

# APPENDICES

## C-663A Pre-Construction Traffic Study for the Scudder Falls Bridge Replacement Project

### APPENDIX M

#### CAPACITY ANALYSIS WORKSHEETS (MULTI-LANE ROADWAYS)



| MULTILANE HIGHWAYS WORKSHEET(Direction 1)             |          |                                   |                        |
|-------------------------------------------------------|----------|-----------------------------------|------------------------|
|                                                       |          |                                   |                        |
| General Information                                   |          | Site Information                  |                        |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)       |
| Agency or Company                                     | Pennoni  | From/To                           | S Warren St/Calhoun St |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT                  |
| Analysis Time Period                                  | AM Peak  | Analysis Year                     | 2015                   |
| Project Description    Pre-Construction Traffic Study |          |                                   |                        |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                        |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                        |
| Flow Inputs                                           |          |                                   |                        |
| Volume, V (veh/h)                                     | 3126     | Peak-Hour Factor, PHF             | 0.93                   |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 2                      |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                      |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level                  |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                   |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                   |
|                                                       |          | Number of Lanes                   | 3                      |
| Calculate Flow Adjustments                            |          |                                   |                        |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                    |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.990                  |
| Speed Inputs                                          |          | Calc Speed Adj and FFS            |                        |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                        |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                        |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                        |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                        |
| FFS (measured)                                        | 49.0     | FFS (mi/h)                        | 49.0                   |
| Base Free-Flow Speed, BFFS                            |          |                                   |                        |
| Operations                                            |          | Design                            |                        |
| Operational (LOS)                                     |          | Design (N)                        |                        |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 1131     | Required Number of Lanes, N       |                        |
| Speed, S (mi/h)                                       | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                        |
| D (pc/mi/ln)                                          | 22.6     | Max Service Flow Rate (pc/h/ln)   |                        |
| LOS                                                   | C        | Design LOS                        |                        |
| Bicycle Level of Service                              |          |                                   |                        |

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1120.4 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.92   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

Copyright © 2010 University of Florida, All Rights Reserved

HCS 2010™ Version 6.1

Generated: 1/18/2016 3:31 PM

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)             |          |                                   |                        |
|-------------------------------------------------------|----------|-----------------------------------|------------------------|
|                                                       |          |                                   |                        |
| General Information                                   |          | Site Information                  |                        |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)       |
| Agency or Company                                     | Pennoni  | From/To                           | S Warren St/Calhoun St |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT                  |
| Analysis Time Period                                  | AM Peak  | Analysis Year                     | 2015                   |
| Project Description    Pre-Construction Traffic Study |          |                                   |                        |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                        |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                        |
| Flow Inputs                                           |          |                                   |                        |
| Volume, V (veh/h)                                     | 2385     | Peak-Hour Factor, PHF             | 0.96                   |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 1                      |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                      |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level                  |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                   |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                   |
|                                                       |          | Number of Lanes                   | 3                      |
| Calculate Flow Adjustments                            |          |                                   |                        |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                    |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.995                  |
| Speed Inputs                                          |          | Calc Speed Adj and FFS            |                        |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                        |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                        |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                        |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                        |
| FFS (measured)                                        | 49.0     | FFS (mi/h)                        | 49.0                   |
| Base Free-Flow Speed, BFFS                            |          |                                   |                        |
| Operations                                            |          | Design                            |                        |
| Operational (LOS)                                     |          | Design (N)                        |                        |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 832      | Required Number of Lanes, N       |                        |
| Speed, S (mi/h)                                       | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                        |
| D (pc/mi/ln)                                          | 16.6     | Max Service Flow Rate (pc/h/ln)   |                        |
| LOS                                                   | B        | Design LOS                        |                        |
| Bicycle Level of Service                              |          |                                   |                        |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 828.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.54  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)           |          |                                   |                        |
|-----------------------------------------------------|----------|-----------------------------------|------------------------|
|                                                     |          |                                   |                        |
| General Information                                 |          | Site Information                  |                        |
| Analyst                                             | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)       |
| Agency or Company                                   | Pennoni  | From/To                           | S Warren St/Calhoun St |
| Date Performed                                      | 9/8/2015 | Jurisdiction                      | NJDOT                  |
| Analysis Time Period                                | PM Peak  | Analysis Year                     | 2015                   |
| Project Description   Pre-Constructio Traffic Study |          |                                   |                        |
| <input type="checkbox"/> Oper.(LOS)                 |          | <input type="checkbox"/> Des. (N) |                        |
| <input type="checkbox"/> Plan. (vp)                 |          |                                   |                        |
| Flow Inputs                                         |          |                                   |                        |
| Volume, V (veh/h)                                   | 1483     | Peak-Hour Factor, PHF             | 0.91                   |
| AADT(veh/h)                                         |          | %Trucks and Buses, P <sub>T</sub> | 1                      |
| Peak-Hour Prop of AADT (veh/d)                      |          | %RVs, P <sub>R</sub>              | 0                      |
| Peak-Hour Direction Prop, D                         |          | General Terrain:                  | Level                  |
| DDHV (veh/h)                                        |          | Grade    Length (mi)              | 0.00                   |
| Driver Type Adjustment                              | 1.00     | Up/Down %                         | 0.00                   |
|                                                     |          | Number of Lanes                   | 3                      |
| Calculate Flow Adjustments                          |          |                                   |                        |
| f <sub>p</sub>                                      | 1.00     | E <sub>R</sub>                    | 1.2                    |
| E <sub>T</sub>                                      | 1.5      | f <sub>HV</sub>                   | 0.995                  |
| Speed Inputs                                        |          | Calc Speed Adj and FFS            |                        |
| Lane Width, LW (ft)                                 | 12.0     | f <sub>LW</sub> (mi/h)            |                        |
| Total Lateral Clearance, LC (ft)                    | 12.0     | f <sub>LC</sub> (mi/h)            |                        |
| Access Points, A (A/mi)                             | 0        | f <sub>A</sub> (mi/h)             |                        |
| Median Type, M                                      |          | f <sub>M</sub> (mi/h)             |                        |
| FFS (measured)                                      | 49.0     | FFS (mi/h)                        | 49.0                   |
| Base Free-Flow Speed, BFFS                          |          |                                   |                        |
| Operations                                          |          | Design                            |                        |
| Operational (LOS)                                   |          | Design (N)                        |                        |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                 | 545      | Required Number of Lanes, N       |                        |
| Speed, S (mi/h)                                     | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                        |
| D (pc/mi/ln)                                        | 10.9     | Max Service Flow Rate (pc/h/ln)   |                        |
| LOS                                                 | A        | Design LOS                        |                        |
| Bicycle Level of Service                            |          |                                   |                        |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 543.2 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.32  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)           |          |                                   |                        |
|-----------------------------------------------------|----------|-----------------------------------|------------------------|
|                                                     |          |                                   |                        |
| General Information                                 |          | Site Information                  |                        |
| Analyst                                             | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)       |
| Agency or Company                                   | Pennoni  | From/To                           | S Warren St/Calhoun St |
| Date Performed                                      | 9/8/2015 | Jurisdiction                      | NJDOT                  |
| Analysis Time Period                                | PM Peak  | Analysis Year                     | 2015                   |
| Project Description   Pre-Constructio Traffic Study |          |                                   |                        |
| <input type="checkbox"/> Oper.(LOS)                 |          | <input type="checkbox"/> Des. (N) |                        |
| <input type="checkbox"/> Plan. (vp)                 |          |                                   |                        |
| Flow Inputs                                         |          |                                   |                        |
| Volume, V (veh/h)                                   | 2514     | Peak-Hour Factor, PHF             | 0.95                   |
| AADT(veh/h)                                         |          | %Trucks and Buses, P <sub>T</sub> | 1                      |
| Peak-Hour Prop of AADT (veh/d)                      |          | %RVs, P <sub>R</sub>              | 0                      |
| Peak-Hour Direction Prop, D                         |          | General Terrain:                  | Level                  |
| DDHV (veh/h)                                        |          | Grade    Length (mi)              | 0.00                   |
| Driver Type Adjustment                              | 1.00     | Up/Down %                         | 0.00                   |
|                                                     |          | Number of Lanes                   | 3                      |
| Calculate Flow Adjustments                          |          |                                   |                        |
| f <sub>p</sub>                                      | 1.00     | E <sub>R</sub>                    | 1.2                    |
| E <sub>T</sub>                                      | 1.5      | f <sub>HV</sub>                   | 0.995                  |
| Speed Inputs                                        |          | Calc Speed Adj and FFS            |                        |
| Lane Width, LW (ft)                                 | 12.0     | f <sub>LW</sub> (mi/h)            |                        |
| Total Lateral Clearance, LC (ft)                    | 12.0     | f <sub>LC</sub> (mi/h)            |                        |
| Access Points, A (A/mi)                             | 0        | f <sub>A</sub> (mi/h)             |                        |
| Median Type, M                                      |          | f <sub>M</sub> (mi/h)             |                        |
| FFS (measured)                                      | 49.0     | FFS (mi/h)                        | 49.0                   |
| Base Free-Flow Speed, BFFS                          |          |                                   |                        |
| Operations                                          |          | Design                            |                        |
| Operational (LOS)                                   |          | Design (N)                        |                        |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                 | 886      | Required Number of Lanes, N       |                        |
| Speed, S (mi/h)                                     | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                        |
| D (pc/mi/ln)                                        | 17.7     | Max Service Flow Rate (pc/h/ln)   |                        |
| LOS                                                 | B        | Design LOS                        |                        |
| Bicycle Level of Service                            |          |                                   |                        |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 882.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.57  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

Copyright © 2010 University of Florida, All Rights Reserved

HCS 2010™ Version 6.1

Generated: 1/18/2016 3:35 PM

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                         |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|-------------------------|
|                                                                                                           |          |                                   |                         |
| General Information                                                                                       |          | Site Information                  |                         |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)        |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Calhoun St/Parkside Ave |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                   |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                    |
| Project Description    Pre-Construction Traffic Study                                                     |          |                                   |                         |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                         |
| Flow Inputs                                                                                               |          |                                   |                         |
| Volume, V (veh/h)                                                                                         | 2911     | Peak-Hour Factor, PHF             | 0.91                    |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                       |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                       |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                   |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                    |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                    |
|                                                                                                           |          | Number of Lanes                   | 2                       |
| Calculate Flow Adjustments                                                                                |          |                                   |                         |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                     |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990                   |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                         |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                         |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                         |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                         |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                         |
| FFS (measured)                                                                                            | 49.0     | FFS (mi/h)                        | 49.0                    |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                         |
| Operations                                                                                                |          | Design                            |                         |
| Operational (LOS)                                                                                         |          | Design (N)                        |                         |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 1615     | Required Number of Lanes, N       |                         |
| Speed, S (mi/h)                                                                                           | 49.1     | Flow Rate, v <sub>p</sub> (pc/h)  |                         |
| D (pc/mi/ln)                                                                                              | 32.9     | Max Service Flow Rate (pc/h/ln)   |                         |
| LOS                                                                                                       | D        | Design LOS                        |                         |
| Bicycle Level of Service                                                                                  |          |                                   |                         |

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1599.5 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 3.10   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)             |          |                                   |                         |
|-------------------------------------------------------|----------|-----------------------------------|-------------------------|
|                                                       |          |                                   |                         |
| General Information                                   |          | Site Information                  |                         |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)        |
| Agency or Company                                     | Pennoni  | From/To                           | Calhoun St/Parkside Ave |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT                   |
| Analysis Time Period                                  | AM Peak  | Analysis Year                     | 2015                    |
| Project Description    Pre-Construction Traffic Study |          |                                   |                         |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                         |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                         |
| Flow Inputs                                           |          |                                   |                         |
| Volume, V (veh/h)                                     | 2394     | Peak-Hour Factor, PHF             | 0.89                    |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 3                       |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                       |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level                   |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                    |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                    |
|                                                       |          | Number of Lanes                   | 2                       |
| Calculate Flow Adjustments                            |          |                                   |                         |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                     |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.985                   |
| Speed Inputs                                          |          | Calc Speed Adj and FFS            |                         |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                         |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                         |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                         |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                         |
| FFS (measured)                                        | 49.0     | FFS (mi/h)                        | 49.0                    |
| Base Free-Flow Speed, BFFS                            |          |                                   |                         |
| Operations                                            |          | Design                            |                         |
| Operational (LOS)                                     |          | Design (N)                        |                         |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 1365     | Required Number of Lanes, N       |                         |
| Speed, S (mi/h)                                       | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                         |
| D (pc/mi/ln)                                          | 27.3     | Max Service Flow Rate (pc/h/ln)   |                         |
| LOS                                                   | D        | Design LOS                        |                         |
| Bicycle Level of Service                              |          |                                   |                         |

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1344.9 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 3.26   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                                                                                                        |          |                                                                                                                                       |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|                                                                                                                                                                                                  |          |                                                                                                                                       |                         |
| General Information                                                                                                                                                                              |          | Site Information                                                                                                                      |                         |
| Analyst                                                                                                                                                                                          | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)        |
| Agency or Company                                                                                                                                                                                | Pennoni  | From/To                                                                                                                               | Calhoun St/Parkside Ave |
| Date Performed                                                                                                                                                                                   | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                   |
| Analysis Time Period                                                                                                                                                                             | PM Peak  | Analysis Year                                                                                                                         | 2015                    |
| Project Description   Pre-Construction Traffic Study                                                                                                                                             |          |                                                                                                                                       |                         |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                        |          |                                                                                                                                       |                         |
| Flow Inputs                                                                                                                                                                                      |          |                                                                                                                                       |                         |
| Volume, V (veh/h)                                                                                                                                                                                | 2183     | Peak-Hour Factor, PHF                                                                                                                 | 0.93                    |
| AADT(veh/h)                                                                                                                                                                                      |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 1                       |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                   |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                       |
| Peak-Hour Direction Prop, D                                                                                                                                                                      |          | General Terrain:                                                                                                                      | Level                   |
| DDHV (veh/h)                                                                                                                                                                                     |          | Grade    Length (mi)                                                                                                                  | 0.00                    |
| Driver Type Adjustment                                                                                                                                                                           | 1.00     | Up/Down %                                                                                                                             | 0.00                    |
|                                                                                                                                                                                                  |          | Number of Lanes                                                                                                                       | 2                       |
| Calculate Flow Adjustments                                                                                                                                                                       |          |                                                                                                                                       |                         |
| f <sub>p</sub>                                                                                                                                                                                   | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                     |
| E <sub>T</sub>                                                                                                                                                                                   | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.995                   |
| Speed Inputs                                                                                                                                                                                     |          | Calc Speed Adj and FFS                                                                                                                |                         |
| Lane Width, LW (ft)                                                                                                                                                                              | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                         |
| Total Lateral Clearance, LC (ft)                                                                                                                                                                 | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                         |
| Access Points, A (A/mi)                                                                                                                                                                          | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                         |
| Median Type, M                                                                                                                                                                                   |          | f <sub>M</sub> (mi/h)                                                                                                                 |                         |
| FFS (measured)                                                                                                                                                                                   | 49.0     | FFS (mi/h)                                                                                                                            | 49.0                    |
| Base Free-Flow Speed, BFFS                                                                                                                                                                       |          |                                                                                                                                       |                         |
| Operations                                                                                                                                                                                       |          | Design                                                                                                                                |                         |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)      1179<br>Speed, S (mi/h)                50.0<br>D (pc/mi/ln)                    23.6<br>LOS                                C |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                         |
| Bicycle Level of Service                                                                                                                                                                         |          |                                                                                                                                       |                         |

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1173.7 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.71   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)            |          |                                   |                         |
|------------------------------------------------------|----------|-----------------------------------|-------------------------|
|                                                      |          |                                   |                         |
| General Information                                  |          | Site Information                  |                         |
| Analyst                                              | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)        |
| Agency or Company                                    | Pennoni  | From/To                           | Calhoun St/Parkside Ave |
| Date Performed                                       | 9/8/2015 | Jurisdiction                      | NJDOT                   |
| Analysis Time Period                                 | PM Peak  | Analysis Year                     | 2015                    |
| Project Description   Pre-Construction Traffic Study |          |                                   |                         |
| <input type="checkbox"/> Oper.(LOS)                  |          | <input type="checkbox"/> Des. (N) |                         |
| <input type="checkbox"/> Plan. (vp)                  |          |                                   |                         |
| Flow Inputs                                          |          |                                   |                         |
| Volume, V (veh/h)                                    | 2543     | Peak-Hour Factor, PHF             | 0.99                    |
| AADT(veh/h)                                          |          | %Trucks and Buses, P <sub>T</sub> | 2                       |
| Peak-Hour Prop of AADT (veh/d)                       |          | %RVs, P <sub>R</sub>              | 0                       |
| Peak-Hour Direction Prop, D                          |          | General Terrain:                  | Level                   |
| DDHV (veh/h)                                         |          | Grade    Length (mi)              | 0.00                    |
| Driver Type Adjustment                               | 1.00     | Up/Down %                         | 0.00                    |
|                                                      |          | Number of Lanes                   | 2                       |
| Calculate Flow Adjustments                           |          |                                   |                         |
| f <sub>p</sub>                                       | 1.00     | E <sub>R</sub>                    | 1.2                     |
| E <sub>T</sub>                                       | 1.5      | f <sub>HV</sub>                   | 0.990                   |
| Speed Inputs                                         |          | Calc Speed Adj and FFS            |                         |
| Lane Width, LW (ft)                                  | 12.0     | f <sub>LW</sub> (mi/h)            |                         |
| Total Lateral Clearance, LC (ft)                     | 12.0     | f <sub>LC</sub> (mi/h)            |                         |
| Access Points, A (A/mi)                              | 0        | f <sub>A</sub> (mi/h)             |                         |
| Median Type, M                                       |          | f <sub>M</sub> (mi/h)             |                         |
| FFS (measured)                                       | 49.0     | FFS (mi/h)                        | 49.0                    |
| Base Free-Flow Speed, BFFS                           |          |                                   |                         |
| Operations                                           |          | Design                            |                         |
| Operational (LOS)                                    |          | Design (N)                        |                         |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                  | 1297     | Required Number of Lanes, N       |                         |
| Speed, S (mi/h)                                      | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                         |
| D (pc/mi/ln)                                         | 25.9     | Max Service Flow Rate (pc/h/ln)   |                         |
| LOS                                                  | C        | Design LOS                        |                         |
| Bicycle Level of Service                             |          |                                   |                         |



|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1284.3 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.99   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                           |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|---------------------------|
|                                                                                                           |          |                                   |                           |
| General Information                                                                                       |          | Site Information                  |                           |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)          |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Parkside Ave/Sullivan Way |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                     |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                      |
| Project Description   Pre-Construction Traffic Study                                                      |          |                                   |                           |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                           |
| Flow Inputs                                                                                               |          |                                   |                           |
| Volume, V (veh/h)                                                                                         | 1968     | Peak-Hour Factor, PHF             | 0.93                      |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                         |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                         |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                     |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                      |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                      |
|                                                                                                           |          | Number of Lanes                   | 2                         |
| Calculate Flow Adjustments                                                                                |          |                                   |                           |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                       |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990                     |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                           |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                           |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                           |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                           |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                           |
| FFS (measured)                                                                                            | 53.0     | FFS (mi/h)                        | 53.0                      |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                           |
| Operations                                                                                                |          | Design                            |                           |
| Operational (LOS)                                                                                         |          | Design (N)                        |                           |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 1068     | Required Number of Lanes, N       |                           |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                           |
| D (pc/mi/ln)                                                                                              | 19.4     | Max Service Flow Rate (pc/h/ln)   |                           |
| LOS                                                                                                       | C        | Design LOS                        |                           |
| Bicycle Level of Service                                                                                  |          |                                   |                           |

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 1058.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00  |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79   |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.89   |
| Bicycle level of service (Exhibit 15-4)                                  | C      |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                 |          |                                   |                           |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|---------------------------|
|                                                                                                           |          |                                   |                           |
| General Information                                                                                       |          | Site Information                  |                           |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)          |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Parkside Ave/Sullivan Way |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                     |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                      |
| Project Description   Pre-Construction Traffic Study                                                      |          |                                   |                           |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                           |
| Flow Inputs                                                                                               |          |                                   |                           |
| Volume, V (veh/h)                                                                                         | 1673     | Peak-Hour Factor, PHF             | 0.85                      |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                         |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                         |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                     |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                      |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                      |
|                                                                                                           |          | Number of Lanes                   | 2                         |
| Calculate Flow Adjustments                                                                                |          |                                   |                           |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                       |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990                     |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                           |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                           |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                           |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                           |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                           |
| FFS (measured)                                                                                            | 53.0     | FFS (mi/h)                        | 53.0                      |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                           |
| Operations                                                                                                |          | Design                            |                           |
| Operational (LOS)                                                                                         |          | Design (N)                        |                           |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 993      | Required Number of Lanes, N       |                           |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                           |
| D (pc/mi/ln)                                                                                              | 18.1     | Max Service Flow Rate (pc/h/ln)   |                           |
| LOS                                                                                                       | C        | Design LOS                        |                           |
| Bicycle Level of Service                                                                                  |          |                                   |                           |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 984.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.85  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                                                                                                       |          |                                                                                                                                       |                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                                                                                                                                                                                                 |          |                                                                                                                                       |                           |
| General Information                                                                                                                                                                             |          | Site Information                                                                                                                      |                           |
| Analyst                                                                                                                                                                                         | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)          |
| Agency or Company                                                                                                                                                                               | Pennoni  | From/To                                                                                                                               | Parkside Ave/Sullivan Way |
| Date Performed                                                                                                                                                                                  | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                     |
| Analysis Time Period                                                                                                                                                                            | PM Peak  | Analysis Year                                                                                                                         | 2015                      |
| Project Description   Pre-Construction Traffic Study                                                                                                                                            |          |                                                                                                                                       |                           |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                       |          |                                                                                                                                       |                           |
| Flow Inputs                                                                                                                                                                                     |          |                                                                                                                                       |                           |
| Volume, V (veh/h)                                                                                                                                                                               | 1480     | Peak-Hour Factor, PHF                                                                                                                 | 0.93                      |
| AADT(veh/h)                                                                                                                                                                                     |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 1                         |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                  |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                         |
| Peak-Hour Direction Prop, D                                                                                                                                                                     |          | General Terrain:                                                                                                                      | Level                     |
| DDHV (veh/h)                                                                                                                                                                                    |          | Grade    Length (mi)                                                                                                                  | 0.00                      |
| Driver Type Adjustment                                                                                                                                                                          | 1.00     | Up/Down %                                                                                                                             | 0.00                      |
|                                                                                                                                                                                                 |          | Number of Lanes                                                                                                                       | 2                         |
| Calculate Flow Adjustments                                                                                                                                                                      |          |                                                                                                                                       |                           |
| f <sub>p</sub>                                                                                                                                                                                  | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                       |
| E <sub>T</sub>                                                                                                                                                                                  | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.995                     |
| Speed Inputs                                                                                                                                                                                    |          | Calc Speed Adj and FFS                                                                                                                |                           |
| Lane Width, LW (ft)                                                                                                                                                                             | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                           |
| Total Lateral Clearance, LC (ft)                                                                                                                                                                | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                           |
| Access Points, A (A/mi)                                                                                                                                                                         | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                           |
| Median Type, M                                                                                                                                                                                  |          | f <sub>M</sub> (mi/h)                                                                                                                 |                           |
| FFS (measured)                                                                                                                                                                                  | 53.0     | FFS (mi/h)                                                                                                                            | 53.0                      |
| Base Free-Flow Speed, BFFS                                                                                                                                                                      |          |                                                                                                                                       |                           |
| Operations                                                                                                                                                                                      |          | Design                                                                                                                                |                           |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)      799<br>Speed, S (mi/h)                55.0<br>D (pc/mi/ln)                    14.5<br>LOS                                B |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                           |
| Bicycle Level of Service                                                                                                                                                                        |          |                                                                                                                                       |                           |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 795.7 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.52  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                                             |          |                                                                                                                                       |                           |
|---------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|                                                      |          |                                                                                                                                       |                           |
| General Information                                                                                                                   |          | Site Information                                                                                                                      |                           |
| Analyst                                                                                                                               | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)          |
| Agency or Company                                                                                                                     | Pennoni  | From/To                                                                                                                               | Parkside Ave/Sullivan Way |
| Date Performed                                                                                                                        | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                     |
| Analysis Time Period                                                                                                                  | PM Peak  | Analysis Year                                                                                                                         | 2015                      |
| Project Description   Pre-Construction Traffic Study                                                                                  |          |                                                                                                                                       |                           |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                             |          |                                                                                                                                       |                           |
| Flow Inputs                                                                                                                           |          |                                                                                                                                       |                           |
| Volume, V (veh/h)                                                                                                                     | 1712     | Peak-Hour Factor, PHF                                                                                                                 | 0.96                      |
| AADT(veh/h)                                                                                                                           |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 1                         |
| Peak-Hour Prop of AADT (veh/d)                                                                                                        |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                         |
| Peak-Hour Direction Prop, D                                                                                                           |          | General Terrain:                                                                                                                      | Level                     |
| DDHV (veh/h)                                                                                                                          |          | Grade    Length (mi)                                                                                                                  | 0.00                      |
| Driver Type Adjustment                                                                                                                | 1.00     | Up/Down %                                                                                                                             | 0.00                      |
|                                                                                                                                       |          | Number of Lanes                                                                                                                       | 2                         |
| Calculate Flow Adjustments                                                                                                            |          |                                                                                                                                       |                           |
| f <sub>p</sub>                                                                                                                        | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                       |
| E <sub>T</sub>                                                                                                                        | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.995                     |
| Speed Inputs                                                                                                                          |          | Calc Speed Adj and FFS                                                                                                                |                           |
| Lane Width, LW (ft)                                                                                                                   | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                           |
| Total Lateral Clearance, LC (ft)                                                                                                      | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                           |
| Access Points, A (A/mi)                                                                                                               | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                           |
| Median Type, M                                                                                                                        |          | f <sub>M</sub> (mi/h)                                                                                                                 |                           |
| FFS (measured)                                                                                                                        | 53.0     | FFS (mi/h)                                                                                                                            | 53.0                      |
| Base Free-Flow Speed, BFFS                                                                                                            |          |                                                                                                                                       |                           |
| Operations                                                                                                                            |          | Design                                                                                                                                |                           |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)    896<br>Speed, S (mi/h)    55.0<br>D (pc/mi/ln)    16.3<br>LOS    B |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                           |
| Bicycle Level of Service                                                                                                              |          |                                                                                                                                       |                           |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 891.7 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.58  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                             |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                                                                           |          |                                   |                             |
| General Information                                                                                       |          | Site Information                  |                             |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Sullivan Way/Lower Ferry Rd |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                        |
| Project Description    Pre-Construction Traffic Study                                                     |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                             |
| Flow Inputs                                                                                               |          |                                   |                             |
| Volume, V (veh/h)                                                                                         | 891      | Peak-Hour Factor, PHF             | 0.90                        |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 8                           |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                        |
|                                                                                                           |          | Number of Lanes                   | 2                           |
| Calculate Flow Adjustments                                                                                |          |                                   |                             |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.962                       |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                             |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                                                                            | 57.0     | FFS (mi/h)                        | 57.0                        |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                             |
| Operations                                                                                                |          | Design                            |                             |
| Operational (LOS)                                                                                         |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 514      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                                                                              | 9.3      | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                                                                       | A        | Design LOS                        |                             |
| Bicycle Level of Service                                                                                  |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 495.0 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 4.32  |
| Bicycle level of service (Exhibit 15-4)                                  | D     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)             |          |                                   |                             |
|-------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                       |          |                                   |                             |
| General Information                                   |          | Site Information                  |                             |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                     | Pennoni  | From/To                           | Sullivan Way/Lower Ferry Rd |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                  | AM Peak  | Analysis Year                     | 2015                        |
| Project Description    Pre-Construction Traffic Study |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                             |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                             |
| Flow Inputs                                           |          |                                   |                             |
| Volume, V (veh/h)                                     | 1541     | Peak-Hour Factor, PHF             | 0.91                        |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 1                           |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                        |
|                                                       |          | Number of Lanes                   | 2                           |
| Calculate Flow Adjustments                            |          |                                   |                             |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.995                       |
| Speed Inputs                                          |          | Calc Speed Adj and FFS            |                             |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                        | 57.0     | FFS (mi/h)                        | 57.0                        |
| Base Free-Flow Speed, BFFS                            |          |                                   |                             |
| Operations                                            |          | Design                            |                             |
| Operational (LOS)                                     |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 850      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                       | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                          | 15.5     | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                   | B        | Design LOS                        |                             |
| Bicycle Level of Service                              |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 846.7 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.55  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                             |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                                                                           |          |                                   |                             |
| General Information                                                                                       |          | Site Information                  |                             |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Sullivan Way/Lower Ferry Rd |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                                                                      | PM Peak  | Analysis Year                     | 2015                        |
| Project Description    Pre-Construction Traffic Study                                                     |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                             |
| Flow Inputs                                                                                               |          |                                   |                             |
| Volume, V (veh/h)                                                                                         | 1108     | Peak-Hour Factor, PHF             | 0.92                        |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                           |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                        |
|                                                                                                           |          | Number of Lanes                   | 2                           |
| Calculate Flow Adjustments                                                                                |          |                                   |                             |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990                       |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                             |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                                                                            | 57.0     | FFS (mi/h)                        | 57.0                        |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                             |
| Operations                                                                                                |          | Design                            |                             |
| Operational (LOS)                                                                                         |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 608      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                                                                              | 11.1     | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                                                                       | B        | Design LOS                        |                             |
| Bicycle Level of Service                                                                                  |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 602.2 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.60  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)            |          |                                   |                             |
|------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                      |          |                                   |                             |
| <b>General Information</b>                           |          | <b>Site Information</b>           |                             |
| Analyst                                              | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                    | Pennoni  | From/To                           | Sullivan Way/Lower Ferry Rd |
| Date Performed                                       | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                 | PM Peak  | Analysis Year                     | 2015                        |
| Project Description   Pre-Construction Traffic Study |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS)                  |          | <input type="checkbox"/> Des. (N) |                             |
| <input type="checkbox"/> Plan. (vp)                  |          |                                   |                             |
| <b>Flow Inputs</b>                                   |          |                                   |                             |
| Volume, V (veh/h)                                    | 1221     | Peak-Hour Factor, PHF             | 0.89                        |
| AADT(veh/h)                                          |          | %Trucks and Buses, P <sub>T</sub> | 1                           |
| Peak-Hour Prop of AADT (veh/d)                       |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                          |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                         |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                               | 1.00     | Up/Down %                         | 0.00                        |
|                                                      |          | Number of Lanes                   | 2                           |
| <b>Calculate Flow Adjustments</b>                    |          |                                   |                             |
| f <sub>p</sub>                                       | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                       | 1.5      | f <sub>HV</sub>                   | 0.995                       |
| <b>Speed Inputs</b>                                  |          | <b>Calc Speed Adj and FFS</b>     |                             |
| Lane Width, LW (ft)                                  | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                     | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                              | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                       |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                       | 57.0     | FFS (mi/h)                        | 57.0                        |
| Base Free-Flow Speed, BFFS                           |          |                                   |                             |
| <b>Operations</b>                                    |          | <b>Design</b>                     |                             |
| Operational (LOS)                                    |          | <u>Design (N)</u>                 |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                  | 689      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                      | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                         | 12.5     | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                  | B        | Design LOS                        |                             |
| <b>Bicycle Level of Service</b>                      |          |                                   |                             |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 686.0 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.46  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

Copyright © 2015 University of Florida, All Rights Reserved

HCS 2010™ Version 6.70

Generated: 1/20/2016 11:30 AM

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                                                                                                      |          |                                                                                                                                       |                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                                                                                                                |          |                                                                                                                                       |                             |
| General Information                                                                                                                                                                            |          | Site Information                                                                                                                      |                             |
| Analyst                                                                                                                                                                                        | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)            |
| Agency or Company                                                                                                                                                                              | Pennoni  | From/To                                                                                                                               | Lower Ferry Rd/Wilburtha Rd |
| Date Performed                                                                                                                                                                                 | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                       |
| Analysis Time Period                                                                                                                                                                           | AM Peak  | Analysis Year                                                                                                                         | 2015                        |
| Project Description   Pre-Construction Traffic Study                                                                                                                                           |          |                                                                                                                                       |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                      |          |                                                                                                                                       |                             |
| Flow Inputs                                                                                                                                                                                    |          |                                                                                                                                       |                             |
| Volume, V (veh/h)                                                                                                                                                                              | 859      | Peak-Hour Factor, PHF                                                                                                                 | 0.93                        |
| AADT(veh/h)                                                                                                                                                                                    |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 4                           |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                 |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                           |
| Peak-Hour Direction Prop, D                                                                                                                                                                    |          | General Terrain:                                                                                                                      | Level                       |
| DDHV (veh/h)                                                                                                                                                                                   |          | Grade    Length (mi)                                                                                                                  | 0.00                        |
| Driver Type Adjustment                                                                                                                                                                         | 1.00     | Up/Down %                                                                                                                             | 0.00                        |
|                                                                                                                                                                                                |          | Number of Lanes                                                                                                                       | 2                           |
| Calculate Flow Adjustments                                                                                                                                                                     |          |                                                                                                                                       |                             |
| f <sub>p</sub>                                                                                                                                                                                 | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                         |
| E <sub>T</sub>                                                                                                                                                                                 | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.980                       |
| Speed Inputs                                                                                                                                                                                   |          | Calc Speed Adj and FFS                                                                                                                |                             |
| Lane Width, LW (ft)                                                                                                                                                                            | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                             |
| Total Lateral Clearance, LC (ft)                                                                                                                                                               | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                             |
| Access Points, A (A/mi)                                                                                                                                                                        | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                             |
| Median Type, M                                                                                                                                                                                 |          | f <sub>M</sub> (mi/h)                                                                                                                 |                             |
| FFS (measured)                                                                                                                                                                                 | 61.0     | FFS (mi/h)                                                                                                                            | 61.0                        |
| Base Free-Flow Speed, BFFS                                                                                                                                                                     |          |                                                                                                                                       |                             |
| Operations                                                                                                                                                                                     |          | Design                                                                                                                                |                             |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)      471<br>Speed, S (mi/h)                60.0<br>D (pc/mi/ln)                    7.8<br>LOS                                A |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                             |
| Bicycle Level of Service                                                                                                                                                                       |          |                                                                                                                                       |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 461.8 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.99  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                 |          |                                   |                             |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                                                                           |          |                                   |                             |
| General Information                                                                                       |          | Site Information                  |                             |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Lower Ferry Rd/Wilburtha Rd |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                        |
| Project Description    Pre-Construction Traffic Study                                                     |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                             |
| Flow Inputs                                                                                               |          |                                   |                             |
| Volume, V (veh/h)                                                                                         | 1406     | Peak-Hour Factor, PHF             | 0.92                        |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                           |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                        |
|                                                                                                           |          | Number of Lanes                   | 2                           |
| Calculate Flow Adjustments                                                                                |          |                                   |                             |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990                       |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                             |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                                                                            | 61.0     | FFS (mi/h)                        | 61.0                        |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                             |
| Operations                                                                                                |          | Design                            |                             |
| Operational (LOS)                                                                                         |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 771      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                                                                           | 60.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                                                                              | 12.9     | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                                                                       | B        | Design LOS                        |                             |
| Bicycle Level of Service                                                                                  |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 764.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.74  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)            |          |                                   |                             |
|------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                      |          |                                   |                             |
| General Information                                  |          | Site Information                  |                             |
| Analyst                                              | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                    | Pennoni  | From/To                           | Lower Ferry Rd/Wilburtha Rd |
| Date Performed                                       | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                 | PM Peak  | Analysis Year                     | 2015                        |
| Project Description   Pre-Construction Traffic Study |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS)                  |          | <input type="checkbox"/> Des. (N) |                             |
| <input type="checkbox"/> Plan. (vp)                  |          |                                   |                             |
| Flow Inputs                                          |          |                                   |                             |
| Volume, V (veh/h)                                    | 1201     | Peak-Hour Factor, PHF             | 0.95                        |
| AADT(veh/h)                                          |          | %Trucks and Buses, P <sub>T</sub> | 1                           |
| Peak-Hour Prop of AADT (veh/d)                       |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                          |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                         |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                               | 1.00     | Up/Down %                         | 0.00                        |
|                                                      |          | Number of Lanes                   | 2                           |
| Calculate Flow Adjustments                           |          |                                   |                             |
| f <sub>p</sub>                                       | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                       | 1.5      | f <sub>HV</sub>                   | 0.995                       |
| Speed Inputs                                         |          | Calc Speed Adj and FFS            |                             |
| Lane Width, LW (ft)                                  | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                     | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                              | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                       |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                       | 61.0     | FFS (mi/h)                        | 61.0                        |
| Base Free-Flow Speed, BFFS                           |          |                                   |                             |
| Operations                                           |          | Design                            |                             |
| Operational (LOS)                                    |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                  | 635      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                      | 60.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                         | 10.6     | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                  | A        | Design LOS                        |                             |
| Bicycle Level of Service                             |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 632.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.40  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                                                                                                      |          |                                                                                                                                       |                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                                                                                                                |          |                                                                                                                                       |                             |
| General Information                                                                                                                                                                            |          | Site Information                                                                                                                      |                             |
| Analyst                                                                                                                                                                                        | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)            |
| Agency or Company                                                                                                                                                                              | Pennoni  | From/To                                                                                                                               | Lower Ferry Rd/Wilburtha Rd |
| Date Performed                                                                                                                                                                                 | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                       |
| Analysis Time Period                                                                                                                                                                           | PM Peak  | Analysis Year                                                                                                                         | 2015                        |
| Project Description   Pre-Construction Traffic Study                                                                                                                                           |          |                                                                                                                                       |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                      |          |                                                                                                                                       |                             |
| Flow Inputs                                                                                                                                                                                    |          |                                                                                                                                       |                             |
| Volume, V (veh/h)                                                                                                                                                                              | 757      | Peak-Hour Factor, PHF                                                                                                                 | 0.86                        |
| AADT(veh/h)                                                                                                                                                                                    |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 3                           |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                 |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                           |
| Peak-Hour Direction Prop, D                                                                                                                                                                    |          | General Terrain:                                                                                                                      | Level                       |
| DDHV (veh/h)                                                                                                                                                                                   |          | Grade    Length (mi)                                                                                                                  | 0.00                        |
| Driver Type Adjustment                                                                                                                                                                         | 1.00     | Up/Down %                                                                                                                             | 0.00                        |
|                                                                                                                                                                                                |          | Number of Lanes                                                                                                                       | 2                           |
| Calculate Flow Adjustments                                                                                                                                                                     |          |                                                                                                                                       |                             |
| f <sub>p</sub>                                                                                                                                                                                 | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                         |
| E <sub>T</sub>                                                                                                                                                                                 | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.985                       |
| Speed Inputs                                                                                                                                                                                   |          | Calc Speed Adj and FFS                                                                                                                |                             |
| Lane Width, LW (ft)                                                                                                                                                                            | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                             |
| Total Lateral Clearance, LC (ft)                                                                                                                                                               | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                             |
| Access Points, A (A/mi)                                                                                                                                                                        | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                             |
| Median Type, M                                                                                                                                                                                 |          | f <sub>M</sub> (mi/h)                                                                                                                 |                             |
| FFS (measured)                                                                                                                                                                                 | 61.0     | FFS (mi/h)                                                                                                                            | 61.0                        |
| Base Free-Flow Speed, BFFS                                                                                                                                                                     |          |                                                                                                                                       |                             |
| Operations                                                                                                                                                                                     |          | Design                                                                                                                                |                             |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)      446<br>Speed, S (mi/h)                60.0<br>D (pc/mi/ln)                    7.4<br>LOS                                A |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                             |
| Bicycle Level of Service                                                                                                                                                                       |          |                                                                                                                                       |                             |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 440.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.65  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                             |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                                                                           |          |                                   |                             |
| <b>General Information</b>                                                                                |          | <b>Site Information</b>           |                             |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Wilburtha Rd/Upper Ferry Rd |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                        |
| Project Description   Pre-Construction Traffic Study                                                      |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                             |
| <b>Flow Inputs</b>                                                                                        |          |                                   |                             |
| Volume, V (veh/h)                                                                                         | 939      | Peak-Hour Factor, PHF             | 0.91                        |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 6                           |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                        |
|                                                                                                           |          | Number of Lanes                   | 2                           |
| <b>Calculate Flow Adjustments</b>                                                                         |          |                                   |                             |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.971                       |
| <b>Speed Inputs</b>                                                                                       |          | <b>Calc Speed Adj and FFS</b>     |                             |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                                                                            | 60.0     | FFS (mi/h)                        | 60.0                        |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                             |
| <b>Operations</b>                                                                                         |          | <b>Design</b>                     |                             |
| Operational (LOS)                                                                                         |          | Design (N)                        |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 531      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                                                                           | 60.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                                                                              | 8.9      | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                                                                       | A        | Design LOS                        |                             |
| <b>Bicycle Level of Service</b>                                                                           |          |                                   |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 515.9 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 3.65  |
| Bicycle level of service (Exhibit 15-4)                                  | D     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                                                                                                                                      |          |                                                                                                                                       |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                                                                                                                                                |          |                                                                                                                                       |                             |
| General Information                                                                                                                                                                                                            |          | Site Information                                                                                                                      |                             |
| Analyst                                                                                                                                                                                                                        | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)            |
| Agency or Company                                                                                                                                                                                                              | Pennoni  | From/To                                                                                                                               | Wilburtha Rd/Upper Ferry Rd |
| Date Performed                                                                                                                                                                                                                 | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                       |
| Analysis Time Period                                                                                                                                                                                                           | AM Peak  | Analysis Year                                                                                                                         | 2015                        |
| Project Description   Pre-Construction Traffic Study                                                                                                                                                                           |          |                                                                                                                                       |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                                                      |          |                                                                                                                                       |                             |
| Flow Inputs                                                                                                                                                                                                                    |          |                                                                                                                                       |                             |
| Volume, V (veh/h)                                                                                                                                                                                                              | 1382     | Peak-Hour Factor, PHF                                                                                                                 | 0.89                        |
| AADT(veh/h)                                                                                                                                                                                                                    |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 2                           |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                                                 |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                           |
| Peak-Hour Direction Prop, D                                                                                                                                                                                                    |          | General Terrain:                                                                                                                      | Level                       |
| DDHV (veh/h)                                                                                                                                                                                                                   |          | Grade    Length (mi)                                                                                                                  | 0.00                        |
| Driver Type Adjustment                                                                                                                                                                                                         | 1.00     | Up/Down %                                                                                                                             | 0.00                        |
|                                                                                                                                                                                                                                |          | Number of Lanes                                                                                                                       | 2                           |
| Calculate Flow Adjustments                                                                                                                                                                                                     |          |                                                                                                                                       |                             |
| f <sub>p</sub>                                                                                                                                                                                                                 | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                         |
| E <sub>T</sub>                                                                                                                                                                                                                 | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.990                       |
| Speed Inputs                                                                                                                                                                                                                   |          | Calc Speed Adj and FFS                                                                                                                |                             |
| Lane Width, LW (ft)                                                                                                                                                                                                            | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                             |
| Total Lateral Clearance, LC (ft)                                                                                                                                                                                               | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                             |
| Access Points, A (A/mi)                                                                                                                                                                                                        | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                             |
| Median Type, M                                                                                                                                                                                                                 |          | f <sub>M</sub> (mi/h)                                                                                                                 |                             |
| FFS (measured)                                                                                                                                                                                                                 | 60.0     | FFS (mi/h)                                                                                                                            | 60.0                        |
| Base Free-Flow Speed, BFFS                                                                                                                                                                                                     |          |                                                                                                                                       |                             |
| Operations                                                                                                                                                                                                                     |          | Design                                                                                                                                |                             |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)            784<br>Speed, S (mi/h)                        60.0<br>D (pc/mi/ln)                            13.1<br>LOS                                         B |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                             |
| Bicycle Level of Service                                                                                                                                                                                                       |          |                                                                                                                                       |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 776.4 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.73  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                                                                                                       |          |                                                                                                                                       |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|                                                                                                                                                                                                 |          |                                                                                                                                       |                             |
| General Information                                                                                                                                                                             |          | Site Information                                                                                                                      |                             |
| Analyst                                                                                                                                                                                         | MTD      | Highway/Direction to Travel                                                                                                           | River Rd (NJ 29)            |
| Agency or Company                                                                                                                                                                               | Pennoni  | From/To                                                                                                                               | Wilburtha Rd/Upper Ferry Rd |
| Date Performed                                                                                                                                                                                  | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT                       |
| Analysis Time Period                                                                                                                                                                            | PM Peak  | Analysis Year                                                                                                                         | 2015                        |
| Project Description   Pre-Construction Traffic Study                                                                                                                                            |          |                                                                                                                                       |                             |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                                                                                       |          |                                                                                                                                       |                             |
| Flow Inputs                                                                                                                                                                                     |          |                                                                                                                                       |                             |
| Volume, V (veh/h)                                                                                                                                                                               | 1248     | Peak-Hour Factor, PHF                                                                                                                 | 0.95                        |
| AADT(veh/h)                                                                                                                                                                                     |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 2                           |
| Peak-Hour Prop of AADT (veh/d)                                                                                                                                                                  |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                           |
| Peak-Hour Direction Prop, D                                                                                                                                                                     |          | General Terrain:                                                                                                                      | Level                       |
| DDHV (veh/h)                                                                                                                                                                                    |          | Grade    Length (mi)                                                                                                                  | 0.00                        |
| Driver Type Adjustment                                                                                                                                                                          | 1.00     | Up/Down %                                                                                                                             | 0.00                        |
|                                                                                                                                                                                                 |          | Number of Lanes                                                                                                                       | 2                           |
| Calculate Flow Adjustments                                                                                                                                                                      |          |                                                                                                                                       |                             |
| f <sub>p</sub>                                                                                                                                                                                  | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                         |
| E <sub>T</sub>                                                                                                                                                                                  | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.990                       |
| Speed Inputs                                                                                                                                                                                    |          | Calc Speed Adj and FFS                                                                                                                |                             |
| Lane Width, LW (ft)                                                                                                                                                                             | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                             |
| Total Lateral Clearance, LC (ft)                                                                                                                                                                | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                             |
| Access Points, A (A/mi)                                                                                                                                                                         | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                             |
| Median Type, M                                                                                                                                                                                  |          | f <sub>M</sub> (mi/h)                                                                                                                 |                             |
| FFS (measured)                                                                                                                                                                                  | 60.0     | FFS (mi/h)                                                                                                                            | 60.0                        |
| Base Free-Flow Speed, BFFS                                                                                                                                                                      |          |                                                                                                                                       |                             |
| Operations                                                                                                                                                                                      |          | Design                                                                                                                                |                             |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)      663<br>Speed, S (mi/h)                60.0<br>D (pc/mi/ln)                    11.1<br>LOS                                B |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                             |
| Bicycle Level of Service                                                                                                                                                                        |          |                                                                                                                                       |                             |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 656.8 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.65  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)             |          |                                   |                             |
|-------------------------------------------------------|----------|-----------------------------------|-----------------------------|
|                                                       |          |                                   |                             |
| <b>General Information</b>                            |          | <b>Site Information</b>           |                             |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)            |
| Agency or Company                                     | Pennoni  | From/To                           | Wilburtha Rd/Upper Ferry Rd |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT                       |
| Analysis Time Period                                  | PM Peak  | Analysis Year                     | 2015                        |
| Project Description    Pre-Construction Traffic Study |          |                                   |                             |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                             |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                             |
| <b>Flow Inputs</b>                                    |          |                                   |                             |
| Volume, V (veh/h)                                     | 713      | Peak-Hour Factor, PHF             | 0.90                        |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 2                           |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                           |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level                       |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                        |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                        |
|                                                       |          | Number of Lanes                   | 2                           |
| <b>Calculate Flow Adjustments</b>                     |          |                                   |                             |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                         |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.990                       |
| <b>Speed Inputs</b>                                   |          | <b>Calc Speed Adj and FFS</b>     |                             |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                             |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                             |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                             |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                             |
| FFS (measured)                                        | 60.0     | FFS (mi/h)                        | 60.0                        |
| Base Free-Flow Speed, BFFS                            |          |                                   |                             |
| <b>Operations</b>                                     |          | <b>Design</b>                     |                             |
| Operational (LOS)                                     |          | <u>Design (N)</u>                 |                             |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 400      | Required Number of Lanes, N       |                             |
| Speed, S (mi/h)                                       | 60.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                             |
| D (pc/mi/ln)                                          | 6.7      | Max Service Flow Rate (pc/h/ln)   |                             |
| LOS                                                   | A        | Design LOS                        |                             |
| <b>Bicycle Level of Service</b>                       |          |                                   |                             |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 396.1 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.39  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)            |          |                                   |                     |
|------------------------------------------------------|----------|-----------------------------------|---------------------|
|                                                      |          |                                   |                     |
| <b>General Information</b>                           |          | <b>Site Information</b>           |                     |
| Analyst                                              | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)    |
| Agency or Company                                    | Pennoni  | From/To                           | Upper Ferry Rd/I-95 |
| Date Performed                                       | 9/8/2015 | Jurisdiction                      | NJDOT               |
| Analysis Time Period                                 | AM Peak  | Analysis Year                     | 2015                |
| Project Description   Pre-Construction Traffic Study |          |                                   |                     |
| <input type="checkbox"/> Oper.(LOS)                  |          | <input type="checkbox"/> Des. (N) |                     |
| <input type="checkbox"/> Plan. (vp)                  |          |                                   |                     |
| <b>Flow Inputs</b>                                   |          |                                   |                     |
| Volume, V (veh/h)                                    | 791      | Peak-Hour Factor, PHF             | 0.89                |
| AADT(veh/h)                                          |          | %Trucks and Buses, P <sub>T</sub> | 6                   |
| Peak-Hour Prop of AADT (veh/d)                       |          | %RVs, P <sub>R</sub>              | 0                   |
| Peak-Hour Direction Prop, D                          |          | General Terrain:                  | Level               |
| DDHV (veh/h)                                         |          | Grade    Length (mi)              | 0.00                |
| Driver Type Adjustment                               | 1.00     | Up/Down %                         | 0.00                |
|                                                      |          | Number of Lanes                   | 2                   |
| <b>Calculate Flow Adjustments</b>                    |          |                                   |                     |
| f <sub>p</sub>                                       | 1.00     | E <sub>R</sub>                    | 1.2                 |
| E <sub>T</sub>                                       | 1.5      | f <sub>HV</sub>                   | 0.971               |
| <b>Speed Inputs</b>                                  |          | <b>Calc Speed Adj and FFS</b>     |                     |
| Lane Width, LW (ft)                                  | 12.0     | f <sub>LW</sub> (mi/h)            |                     |
| Total Lateral Clearance, LC (ft)                     | 12.0     | f <sub>LC</sub> (mi/h)            |                     |
| Access Points, A (A/mi)                              | 0        | f <sub>A</sub> (mi/h)             |                     |
| Median Type, M                                       |          | f <sub>M</sub> (mi/h)             |                     |
| FFS (measured)                                       | 54.0     | FFS (mi/h)                        | 54.0                |
| Base Free-Flow Speed, BFFS                           |          |                                   |                     |
| <b>Operations</b>                                    |          | <b>Design</b>                     |                     |
| Operational (LOS)                                    |          | <u>Design (N)</u>                 |                     |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                  | 457      | Required Number of Lanes, N       |                     |
| Speed, S (mi/h)                                      | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                     |
| D (pc/mi/ln)                                         | 8.3      | Max Service Flow Rate (pc/h/ln)   |                     |
| LOS                                                  | A        | Design LOS                        |                     |
| <b>Bicycle Level of Service</b>                      |          |                                   |                     |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 444.4 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 3.58  |
| Bicycle level of service (Exhibit 15-4)                                  | D     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                 |          |                                   |                     |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|---------------------|
|                                                                                                           |          |                                   |                     |
| General Information                                                                                       |          | Site Information                  |                     |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)    |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Upper Ferry Rd/I-95 |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT               |
| Analysis Time Period                                                                                      | AM Peak  | Analysis Year                     | 2015                |
| Project Description   Pre-Construction Traffic Study                                                      |          |                                   |                     |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                     |
| Flow Inputs                                                                                               |          |                                   |                     |
| Volume, V (veh/h)                                                                                         | 1498     | Peak-Hour Factor, PHF             | 0.94                |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 2                   |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                   |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level               |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                |
|                                                                                                           |          | Number of Lanes                   | 2                   |
| Calculate Flow Adjustments                                                                                |          |                                   |                     |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                 |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.990               |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                     |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                     |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                     |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                     |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                     |
| FFS (measured)                                                                                            | 54.0     | FFS (mi/h)                        | 54.0                |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                     |
| Operations                                                                                                |          | Design                            |                     |
| Operational (LOS)                                                                                         |          | Design (N)                        |                     |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 804      | Required Number of Lanes, N       |                     |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                     |
| D (pc/mi/ln)                                                                                              | 14.6     | Max Service Flow Rate (pc/h/ln)   |                     |
| LOS                                                                                                       | B        | Design LOS                        |                     |
| Bicycle Level of Service                                                                                  |          |                                   |                     |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 796.8 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.75  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)             |          |                                   |                     |
|-------------------------------------------------------|----------|-----------------------------------|---------------------|
|                                                       |          |                                   |                     |
| General Information                                   |          | Site Information                  |                     |
| Analyst                                               | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)    |
| Agency or Company                                     | Pennoni  | From/To                           | Upper Ferry Rd/I-95 |
| Date Performed                                        | 9/8/2015 | Jurisdiction                      | NJDOT               |
| Analysis Time Period                                  | PM Peak  | Analysis Year                     | 2015                |
| Project Description    Pre-Construction Traffic Study |          |                                   |                     |
| <input type="checkbox"/> Oper.(LOS)                   |          | <input type="checkbox"/> Des. (N) |                     |
| <input type="checkbox"/> Plan. (vp)                   |          |                                   |                     |
| Flow Inputs                                           |          |                                   |                     |
| Volume, V (veh/h)                                     | 1242     | Peak-Hour Factor, PHF             | 0.98                |
| AADT(veh/h)                                           |          | %Trucks and Buses, P <sub>T</sub> | 2                   |
| Peak-Hour Prop of AADT (veh/d)                        |          | %RVs, P <sub>R</sub>              | 0                   |
| Peak-Hour Direction Prop, D                           |          | General Terrain:                  | Level               |
| DDHV (veh/h)                                          |          | Grade    Length (mi)              | 0.00                |
| Driver Type Adjustment                                | 1.00     | Up/Down %                         | 0.00                |
|                                                       |          | Number of Lanes                   | 2                   |
| Calculate Flow Adjustments                            |          |                                   |                     |
| f <sub>p</sub>                                        | 1.00     | E <sub>R</sub>                    | 1.2                 |
| E <sub>T</sub>                                        | 1.5      | f <sub>HV</sub>                   | 0.990               |
| Speed Inputs                                          |          | Calc Speed Adj and FFS            |                     |
| Lane Width, LW (ft)                                   | 12.0     | f <sub>LW</sub> (mi/h)            |                     |
| Total Lateral Clearance, LC (ft)                      | 12.0     | f <sub>LC</sub> (mi/h)            |                     |
| Access Points, A (A/mi)                               | 0        | f <sub>A</sub> (mi/h)             |                     |
| