	0.49	0.49		0.71	0.71		0.22	0.22				0.22
v/c Ratio	0.67	1.21		1.31	1.30		0.98	0.54				1.17
Control Delay	96.8	134.8		188.5	155.6		113.6	20.0				175.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Total Delay	96.8	134.8		188.5	155.6		113.6	20.0				175.0
LOS	F	F		F	F		F	B				F
Approach Delay		134.2			159.8			62.9				175.0
Approach LOS		F			F			E				F
Queue Length 50th (ft)	24	~1379		~589	~2293		249	68				~236
Queue Length 95th (ft)	#95	#1508		m#517	m#1777		#433	169				#407
Internal Link Dist (ft)		637			1276			364				325
Turn Bay Length (ft)	140			210								
Base Capacity (vph)	46	1710		359	2482		242	515				164
Starvation Cap Reductn	0	0		0	0		0	0				0
Spillback Cap Reductn	0	0		0	0		0	0				0
Storage Cap Reductn	0	0		0	0		0	0				0

Lanes, Volumes, Timings
 6: Village Pkwy & Windy Hill Rd

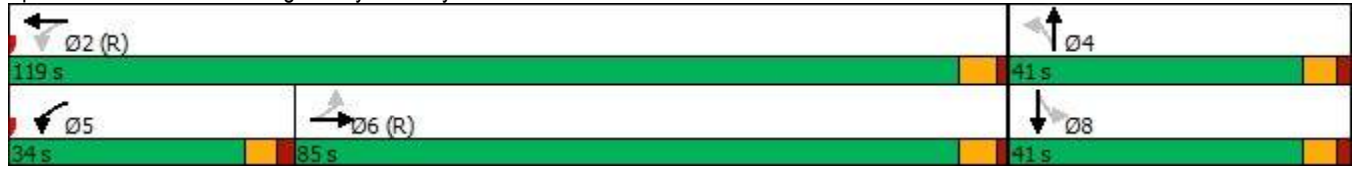
Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.67	1.21		1.31	1.30		0.98	0.54				1.17

Intersection Summary	
Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	160
Offset:	0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.31
Intersection Signal Delay:	144.3
Intersection LOS:	F
Intersection Capacity Utilization	146.8%
ICU Level of Service	H
Analysis Period (min)	15

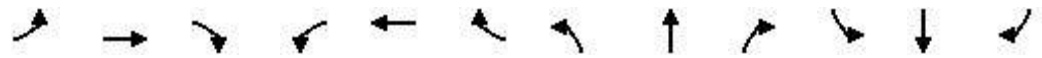
- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.152			0.152				0.715			0.752	
Satd. Flow (perm)	289	5026	0	289	5050	0	0	1357	1594	0	1428	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				140			140
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	26.6		13.4	26.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	30.4	27.7		30.4	27.7			8.0	8.0		8.0	8.0
Actuated g/C Ratio	0.60	0.55		0.60	0.55			0.16	0.16		0.16	0.16
v/c Ratio	0.19	0.50		0.19	0.59			0.04	0.06		0.21	0.21
Control Delay	5.8	12.1		5.8	13.7			20.1	0.3		22.6	2.5
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	5.8	12.1		5.8	13.7			20.1	0.3		22.6	2.5
LOS	A	B		A	B			C	A		C	A
Approach Delay		11.7			13.3			6.0			10.3	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	7	129		7	162			3	0		14	0
Queue Length 95th (ft)	21	186		21	#246			13	0		38	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	397	2752		397	2770			650	836		684	836
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.19	0.50		0.19	0.59			0.01	0.03		0.07	0.09

Intersection Summary

Area Type:	Other		
Cycle Length:	70		
Actuated Cycle Length:	50.6		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.59		
Intersection Signal Delay:	12.4	Intersection LOS:	B
Intersection Capacity Utilization:	61.1%	ICU Level of Service:	B
Analysis Period (min):	15		
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Option 4B – AM Peak Hour

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	927	166	90	587	266	103	532	116	170	665	91
Future Volume (vph)	231	927	166	90	587	266	103	532	116	170	665	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	110		185	390		255	400		540	530		490
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			25			300		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.88
Ped Bike Factor	1.00					0.98			0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3400	5036	1568	3303	4893	1568	3367	4848	1583	3400	4893	2760
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3397	5036	1568	3303	4893	1544	3367	4848	1563	3398	4893	2760
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			197			187			248			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			898			767			761	
Travel Time (s)		25.2			17.5			11.6			11.5	
Confl. Peds. (#/hr)	3					3			1	1		1
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	3%	3%	3%	6%	6%	3%	4%	7%	2%	3%	6%	3%
Adj. Flow (vph)	376	1510	270	120	956	354	168	708	154	226	884	148
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	1510	270	120	956	354	168	708	154	226	884	148
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			6			
Total Split (s)	20.0	48.7	48.7	12.0	40.7	40.7	15.0	40.3	40.3	15.0	40.3	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effect Green (s)	13.0	40.7	40.7	5.3	33.0	33.0	8.0	32.7	32.7	8.0	32.7	52.7
Actuated g/C Ratio	0.11	0.35	0.35	0.05	0.28	0.28	0.07	0.28	0.28	0.07	0.28	0.45
v/c Ratio	0.99	0.86	0.40	0.79	0.69	0.62	0.72	0.52	0.25	0.97	0.64	0.12
Control Delay	94.8	40.7	9.9	89.3	39.9	21.7	71.2	36.7	1.0	105.9	30.7	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.8	40.7	9.9	89.3	39.9	21.7	71.2	36.7	1.0	105.9	30.7	14.5
LOS	F	D	A	F	D	C	E	D	A	F	C	B
Approach Delay		46.3			39.6			36.9			42.3	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	146	379	37	46	232	106	64	163	0	92	230	35
Queue Length 95th (ft)	#247	442	104	#101	282	209	#113	204	0	#170	157	26
Internal Link Dist (ft)		1213			818			687			681	
Turn Bay Length (ft)	110		185	390		255	400		540	530		490
Base Capacity (vph)	381	1779	681	151	1391	573	232	1366	618	234	1379	1253
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.85	0.40	0.79	0.69	0.62	0.72	0.52	0.25	0.97	0.64	0.12

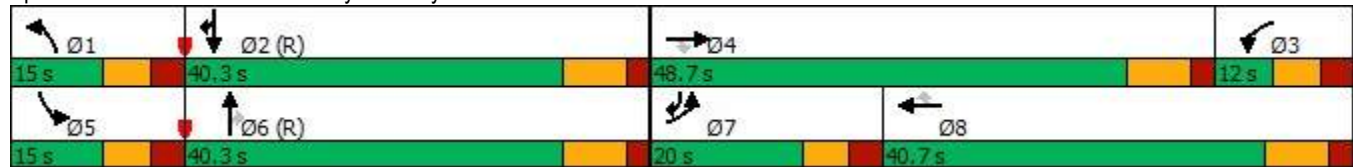
Lanes, Volumes, Timings
 1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Intersection Summary















Area Type: Other
 Cycle Length: 116
 Actuated Cycle Length: 116
 Offset: 37 (32%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 42.2 Intersection LOS: D
 Intersection Capacity Utilization 89.0% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	180	170	783	212	178	794
Future Volume (vph)	180	170	783	212	178	794
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	140	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99			0.99		
Frt	0.927			0.850		
Flt Protected	0.975				0.950	
Satd. Flow (prot)	3244	0	3438	1583	1787	3438
Flt Permitted	0.975				0.195	
Satd. Flow (perm)	3244	0	3438	1560	367	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	199			291		
Link Speed (mph)	35		45			45
Link Distance (ft)	776		294			1370
Travel Time (s)	15.1		4.5			20.8
Confl. Peds. (#/hr)		2		2	2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	2%	1%	5%	2%	1%	5%
Adj. Flow (vph)	247	233	1075	291	244	1090
Shared Lane Traffic (%)						
Lane Group Flow (vph)	480	0	1075	291	244	1090
Turn Type	Prot		NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases				6	2	
Total Split (s)	36.6		54.4	54.4	25.0	79.4
Total Lost Time (s)	6.5		6.8	6.8	6.5	6.8
Act Effect Green (s)	15.1		70.4	70.4	87.9	87.6
Actuated g/C Ratio	0.13		0.61	0.61	0.76	0.76
v/c Ratio	0.81		0.52	0.27	0.60	0.42
Control Delay	38.9		9.9	1.0	18.6	10.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	38.9		9.9	1.0	18.6	10.8
LOS	D		A	A	B	B
Approach Delay	38.9		8.0			12.2
Approach LOS	D		A			B
Queue Length 50th (ft)	107		77	1	73	122
Queue Length 95th (ft)	157		m332	m0	199	426
Internal Link Dist (ft)	696		214			1290
Turn Bay Length (ft)					140	
Base Capacity (vph)	989		2087	1061	504	2595
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.49		0.52	0.27	0.48	0.42

Intersection Summary
























Area Type:	Other
Cycle Length:	116
Actuated Cycle Length:	116
Offset:	36 (31%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.81
Intersection Signal Delay:	14.4
Intersection LOS:	B
Intersection Capacity Utilization	71.5%
ICU Level of Service	C
Analysis Period (min)	15
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Future Volume (vph)	215	69	556	28	34	30	134	624	45	19	745	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	50			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00				0.99				0.98	1.00		0.99
Frt			0.850		0.930				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1599	1736	1756	0	1770	3438	1583	1805	3406	1615
Flt Permitted	0.567			0.694			0.089			0.203		
Satd. Flow (perm)	1066	1900	1599	1268	1756	0	166	3438	1548	386	3406	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				187			187
Link Speed (mph)		30			30			45				45
Link Distance (ft)		442			522			748				1959
Travel Time (s)		10.0			11.9			11.3				29.7
Confl. Peds. (#/hr)	1						1	1		1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	0%	1%	4%	0%	0%	2%	5%	2%	0%	6%	0%
Adj. Flow (vph)	301	97	780	39	48	42	188	875	63	27	1045	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	97	780	39	90	0	188	875	63	27	1045	102
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	20.6	47.0	47.0	14.2	40.6		15.0	44.6	44.6	14.2	43.8	43.8
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effect Green (s)	49.4	41.2	41.2	32.6	26.1		50.2	45.0	45.0	46.4	38.0	38.0
Actuated g/C Ratio	0.43	0.36	0.36	0.29	0.23		0.44	0.39	0.39	0.41	0.33	0.33
v/c Ratio	0.51	0.14	1.00	0.10	0.21		0.94	0.65	0.09	0.10	0.92	0.16
Control Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	26.9	56.6	19.5	21.3		79.6	33.8	0.2	19.8	51.5	0.5
LOS	C	C	E	B	C		E	C	A	B	D	A
Approach Delay		46.2			20.7			39.5			46.4	
Approach LOS		D			C			D			D	
Queue Length 50th (ft)	148	52	~479	16	30		~104	323	0	12	419	0
Queue Length 95th (ft)	218	93	#724	37	72		#260	403	0	30	#563	0
Internal Link Dist (ft)		362			442			668			1879	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	589	685	777	395	560		200	1352	722	259	1133	655
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.14	1.00	0.10	0.16		0.94	0.65	0.09	0.10	0.92	0.16

Intersection Summary

Area Type:	Other		
Cycle Length:	120		
Actuated Cycle Length:	114.3		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.00		
Intersection Signal Delay:	43.3	Intersection LOS:	D
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr



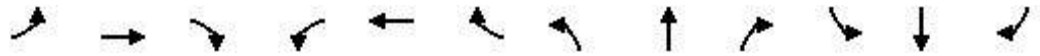
Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Future Volume (vph)	33	7	44	44	2	32	86	832	44	39	853	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.99	1.00					0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.961		0.950			0.950			0.950		
Satd. Flow (prot)	0	1445	1369	1662	1224	1473	1656	3471	1509	1671	3438	1538
Flt Permitted		0.762		0.720			0.188			0.231		
Satd. Flow (perm)	0	1145	1351	1257	1224	1473	328	3471	1489	406	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			88			88			80			84
Link Speed (mph)		30			30			45				45
Link Distance (ft)		757			724			1370				698
Travel Time (s)		17.2			16.5			20.8				10.6
Confl. Peds. (#/hr)			2	2					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	27%	0%	14%	5%	50%	6%	9%	4%	7%	8%	5%	5%
Adj. Flow (vph)	46	10	62	62	3	45	121	1167	62	55	1196	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	62	62	3	45	121	1167	62	55	1196	84
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		2
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	15.0	59.2	59.2	11.8	56.0	56.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		9.7	9.7	9.7	9.7	9.7	95.2	89.2	89.2	87.4	81.6	81.6
Actuated g/C Ratio		0.08	0.08	0.08	0.08	0.08	0.82	0.77	0.77	0.75	0.70	0.70
v/c Ratio		0.59	0.32	0.59	0.03	0.22	0.34	0.44	0.05	0.16	0.49	0.08
Control Delay		74.2	8.7	72.6	46.7	3.5	3.7	2.4	0.2	4.1	10.1	2.1
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		74.2	8.7	72.6	46.7	3.5	3.7	2.4	0.2	4.1	10.1	2.1
LOS		E	A	E	D	A	A	A	A	A	B	A
Approach Delay		39.8			43.6			2.4			9.4	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		41	0	46	2	0	2	13	0	6	203	0
Queue Length 95th (ft)		83	22	89	11	5	18	16	m0	17	330	19
Internal Link Dist (ft)		677			644			1290			618	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		384	512	422	411	553	379	2668	1163	381	2418	1106
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement

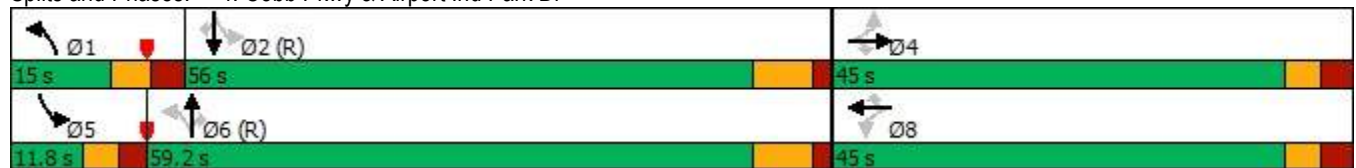


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.15	0.12	0.15	0.01	0.08	0.32	0.44	0.05	0.14	0.49	0.08

Intersection Summary

Area Type: Other
 Cycle Length: 116
 Actuated Cycle Length: 116
 Offset: 100 (86%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 8.7
 Intersection LOS: A
 Intersection Capacity Utilization 63.5%
 ICU Level of Service B
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Future Volume (vph)	20	1417	375	145	939	42	89	10	185	75	39	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	140		0	330		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor							1.00	0.99				1.00
Frt		0.969				0.850		0.857				0.973
Flt Protected	0.950			0.950			0.950					0.974
Satd. Flow (prot)	1626	3410	0	1787	3471	1442	1770	1592	0	0	1754	0
Flt Permitted	0.140			0.034			0.595					0.377
Satd. Flow (perm)	240	3410	0	64	3471	1442	1107	1592	0	0	679	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				66		120				6
Link Speed (mph)		35			35			45				30
Link Distance (ft)		780			1372			689				492
Travel Time (s)		15.2			26.7			10.4				11.2
Confl. Peds. (#/hr)							1		1	1		1
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	11%	3%	1%	1%	4%	12%	2%	0%	1%	3%	0%	4%
Adj. Flow (vph)	33	2332	617	239	1545	69	120	13	249	101	52	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	2949	0	239	1545	69	120	262	0	0	191	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4				8	
Total Split (s)	116.0	116.0		19.0	135.0	135.0	45.0	45.0		45.0		45.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0		6.0
Act Effect Green (s)	110.0	110.0		129.0	129.0	129.0	39.0	39.0		39.0		39.0
Actuated g/C Ratio	0.61	0.61		0.72	0.72	0.72	0.22	0.22		0.22		0.22
v/c Ratio	0.23	1.41		1.41	0.62	0.07	0.50	0.60		0.60		1.26
Control Delay	20.7	215.5		254.0	14.4	1.8	70.4	39.8		39.8		212.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	20.7	215.5		254.0	14.4	1.8	70.4	39.8		39.8		212.7
LOS	C	F		F	B	A	E	D		D		F
Approach Delay		213.3			44.8			49.4				212.7
Approach LOS		F			D			D				F
Queue Length 50th (ft)	17	~2449		~327	458	1	126	153		153		~277
Queue Length 95th (ft)	42	#2533		#522	517	17	203	260		260		#457
Internal Link Dist (ft)		700			1292			609				412
Turn Bay Length (ft)	140			330								
Base Capacity (vph)	146	2097		170	2487	1052	239	438		438		151
Starvation Cap Reductn	0	0		0	0	0	0	0		0		0
Spillback Cap Reductn	0	0		0	0	0	0	0		0		0
Storage Cap Reductn	0	0		0	0	0	0	0		0		0
Reduced v/c Ratio	0.23	1.41		1.41	0.62	0.07	0.50	0.60		0.60		1.26

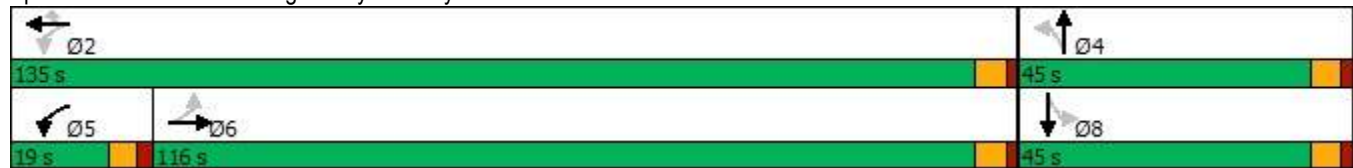
Lanes, Volumes, Timings
 6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Intersection Summary

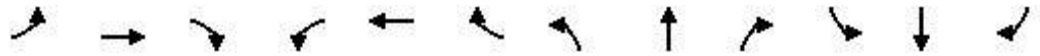
Area Type:	Other		
Cycle Length:	180		
Actuated Cycle Length:	180		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	1.41		
Intersection Signal Delay:	144.0	Intersection LOS:	F
Intersection Capacity Utilization	139.7%	ICU Level of Service	H
Analysis Period (min)	15		
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.			

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑		↖	↑↑↑			↑	↗		↖	↗
Traffic Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Future Volume (vph)	44	1215	51	101	932	42	24	7	47	10	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	90			100			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor									0.98		1.00	
Frt		0.994			0.994				0.850			0.850
Flt Protected	0.950			0.950				0.962			0.956	
Satd. Flow (prot)	1805	5008	0	1805	4916	0	0	1828	1583	0	1662	1482
Flt Permitted	0.184			0.125				0.764			0.711	
Satd. Flow (perm)	350	5008	0	238	4916	0	0	1452	1559	0	1232	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			10				131			131
Link Speed (mph)		35			35			30				30
Link Distance (ft)		898			1245			657				706
Travel Time (s)		17.5			24.3			14.9				16.0
Confl. Peds. (#/hr)									4	4		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	2%	0%	5%	2%	0%	0%	2%	10%	0%	9%
Adj. Flow (vph)	59	1616	68	134	1239	56	32	9	63	13	1	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	1684	0	134	1295	0	0	41	63	0	14	15
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.5		13.5	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.1	30.9		36.3	33.5			7.8	7.8		7.8	7.8
Actuated g/C Ratio	0.62	0.55		0.64	0.59			0.14	0.14		0.14	0.14
v/c Ratio	0.14	0.61		0.37	0.44			0.20	0.19		0.08	0.05
Control Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	4.8	13.7		9.5	10.4			25.4	2.0		23.6	0.3
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.4			10.4			11.3				11.5
Approach LOS		B			B			B				B
Queue Length 50th (ft)	6	172		13	119			13	0		4	0
Queue Length 95th (ft)	16	237		46	166			38	5		18	0
Internal Link Dist (ft)		818			1165			577			626	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	410	2743		363	2922			623	743		528	711
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.14	0.61		0.37	0.44			0.07	0.08		0.03	0.02







Lanes, Volumes, Timings
 8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	56.4
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	12.0
Intersection LOS:	B
Intersection Capacity Utilization	64.2%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd

 Ø1 13.4 s	 Ø2 31.6 s	 Ø4 30 s
 Ø5 13.5 s	 Ø6 31.5 s	 Ø8 30 s

Lanes, Volumes, Timings
1: Cobb Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

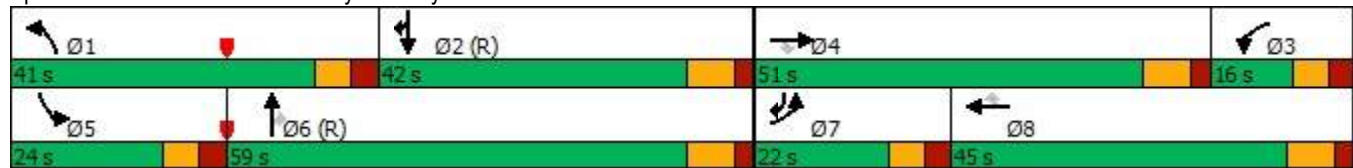
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	662	167	121	816	250	517	1096	124	238	862	583
Future Volume (vph)	224	662	167	121	816	250	517	1096	124	238	862	583
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	110		185	390		255	400		540	530		490
Storage Lanes	2		1	2		1	2		1	2		2
Taper Length (ft)	300			140			200			300		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.88
Ped Bike Factor	1.00					0.99	1.00		0.99	1.00		
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	5036	1583	3433	5085	1568	3433	5085	1583	3433	5036	2814
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3432	5036	1583	3433	5085	1547	3431	5085	1562	3432	5036	2814
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)			195			244			192			
Link Speed (mph)		35			35			45			45	
Link Distance (ft)		1293			906			815			817	
Travel Time (s)		25.2			17.6			12.3			12.4	
Confl. Peds. (#/hr)	1						1	2		1	1	2
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
Growth Factor	158%	158%	158%	129%	158%	129%	158%	129%	129%	129%	129%	158%
Heavy Vehicles (%)	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	3%	1%
Adj. Flow (vph)	365	1078	272	161	1329	332	842	1458	165	317	1146	950
Shared Lane Traffic (%)												
Lane Group Flow (vph)	365	1078	272	161	1329	332	842	1458	165	317	1146	950
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	pt+ov
Protected Phases	7	4		3	8		1	6		5	2	27
Permitted Phases			4			8			6			
Total Split (s)	22.0	51.0	51.0	16.0	45.0	45.0	41.0	59.0	59.0	24.0	42.0	
Total Lost Time (s)	7.0	7.7	7.7	7.0	7.7	7.7	7.0	7.6	7.6	7.0	7.6	
Act Effect Green (s)	15.0	40.6	40.6	11.7	37.3	37.3	34.0	51.9	51.9	16.5	34.4	56.4
Actuated g/C Ratio	0.10	0.27	0.27	0.08	0.25	0.25	0.23	0.35	0.35	0.11	0.23	0.38
v/c Ratio	1.06	0.79	0.48	0.61	1.05	0.58	1.08	0.83	0.25	0.84	0.99	0.90
Control Delay	104.5	39.5	7.2	77.5	93.4	17.8	110.2	50.1	3.3	88.0	75.8	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.5	39.5	7.2	77.5	93.4	17.8	110.2	50.1	3.3	88.0	75.8	47.0
LOS	F	D	A	E	F	B	F	D	A	F	E	D
Approach Delay		48.2			78.2			67.5			66.0	
Approach LOS		D			E			E			E	
Queue Length 50th (ft)	~198	281	31	80	~517	70	~473	481	0	167	398	435
Queue Length 95th (ft)	m155	m220	m22	#140	#615	178	#605	544	33	m#231	#518	#628
Internal Link Dist (ft)		1213			826			735			737	
Turn Bay Length (ft)	110		185	390		255	400		540	530		490
Base Capacity (vph)	343	1453	595	266	1264	568	778	1758	665	389	1154	1058
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	1	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.74	0.46	0.61	1.05	0.59	1.08	0.83	0.25	0.81	0.99	0.90

