

| | | |
|-------------------------------|------|------|
| Potential Capacity | | 1636 |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Movement Capacity | | 1636 |
| Probability of Queue free St. | 1.00 | 1.00 |
| Maj L-Shared Prob Q free St. | | 1.00 |

Step 3: TH from Minor St. 8 11

| | | |
|--|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | | |
| Probability of Queue free St. | 1.00 | 1.00 |

Step 4: LT from Minor St. 7 10

| | | |
|--|------|------|
| Conflicting Flows | | |
| Potential Capacity | | 400 |
| Pedestrian Impedance Factor | | 598 |
| Maj. L, Min T Impedance Factor | 1.00 | 1.00 |
| Maj. L, Min T Adj. Imp Factor. | 1.00 | |
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | | 596 |

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St. 8 11

| | | |
|--|--|--|
| Part 1 - First Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |
| Probability of Queue free St. | | |

| | | |
|--|--|--|
| Part 2 - Second Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

| | | |
|--|------|------|
| Part 3 - Single Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | | |

Result for 2 stage process:

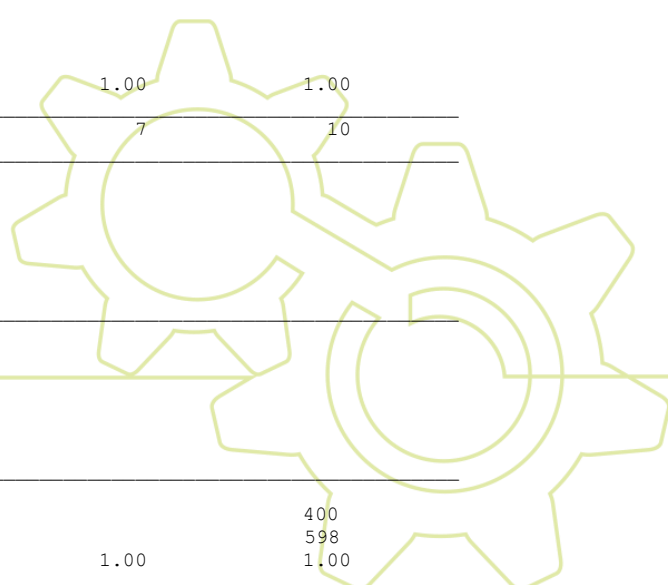
| | | |
|-------------------------------|------|------|
| a | | |
| Y | | |
| C t | | |
| Probability of Queue free St. | 1.00 | 1.00 |

Step 4: LT from Minor St. 7 10

| | | |
|--|--|--|
| Part 1 - First Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

| | | |
|--|--|--|
| Part 2 - Second Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

| | | |
|-----------------------------|------|------|
| Part 3 - Single Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | 400 |
| Pedestrian Impedance Factor | 1.00 | 598 |
| | | 1.00 |



| | | |
|--|------|------|
| Maj. L, Min T Impedance factor | 1.00 | |
| Maj. L, Min T Adj. Imp Factor. | 1.00 | |
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | | 596 |

Results for Two-stage process:

| | |
|-----|-----|
| a | |
| Y | |
| C t | 596 |

Worksheet 8-Shared Lane Calculations

| Movement | 7 L | 8 T | 9 R | 10 L | 11 T | 12 R |
|----------------------------|--------|--------|--------|---------|---------|---------|
| Volume (vph) | | | | 180 | | |
| Movement Capacity (vph) | | | | 596 | | |
| Shared Lane Capacity (vph) | | | | | | |

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

| Movement | 7 L | 8 T | 9 R | 10 L | 11 T | 12 R |
|-----------------|--------|--------|--------|---------|---------|---------|
| C sep | | | | 596 | | |
| Volume | | | | 180 | | |
| Delay | | | | | | |
| Q sep | | | | | | |
| Q sep +1 | | | | | | |
| round (Qsep +1) | | | | | | |
| n max | | | | | | |
| C sh | | | | | | |
| SUM C sep | | | | | | |
| n | | | | | | |
| C act | | | | | | |

Worksheet 10-Delay, Queue Length, and Level of Service

| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------|------|---|---|---|---|------|------|----|
| Lane Config | LT | | | | | L | | |
| v (vph) | 6 | | | | | 180 | | |
| C(m) (vph) | 1636 | | | | | 596 | | |
| v/c | 0.00 | | | | | 0.30 | | |
| 95% queue length | 0.01 | | | | | 1.29 | | |
| Control Delay | 7.2 | | | | | 13.6 | | |
| LOS | A | | | | | B | | |
| Approach Delay | | | | | | | 13.6 | |
| Approach LOS | | | | | | | B | |

Worksheet 11-Shared Major LT Impedance and Delay

| | Movement 2 | Movement 5 |
|---|------------|------------|
| p(oj) | 1.00 | 1.00 |
| v(i1), Volume for stream 2 or 5 | 0 | |
| v(i2), Volume for stream 3 or 6 | 0 | |
| s(i1), Saturation flow rate for stream 2 or 5 | 1700 | |
| s(i2), Saturation flow rate for stream 3 or 6 | 1700 | |
| P*(oj) | 1.00 | |
| d(M,LT), Delay for stream 1 or 4 | 7.2 | |
| N, Number of major street through lanes | 2 | |
| d(rank,1) Delay for stream 2 or 5 | | |

1.1.4.19 Interseção J – Pico Manhã

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: Progeplan

Agency/Co.:
 Date Performed: 05/06/2023
 Analysis Time Period: Pico Manha
 Intersection: J
 Jurisdiction: DER/DF
 Units: U. S. Metric
 Analysis Year: 2023
 Project ID: FUTURA COMERCIAL
 East/West Street: M2-M10
 North/South Street: M9
 Intersection Orientation: EW Study period (hrs): 1.00

| Vehicle Volumes and Adjustments | | | | | | | |
|---------------------------------|-------------------|-----------|----|----|-----------|------|----|
| Major Street: | Approach Movement | Eastbound | | | Westbound | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | L | T | R | L | T | R |
| Volume | | | | | 0 | 751 | |
| Peak-Hour Factor, PHF | | | | | 0.91 | 0.91 | |
| Hourly Flow Rate, HFR | | | | | 0 | 825 | |
| Percent Heavy Vehicles | | | -- | -- | 17 | -- | -- |
| Median Type/Storage | | Undivided | | | / | | |
| RT Channelized? | | | | | | | |
| Lanes | | | | | 0 | 2 | |
| Configuration | | | | | LT | T | |
| Upstream Signal? | | No | | | | No | |

| Minor Street: | Approach Movement | Northbound | | | Southbound | | |
|----------------------------------|-------------------|------------|---|---|------------|----|----|
| | | 7 | 8 | 9 | 10 | 11 | 12 |
| | | L | T | R | L | T | R |
| Volume | | 62 | | | | | |
| Peak Hour Factor, PHF | | 1.00 | | | | | |
| Hourly Flow Rate, HFR | | 62 | | | | | |
| Percent Heavy Vehicles | | 0 | | | | | |
| Percent Grade (%) | | | 0 | | | 0 | |
| Flared Approach: Exists?/Storage | | | | | / | | / |
| Lanes | | 1 | | | | | |
| Configuration | | L | | | | | |

| Delay, Queue Length, and Level of Service | | | | | | | | | |
|---|----|------|------------|------|---|------------|----|----|--|
| Approach Movement | EB | WB | Northbound | | | Southbound | | | |
| | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 | |
| Lane Config | | LT | L | | | | | | |
| v (vph) | | 0 | 62 | | | | | | |
| C (m) (vph) | | 1530 | 600 | | | | | | |
| v/c | | 0.00 | 0.10 | | | | | | |
| 95% queue length | | 0.00 | 0.35 | | | | | | |
| Control Delay | | 7.4 | 11.7 | | | | | | |
| LOS | | A | B | | | | | | |
| Approach Delay | | | | 11.7 | | | | | |
| Approach LOS | | | | B | | | | | |

