

# Barracks-Emmet Intersection Improvements



# STEERING COMMITTEE MEETING 1

JULY 25, 2019

TIMMONS GROUP



# TODAY'S AGENDA

- **STEERING COMMITTEE OVERVIEW**
- **PROJECT SCOPE & SCHEDULE**
- **EXISTING CONDITIONS**
- **TRAFFIC STUDY RESULTS**
- **STREETS THAT WORK PLAN**
- **PRIORITIES OF THE COMMUNITY**
- **COMMUNITY DIALOGUE**
- **NEXT STEPS**



# STEERING COMMITTEE OVERVIEW

PURPOSE OF TODAY'S MEETING



# ROLE OF THE STEERING COMMITTEE

**TO PROVIDE  
SUGGESTIONS THAT  
WILL INFORM THE  
DECISION-MAKING  
PROCESS AS  
REPRESENTATIVES OF  
THE LOCAL  
COMMUNITY**



# RULES OF THE STEERING COMMITTEE

- **ALL MEMBERS HAVE EQUAL OPPORTUNITY TO SHARE INDIVIDUAL VIEWPOINTS**
- **LISTEN AND BE RESPECTFUL OF THE VIEWS OF OTHERS**
- **SEEK TO REFLECT THE VIEWS OF THOSE YOU REPRESENT**
- **KEEP IN MIND THE PHYSICAL AND FISCAL CONSTRAINTS**
- **STAY FOCUSED ON THE PRIMARY MISSION & PURPOSE OF THE PROJECT**



**PROJECT  
MISSION &  
PURPOSE**

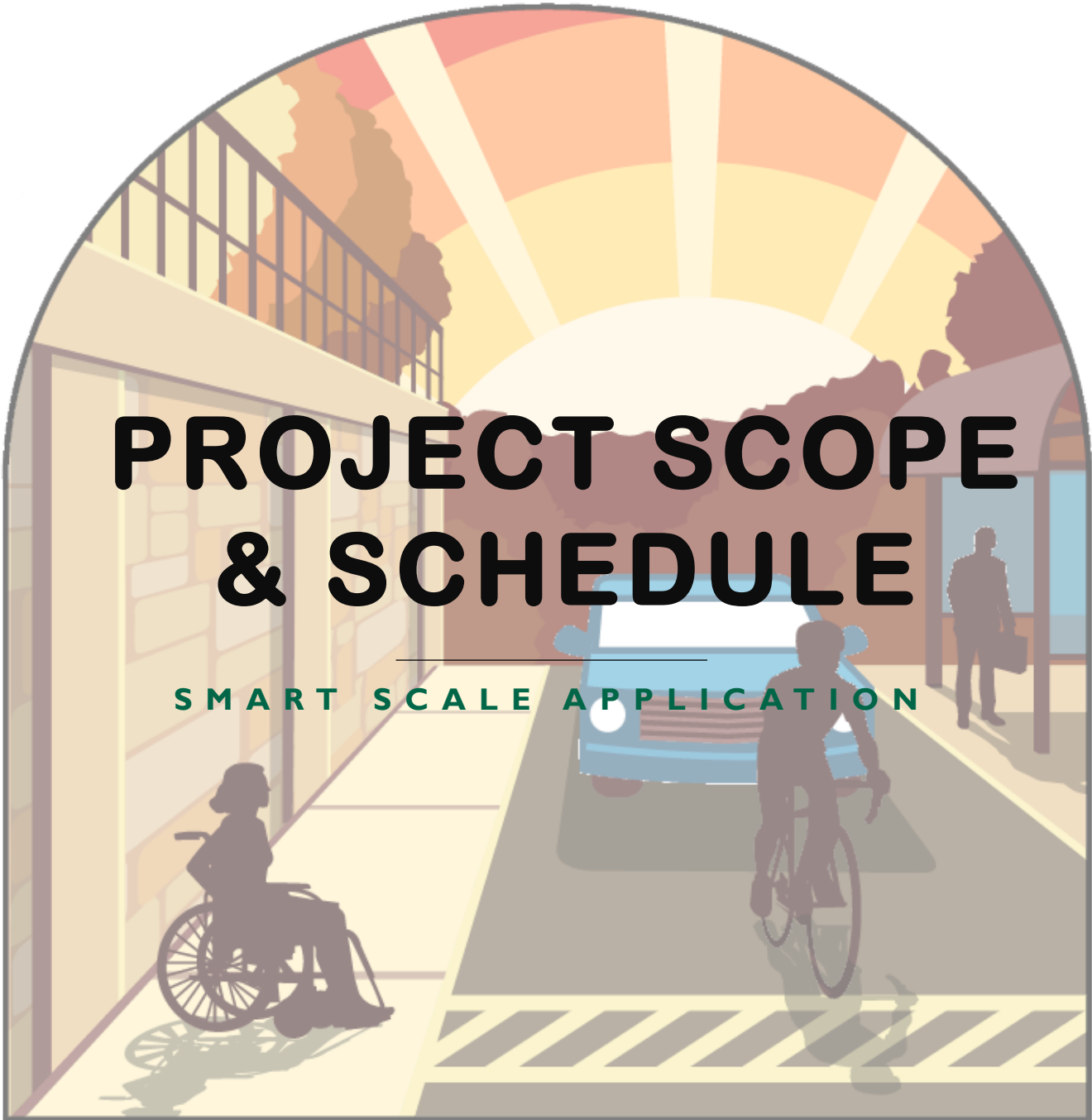
**TO IMPROVE THE  
OPERATIONAL  
PERFORMANCE OF THE  
INTERSECTION WHILE  
ALSO PROVIDING  
ENHANCEMENTS TO  
BIKE, PEDESTRIAN AND  
TRANSIT FACILITIES**



# GOAL OF TODAY'S MEETING?

- **TO BECOME FAMILIAR WITH IMPLEMENTATION CHALLENGES FACING THE DESIGN TEAM**
- **TO GAIN A BETTER UNDERSTANDING OF ISSUES FACING THE BARRACKS ROAD CORRIDOR**
- **TO PRIORITIZE THE PROJECT GOALS FROM THE PERSPECTIVE OF THE LOCAL CITIZENS**