Option 4B – PM Peak Hour

Intersection Summary















Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	40 (27%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.08
Intersection Signal Delay:	65.5
Intersection LOS:	E
Intersection Capacity Utilization	109.5%
ICU Level of Service	H
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Cobb Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
2: Cobb Pkwy & Terrell Mill Rd

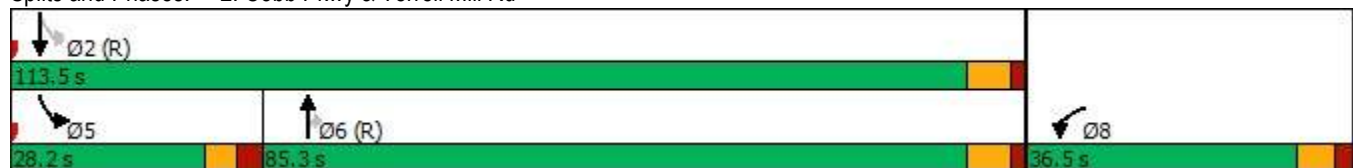
Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (vph)	253	181	1218	409	185	1470
Future Volume (vph)	253	181	1218	409	185	1470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	140	
Storage Lanes	2	0		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	0.95
Ped Bike Factor	0.99			0.98		
Frt	0.937			0.850		
Flt Protected	0.972				0.950	
Satd. Flow (prot)	3310	0	3505	1599	1770	3539
Flt Permitted	0.972				0.058	
Satd. Flow (perm)	3293	0	3505	1562	108	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	108			353		
Link Speed (mph)	35		45			45
Link Distance (ft)	864		238			1370
Travel Time (s)	16.8		3.6			20.8
Confl. Peds. (#/hr)	6			7	7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Growth Factor	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	1%	2%	3%	1%	2%	2%
Adj. Flow (vph)	336	241	1620	544	246	1955
Shared Lane Traffic (%)						
Lane Group Flow (vph)	577	0	1620	544	246	1955
Turn Type	Prot		NA	Perm	pm+pt	NA
Protected Phases	8		6		5	2
Permitted Phases				6	2	
Total Split (s)	36.5		85.3	85.3	28.2	113.5
Total Lost Time (s)	6.5		6.8	6.8	6.5	6.8
Act Effect Green (s)	25.6		86.1	86.1	111.4	111.1
Actuated g/C Ratio	0.17		0.57	0.57	0.74	0.74
v/c Ratio	0.88		0.81	0.52	0.86	0.75
Control Delay	64.8		9.6	1.0	74.5	7.8
Queue Delay	0.0		0.1	0.0	0.0	0.0
Total Delay	64.8		9.6	1.0	74.5	7.8
LOS	E		A	A	E	A
Approach Delay	64.8		7.5			15.3
Approach LOS	E		A			B
Queue Length 50th (ft)	236		82	1	191	223
Queue Length 95th (ft)	299		m105	m0	m#288	270
Internal Link Dist (ft)	784		158			1290
Turn Bay Length (ft)					140	
Base Capacity (vph)	748		2011	1046	323	2621
Starvation Cap Reductn	0		19	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.77		0.81	0.52	0.76	0.75

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	24 (16%), Referenced to phase 2:SBTL and 6:NBT, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.88
Intersection Signal Delay:	17.6
Intersection LOS:	B
Intersection Capacity Utilization:	89.8%
ICU Level of Service:	E
Analysis Period (min)	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cobb Pkwy & Terrell Mill Rd



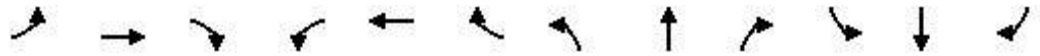
Lanes, Volumes, Timings
3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Future Volume (vph)	88	59	281	181	107	108	291	1394	163	80	1032	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	12	12	12
Storage Length (ft)	100		0	0		0	105		110	105		1000
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	40			25			50			50		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00		0.99	1.00	0.99				0.97			0.99
Frt			0.850		0.924				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1900	1599	1668	1619	0	1787	3539	1599	1787	3505	1615
Flt Permitted	0.219			0.701			0.057			0.062		
Satd. Flow (perm)	416	1900	1575	1228	1619	0	107	3539	1557	117	3505	1592
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			299		29				100			140
Link Speed (mph)		30			30			45				45
Link Distance (ft)		503			490			464				1912
Travel Time (s)		11.4			11.1			7.0				29.0
Confl. Peds. (#/hr)	1		2	2		1	1		2	2		1
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	0%	1%	1%	0%	1%	1%	2%	1%	1%	3%	0%
Adj. Flow (vph)	117	78	374	241	142	144	387	1854	217	106	1372	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	78	374	241	286	0	387	1854	217	106	1372	106
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases	8		8	4			6		6	2		2
Total Split (s)	14.4	38.9	38.9	14.6	39.1		36.0	92.3	92.3	14.2	70.5	70.5
Total Lost Time (s)	5.9	5.9	5.9	5.9	5.9		5.9	5.9	5.9	5.9	5.9	5.9
Act Effct Green (s)	37.1	28.6	28.6	37.5	28.8		100.7	86.5	86.5	73.0	64.7	64.7
Actuated g/C Ratio	0.24	0.18	0.18	0.24	0.18		0.65	0.56	0.56	0.47	0.42	0.42
v/c Ratio	0.67	0.22	0.70	0.75	0.89		0.98	0.94	0.24	0.74	0.94	0.14
Control Delay	64.2	55.3	20.3	67.1	83.7		89.8	43.7	10.4	63.8	57.4	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	55.3	20.3	67.1	83.7		89.8	43.7	10.4	63.8	57.4	2.0
LOS	E	E	C	E	F		F	D	B	E	E	A
Approach Delay		34.1			76.1			48.0			54.1	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	92	68	67	208	260		352	934	58	55	721	0
Queue Length 95th (ft)	149	119	191	300	#401		#591	#1158	111	#159	#898	17
Internal Link Dist (ft)		423			410			384			1832	
Turn Bay Length (ft)	100						105		110	105		1000
Base Capacity (vph)	174	402	569	320	368		394	1966	909	143	1456	743
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0

Lanes, Volumes, Timings
 3: Cobb Pkwy & Lake Park Dr/Target Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.67	0.19	0.66	0.75	0.78		0.98	0.94	0.24	0.74	0.94	0.14

Intersection Summary
























Area Type:	Other
Cycle Length:	160
Actuated Cycle Length:	155.7
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	51.2
Intersection LOS:	D
Intersection Capacity Utilization	100.4%
ICU Level of Service	G
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Cobb Pkwy & Lake Park Dr/Target Dr

Ø1	Ø2	Ø3	Ø4
36 s	70.5 s	14.4 s	39.1 s
Ø5	Ø6	Ø7	Ø8
14.2 s	92.3 s	14.6 s	38.9 s

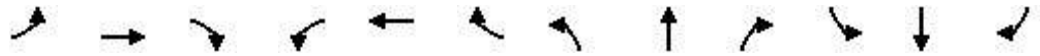
Lanes, Volumes, Timings
4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Future Volume (vph)	61	9	62	154	13	118	40	1172	113	127	1340	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Storage Length (ft)	0		220	195		210	130		130	175		600
Storage Lanes	0		1	1		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		1.00	0.99	1.00		0.99			0.98			
Frt			0.850			0.850			0.850			0.850
Flt Protected		0.958		0.950			0.950			0.950		
Satd. Flow (prot)	0	1658	1516	1711	1837	1516	1597	3505	1583	1736	3539	1442
Flt Permitted		0.741		0.680			0.071			0.086		
Satd. Flow (perm)	0	1280	1493	1221	1837	1493	119	3505	1559	157	3539	1442
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			114			130			108			68
Link Speed (mph)		30			30			45				45
Link Distance (ft)		651			696			1370				617
Travel Time (s)		14.8			15.8			20.8				9.3
Confl. Peds. (#/hr)	2		2	2		2			2	2		
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	7%	0%	3%	2%	0%	3%	13%	3%	2%	4%	2%	12%
Adj. Flow (vph)	81	12	82	205	17	157	53	1559	150	169	1782	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	82	205	17	157	53	1559	150	169	1782	66
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4	4	8	8	8	6		6	2		2
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	12.0	89.0	89.0	21.0	98.0	98.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.3	6.9	6.9	5.5	6.9	6.9
Act Effct Green (s)		27.6	27.6	27.6	27.6	27.6	98.2	92.7	92.7	110.5	100.3	100.3
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.18	0.65	0.62	0.62	0.74	0.67	0.67
v/c Ratio		0.40	0.22	0.92	0.05	0.41	0.42	0.72	0.15	0.72	0.75	0.07
Control Delay		57.3	4.2	100.3	47.4	15.1	20.4	19.3	6.5	34.6	21.1	2.6
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		57.3	4.2	100.3	47.4	15.1	20.4	19.3	6.5	34.6	21.1	2.6
LOS		E	A	F	D	B	C	B	A	C	C	A
Approach Delay		32.4			62.6			18.3			21.6	
Approach LOS		C			E			B			C	
Queue Length 50th (ft)		80	0	197	14	22	11	252	9	54	615	0
Queue Length 95th (ft)		134	20	#304	35	86	m23	383	m34	144	803	19
Internal Link Dist (ft)		571			616			1290			537	
Turn Bay Length (ft)			220	195		210	130		130	175		600
Base Capacity (vph)		290	426	276	416	438	134	2165	1004	279	2367	987
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0

Lanes, Volumes, Timings
 4: Cobb Pkwy & Airport Ind Park Dr

Cobb Parkway at Windy Hill Scoping Study
 Design Year 2050 Build - Flyover Ramp with Capacity Improvement

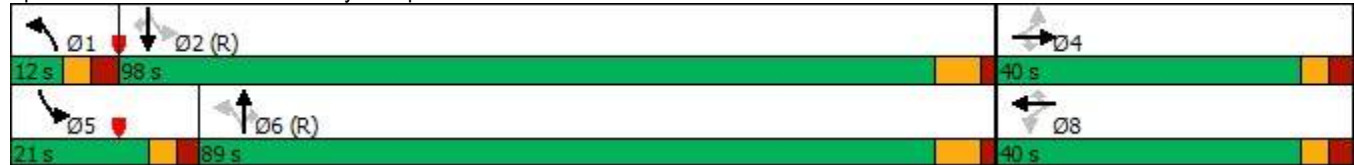


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.32	0.19	0.74	0.04	0.36	0.40	0.72	0.15	0.61	0.75	0.07