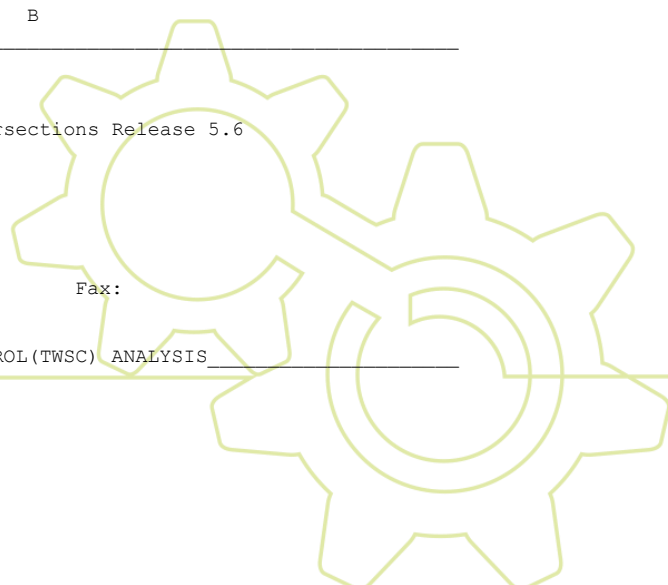
HCS+: Unsignalized Intersections Release 5.6

Phone:
E-Mail:

Fax:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: Progeplan
 Agency/Co.:
 Date Performed: 05/06/2023
 Analysis Time Period: Pico Manha
 Intersection: J
 Jurisdiction: DER/DF
 Units: U. S. Metric
 Analysis Year: 2023



Project ID: FUTURA COMERCIAL
 East/West Street: M2-M10
 North/South Street: M9
 Intersection Orientation: EW

Study period (hrs): 1.00

| Vehicle Volumes and Adjustments | | | | | | |
|---------------------------------|-----------|----|----|------|------|----|
| Major Street Movements | 1 | 2 | 3 | 4 | 5 | 6 |
| | L | T | R | L | T | R |
| Volume | | | | 0 | 751 | |
| Peak-Hour Factor, PHF | | | | 0.91 | 0.91 | |
| Peak-15 Minute Volume | | | | 0 | 206 | |
| Hourly Flow Rate, HFR | | | | 0 | 825 | |
| Percent Heavy Vehicles | | -- | -- | 17 | -- | -- |
| Median Type/Storage | Undivided | | | / | | |
| RT Channelized? | | | | | | |
| Lanes | | | | 0 | 2 | |
| Configuration | | | | LT | T | |
| Upstream Signal? | | No | | | No | |

| Minor Street Movements | | | | | | |
|----------------------------------|------|---|---|----|----|----|
| Minor Street Movements | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | T | R | L | T | R |
| Volume | 62 | | | | | |
| Peak Hour Factor, PHF | 1.00 | | | | | |
| Peak-15 Minute Volume | 16 | | | | | |
| Hourly Flow Rate, HFR | 62 | | | | | |
| Percent Heavy Vehicles | 0 | | | | | |
| Percent Grade (%) | | 0 | | | 0 | |
| Flared Approach: Exists?/Storage | | | | / | | / |
| RT Channelized | | | | | | |
| Lanes | 1 | | | | | |
| Configuration | L | | | | | |

| Pedestrian Volumes and Adjustments | | | | |
|------------------------------------|-----|-----|-----|-----|
| Movements | 13 | 14 | 15 | 16 |
| Flow (ped/hr) | 0 | 0 | 0 | 0 |
| Lane Width (m) | 3.6 | 3.6 | 3.6 | 3.6 |
| Walking Speed (m/sec) | 1.2 | 1.2 | 1.2 | 1.2 |
| Percent Blockage | 0 | 0 | 0 | 0 |

| Upstream Signal Data | | | | | | | |
|----------------------|----------------|--------------|--------------|----------------|------------------|-----------------|---------------------------|
| | Prog. Flow vph | Sat Flow vph | Arrival Type | Green Time sec | Cycle Length sec | Prog. Speed kph | Distance to Signal meters |
| S2 Left-Turn Through | | | | | | | |
| S5 Left-Turn Through | | | | | | | |

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

| | Movement 2 | Movement 5 |
|---------------------------------------|------------|------------|
| Shared ln volume, major th vehicles: | | 0 |
| Shared ln volume, major rt vehicles: | | 0 |
| Sat flow rate, major th vehicles: | | 1700 |
| Sat flow rate, major rt vehicles: | | 1700 |
| Number of major street through lanes: | | 2 |

Worksheet 4-Critical Gap and Follow-up Time Calculation

| Critical Gap Calculation | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | L | L | T | R | L | T | R |
| t(c,base) | | 4.1 | 7.1 | | | | | |
| t(c,hv) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| P(hv) | | 17 | 0 | | | | | |
| t(c,g) | | | 0.20 | 0.20 | 0.10 | 0.20 | 0.20 | 0.10 |
| Percent Grade | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| t(3,lt) | | 0.00 | 0.70 | | | | | |

| | | | | | | | | | |
|---------|---------|------|------|------|------|------|------|------|------|
| t(c,T): | 1-stage | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 2-stage | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| t(c) | 1-stage | | 4.3 | 6.4 | | | | | |
| | 2-stage | | | | | | | | |

Follow-Up Time Calculations

| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------|------|------|------|------|------|------|------|------|
| | L | L | L | T | R | L | T | R |
| t(f,base) | | 2.20 | 3.50 | | | | | |
| t(f,HV) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| P(HV) | | 17 | 0 | | | | | |
| t(f) | | 2.4 | 3.5 | | | | | |

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

| Movement 2 | | Movement 5 | |
|------------|-----------|------------|-----------|
| V(t) | V(l,prot) | V(t) | V(l,prot) |

V prog

Total Saturation Flow Rate, s (vph)

Arrival Type

Effective Green, g (sec)

Cycle Length, C (sec)

Rp (from Exhibit 16-11)

Proportion vehicles arriving on green P

g(q1)

g(q2)

g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

| Movement 2 | | Movement 5 | |
|------------|-----------|------------|-----------|
| V(t) | V(l,prot) | V(t) | V(l,prot) |

alpha

beta

Travel time, t(a) (sec)

Smoothing Factor, F

Proportion of conflicting flow, f

Max platooned flow, V(c,max)

Min platooned flow, V(c,min)

Duration of blocked period, t(p)

Proportion time blocked, p

Computation 3-Platoon Event Periods

| | Result |
|------|--------|
| p(2) | 0.000 |
| p(5) | 0.000 |

p(dom)

p(subo)

Constrained or unconstrained?

Proportion

unblocked

for minor movements, p(x)

(1)
Single-stage Process

(2)
Two-Stage Process
Stage I

(3)
Stage II

p(1)

p(4)

p(7)

p(8)

p(9)

p(10)

p(11)

p(12)

Computation 4 and 5
Single-Stage Process

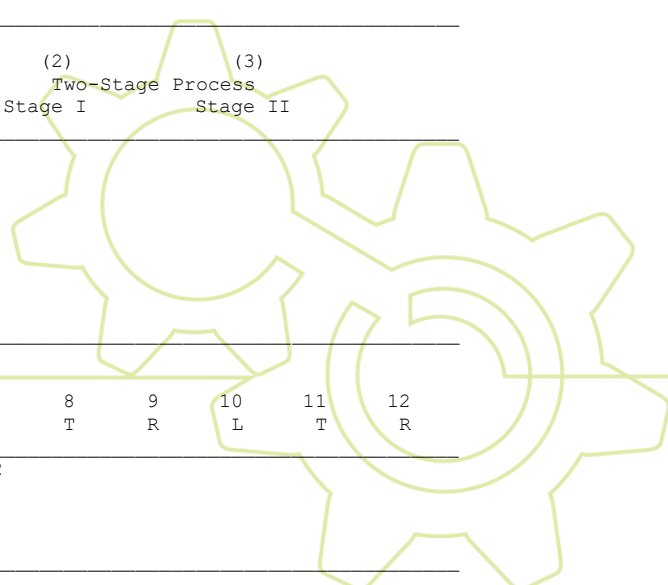
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------|---|---|---|---|---|----|----|----|
| | L | L | L | T | R | L | T | R |

V c, x

s

Px

V c, u, x



C r,x
C plat,x

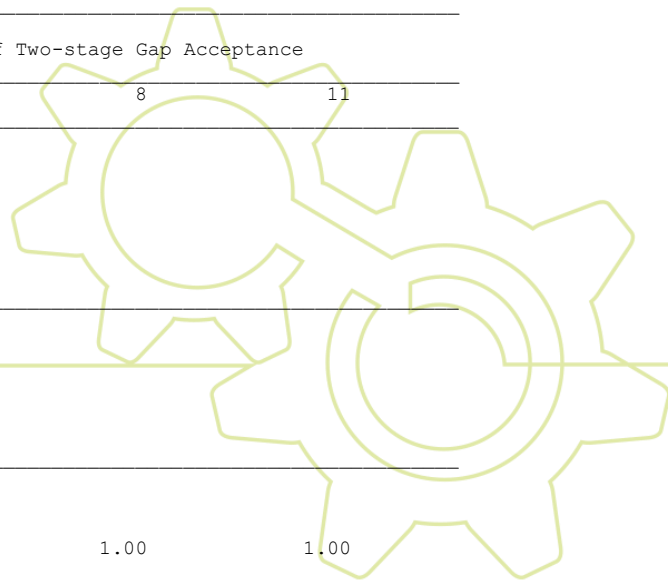
| Two-Stage Process | 7 | | 8 | | 10 | | 11 | |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 |
| V(c,x) s | | 3000 | | | | | | |
| P(x) | | | | | | | | |
| V(c,u,x) | | | | | | | | |
| C(r,x) | | | | | | | | |
| C(plat,x) | | | | | | | | |

Worksheet 6-Impedance and Capacity Equations

| | | | | | | | | |
|--|--|--|--|--|------|--|------|--|
| Step 1: RT from Minor St. | | | | | 9 | | 12 | |
| Conflicting Flows | | | | | | | | |
| Potential Capacity | | | | | | | | |
| Pedestrian Impedance Factor | | | | | 1.00 | | 1.00 | |
| Movement Capacity | | | | | | | | |
| Probability of Queue free St. | | | | | 1.00 | | 1.00 | |
| Step 2: LT from Major St. | | | | | 4 | | 1 | |
| Conflicting Flows | | | | | 0 | | | |
| Potential Capacity | | | | | 1530 | | | |
| Pedestrian Impedance Factor | | | | | 1.00 | | 1.00 | |
| Movement Capacity | | | | | 1530 | | | |
| Probability of Queue free St. | | | | | 1.00 | | 1.00 | |
| Maj L-Shared Prob Q free St. | | | | | 1.00 | | | |
| Step 3: TH from Minor St. | | | | | 8 | | 11 | |
| Conflicting Flows | | | | | | | | |
| Potential Capacity | | | | | | | | |
| Pedestrian Impedance Factor | | | | | 1.00 | | 1.00 | |
| Cap. Adj. factor due to Impeding mvmnt | | | | | 1.00 | | 1.00 | |
| Movement Capacity | | | | | | | | |
| Probability of Queue free St. | | | | | 1.00 | | 1.00 | |
| Step 4: LT from Minor St. | | | | | 7 | | 10 | |
| Conflicting Flows | | | | | 412 | | | |
| Potential Capacity | | | | | 600 | | | |
| Pedestrian Impedance Factor | | | | | 1.00 | | 1.00 | |
| Maj. L, Min T Impedance factor | | | | | | | 1.00 | |
| Maj. L, Min T Adj. Imp Factor. | | | | | | | 1.00 | |
| Cap. Adj. factor due to Impeding mvmnt | | | | | 1.00 | | 1.00 | |
| Movement Capacity | | | | | 600 | | | |

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

| | | | | | | | | |
|--|--|--|--|--|------|--|------|--|
| Step 3: TH from Minor St. | | | | | 8 | | 11 | |
| Part 1 - First Stage | | | | | | | | |
| Conflicting Flows | | | | | | | | |
| Potential Capacity | | | | | | | | |
| Pedestrian Impedance Factor | | | | | | | | |
| Cap. Adj. factor due to Impeding mvmnt | | | | | | | | |
| Movement Capacity | | | | | | | | |
| Probability of Queue free St. | | | | | | | | |
| Part 2 - Second Stage | | | | | | | | |
| Conflicting Flows | | | | | | | | |
| Potential Capacity | | | | | | | | |
| Pedestrian Impedance Factor | | | | | | | | |
| Cap. Adj. factor due to Impeding mvmnt | | | | | | | | |
| Movement Capacity | | | | | | | | |
| Part 3 - Single Stage | | | | | | | | |
| Conflicting Flows | | | | | | | | |
| Potential Capacity | | | | | | | | |
| Pedestrian Impedance Factor | | | | | 1.00 | | 1.00 | |



| | | |
|--|------|------|
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | | |

Result for 2 stage process:

| | | |
|-------------------------------|------|------|
| a | | |
| y | | |
| C t | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|----|
| Step 4: LT from Minor St. | 7 | 10 |
|---------------------------|---|----|

Part 1 - First Stage

| | | |
|--|--|--|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

Part 2 - Second Stage

| | | |
|--|--|--|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

Part 3 - Single Stage

| | | |
|--|------|------|
| Conflicting Flows | 412 | |
| Potential Capacity | 600 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Maj. L, Min T Impedance factor | | 1.00 |
| Maj. L, Min T Adj. Imp Factor. | | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 1.00 | 1.00 |
| Movement Capacity | 600 | |