# PROJECT SCOPE & SCHEDULE

SMART SCALE APPLICATION







# OVERALL PROJECT LIMITS

AERIAL MAP



# INTERSECTION TRAFFIC CONGESTION & DELAYS



## KNOWN CORRIDOR CONCERNS

PURPOSE OF THE PROJECT



# INFILL DEVELOPMENTS FURTHER DEGRADING TRAFFIC OPERATIONS



## KNOWN CORRIDOR CONCERNS

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PURPOSE OF THE PROJECT



# UNSAFE PEDESTRIAN ENVIRONMENT



## KNOWN CORRIDOR CONCERNS

PURPOSE OF THE PROJECT



# NO BICYCLE FACILITIES



# KNOWN CORRIDOR CONCERNS

PURPOSE OF THE PROJECT



# POOR TRANSIT FACILITIES



# KNOWN CORRIDOR CONCERNS

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PURPOSE OF THE PROJECT



# SAFETY AT MEADOWBROOK ROAD CROSSOVER



## KNOWN CORRIDOR CONCERNS

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PURPOSE OF THE PROJECT



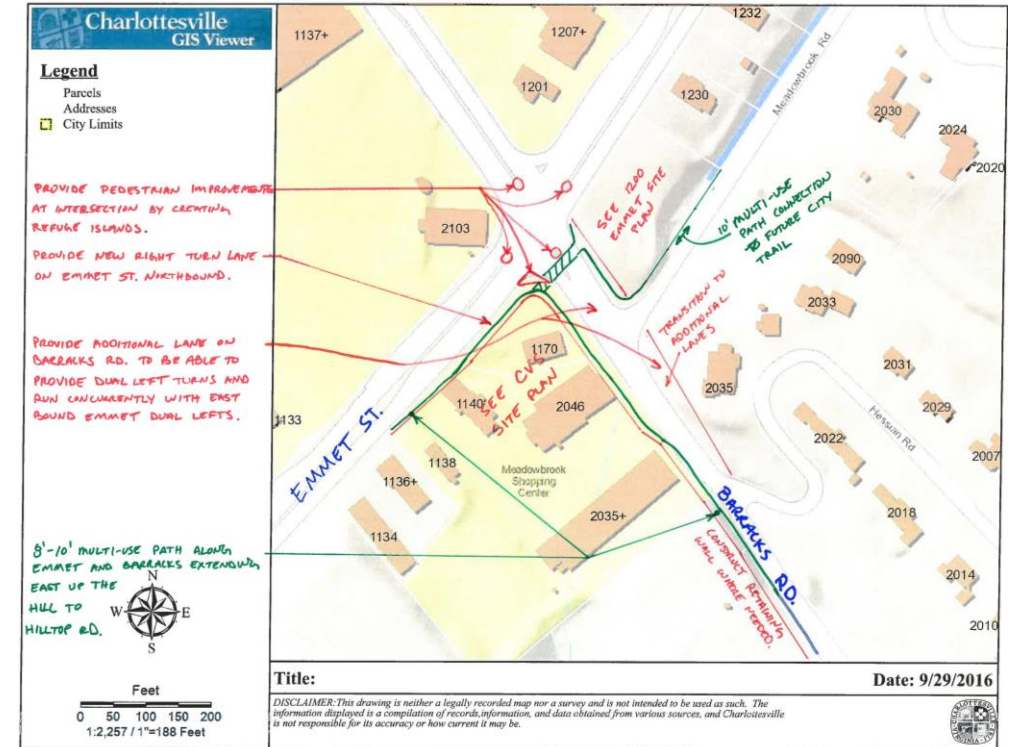


**SMART  
SCALE**

*Funding the Right  
Transportation Projects  
in Virginia*

## CHARLOTTESVILLE AWARDED \$8.6M FOR FOLLOWING IMPROVEMENTS:

- ADDITIONAL NORTHBOUND RIGHT TURN LANE ON EMMET STREET
- ADDITIONAL WESTBOUND LEFT TURN LANE (CONCURRENT DUAL LEFTS) ON BARRACKS ROAD
- TRAFFIC SIGNAL IMPROVEMENTS
- PEDESTRIAN REFUGE ISLANDS AT INTERSECTION
- UPGRADED BIKE/PEDESTRIAN FACILITIES ON BARRACKS TO HILLTOP RD.
- NEW CAT BUS SHELTER ON BARRACKS ROAD