Intersection Summary

Area Type: Other
 Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 34 (23%), Referenced to phase 2:SBTL and 6:NBTL, Start of 1st Green
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 24.3 Intersection LOS: C
 Intersection Capacity Utilization 85.3% ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Cobb Pkwy & Airport Ind Park Dr



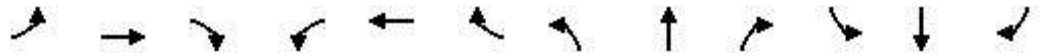
Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Future Volume (vph)	19	1122	144	288	1870	114	178	26	184	74	40	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	8	16	8
Storage Length (ft)	140		0	330		0	0		0	0		0
Storage Lanes	1		0	1		1	1		0	0		0
Taper Length (ft)	70			75			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00										
Frt		0.983				0.850		0.869				0.971
Flt Protected	0.950			0.950			0.950					0.975
Satd. Flow (prot)	1752	3451	0	1787	3539	1615	1787	1637	0	0	2012	0
Flt Permitted	0.054			0.050			0.589					0.355
Satd. Flow (perm)	100	3451	0	94	3539	1615	1108	1637	0	0	732	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				104		214				3
Link Speed (mph)		35			35			45				30
Link Distance (ft)		717			1356			444				405
Travel Time (s)		14.0			26.4			6.7				9.2
Confl. Peds. (#/hr)			1	1								
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
Growth Factor	158%	158%	158%	158%	158%	158%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	3%	3%	0%	1%	2%	0%	1%	0%	1%	1%	3%	0%
Adj. Flow (vph)	31	1828	235	469	3046	186	237	35	245	98	53	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	2063	0	469	3046	186	237	280	0	0	192	0
Turn Type	Perm	NA		pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6		5	2			4				8
Permitted Phases	6			2		2	4			8		
Total Split (s)	80.0	80.0		32.0	112.0	112.0	38.0	38.0		38.0		38.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0		6.0
Act Effct Green (s)	74.0	74.0		106.0	106.0	106.0	32.0	32.0		32.0		32.0
Actuated g/C Ratio	0.49	0.49		0.71	0.71	0.71	0.21	0.21		0.21		0.21
v/c Ratio	0.63	1.21		1.31	1.22	0.16	1.00	0.54		0.54		1.22
Control Delay	84.7	133.4		193.8	119.0	1.7	117.4	17.5		17.5		188.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	84.7	133.4		193.8	119.0	1.7	117.4	17.5		17.5		188.5
LOS	F	F		F	F	A	F	B		B		F
Approach Delay		132.7			122.6			63.3				188.5
Approach LOS		F			F			E				F
Queue Length 50th (ft)	22	~1291		~547	~1919	14	~235	54		54		~227
Queue Length 95th (ft)	#88	#1424		m#580	m#1846	m13	#420	150		150		#396
Internal Link Dist (ft)		637			1276			364				325
Turn Bay Length (ft)	140			330								
Base Capacity (vph)	49	1709		359	2500	1171	236	517				158
Starvation Cap Reductn	0	0		0	0	0	0	0		0		0
Spillback Cap Reductn	0	0		0	0	0	0	0		0		0
Storage Cap Reductn	0	0		0	0	0	0	0		0		0

Lanes, Volumes, Timings
6: Village Pkwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement



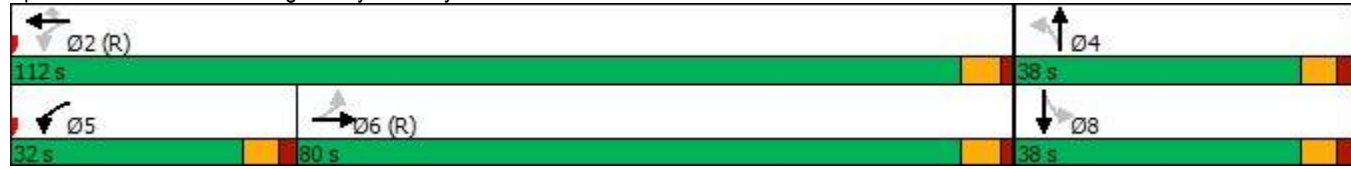
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.63	1.21		1.31	1.22	0.16	1.00	0.54				1.22

Intersection Summary

Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	148 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of 1st Green
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.31
Intersection Signal Delay:	123.0
Intersection LOS:	F
Intersection Capacity Utilization	141.0%
ICU Level of Service	H
Analysis Period (min)	15

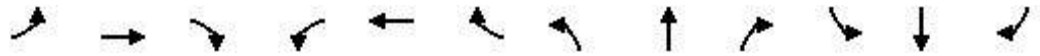
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Village Pkwy & Windy Hill Rd



Lanes, Volumes, Timings
8: Windy Hill Village Dwy & Windy Hill Rd

Cobb Parkway at Windy Hill Scoping Study
Design Year 2050 Build - Flyover Ramp with Capacity Improvement



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Future Volume (vph)	56	1002	14	55	1133	65	6	1	16	35	0	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	195		0	385		0	0		0	0		0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				1.00	0.99		1.00	0.99
Frt		0.998			0.992				0.850			0.850
Flt Protected	0.950			0.950				0.957			0.950	
Satd. Flow (prot)	1805	5026	0	1805	5050	0	0	1818	1615	0	1805	1615
Flt Permitted	0.126			0.150				0.737			0.752	
Satd. Flow (perm)	239	5026	0	285	5050	0	0	1398	1594	0	1427	1593
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13				131			131
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		906			1237			395			475	
Travel Time (s)		17.6			24.1			9.0			10.8	
Confl. Peds. (#/hr)			3	3			2		1	1		2
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
Growth Factor	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
Heavy Vehicles (%)	0%	3%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	76	1361	19	75	1538	88	8	1	22	48	0	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	1380	0	75	1626	0	0	9	22	0	48	76
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4				8
Permitted Phases	6			2			4		4	8		8
Total Split (s)	13.4	31.6		13.4	31.6		30.0	30.0	30.0	30.0	30.0	30.0
Total Lost Time (s)	6.0	6.0		6.0	6.0			6.0	6.0		6.0	6.0
Act Effect Green (s)	35.8	33.2		35.8	33.2			10.3	10.3		10.3	10.3
Actuated g/C Ratio	0.61	0.57		0.61	0.57			0.18	0.18		0.18	0.18
v/c Ratio	0.22	0.48		0.20	0.56			0.04	0.06		0.19	0.20
Control Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	7.9	13.3		7.6	14.9			20.1	0.3		22.6	2.1
LOS	A	B		A	B			C	A		C	A
Approach Delay		13.0			14.5			6.0			10.1	
Approach LOS		B			B			A			B	
Queue Length 50th (ft)	7	129		7	162			3	0		16	0
Queue Length 95th (ft)	36	264		36	#365			13	0		39	9
Internal Link Dist (ft)		826			1157			315			395	
Turn Bay Length (ft)	195			385								
Base Capacity (vph)	349	2860		372	2878			588	747		600	746
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	0		0	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.22	0.48		0.20	0.56			0.02	0.03		0.08	0.10

Intersection Summary







Area Type:	Other		
Cycle Length:	75		
Actuated Cycle Length:	58.4		
Control Type:	Actuated-Uncoordinated		
Maximum v/c Ratio:	0.56		
Intersection Signal Delay:	13.6	Intersection LOS:	B
Intersection Capacity Utilization:	61.1%	ICU Level of Service:	B
Analysis Period (min):	15		
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 8: Windy Hill Village Dwy & Windy Hill Rd



Appendix E: Crash Data Analysis

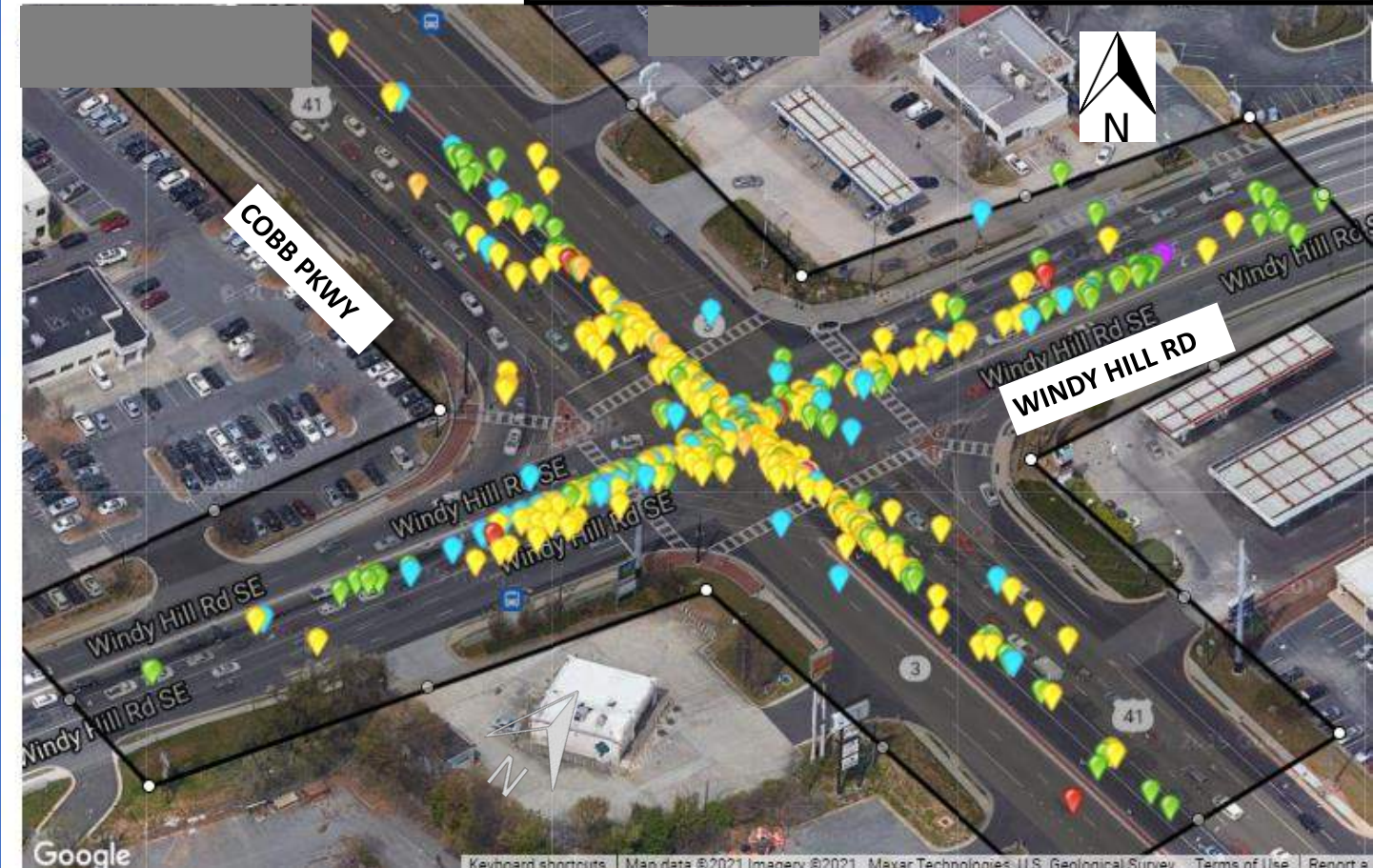
852 collisions shown / 0 not shown

- ✓  Angle 278
- ✓  Head On 9
- ✓  Rear End 419
- ✓  Sideswipe-Same Direction 130
- ✓  Sideswipe-Opposite Direction 4
- ✓  Not A Collision with Motor Vehicle 12
- ✓  Unknown 0








INTERSECTION #1

WINDY HILL @ COBB PKWY

Manner of Collision
(2015-2019)



324 collisions shown / 0 not shown








- ✓  Angle 109
- ✓  Head On 3
- ✓  Rear End 161
- ✓  Sideswipe-Same Direction 38
- ✓  Sideswipe-Opposite Direction 2
- ✓  Not A Collision with Motor Vehicle 11
- ✓  Unknown 0

INTERSECTION #2

COBB PKWY @ TERRELL MILL RD
Manner of Collision
(2015-2019)

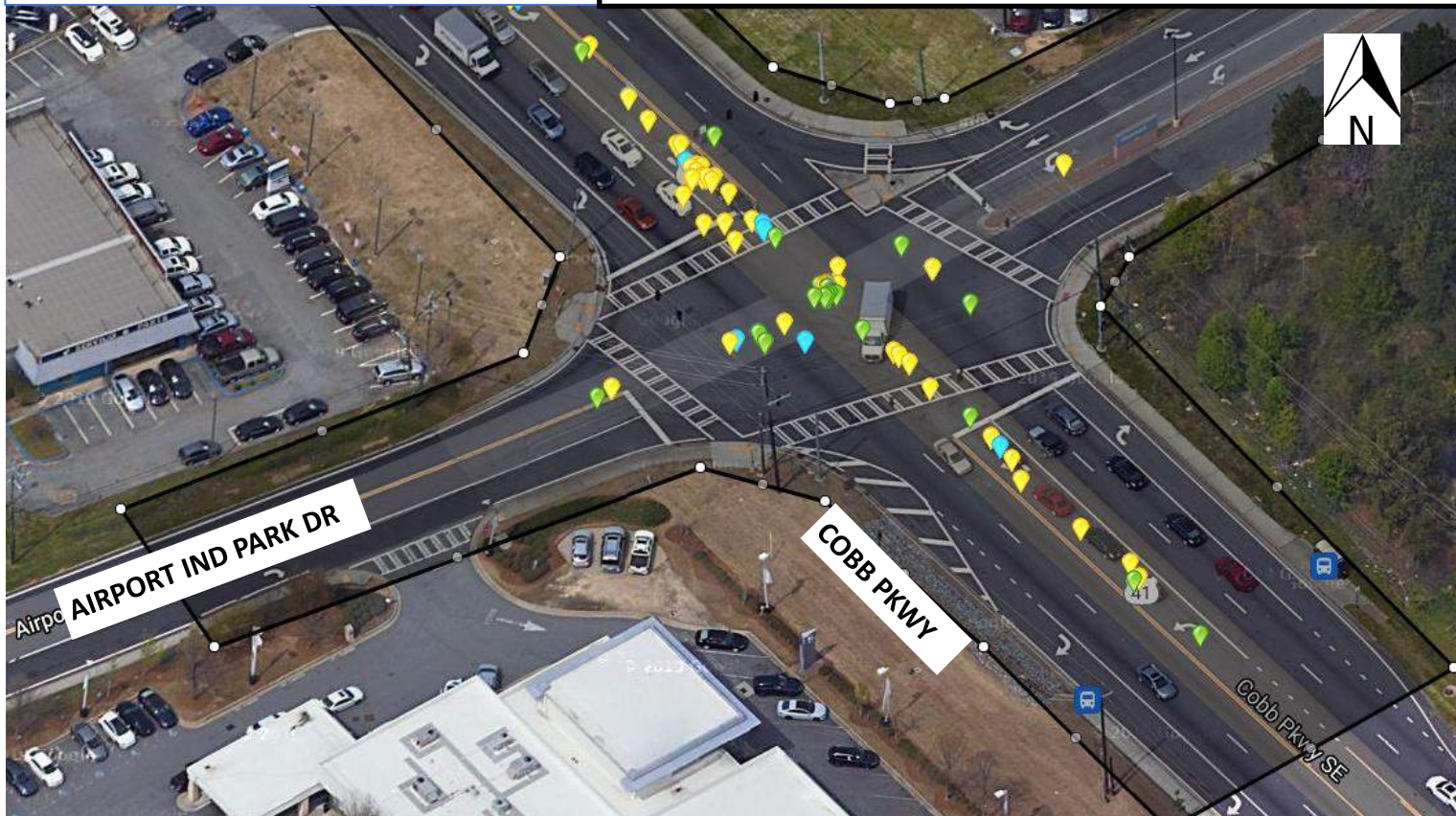


118 collisions shown / 0 not shown








- ✓  Angle 35
- ✓  Head On 2
- ✓  Rear End 62
- ✓  Sideswipe-Same Direction 16
- ✓  Sideswipe-Opposite Direction 0
- ✓  Not A Collision with Motor Vehicle 3
- ✓  Unknown 0

INTERSECTION #4

COBB PKWY @ AIRPORT INDUSTRIAL PK DR
Manner of Collision
(2015-2019)



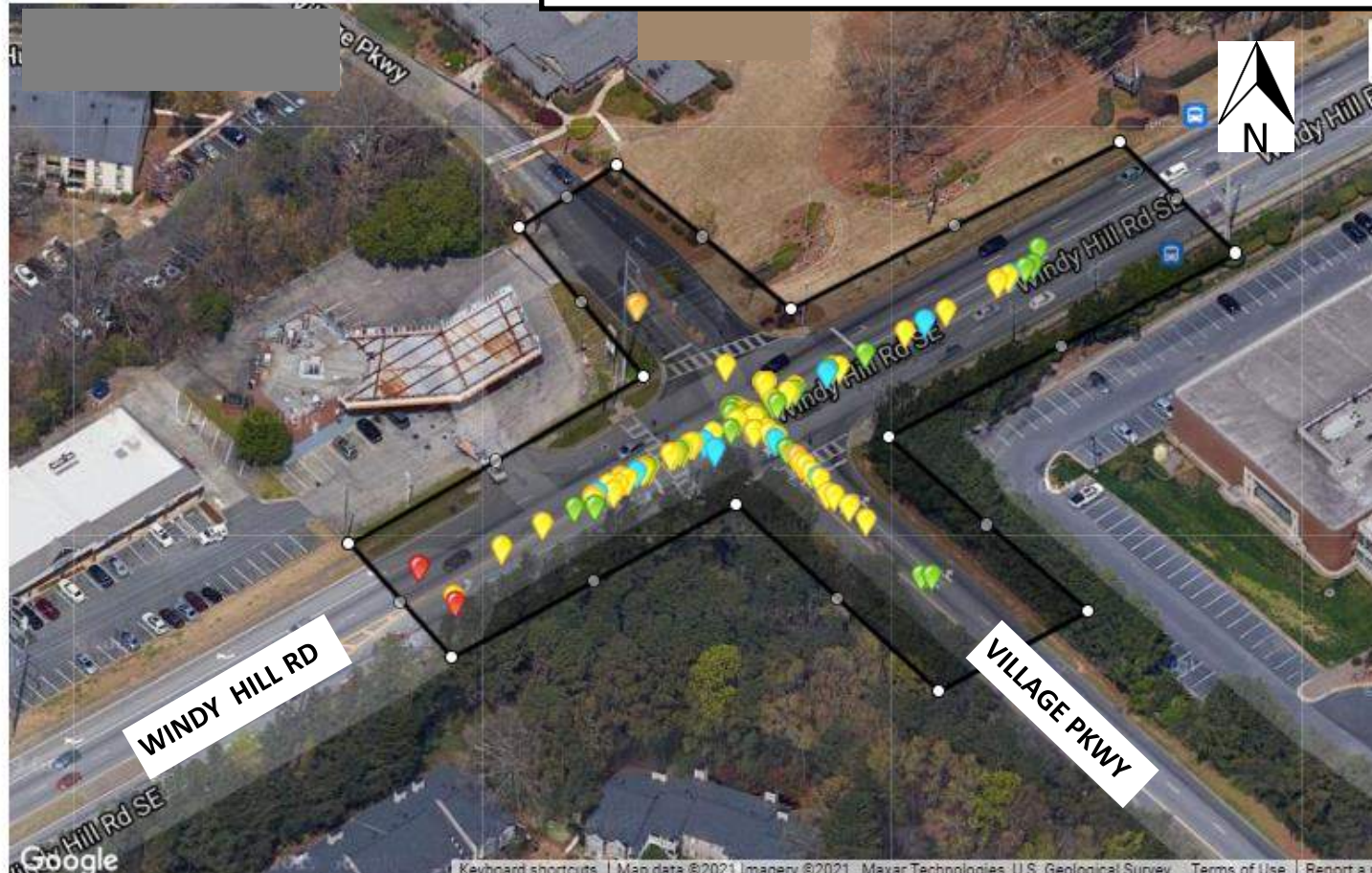
237 collisions shown / 0 not shown

- ✓  Angle 64
- ✓  Head On 4
- ✓  Rear End 138
- ✓  Sideswipe-Same Direction 26
- ✓  Sideswipe-Opposite Direction 0
- ✓  Not A Collision with Motor Vehicle 5
- ✓  Unknown 0








INTERSECTION #6

WINDY HILL @ VILLAGE PKWY

Manner of Collision
(2015-2019)



29 collisions shown / 0 not shown

-  Angle 23
-  Head On 1
-  Rear End 4
-  Sideswipe-Same Direction 1
-  Sideswipe-Opposite Direction 0
-  Not A Collision with Motor Vehicle 0
-  Unknown 0

INTERSECTION

WINDY HILL RD @ QT GAS STATION

Manner of Collision
(2015-2019)



Crash Reduction for Options 1A & 1B				
Intersection	Crash Type	Annual Average Reported Crashes	Predicted Crashes	Crash Reduction
Cobb Pkwy @ Windy Hill Rd	Angle	278	134	52%
	Head on	9	4	56%
	Sideswipe	134	113	16%
	Others	12	10	17%
	Rear End	419	294	30%
Cobb Pkwy @ Terrell Mill Rd	Angle	109	67	39%
	Head on	3	2	33%
	Sideswipe	40	27	33%
	Others	11	8	27%
	Rear End	161	98	39%
Cobb Pkwy @ Airport Industrial Park Dr	Angle	35	35	0%
	Head on	2	2	0%
	Sideswipe	16	17	-6%
	Others	3	3	0%
	Rear End	62	65	-5%

Crash Reduction for Option 2A				
Intersection	Crash Type	Annual Average Reported Crashes	Predicted Crashes	Crash Reduction
Cobb Pkwy @ Windy Hill Rd & NB Crossover	Angle	278	242	13%
	Head on	9	8	11%
	Sideswipe	134	147	-10%
	Others	12	13	-8%
	Rear End	419	461	-10%
Cobb Pkwy @ Terrell Mill Rd & SB Crossover	Angle	109	197	-81%
	Head on	3	5	-67%
	Sideswipe	40	44	-10%
	Others	11	12	-9%
	Rear End	161	177	-10%

Crash Reduction for Option 2C				
Intersection	Crash Type	Annual Average Reported Crashes	Predicted Crashes	Crash Reduction
Cobb Pkwy @ Windy Hill Rd	Angle	278	292	-5%
	Head on	9	9	0%
	Sideswipe	134	147	-10%
	Others	12	13	-8%
	Rear End	419	461	-10%
Windy Hill Rd @ QT & Eastbound Crossover	Angle	23	26	-13%
	Head on	1	1	0%
	Sideswipe	1	1	0%
	Rear End	4	4	0%

Crash Reduction for Option 3				
Intersection	Crash Type	Annual Average Reported Crashes	Predicted crashes	Crash Reduction
Cobb Pkwy @ Windy Hill Rd	Angle	278	317	-14%
	Head on	9	11	-22%
	Sideswipe	134	147	-10%
	Others	12	13	-8%
	Rear End	419	461	-10%

Crash Reduction for Option 4A				
Intersection	Crash Type	Annual Average Reported Crashes	Predicted crashes	Crash Reduction
Cobb Pkwy @ Windy Hill Rd	Angle	278	198	29%
	Head on	9	6	33%
	Sideswipe	134	120	10%
	Others	12	11	8%
	Rear End	419	374	11%
Cobb Pkwy @ Terrell Mill Rd	Angle	109	37	66%
	Head on	3	1	67%
	Sideswipe	40	35	13%
	Others	11	9	18%
	Rear End	161	146	9%
Windy Hill Rd @ Village Pkwy	Angle	64	64	0%
	Head on	4	4	0%
	Sideswipe	26	29	-12%
	Others	5	5	0%
	Rear End	138	152	-10%

Average Annual Crash Cost Reduction					
Intersection	Option 1A-1B	Option 2A	Option 2C	Option 3	Option 4A
Cobb Pkwy @ Windy Hill Rd	\$3,129,641	-\$134,122	-\$785,970	-\$1,127,464	\$1,838,577
Cobb Pkwy @ Terrell Mill Rd	\$1,361,600	-\$1,549,818	N/A	N/A	\$1,350,585
Cobb Pkwy @ Airport Ind Park Dr	-\$495,300	N/A	N/A	N/A	N/A
Windy Hill Rd @ Village Pkwy	N/A	N/A	N/A	N/A	-\$202,750
Windy Hill Rd @ QT	N/A	N/A	-\$69,948	N/A	N/A
Total Reduction\Increase	\$3,995,941	-\$1,683,940	-\$855,918	-\$1,127,464	\$2,986,413

Appendix F: Cost Estimates

Date of Estimate (MM/DD/YYYY) = 4/20/2022
 Anticipated NTP 1 (MM/DD/YYYY) = 4/20/2025
 Anticipated Start of Construction (MM/DD/YYYY) = 5/20/2025
 Anticipated Finish of Construction (MM/DD/YYYY) = 5/30/2027

Windy Hill Road at Hwy 41 Interchange - Concept Comparison Estimate

		Altrnate 1C SPUI w/WHR Widening				Alternate 2B CFI w/WHR Widening				Alternate 4B Flyover Ramp w/WHR Widening					
Quantifiable Scope		Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	Notes	
Construction Costs	CLEAR, GRUB AND DEMOLITION	37	AC	\$ 15,000.00	\$ 555,000	33	AC	\$ 15,000.00	\$ 495,000	33	AC	\$ 15,000.00	\$ 495,000		
	EXCAVATION	73,080	CY	\$ 12.00	\$ 876,960	500	CY	\$ 12.00	\$ 6,000	27	CY	\$ 12.00	\$ 324		
	EMBANKMENT	0	CY	\$ 15.00	\$ -	12,500	CY	\$ 15.00	\$ 187,500	45,000	CY	\$ 15.00	\$ 675,000		
	MSE/CAST IN PLACE WALLS	37,100	SF	\$ 100.00	\$ 3,710,000	7,000	SF	\$ 100.00	\$ 700,000	52,960	SF	\$ 100.00	\$ 5,296,000		
	ASPHALT PAVING (Full Depth)	67,600	SY	\$ 140.00	\$ 9,464,000	35,500	SY	\$ 140.00	\$ 4,970,000	37,400	SY	\$ 140.00	\$ 5,236,000		
	MILL & OVERLAY	44,100	SY	\$ 30.00	\$ 1,323,000	65,100	SY	\$ 30.00	\$ 1,953,000	77,390	SY	\$ 30.00	\$ 2,321,700		
	SIDEWALK	5,600	SY	\$ 70.00	\$ 392,000	5,200	SY	\$ 70.00	\$ 364,000	4,200	SY	\$ 70.00	\$ 294,000		
	CONCRETE BARRIER	10,970	LF	\$ 300.00	\$ 3,291,000	1,150	LF	\$ 300.00	\$ 345,000	0	LF	\$ 300.00	\$ -		
	BRIDGE (Overpass)	24,580	SF	\$ 200.00	\$ 4,916,000	0	SF	\$ 200.00	\$ -	87,990	SF	\$ 200.00	\$ 17,598,000		
	BRIDGE (Underpass)	28,680	SF	\$ 600.00	\$ 17,208,000	0	SF	\$ 600.00	\$ -	0		\$ 600.00	\$ -		
	TRAFFIC SIGNALS	4	EA	\$ 500,000.00	\$ 2,000,000	3	EA	\$ 500,000.00	\$ 1,500,000	2	EA	\$ 500,000.00	\$ 1,000,000		
	Quantifiable Scope Subtotal					\$ 43,735,960	\$ 10,520,500					\$ 32,916,024			
	Factored Scope		% of Quantified Scope			Extended Cost	% of Quantified Scope			Extended Cost	% of Quantified Scope			Extended Cost	Notes
	Drainage	8.00%			\$ 3,498,877	15.00%			\$ 1,578,075	8.00%			\$ 2,633,282		
	Rock Excavation	2.00%			\$ 874,719	0.00%			\$ -	0.00%			\$ -		
Maintenance During Construction and Temporary Conditions	6.00%			\$ 2,624,158	6.00%			\$ 631,230	6.00%			\$ 1,974,961			
Erosion Control	5.00%			\$ 2,186,798	1.50%			\$ 157,808	3.00%			\$ 987,481			
Landscaping	1.00%			\$ 437,360	2.00%			\$ 210,410	1.00%			\$ 329,160			
Signage	1.00%			\$ 437,360	1.00%			\$ 105,205	1.00%			\$ 329,160			
Traffic Control	4.00%			\$ 1,749,438	10.00%			\$ 1,052,050	4.00%			\$ 1,316,641			
Utilities	1	LS	\$ 15,000,000.00	\$ 15,000,000	1	LS	\$ 11,900,000.00	\$ 11,900,000	1	LS	\$ 12,300,000.00	\$ 12,300,000			
Construction Subtotal					\$ 70,544,669	\$ 26,155,278					\$ 52,786,710				
Additional Construction Costs		% of Direct Cost			Extended Cost	% of Direct Cost			Extended Cost	% of Direct Cost			Extended Cost		
General Conditions / General Requirements	7.00%			\$ 4,938,127	7.00%			\$ 1,830,869	7.00%			\$ 3,695,070			
Mobilization	3.00%			\$ 2,116,340	3.00%			\$ 784,658	3.00%			\$ 1,583,601			
Profit	10.00%			\$ 7,054,467	10.00%			\$ 2,615,528	10.00%			\$ 5,278,671			
Bonding / Insurance Costs	3.00%			\$ 2,116,340	3.00%			\$ 784,658	3.00%			\$ 1,583,601			
Construction Subtotal					\$ 86,769,943	\$ 32,170,991					\$ 64,927,653				
Construction Adds	Escalation @ 7%/Year	31.96%			\$ 27,729,283	31.96%			\$ 10,280,962	31.96%			\$ 20,749,088		
	Construction Subtotal with Escalation					\$ 114,499,226	\$ 42,451,954					\$ 85,676,741			
	Contingency	20.00%			\$ 22,899,845	20.00%			\$ 8,490,391	20.00%			\$ 17,135,348		
Total Construction Costs					\$ 137,399,071	\$ 50,942,344					\$ 102,812,089				
DESIGN	Engineering Design		% of Construction Costs			Extended Cost	% of Construction Costs			Extended Cost	% of Construction Costs			Extended Cost	Notes
	Preliminary Engineering	3.50%			\$ 3,036,948	3.50%			\$ 1,125,985	3.50%			\$ 2,272,468		
	Engineering	7.00%			\$ 6,073,896	7.00%			\$ 2,251,969	7.00%			\$ 4,544,936		
	Escalation	6.07%			\$ 184,200	6.07%			\$ 68,294	6.07%			\$ 137,832		
	Contingency	3.00%			\$ 278,851	3.00%			\$ 103,387	3.00%			\$ 208,657		
Total PE Costs					\$ 9,573,895	\$ 3,549,636					\$ 7,163,893				
ROW	Right of Way (ROW)		Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	
	Right of Way (ROW)	1.00	LS	\$ 14,800,000	\$ 14,800,000	1.00	LS	\$ 16,000,000	\$ 16,000,000	1.00	LS	\$ 31,300,000	\$ 31,300,000		
	Escalation	12.50%			\$ 1,849,776	12.50%			\$ 1,999,758	12.50%			\$ 3,912,027		
Total ROW Costs					\$ 16,649,776	\$ 17,999,758					\$ 35,212,027				
Mitigation	Environmental Mitigation		Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	Qty	UOM	Unit Cost	Extended Cost	
	Environmental Mitigation	1	LS	\$ -	\$ -	1	LS	\$ -	\$ -	1	LS	\$ -	\$ -		
	Escalation	12.50%			\$ -	12.50%			\$ -	12.50%			\$ -		
Total Mitigation Costs					\$ -	\$ -					\$ -				
CEI Post-Let	Engineering Post Let		% of Construction Costs			Extended Cost	% of Construction Costs			Extended Cost	% of Construction Costs			Extended Cost	Notes
	Construction Phase Services / CEI	12.00%			\$ 10,412,393	12.00%			\$ 3,860,519	12.00%			\$ 7,791,318		
	Escalation	17.25%			\$ 1,796,152	17.25%			\$ 665,945	17.25%			\$ 1,344,013		
	Contingency	3.00%			\$ 366,256	3.00%			\$ 135,794	3.00%			\$ 274,060		
Total Post-Let Costs					\$ 12,574,802	\$ 4,662,258					\$ 9,409,391				
Grand Total Project Cost					\$ 176,200,000	\$ 77,160,000					\$ 154,600,000				

Windy Hill Road at Hwy 41 Interchange - Concept ROW Comparison Estimate

DESCRIPTION	AMOUNT		Alternate 1C		Alternate 2B		Alternate 4B	
			SPUI w/WHR Widening		CFI w/WHR Widening		Flyover Ramp w/WHR Widening	
REQD ROW	\$1,250,000	AC	3	\$3,750,000	3	\$3,750,000	9	\$11,250,000
PERM EASEMENT (75% of ROW)	\$937,500	AC	4	\$3,750,000	4	\$3,750,000	3	\$2,812,500
TRADE FIXTURES	\$25,000	EA	7	\$175,000	8	\$200,000	6	\$150,000
SIGN VALUE	\$15,000	EA	7	\$105,000	8	\$120,000	7	\$105,000
SIGN VALUATION	\$1,000	EA	7	\$7,000	8	\$8,000	7	\$7,000
DAMAGES TO REMAINDER	\$500,000	EA	7	\$3,500,000	8	\$4,000,000	5	\$2,500,000
BUSINESS RELOCATION	\$50,000	EA		\$0	1	\$50,000	28	\$1,400,000
RESIDENTIAL RELOCATION	\$30,000	EA		\$0	0	\$0	100	\$3,000,000
UST	\$50,000	EA		\$0	0	\$0	1	\$50,000
COST-TO-CURE REPORT (PARKING)	\$5,500	EA	7	\$38,500	8	\$44,000	6	\$33,000
COST-TO-CURE DAMAGES(PARKING)	\$100,000	EA	7	\$700,000	8	\$800,000	15	\$1,500,000
DAMAGES DUE TO CHANGE OF USAGE	\$300,000	EA	1	\$300,000	2	\$600,000	4	\$1,200,000
LEASEHOLD VALUE	\$500,000	EA	0	\$0	0	\$0	4	\$2,000,000
Subtotal				\$12,325,500		\$13,322,000		\$26,007,500
With Assumed 20% Increase for Scoping Level of Design				\$14,800,000		\$16,000,000*		\$31,300,000

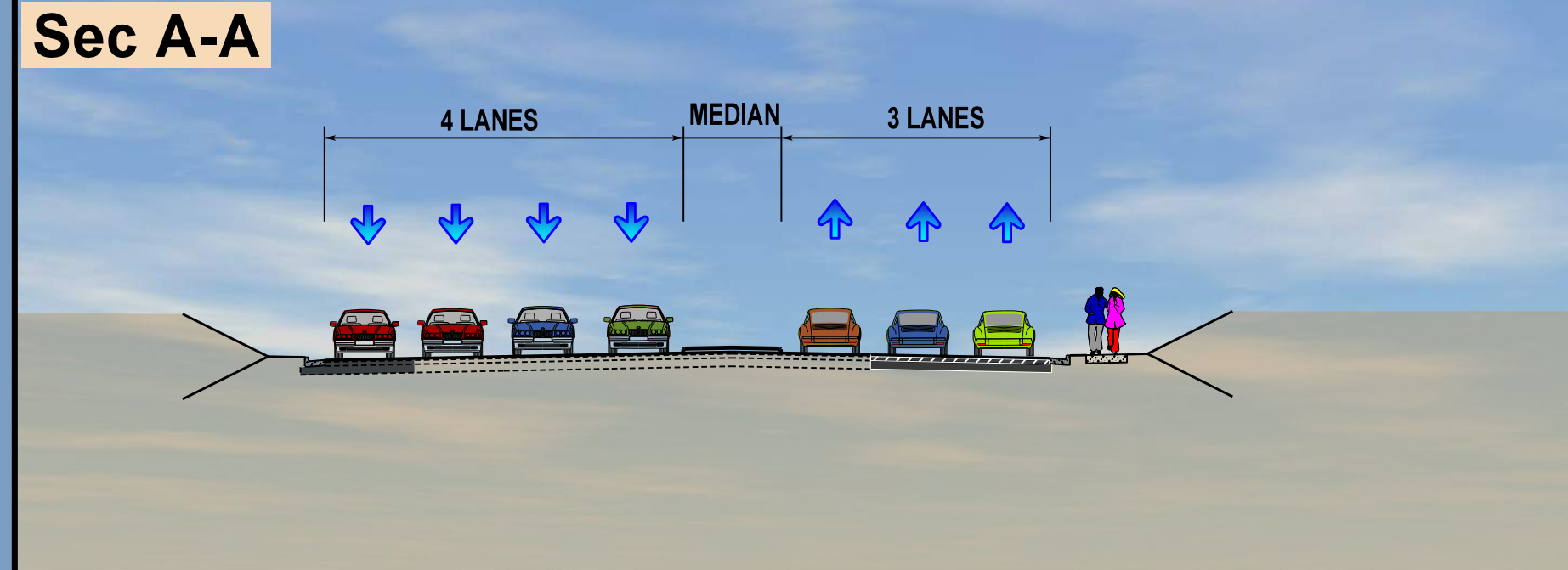
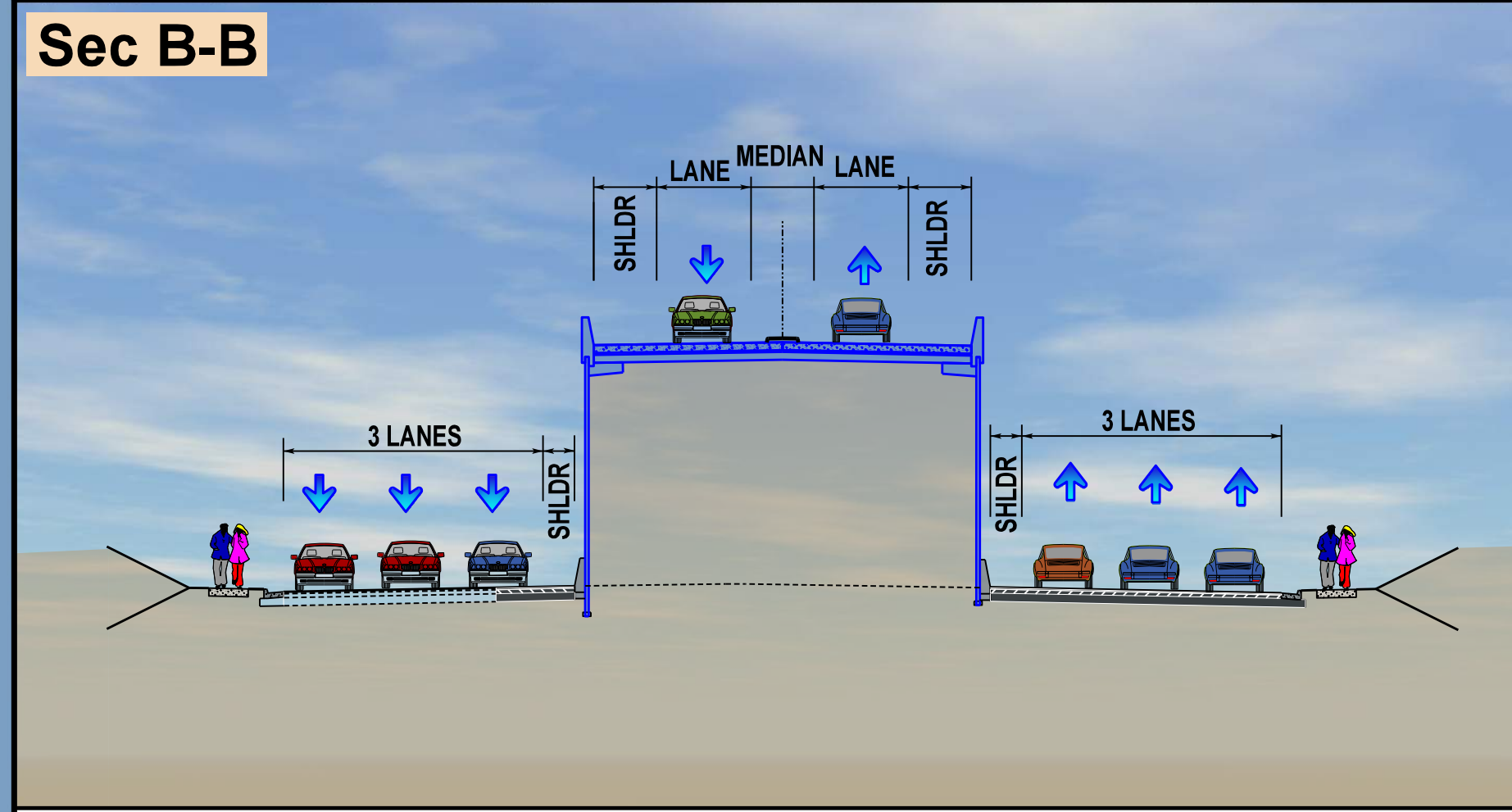
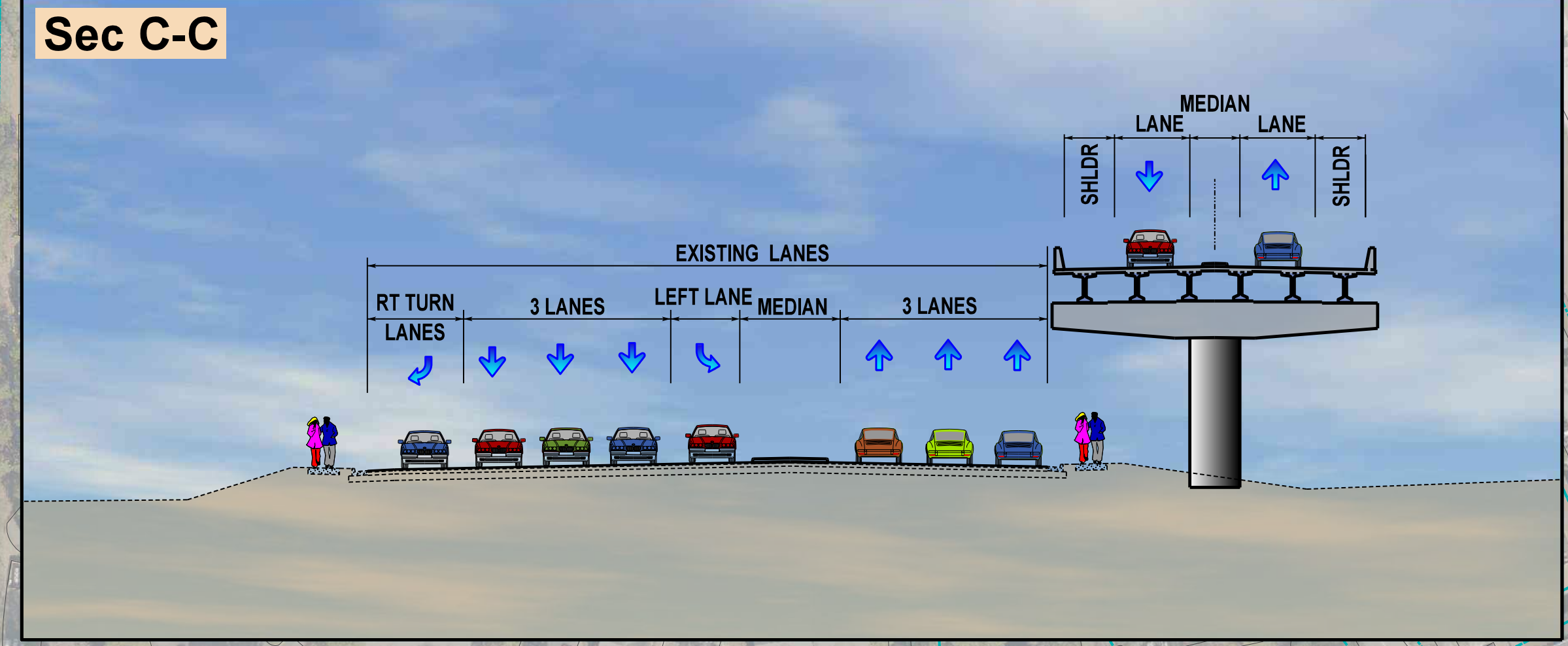
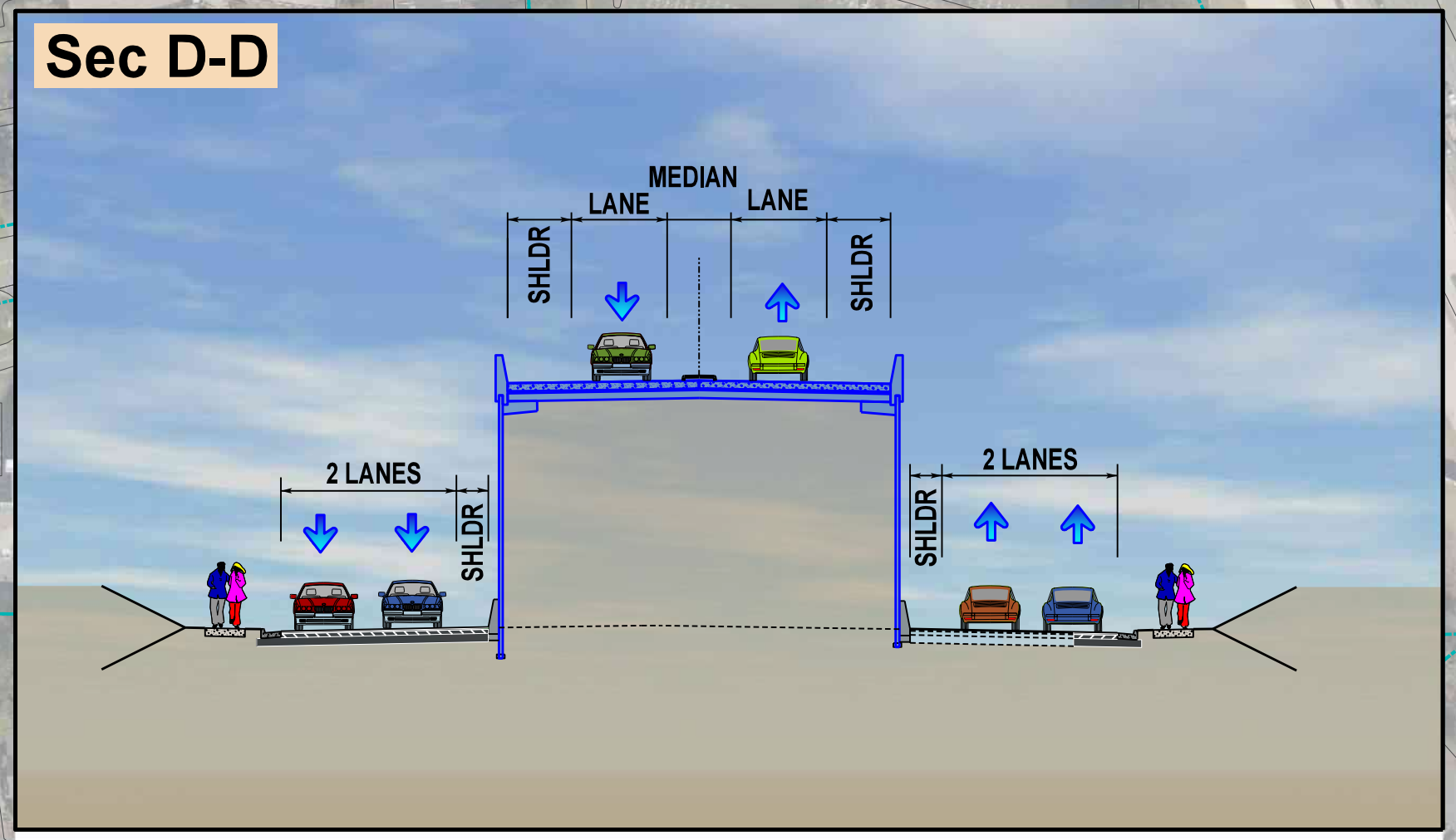
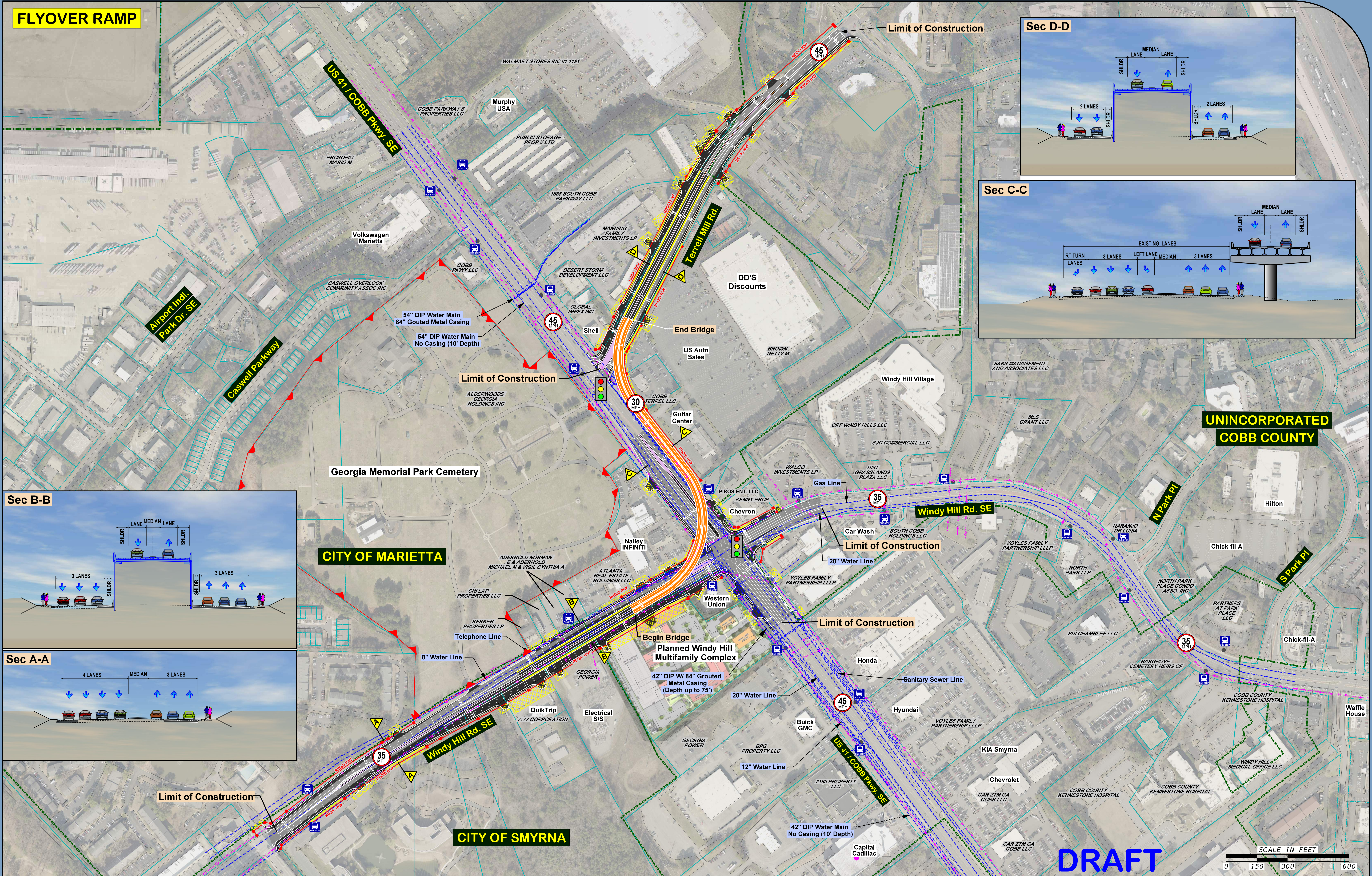
This price does not consider critical access management issues that will severely impact property owners in the area

Windy Hill Road at Hwy 41 Interchange - Concept Utility Comparison Estimate

DESCRIPTION	UNIT OF MEASURE	COST PER UNIT	ALTERNATIVE 1C		ALTERNATIVE 2B		ALTERNATIVE 4B	
			SPUI Interchange - Underpass and At- Grade Improvements Along Windy Hill Rd		CFI Intersection and At- Grade Improvements Along Windy Hill Rd		Flyover Ramp w/ WHR 3rd Lane Widening	
			QUANTITY	COST	QUANTITY	COST	QUANTITY	COST
OVERHEAD TRANSMISSION LINES	LINEAR FOOT	\$1,500	3,545	\$5,317,500	2,568	\$3,852,000	2,929	\$4,393,500
UNDERGROUND TRANSMISSION LINES	LINEAR FOOT	\$5,000		\$0		\$0		\$0
OVERHEAD DISTRIBUTION LINES	LINEAR FOOT	\$200	12,967	\$2,593,400	7,648	\$1,529,600	4,006	\$801,200
UNDERGROUND DISTRIBUTION LINES	LINEAR FOOT	\$2,000	172	\$344,000		\$0	1,132	\$2,264,000
WATER LINE 54 INCH	LINEAR FOOT	\$3,000		\$0		\$0		\$0
WATER LINE 42 INCH	LINEAR FOOT	\$2,500		\$0		\$0		\$0
WATER LINE 20 INCH	LINEAR FOOT	\$350	2,746	\$961,100		\$0		\$0
WATER LINE 2 INCH	LINEAR FOOT	\$35	254	\$8,890	356	\$12,460		\$0
WATER LINE 8 INCH	LINEAR FOOT	\$60	1,803	\$108,180	876	\$52,560	886	\$53,160
WATER LINE 10 INCH	LINEAR FOOT	\$100	582	\$58,200	128	\$12,800	113	\$11,300
WATER LINE 12 INCH	LINEAR FOOT	\$250	1,223	\$305,750	974	\$243,500		\$0
GAS LINE 4"	LINEAR FOOT	\$60	3,220	\$193,200	4,138	\$248,280	2,436	\$146,160
GAS LINE 8"	LINEAR FOOT	\$60					446	\$26,760
GAS LINE 10"	LINEAR FOOT	\$100	4,931	\$493,100	4,413	\$441,300	1,627	\$162,700
GAS LINE 12"	LINEAR FOOT	\$250	4,388	\$1,097,000	3,430	\$857,500	1,627	\$406,750
COMMUNICATION	LINEAR FOOT	\$35	11,576	\$405,160	8,368	\$292,880		\$0
SANITARY SEWER	LINEAR FOOT	\$200	670	\$134,000			5,770	\$1,154,000
BUSINESS/HOME SERVICE	EACH			\$400,000		\$400,000		\$400,000
Utility Totals				12,500,000		8,000,000		9,900,000
20% Utility Increase for Scoping Level Basis of Design				15,000,000		9,600,000		11,900,000

Appendix G: Preferred Concept Layout and Typical Sections

FLYOVER RAMP

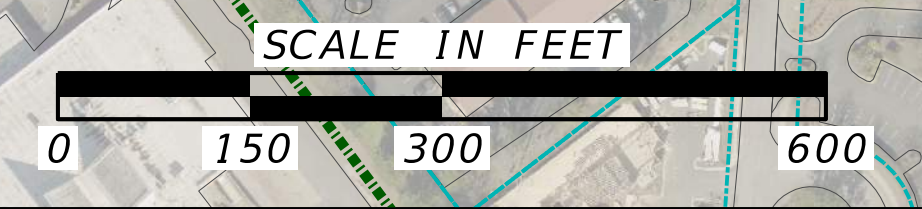


UNINCORPORATED COBB COUNTY

CITY OF MARIETTA

CITY OF SMYRNA

DRAFT



- LEGEND**
- PROPOSED MILL & INLAY
 - PROPOSED NEW ROADWAY PAVEMENT
 - PROPOSED BRIDGE
 - PROPOSED UNDERPASS
 - PROPOSED RAISED ISLAND
 - PROPOSED SIDEWALK
 - EXISTING ROW
 - PROPOSED ROW
 - EASEMENT
 - EXISTING UNDERGROUND UTILITIES
 - RETAINING WALL
 - ENVIRONMENTAL SENSITIVE AREA
 - OVERHEAD TRANSMISSION LINE

- EXISTING MARTA BUS STOP
- TRAFFIC SIGNAL
- CITY LIMIT



**PIOH LAYOUT - PRELIMINARY
COBB PARKWAY AT WINDY HILL
GRADE SEPARATION STUDY
ALTERNATIVE 4 - FLYOVER**



SKETCH 0004B

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