Results for Two-stage process:

| | |
|-----|-----|
| a | |
| y | |
| C t | 600 |

Worksheet 8-Shared Lane Calculations

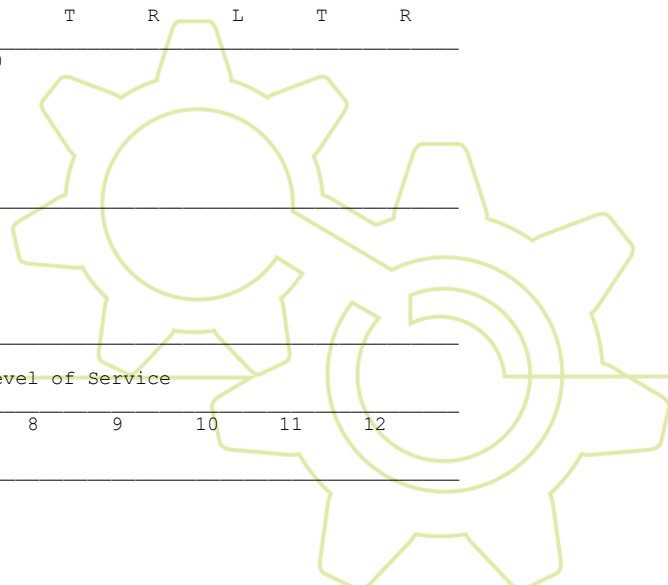
| | | | | | | |
|----------------------------|-----|---|---|----|----|----|
| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | T | R | L | T | R |
| Volume (vph) | 62 | | | | | |
| Movement Capacity (vph) | 600 | | | | | |
| Shared Lane Capacity (vph) | | | | | | |

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

| | | | | | | |
|-----------------|-----|---|---|----|----|----|
| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | T | R | L | T | R |
| C sep | 600 | | | | | |
| Volume | 62 | | | | | |
| Delay | | | | | | |
| Q sep | | | | | | |
| Q sep +1 | | | | | | |
| round (Qsep +1) | | | | | | |
| n max | | | | | | |
| C sh | | | | | | |
| SUM C sep | | | | | | |
| n | | | | | | |
| C act | | | | | | |

Worksheet 10-Delay, Queue Length, and Level of Service

| | | | | | | | | |
|------------------|---|------|------|---|---|----|----|----|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| Lane Config | | LT | L | | | | | |
| v (vph) | | 0 | 62 | | | | | |
| C (m) (vph) | | 1530 | 600 | | | | | |
| v/c | | 0.00 | 0.10 | | | | | |
| 95% queue length | | 0.00 | 0.35 | | | | | |



| | | | |
|----------------|-----|------|------|
| Control Delay | 7.4 | 11.7 | |
| LOS | A | B | |
| Approach Delay | | | 11.7 |
| Approach LOS | | | B |

Worksheet 11-Shared Major LT Impedance and Delay

| | Movement 2 | Movement 5 |
|---|------------|------------|
| p(oj) | 1.00 | 1.00 |
| v(i1), Volume for stream 2 or 5 | | 0 |
| v(i2), Volume for stream 3 or 6 | | 0 |
| s(i1), Saturation flow rate for stream 2 or 5 | | 1700 |
| s(i2), Saturation flow rate for stream 3 or 6 | | 1700 |
| P*(oj) | | 1.00 |
| d(M,LT), Delay for stream 1 or 4 | | 7.4 |
| N, Number of major street through lanes | | 2 |
| d(rank,1) Delay for stream 2 or 5 | | |

Interseção J – Pico Tarde

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: Progeplan
 Agency/Co.:
 Date Performed: 05/06/2023
 Analysis Time Period: Pico Tarde
 Intersection: J
 Jurisdiction: DER/DF
 Units: U. S. Metric
 Analysis Year: 2023
 Project ID: FUTURA COMERCIAL
 East/West Street: M2-M10
 North/South Street: M9
 Intersection Orientation: EW Study period (hrs): 1.00

| | | Vehicle Volumes and Adjustments | | | | | |
|----------------------------------|-------------------|---------------------------------|----|---|------------|------|----|
| Major Street: | Approach Movement | Eastbound | | | Westbound | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| | | L | T | R | L | T | R |
| Volume | | | | | 10 | 2138 | |
| Peak-Hour Factor, PHF | | | | | 0.91 | 0.91 | |
| Hourly Flow Rate, HFR | | | | | 10 | 2349 | |
| Percent Heavy Vehicles | | -- | -- | | 6 | -- | -- |
| Median Type/Storage | | Undivided | | | / | | |
| RT Channelized? | | | | | | | |
| Lanes | | | | | 0 | 2 | |
| Configuration | | | | | LT | T | |
| Upstream Signal? | | No | | | | No | |
| Minor Street: | Approach Movement | Northbound | | | Southbound | | |
| | | 7 | 8 | 9 | 10 | 11 | 12 |
| | | L | T | R | L | T | R |
| Volume | | 6 | | | | | |
| Peak Hour Factor, PHF | | 0.91 | | | | | |
| Hourly Flow Rate, HFR | | 6 | | | | | |
| Percent Heavy Vehicles | | 0 | | | | | |
| Percent Grade (%) | | | 0 | | | 0 | |
| Flared Approach: Exists?/Storage | | / | | | / | | |
| Lanes | | 1 | | | | | |
| Configuration | | L | | | | | |

| | | Delay, Queue Length, and Level of Service | | | | | | |
|-------------------|----|---|------------|---|---|------------|----|----|
| Approach Movement | EB | WB | Northbound | | | Southbound | | |
| | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| Lane Config | | LT | L | | | | | |
| v (vph) | | 10 | 6 | | | | | |
| C (m) (vph) | | 1597 | 207 | | | | | |
| v/c | | 0.01 | 0.03 | | | | | |

| | | | |
|------------------|------|------|------|
| 95% queue length | 0.02 | 0.09 | |
| Control Delay | 7.3 | 22.9 | |
| LOS | A | C | |
| Approach Delay | | | 22.9 |
| Approach LOS | | | C |

HCS+: Unsignalized Intersections Release 5.6

Phone: _____ Fax: _____
E-Mail: _____

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: Progeplan
Agency/Co.:
Date Performed: 05/06/2023
Analysis Time Period: Pico Tarde
Intersection: J
Jurisdiction: DER/DF
Units: U. S. Metric
Analysis Year: 2023
Project ID: FUTURA COMERCIAL
East/West Street: M2-M10
North/South Street: M9
Intersection Orientation: EW
Study period (hrs): 1.00

Vehicle Volumes and Adjustments

| Major Street Movements | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------|-----------|----|----|------|------|----|
| | L | T | R | L | T | R |
| Volume | | | | 10 | 2138 | |
| Peak-Hour Factor, PHF | | | | 0.91 | 0.91 | |
| Peak-15 Minute Volume | | | | 3 | 587 | |
| Hourly Flow Rate, HFR | | | | 10 | 2349 | |
| Percent Heavy Vehicles | | -- | -- | 6 | -- | -- |
| Median Type/Storage | Undivided | | | / | | |
| RT Channelized? | | | | | | |
| Lanes | | | | 0 | 2 | |
| Configuration | | | | LT | T | |
| Upstream Signal? | | No | | | No | |

| Minor Street Movements | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------------|------|---|---|----|----|----|
| | L | T | R | L | T | R |
| Volume | 6 | | | | | |
| Peak Hour Factor, PHF | 0.91 | | | | | |
| Peak-15 Minute Volume | 2 | | | | | |
| Hourly Flow Rate, HFR | 6 | | | | | |
| Percent Heavy Vehicles | 0 | | | | | |
| Percent Grade (%) | | 0 | | | 0 | |
| Flared Approach: Exists?/Storage | | | / | | / | |
| RT Channelized | | | | | | |
| Lanes | 1 | | | | | |
| Configuration | L | | | | | |

Pedestrian Volumes and Adjustments

| Movements | 13 | 14 | 15 | 16 |
|-----------------------|-----|-----|-----|-----|
| Flow (ped/hr) | 0 | 0 | 0 | 0 |
| Lane Width (m) | 3.6 | 3.6 | 3.6 | 3.6 |
| Walking Speed (m/sec) | 1.2 | 1.2 | 1.2 | 1.2 |
| Percent Blockage | 0 | 0 | 0 | 0 |

Upstream Signal Data

| Prog. Flow vph | Sat Flow vph | Arrival Type | Green Time sec | Cycle Length sec | Prog. Speed kph | Distance to Signal meters |
|----------------|--------------|--------------|----------------|------------------|-----------------|---------------------------|
| | | | | | | |

S2 Left-Turn
Through
S5 Left-Turn
Through

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

| | Movement 2 | Movement 5 |
|---------------------------------------|------------|------------|
| Shared ln volume, major th vehicles: | | 0 |
| Shared ln volume, major rt vehicles: | | 0 |
| Sat flow rate, major th vehicles: | | 1700 |
| Sat flow rate, major rt vehicles: | | 1700 |
| Number of major street through lanes: | | 2 |

Worksheet 4-Critical Gap and Follow-up Time Calculation

| Critical Gap Calculation | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | L | L | T | R | L | T | R |
| t(c,base) | | 4.1 | 7.1 | | | | | |
| t(c,hv) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| P(hv) | | 6 | 0 | | | | | |
| t(c,g) | | | 0.20 | 0.20 | 0.10 | 0.20 | 0.20 | 0.10 |
| Percent Grade | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| t(3,lt) | | 0.00 | 0.70 | | | | | |
| t(c,T): 1-stage | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2-stage | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| t(c) 1-stage | | 4.2 | 6.4 | | | | | |
| 2-stage | | | | | | | | |

| Follow-Up Time Calculations | | | | | | | | |
|-----------------------------|------|------|------|------|------|------|------|------|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | L | L | T | R | L | T | R |
| t(f,base) | | 2.20 | 3.50 | | | | | |
| t(f,HV) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| P(HV) | | 6 | 0 | | | | | |
| t(f) | | 2.3 | 3.5 | | | | | |

Worksheet 5-Effect of Upstream Signals

| Computation 1-Queue Clearance Time at Upstream Signal | | | | |
|---|------------|-----------|------------|-----------|
| | Movement 2 | | Movement 5 | |
| | V(t) | V(l,prot) | V(t) | V(l,prot) |
| V prog | | | | |
| Total Saturation Flow Rate, s (vph) | | | | |
| Arrival Type | | | | |
| Effective Green, g (sec) | | | | |
| Cycle Length, C (sec) | | | | |
| Rp (from Exhibit 16-11) | | | | |
| Proportion vehicles arriving on green P | | | | |
| g(q1) | | | | |
| g(q2) | | | | |
| g(q) | | | | |

| Computation 2-Proportion of TWSC Intersection Time blocked | | | | |
|--|------------|-----------|------------|-----------|
| | Movement 2 | | Movement 5 | |
| | V(t) | V(l,prot) | V(t) | V(l,prot) |
| alpha | | | | |
| beta | | | | |
| Travel time, t(a) (sec) | | | | |
| Smoothing Factor, F | | | | |
| Proportion of conflicting flow, f | | | | |
| Max platooned flow, V(c,max) | | | | |
| Min platooned flow, V(c,min) | | | | |
| Duration of blocked period, t(p) | | | | |
| Proportion time blocked, p | | | 0.000 | 0.000 |

| Computation 3-Platoon Event Periods | | Result |
|-------------------------------------|--|--------|
| p(2) | | 0.000 |

p(5) 0.000
p(dom)
p(subo)
Constrained or unconstrained?

| Proportion unblocked for minor movements, p(x) | (1) Single-stage Process | (2) Two-Stage Process Stage I | (3) Process Stage II |
|--|-----------------------------|----------------------------------|-------------------------|
|--|-----------------------------|----------------------------------|-------------------------|

p(1)
p(4)
p(7)
p(8)
p(9)
p(10)
p(11)
p(12)

Computation 4 and 5
Single-Stage Process
Movement

| | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|--|---|---|---|---|---|----|----|----|
| | L | L | L | T | R | L | T | R |

| | | |
|---------|---|------|
| V c,x | 0 | 1194 |
| s | | |
| Px | | |
| V c,u,x | | |

C r,x
C plat,x

Two-Stage Process

| | 7 | | 8 | | 10 | | 11 | |
|--|--------|--------|--------|--------|--------|--------|--------|--------|
| | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 |

| | | | | | | | | |
|----------|------|--|--|--|--|--|--|--|
| V(c,x) | | | | | | | | |
| s | 3000 | | | | | | | |
| P(x) | | | | | | | | |
| V(c,u,x) | | | | | | | | |

C(r,x)
C(plat,x)

Worksheet 6-Impedance and Capacity Equations

| | | |
|---------------------------|---|----|
| Step 1: RT from Minor St. | 9 | 12 |
|---------------------------|---|----|

| | | |
|-------------------------------|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Movement Capacity | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|---|
| Step 2: LT from Major St. | 4 | 1 |
|---------------------------|---|---|

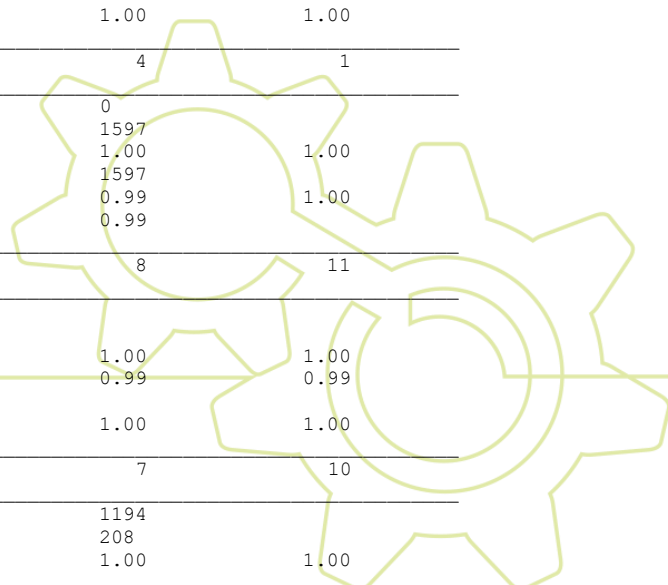
| | | |
|-------------------------------|------|------|
| Conflicting Flows | 0 | |
| Potential Capacity | 1597 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Movement Capacity | 1597 | |
| Probability of Queue free St. | 0.99 | 1.00 |
| Maj L-Shared Prob Q free St. | 0.99 | |

| | | |
|---------------------------|---|----|
| Step 3: TH from Minor St. | 8 | 11 |
|---------------------------|---|----|

| | | |
|--|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 0.99 |
| Movement Capacity | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|----|
| Step 4: LT from Minor St. | 7 | 10 |
|---------------------------|---|----|

| | | |
|-----------------------------|------|------|
| Conflicting Flows | 1194 | |
| Potential Capacity | 208 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |



| | | |
|--|------|------|
| Maj. L, Min T Impedance factor | | 0.99 |
| Maj. L, Min T Adj. Imp Factor. | | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 1.00 |
| Movement Capacity | 207 | |

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

| | | |
|---------------------------|---|----|
| Step 3: TH from Minor St. | 8 | 11 |
|---------------------------|---|----|

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity
 Probability of Queue free St.

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

| | | |
|--|------|------|
| Part 3 - Single Stage | | |
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 0.99 |
| Movement Capacity | | |

Result for 2 stage process:

| | | |
|-------------------------------|------|------|
| a | | |
| y | | |
| C t | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|----|
| Step 4: LT from Minor St. | 7 | 10 |
|---------------------------|---|----|

Part 1 - First Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

Part 2 - Second Stage
 Conflicting Flows
 Potential Capacity
 Pedestrian Impedance Factor
 Cap. Adj. factor due to Impeding mvmnt
 Movement Capacity

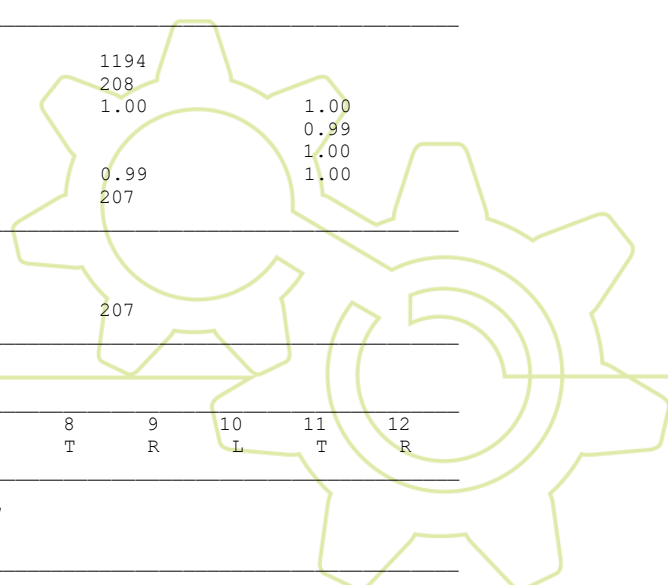
| | | |
|--|------|------|
| Part 3 - Single Stage | | |
| Conflicting Flows | 1194 | |
| Potential Capacity | 208 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Maj. L, Min T Impedance factor | | 0.99 |
| Maj. L, Min T Adj. Imp Factor. | | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 1.00 |
| Movement Capacity | 207 | |

Results for Two-stage process:

| | |
|-----|-----|
| a | |
| y | |
| C t | 207 |

Worksheet 8-Shared Lane Calculations

| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------|-----|---|---|----|----|----|
| | L | T | R | L | T | R |
| Volume (vph) | 6 | | | | | |
| Movement Capacity (vph) | 207 | | | | | |
| Shared Lane Capacity (vph) | | | | | | |



Worksheet 9-Computation of Effect of Flared Minor Street Approaches

| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|-----|---|---|----|----|----|
| | L | T | R | L | T | R |
| C sep | 207 | | | | | |
| Volume | 6 | | | | | |
| Delay | | | | | | |
| Q sep | | | | | | |
| Q sep +1 | | | | | | |
| round (Qsep +1) | | | | | | |
| n max | | | | | | |
| C sh | | | | | | |
| SUM C sep | | | | | | |
| n | | | | | | |
| C act | | | | | | |

Worksheet 10-Delay, Queue Length, and Level of Service

| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------|---|------|------|------|---|----|----|----|
| Lane Config | | LT | L | | | | | |
| v (vph) | | 10 | 6 | | | | | |
| C(m) (vph) | | 1597 | 207 | | | | | |
| v/c | | 0.01 | 0.03 | | | | | |
| 95% queue length | | 0.02 | 0.09 | | | | | |
| Control Delay | | 7.3 | 22.9 | | | | | |
| LOS | | A | C | | | | | |
| Approach Delay | | | | 22.9 | | | | |
| Approach LOS | | | | C | | | | |

Worksheet 11-Shared Major LT Impedance and Delay

| | Movement 2 | Movement 5 |
|---|------------|------------|
| p(oj) | 1.00 | 0.99 |
| v(i1), Volume for stream 2 or 5 | | 0 |
| v(i2), Volume for stream 3 or 6 | | 0 |
| s(i1), Saturation flow rate for stream 2 or 5 | | 1700 |
| s(i2), Saturation flow rate for stream 3 or 6 | | 1700 |
| P*(oj) | | 0.99 |
| d(M,LT), Delay for stream 1 or 4 | | 7.3 |
| N, Number of major street through lanes | | 2 |
| d(rank,1) Delay for stream 2 or 5 | | |

1.1.4.20 Interseção J – Pico Tarde

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: Progeplan
 Agency/Co.:
 Date Performed: 05/06/2023
 Analysis Time Period: Pico Tarde
 Intersection: J
 Jurisdiction: DER/DF
 Units: U. S. Metric
 Analysis Year: 2023
 Project ID: FUTURA COMERCIAL
 East/West Street: M2-M10
 North/South Street: M9
 Intersection Orientation: EW Study period (hrs): 1.00

| Major Street: | Approach Movement | Vehicle Volumes and Adjustments | | | | | | |
|-----------------------|-------------------|---------------------------------|--------|--------|-----------|--------|--------|------|
| | | Eastbound | | | Westbound | | | |
| | | 1 L | 2 T | 3 R | 4 L | 5 T | 6 R | |
| Volume | | | | | | | 10 | 2138 |
| Peak-Hour Factor, PHF | | | | | | | 0.91 | 0.91 |
| Hourly Flow Rate, HFR | | | | | | | 10 | 2349 |

Percent Heavy Vehicles -- -- 6 -- --
 Median Type/Storage Undivided /
 RT Channelized?
 Lanes 0 2
 Configuration LT T
 Upstream Signal? No No

| Minor Street: Approach Movement | Northbound | | | Southbound | | |
|---------------------------------|------------|--------|--------|------------|---------|---------|
| | 7 L | 8 T | 9 R | 10 L | 11 T | 12 R |

Volume 6
 Peak Hour Factor, PHF 0.91
 Hourly Flow Rate, HFR 6
 Percent Heavy Vehicles 0
 Percent Grade (%) 0 0
 Flared Approach: Exists?/Storage / /
 Lanes 1
 Configuration L

| Approach Movement | Delay, Queue Length, and Level of Service | | | | | | | | |
|-------------------|---|------|------------|---|----|------------|----|--|--|
| | EB | WB | Northbound | | | Southbound | | | |
| 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| Lane Config | LT | L | | | | | | | |
| v (vph) | 10 | 6 | | | | | | | |
| C(m) (vph) | 1597 | 207 | | | | | | | |
| v/c | 0.01 | 0.03 | | | | | | | |
| 95% queue length | 0.02 | 0.09 | | | | | | | |
| Control Delay | 7.3 | 22.9 | | | | | | | |
| LOS | A | C | | | | | | | |
| Approach Delay | | | 22.9 | | | | | | |
| Approach LOS | | | C | | | | | | |

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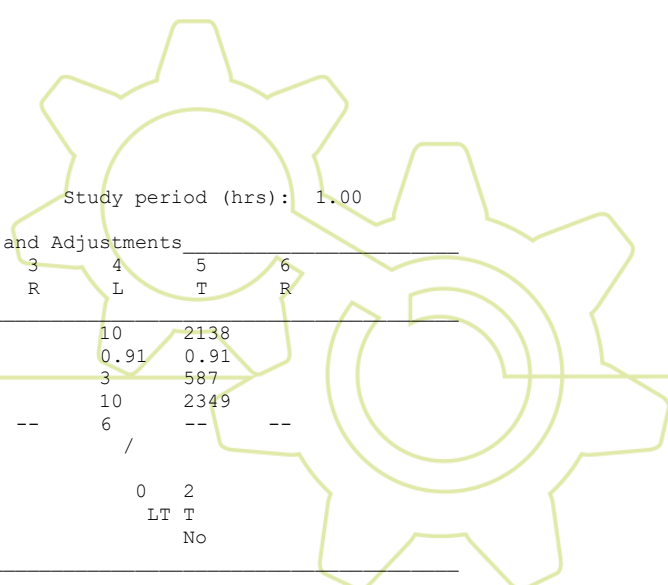
Phone: Fax:
 E-Mail:

TWO-WAY STOP CONTROL (TWSC) ANALYSIS

Analyst: Progeplan
 Agency/Co.:
 Date Performed: 05/06/2023
 Analysis Time Period: Pico Tarde
 Intersection: J
 Jurisdiction: DER/DF
 Units: U. S. Metric
 Analysis Year: 2023
 Project ID: FUTURA COMERCIAL
 East/West Street: M2-M10
 North/South Street: M9
 Intersection Orientation: EW

Study period (hrs): 1.00

| Major Street Movements | Vehicle Volumes and Adjustments | | | | | |
|------------------------|---------------------------------|--------|--------|--------|--------|--------|
| | 1 L | 2 T | 3 R | 4 L | 5 T | 6 R |
| Volume | | | | 10 | 2138 | |
| Peak-Hour Factor, PHF | | | | 0.91 | 0.91 | |
| Peak-15 Minute Volume | | | | 3 | 587 | |
| Hourly Flow Rate, HFR | | | | 10 | 2349 | |
| Percent Heavy Vehicles | -- | -- | -- | 6 | -- | -- |
| Median Type/Storage | Undivided | | | / | | |
| RT Channelized? | | | | | | |
| Lanes | | | | 0 | 2 | |
| Configuration | | | | LT | T | |
| Upstream Signal? | | | No | | No | |



| | | | | | | |
|------------------------|---|---|---|----|----|----|
| Minor Street Movements | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | T | R | L | T | R |

| | | | | | | |
|----------------------------------|------|---|--|---|---|---|
| Volume | 6 | | | | | |
| Peak Hour Factor, PHF | 0.91 | | | | | |
| Peak-15 Minute Volume | 2 | | | | | |
| Hourly Flow Rate, HFR | 6 | | | | | |
| Percent Heavy Vehicles | 0 | | | | | |
| Percent Grade (%) | | 0 | | | 0 | |
| Flared Approach: Exists?/Storage | | | | / | | / |
| RT Channelized | | | | | | |
| Lanes | 1 | | | | | |
| Configuration | L | | | | | |

| Pedestrian Volumes and Adjustments | | | | |
|------------------------------------|-----|-----|-----|-----|
| Movements | 13 | 14 | 15 | 16 |
| Flow (ped/hr) | 0 | 0 | 0 | 0 |
| Lane Width (m) | 3.6 | 3.6 | 3.6 | 3.6 |
| Walking Speed (m/sec) | 1.2 | 1.2 | 1.2 | 1.2 |
| Percent Blockage | 0 | 0 | 0 | 0 |

| Upstream Signal Data | | | | | | | |
|----------------------|----------------|--------------|--------------|----------------|------------------|-----------------|---------------------------|
| | Prog. Flow vph | Sat Flow vph | Arrival Type | Green Time sec | Cycle Length sec | Prog. Speed kph | Distance to Signal meters |
| S2 Left-Turn Through | | | | | | | |
| S5 Left-Turn Through | | | | | | | |

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

| | Movement 2 | Movement 5 |
|---------------------------------------|------------|------------|
| Shared ln volume, major th vehicles: | | 0 |
| Shared ln volume, major rt vehicles: | | 0 |
| Sat flow rate, major th vehicles: | | 1700 |
| Sat flow rate, major rt vehicles: | | 1700 |
| Number of major street through lanes: | | 2 |

Worksheet 4-Critical Gap and Follow-up Time Calculation

| Critical Gap Calculation | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | L | L | T | R | L | T | R |
| t(c,base) | | 4.1 | 7.1 | | | | | |
| t(c,hv) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| P(hv) | | 6 | 0 | | | | | |
| t(c,g) | | | 0.20 | 0.20 | 0.10 | 0.20 | 0.20 | 0.10 |
| Percent Grade | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| t(3,lt) | | 0.00 | 0.70 | | | | | |
| t(c,T): 1-stage | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2-stage | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| t(c) 1-stage | | 4.2 | 6.4 | | | | | |
| 2-stage | | | | | | | | |

| Follow-Up Time Calculations | | | | | | | | |
|-----------------------------|------|------|------|------|------|------|------|------|
| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
| | L | L | L | T | R | L | T | R |
| t(f,base) | | 2.20 | 3.50 | | | | | |
| t(f,HV) | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| P(HV) | | 6 | 0 | | | | | |
| t(f) | | 2.3 | 3.5 | | | | | |

Worksheet 5-Effect of Upstream Signals

| Computation 1-Queue Clearance Time at Upstream Signal | | | | |
|---|------------|-----------|------------|-----------|
| | Movement 2 | | Movement 5 | |
| | V(t) | V(l,prot) | V(t) | V(l,prot) |
| | | | | |

V prog
 Total Saturation Flow Rate, s (vph)
 Arrival Type
 Effective Green, g (sec)
 Cycle Length, C (sec)
 Rp (from Exhibit 16-11)
 Proportion vehicles arriving on green P
 g(q1)
 g(q2)
 g(q)

Computation 2-Proportion of TWSC Intersection Time blocked

| | | Movement 2 | | Movement 5 | |
|--|--|------------|-----------|------------|-----------|
| | | V(t) | V(l,prot) | V(t) | V(l,prot) |

alpha
 beta
 Travel time, t(a) (sec)
 Smoothing Factor, F
 Proportion of conflicting flow, f
 Max platooned flow, V(c,max)
 Min platooned flow, V(c,min)
 Duration of blocked period, t(p)
 Proportion time blocked, p

| | | |
|--|-------|-------|
| | 0.000 | 0.000 |
|--|-------|-------|

Computation 3-Platoon Event Periods Result

| | |
|-------------------------------|-------|
| p(2) | 0.000 |
| p(5) | 0.000 |
| p(dom) | |
| p(subo) | |
| Constrained or unconstrained? | |

Proportion unblocked for minor movements, p(x)

| | (1) Single-stage Process | (2) Two-Stage Stage I | (3) Two-Stage Process Stage II |
|--|--------------------------------|-----------------------------|--------------------------------------|
|--|--------------------------------|-----------------------------|--------------------------------------|

p(1)
 p(4)
 p(7)
 p(8)
 p(9)
 p(10)
 p(11)
 p(12)

Computation 4 and 5
 Single-Stage Process

| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------|---|---|---|---|---|----|----|----|
| | L | L | L | T | R | L | T | R |

| | | |
|-------|---|------|
| V c,x | 0 | 1194 |
|-------|---|------|

s
 Px
 V c,u,x

C r,x
 C plat,x

Two-Stage Process

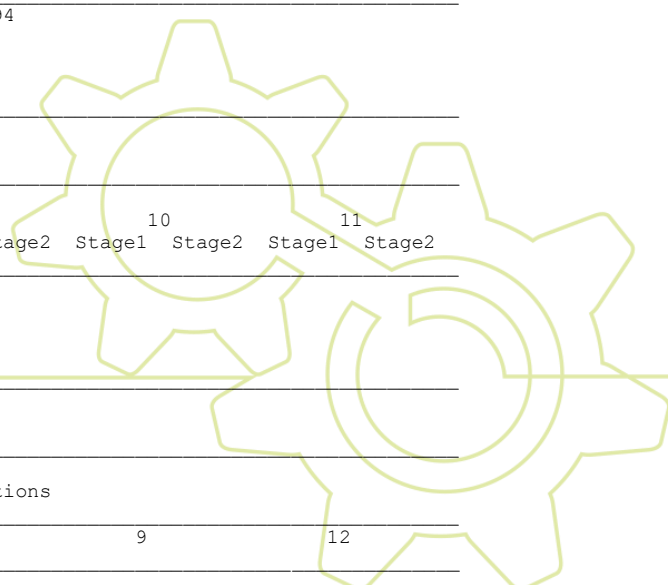
| | 7 | | 8 | | 10 | | 11 | |
|--|--------|--------|--------|--------|--------|--------|--------|--------|
| | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 | Stage1 | Stage2 |

| | |
|----------|------|
| V(c,x) | |
| s | 3000 |
| P(x) | |
| V(c,u,x) | |

C(r,x)
 C(plat,x)

Worksheet 6-Impedance and Capacity Equations

| | | |
|---------------------------|---|----|
| Step 1: RT from Minor St. | 9 | 12 |
|---------------------------|---|----|



| | | |
|-------------------------------|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Movement Capacity | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|---|
| Step 2: LT from Major St. | 4 | 1 |
|---------------------------|---|---|

| | | |
|-------------------------------|------|------|
| Conflicting Flows | 0 | |
| Potential Capacity | 1597 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Movement Capacity | 1597 | |
| Probability of Queue free St. | 0.99 | 1.00 |
| Maj L-Shared Prob Q free St. | 0.99 | |

| | | |
|---------------------------|---|----|
| Step 3: TH from Minor St. | 8 | 11 |
|---------------------------|---|----|

| | | |
|--|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 0.99 |
| Movement Capacity | | |
| Probability of Queue free St. | 1.00 | 1.00 |

| | | |
|---------------------------|---|----|
| Step 4: LT from Minor St. | 7 | 10 |
|---------------------------|---|----|

| | | |
|--|------|------|
| Conflicting Flows | 1194 | |
| Potential Capacity | 208 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Maj. L, Min T Impedance factor | | 0.99 |
| Maj. L, Min T Adj. Imp Factor. | | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 1.00 |
| Movement Capacity | 207 | |

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

| | | |
|---------------------------|---|----|
| Step 3: TH from Minor St. | 8 | 11 |
|---------------------------|---|----|

Part 1 - First Stage

| | | |
|--|--|--|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |
| Probability of Queue free St. | | |

Part 2 - Second Stage

| | | |
|--|--|--|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

Part 3 - Single Stage

| | | |
|--|------|------|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 0.99 |
| Movement Capacity | | |

Result for 2 stage process:

| | | |
|-------------------------------|------|------|
| a | | |
| Y | | |
| C t | | |
| Probability of Queue free St. | 1.00 | 1.00 |

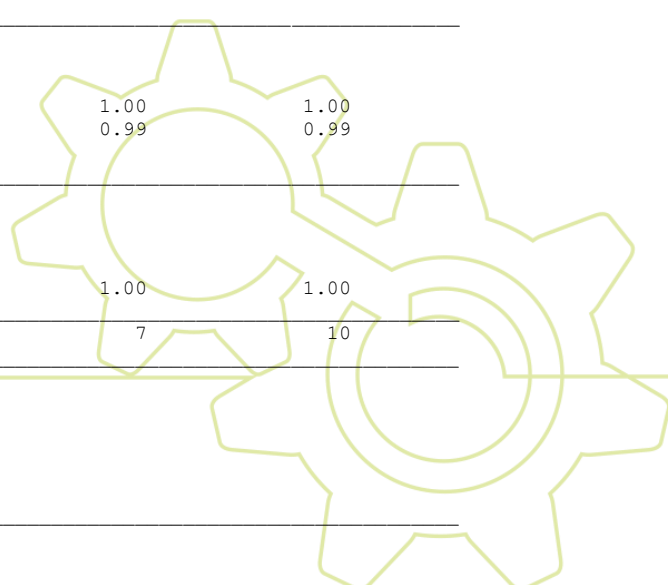
| | | |
|---------------------------|---|----|
| Step 4: LT from Minor St. | 7 | 10 |
|---------------------------|---|----|

Part 1 - First Stage

| | | |
|--|--|--|
| Conflicting Flows | | |
| Potential Capacity | | |
| Pedestrian Impedance Factor | | |
| Cap. Adj. factor due to Impeding mvmnt | | |
| Movement Capacity | | |

Part 2 - Second Stage

| | | |
|-------------------|--|--|
| Conflicting Flows | | |
|-------------------|--|--|



Potential Capacity
Pedestrian Impedance Factor
Cap. Adj. factor due to Impeding mvmnt
Movement Capacity

| | | |
|--|------|------|
| Part 3 - Single Stage | | |
| Conflicting Flows | 1194 | |
| Potential Capacity | 208 | |
| Pedestrian Impedance Factor | 1.00 | 1.00 |
| Maj. L, Min T Impedance factor | | 0.99 |
| Maj. L, Min T Adj. Imp Factor. | | 1.00 |
| Cap. Adj. factor due to Impeding mvmnt | 0.99 | 1.00 |
| Movement Capacity | 207 | |

Results for Two-stage process:

| | |
|-----|-----|
| a | |
| y | |
| C t | 207 |

Worksheet 8-Shared Lane Calculations

| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------------------|-----|---|---|----|----|----|
| | L | T | R | L | T | R |
| Volume (vph) | 6 | | | | | |
| Movement Capacity (vph) | 207 | | | | | |
| Shared Lane Capacity (vph) | | | | | | |

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

| Movement | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------|-----|---|---|----|----|----|
| | L | T | R | L | T | R |
| C sep | 207 | | | | | |
| Volume | 6 | | | | | |
| Delay | | | | | | |
| Q sep | | | | | | |
| Q sep +1 | | | | | | |
| round (Qsep +1) | | | | | | |
| n max | | | | | | |
| C sh | | | | | | |
| SUM C sep | | | | | | |
| n | | | | | | |
| C act | | | | | | |

Worksheet 10-Delay, Queue Length, and Level of Service

| Movement | 1 | 4 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------|---|------|------|------|---|----|----|----|
| Lane Config | | LT | L | | | | | |
| v (vph) | | 10 | 6 | | | | | |
| C(m) (vph) | | 1597 | 207 | | | | | |
| v/c | | 0.01 | 0.03 | | | | | |
| 95% queue length | | 0.02 | 0.09 | | | | | |
| Control Delay | | 7.3 | 22.9 | | | | | |
| LOS | | A | C | | | | | |
| Approach Delay | | | | 22.9 | | | | |
| Approach LOS | | | | C | | | | |

Worksheet 11-Shared Major LT Impedance and Delay

| | Movement 2 | Movement 5 |
|---|------------|------------|
| p(oj) | 1.00 | 0.99 |
| v(i1), Volume for stream 2 or 5 | | 0 |
| v(i2), Volume for stream 3 or 6 | | 0 |
| s(i1), Saturation flow rate for stream 2 or 5 | | 1700 |
| s(i2), Saturation flow rate for stream 3 or 6 | | 1700 |
| P*(oj) | | 0.99 |
| d(M,LT), Delay for stream 1 or 4 | | 7.3 |
| N, Number of major street through lanes | | 2 |
| d(rank,1) Delay for stream 2 or 5 | | |