# SMARTSCALE APPLICATION

PROJECT DESCRIPTION



**TIMMONS GROUP**





**SCOPING & VISIONING**

- SURVEY
- TRAFFIC ANALYSIS
- COMMITTEE MEETINGS
- CONCEPT PLANS
- PUBLIC ENGAGEMENT

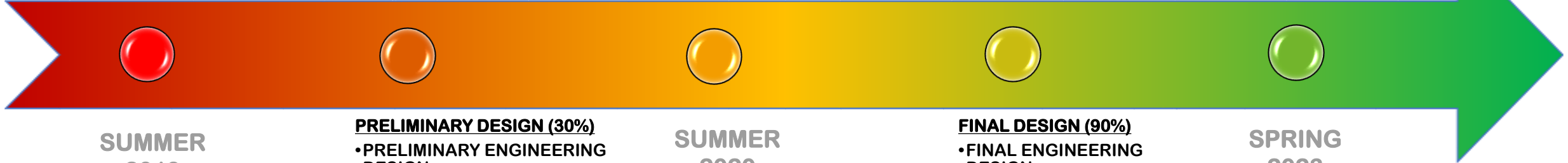
WINTER  
2020

**DETAILED DESIGN (60%)**

- DETAILED ENGINEERING DESIGN
- DESIGN PUBLIC HEARING
- VDOT DESIGN APPROVAL

SUMMER  
2021

CONSTRUCTION



SUMMER  
2019

**PRELIMINARY DESIGN (30%)**

- PRELIMINARY ENGINEERING DESIGN
- CITIZEN INFORMATION MEETING
- CITY COUNCIL APPROVAL

SUMMER  
2020

**FINAL DESIGN (90%)**

- FINAL ENGINEERING DESIGN
- RIGHT OF WAY ACQUISITION
- UTILITY RELOCATION
- VDOT AUTH. TO ADVERTISE

SPRING  
2023

PLANNING PHASE

DESIGN DEVELOPMENT PHASE

IMPLEMENTATION PHASE

# PROJECT SCHEDULE

TENTATIVE



TIMMONS GROUP





# EXISTING CONDITIONS

CORRIDOR CONSTRAINTS



TIMMONS GROUP



# BARRACKS ROAD/EMMET STREET INTERSECTION

EXISTING CONDITIONS

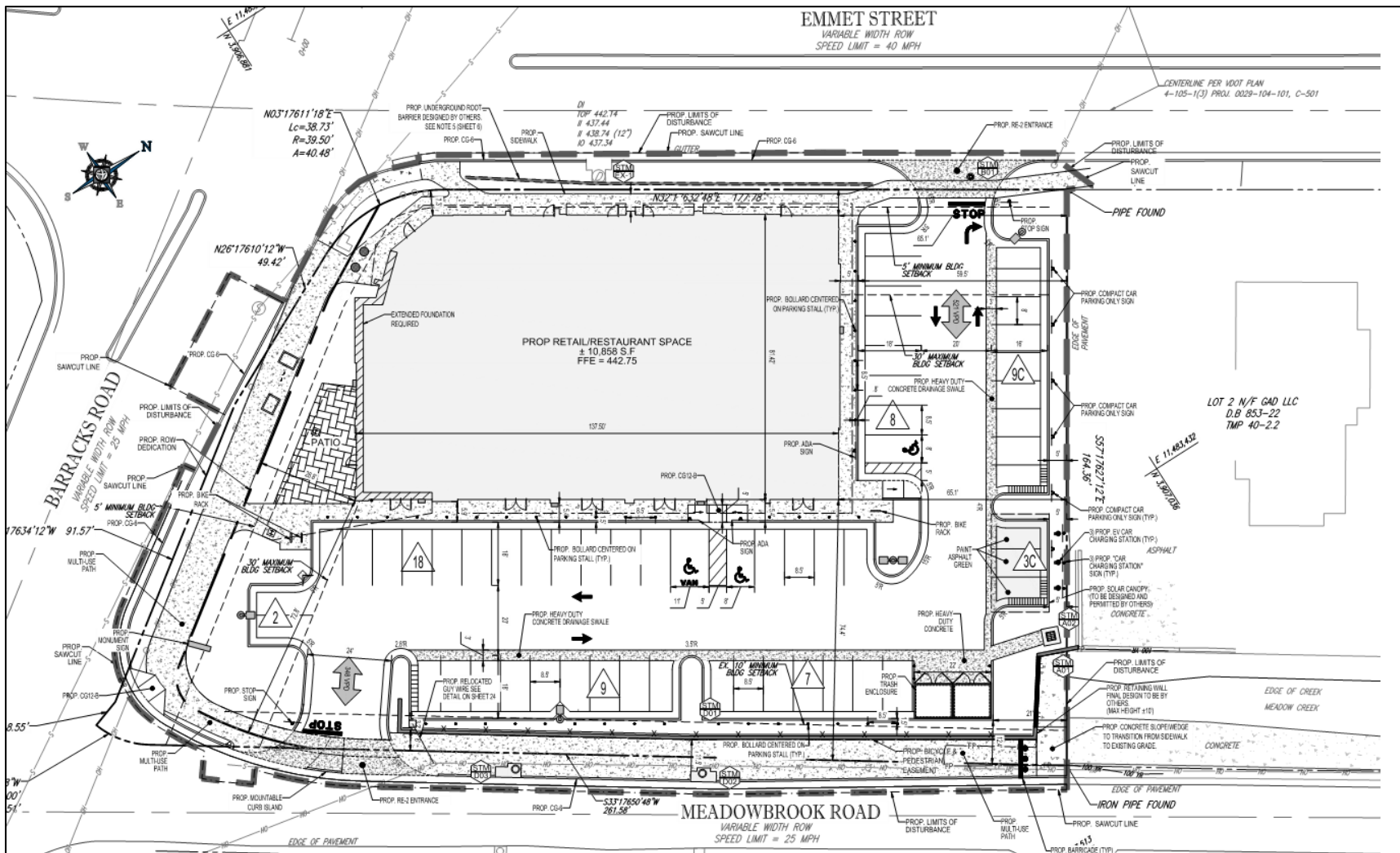




# CAVA SITE

RECENTLY COMPLETED PROJECT





## KEY POINTS:

- R/W BEHIND SIDEWALK
- EXISTING POWER POLES
- TRAFFIC SIGNAL EQUIPMENT AT THE CORNER
- MINIMAL FLEXIBILITY TO ADJUST



# CAVA SITE

RECENTLY COMPLETED PROJECT





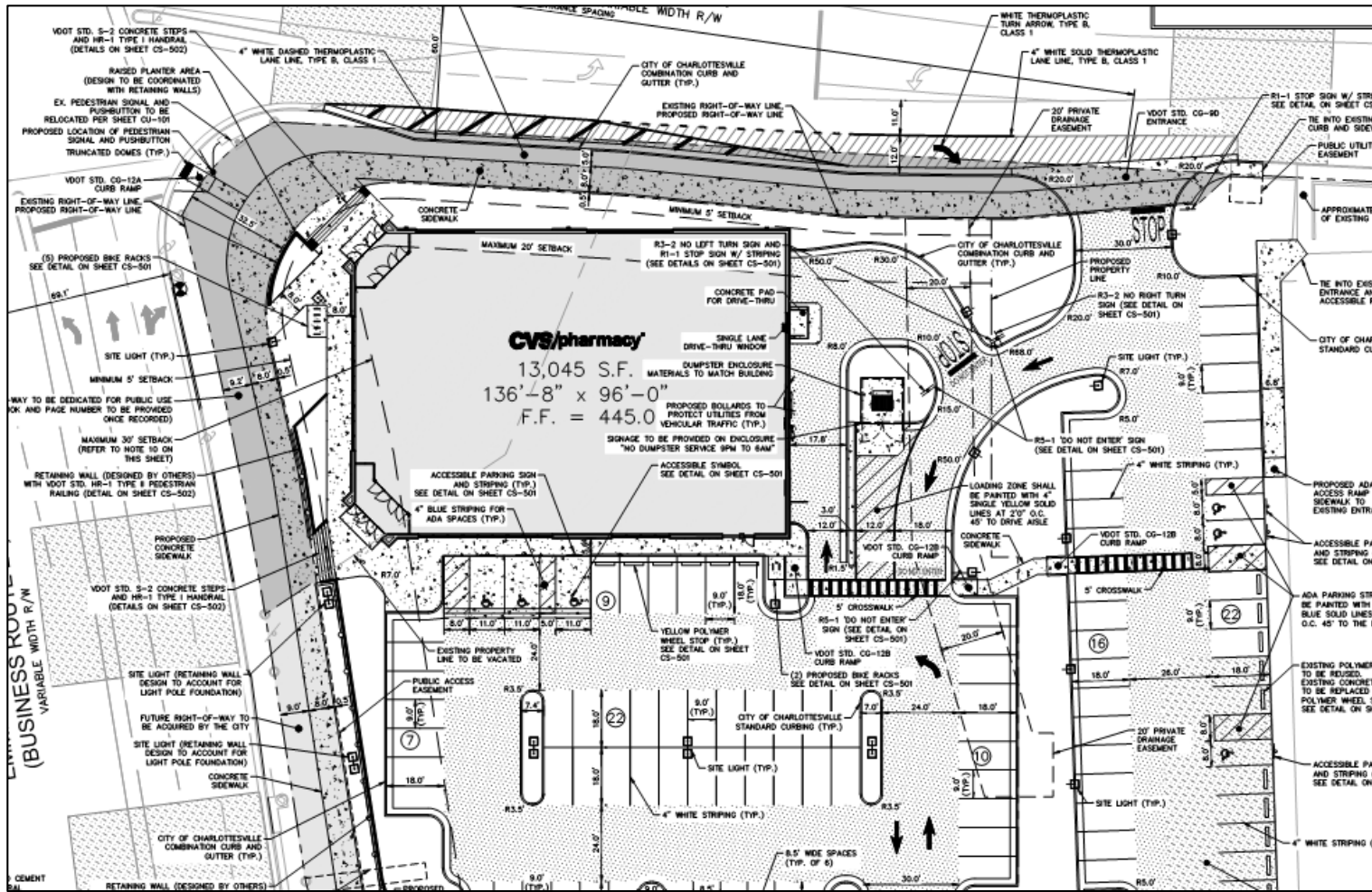
# CVS SITE

CURRENT IMPROVEMENTS UNDER CONSTRUCTION



TIMMONS GROUP





## KEY POINTS:

- **DARK SHADING: R/W ACQUIRED BEHIND SIDEWALK**
- **LIGHT SHADING: R/W TO BE ACQUIRED**
- **TRAFFIC POLE TO BE RELOCATED**
- **NEED TO MATCH BARRACKS ROAD CURB**



# CVS SITE

CURRENT IMPROVEMENTS UNDER CONSTRUCTION



TIMMONS GROUP





# BARRACKS ROAD (MEADOWBROOK RD)

EXISTING CONDITIONS & CONSTRAINTS







# BARRACKS ROAD (HESSIAN ROAD)

EXISTING CONDITIONS & CONSTRAINTS





# BARRACKS ROAD (SLOPES)

EXISTING CONDITIONS & CONSTRAINTS

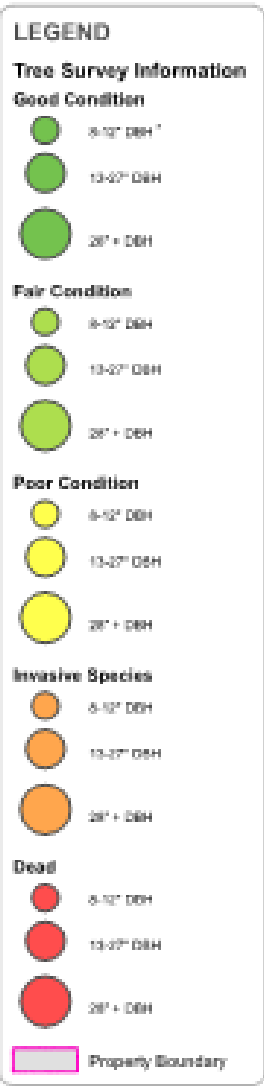




# BARRACKS ROAD (DRIVEWAYS)

EXISTING CONDITIONS & CONSTRAINTS





# EXISTING TREE EVALUATION

CURRENT CONDITION OF TREES



**LEGEND**

**Tree Survey Information**

**Good Condition**

- 8-12" DBH
- 13-27" DBH
- 28" + DBH

**Fair Condition**

- 8-12" DBH
- 13-27" DBH
- 28" + DBH

**Poor Condition**

- 8-12" DBH
- 13-27" DBH
- 28" + DBH

**Invasive Species**

- 8-12" DBH
- 13-27" DBH
- 28" + DBH

**Dead**

- 8-12" DBH
- 13-27" DBH
- 28" + DBH

Property Boundary

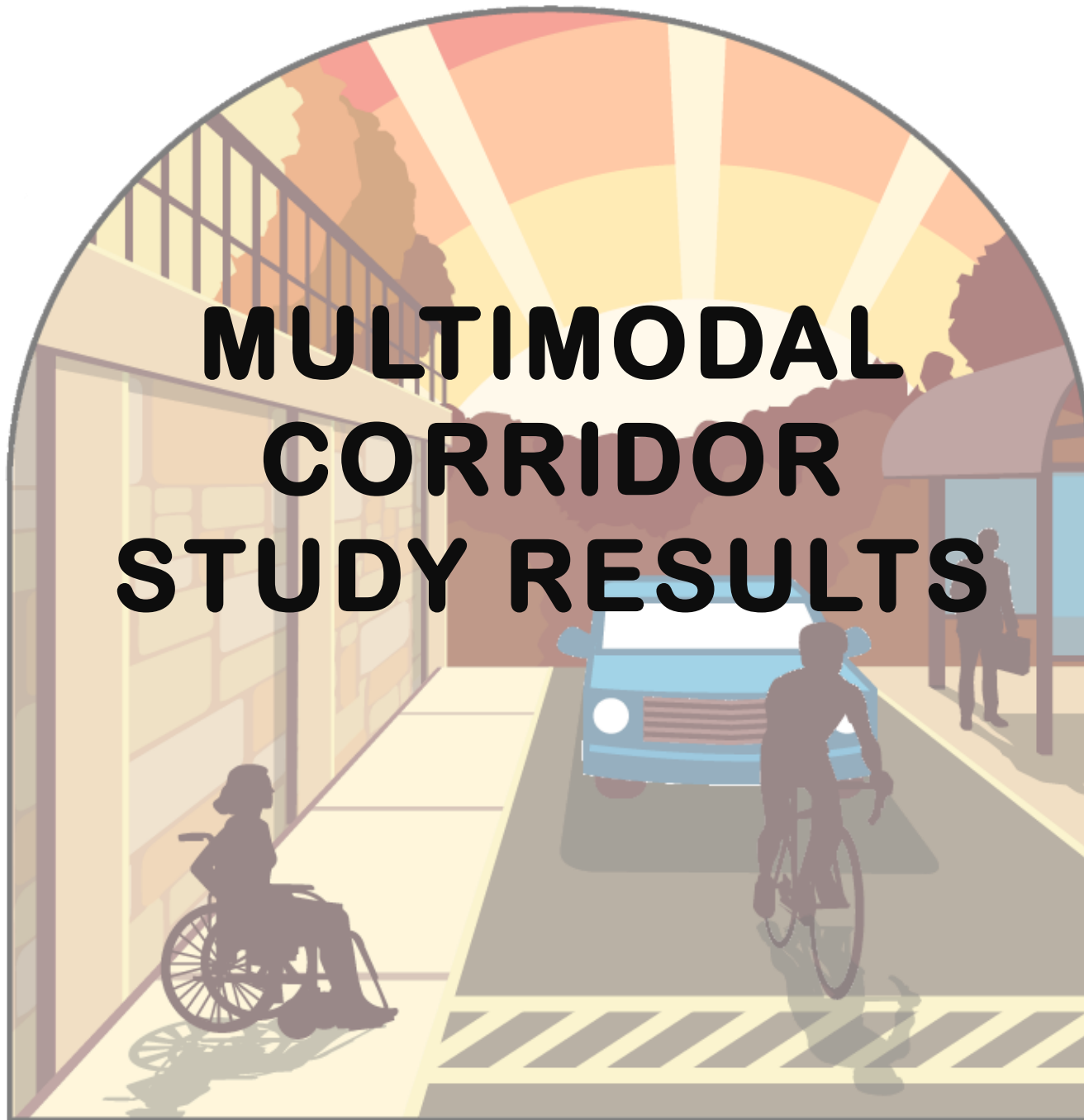


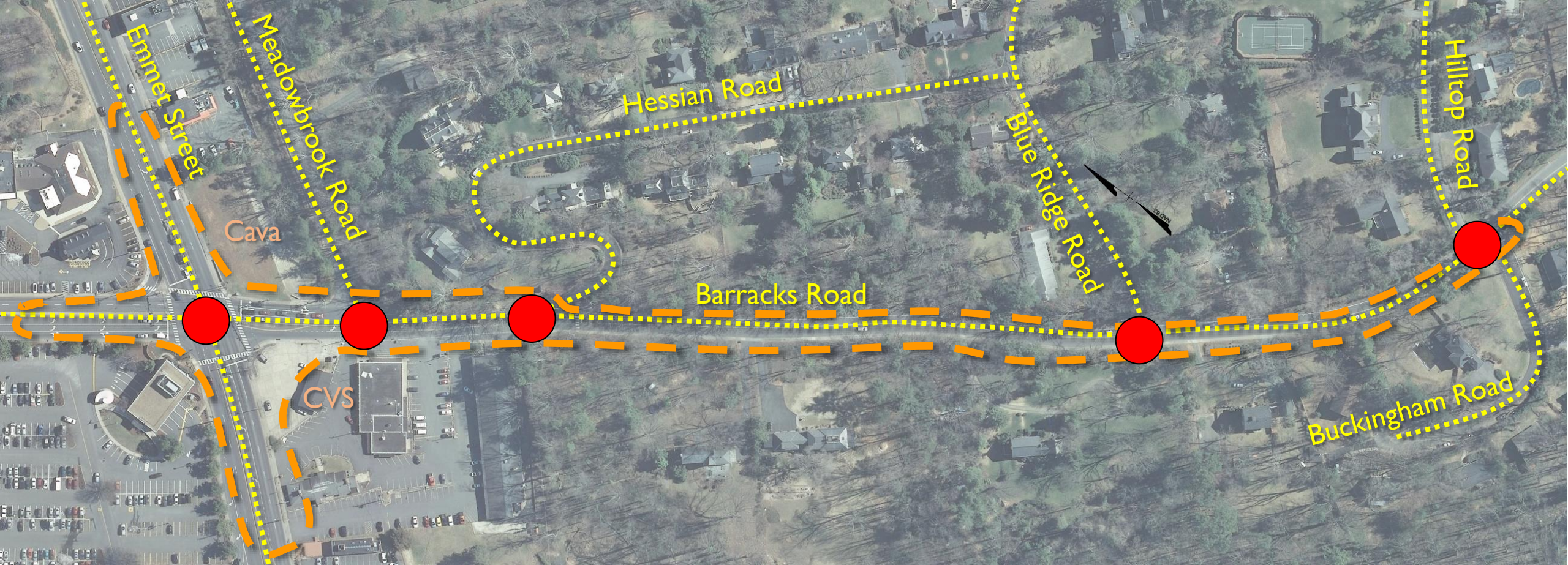
# EXISTING TREE EVALUATION

CURRENT CONDITION OF TREES



# MULTIMODAL CORRIDOR STUDY RESULTS



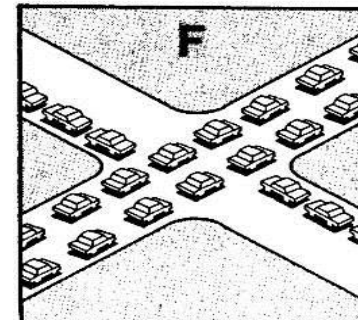
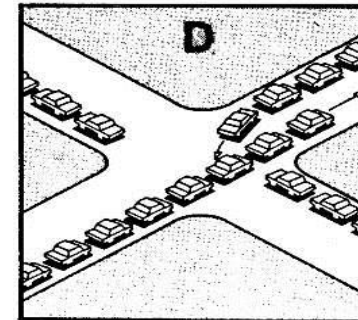
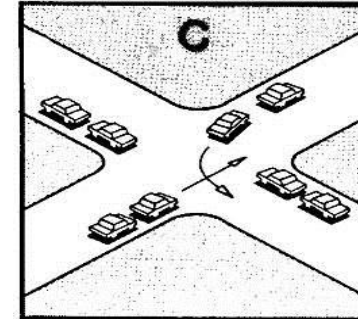
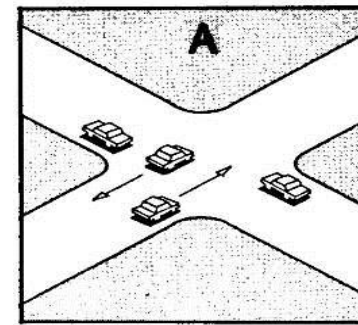


# CORRIDOR STUDY INTERSECTIONS

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<u>Level of Service</u>	<u>Roadway Segments or Controlled Access Highways</u>	<u>Intersections</u>
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive backups.
E	Actual capacity of the roadway involves delay to all motorists due to congestion.	Very long queues may create lengthy delays, especially for left-turning vehicles.
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage area during part or all of an hour.



SOURCE: "A Policy on Design of Design of Urban Highways and Arterial Streets" - AASHTO, 1973 based upon material published in "Highway Capacity Manual", National Academy of Sciences, 1965.





<b>Volume to Capacity (V/C) Ratio</b>	<b>Assessment</b>
< 0.85	Intersection is operating under capacity. Excessive delays are not experienced.
0.85 – 0.95	Intersection is operating near its capacity. Higher delays may be expected, but continuously increasing queues should not occur.
0.95 – 1.00	Unstable flow results in a wide range of delay. Intersection improvements will be required soon to avoid excessive delays.
> 1.00	The demand exceeds the available capacity of the intersection. Excessive delays and queuing are anticipated.

# TRAFFIC ENGINEERING CONCEPTS

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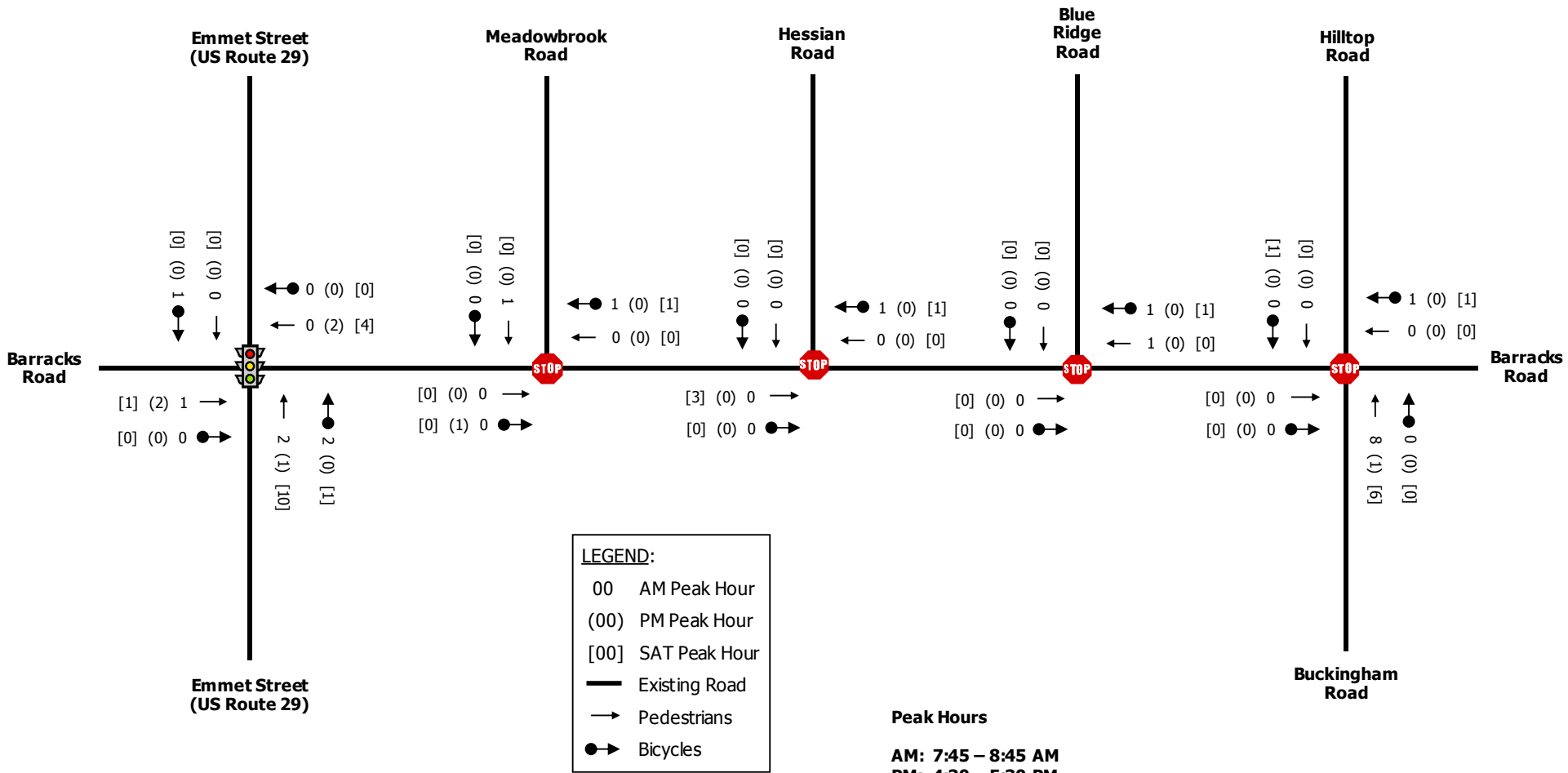


- **Barracks Road/Emmet Street Intersection**
  - Operates at overall LOS D during AM/SAT peak hours
  - Operates at overall LOS E during PM peak hour
  - Multiple approaches and individual movements operate at LOS F
  - V/C ratio is overall 0.95 in the PM peak hour; individual movements above 1.00
  - WB queues on Barracks Road extend approximately 370+’
  - The NB and SB through movements on Emmet Street block access to the existing turn lanes

## 2019 EXISTING CONDITIONS

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# BIKE/PED COUNTS



- **With no changes to signal timings, the background traffic growth will further increase delays and worsen operations at the signalized intersection**
- **Queues on all four (4) approaches at the intersection will extend beyond the existing turn lanes and create issues for vehicles attempting to utilize the commercial entrances on Barracks Road and Emmet Street**
- **V/C ratio increases to above 1.00 for the PM and SAT**
- **WB queues on Barracks Road increase substantially (greater than 25%)**

## **2030 BACKGROUND CONDITIONS**

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**EXISTING**

DEDICATED LEFT  
THROUGH-LEFT  
THROUGH-RIGHT



**OPTION 1**

DUAL LEFTS  
THROUGH  
DEDICATED RIGHT



**OPTION 2**

DUAL LEFTS  
THROUGH  
THROUGH-RIGHT



**OPTION 3**

SAME AS OPTION 2,  
EXCEPT THROUGH-RIGHT  
STORAGE IS EXTENDED  
TO HESSIAN

# WESTBOUND APPROACH OPTIONS

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	Overall Intersection V/C Ratio			Emmet Street NB Queue (ft)			Barracks Road WB Queue (ft) (From Hessian Road)		
	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak	AM Peak	PM Peak	SAT Peak
2019 Existing Volumes	0.80	0.95	0.91	213	606	360	18	276	371
2024 Background Volumes	0.82	0.96	0.91	214	617	365	33	387	443
2030 Background Volumes	0.83	0.97	0.93	218	628	370	67	468	450
2030 Build - Option 1	0.77	0.88	0.87	186	486	311	16	272	180
2030 Build - Option 2	0.77	0.86	0.84	186	486	311	51	251	345
2030 Build - Option 3	0.77	0.86	0.84	183	486	311	6	210	208

# CAPACITY ANALYSIS RESULTS



- **Add northbound channelized right turn lane with 200 ft of storage on Emmet Street**
- **Add 4<sup>th</sup> lane to westbound Barracks Rd approach**
  - **Option 2 (Dual lefts, through, through-right) gives best operational results**
  - **Option 3 (same as Option 2 but has through-right lane extended) reduces backup queues on westbound Barracks Rd the most**

## **VEHICULAR RECOMMENDATIONS**

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- **Upgraded, ADA-compliant pedestrian accommodations along Barracks Road, from Emmet Street to Hilltop Road**
  - Includes either a separated multi-use path or a climbing bicycle lane on the EB lane of Barracks
- **Pedestrian refuge islands on all approaches within the Barracks/Emmet signalized intersection**
  - Shorter crossing distances on the NB and WB approaches
- **Upgraded bus stop at Hessian Road, with room for a bus to fully exit the through lane and safely stop outside of traffic**

## **BIKE/PED RECOMMENDATIONS**

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- **Convert to right-in/right-out access**
- **Existing WB traffic queues on Barracks Road block vehicles turning left to/from Meadowbrook Road**
- **The additional lane on WB Barracks Road leaves no room for a left turn lane from EB Barracks Road onto Meadowbrook Road**
- **Vehicles can travel northbound on Emmet Street to Morton Drive in order to access Meadowbrook Road**
- **Improves:**
  - **Safety by reducing conflict points**
  - **Traffic flow by removing backups from left-turning vehicles**
  - **Storage on Barracks by eliminating gaps in queue**

## **MEADOWBROOK ROAD INTERSECTION**

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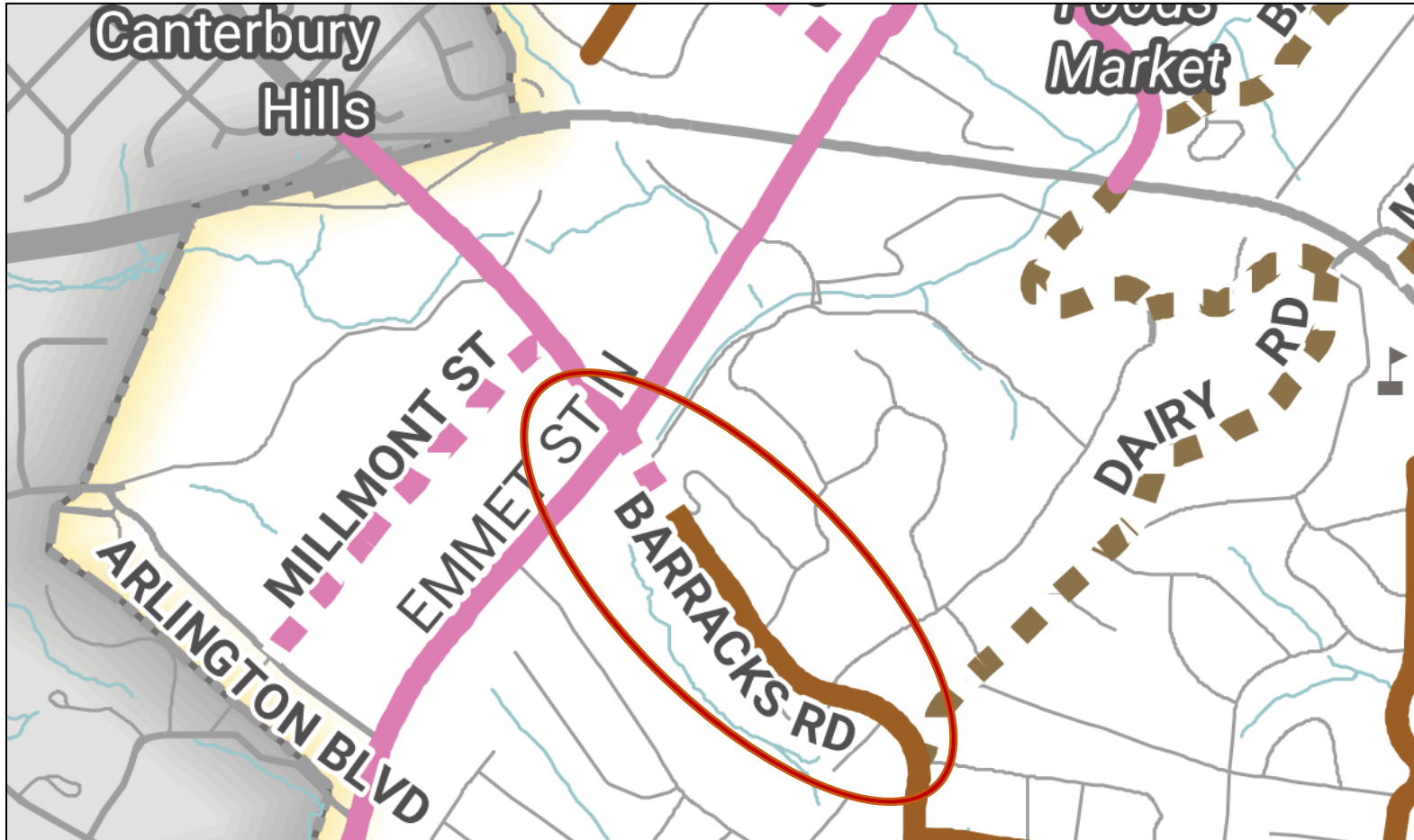




# STREETS THAT WORK PLAN

WHAT DO THE CITY GUIDELINES SAY?





**Street Typology**

- Downtown
- Industrial
- Mixed Use A
- Mixed Use B
- Neighborhood A
- Neighborhood B
- Local

# STREET TYPOLOGY



# MIXED USE B HIGHLIGHTS

- < 30 MPH DESIGN SPEED
- 11' TRAVEL LANE WIDTH (W/ TRANSIT)
- 7'+ SIDEWALK (CLEAR WALK ZONE)
- 3'-6' CURBSIDE BUFFER ZONE
- 10' SHARED USE PATH
- TRANSIT SHELTERS
- PEDESTRIAN AND STREET LIGHTING
- MEDIAN REFUGE

# NEIGHBORHOOD A HIGHLIGHTS

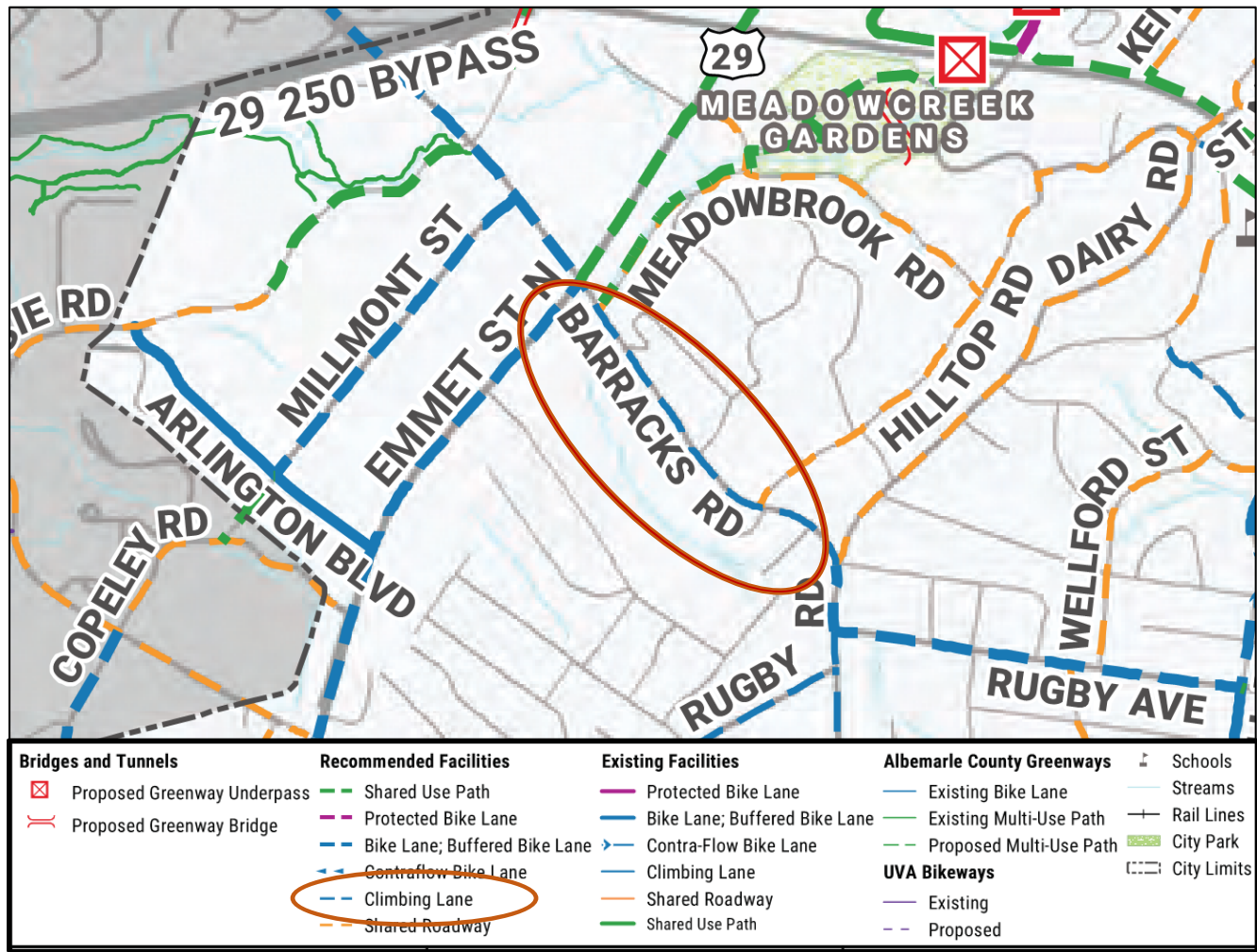
- < 25 MPH DESIGN SPEED
- 11' TRAVEL LANE WIDTH (W/ TRANSIT)
- 5'-6' SIDEWALK (CLEAR WALK ZONE)
- 3'-6' CURBSIDE BUFFER ZONE
- SHARED USE LANE, 6' CLIMBING LANE
- TRANSIT CURBSIDE WAITING AREAS W/ BENCHES
- PEDESTRIAN LIGHTING
- NO MEDIAN

## TYPOLOGY RECOMMENDATIONS

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STREETS THAT WORK DESIGN GUIDE





# BIKE FACILITY RECOMMENDATIONS

STREETS THAT WORK DESIGN GUIDE





# PRIORITIES OF THE COMMUNITY

IMPROVEMENT PRIORITIZATION



## What improvements would you most like to see implemented on the Barracks Road corridor?

### Barracks/Emmet Street Improvements

1. Please rank the following Barracks Road improvements you would most like to see implemented from most important to least important.

☰	⏴	Mitigate Traffic Congestion
☰	⏴	Improve Pedestrian Safety
☰	⏴	Improve Bicycle Infrastructure/Access
☰	⏴	Implement Traffic Calming Measures
☰	⏴	Preserve Neighborhood Character & Aesthetics
☰	⏴	Add Corridor Lighting
☰	⏴	Improve Transit Facilities
☰	⏴	Maintain Dense Tree Canopy

# LOCAL PRIORITIES

LIST IN ORDER OF PRIORITY



## What improvements would you most like to see implemented on the Barracks Road corridor?

### Barracks/Emmet Street Improvements

2. Which of the following bike/ped improvements would you most like to see implemented on the south side Barracks Road between Hessian Road and Hilltop Road?

- Climbing bike lane (in road) with planting strip and 5' sidewalk behind the curb
- Protected climbing bike lane (in road) without planting strip and 5' sidewalk behind the curb
- 10' Multi-use path with planting strip behind the curb
- 10' Multi-use path without planting strip behind the curb

3. Which of the following Barracks Road/Meadowbrook Road access options do you prefer?

- Right-In/Right-Out Access Only (extension of raised median across intersection to limit access)
- Full Access (ability to make all movements at the intersection - current condition)

# LOCAL PRIORITIES

LIST IN ORDER OF PRIORITY





## What improvements would you most like to see implemented on the Barracks Road corridor?

### Barracks/Emmet Street Improvements

4. If it were made safer, would you bike on Barracks Road?

Yes

No

5. Please provide any other comments/suggestions you may have to offer below.

# LOCAL PRIORITIES

LIST IN ORDER OF PRIORITY





# COMMUNITY DIALOGUE

WHAT HAVE YOU SEEN?





# NEXT STEPS

2019 TENTATIVE DATES



- ✓ **TECHNICAL & STEERING COMMITTEE MEETING #1 – JULY**
- ✓ **PUBLIC WORKSHOP – SEPTEMBER**
- ✓ **TECHNICAL/STEERING COMMITTEE MEETING #2 – OCTOBER**
- ✓ **PUBLIC OPEN HOUSE – NOVEMBER**
- ✓ **BOARDS & COMMISSIONS MEETINGS – WINTER 2019/2020**
- ✓ **PLANNING COMMISSION MEETING – WINTER 2019/2020**

## **2019 TIMELINE**

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**TENTATIVE**

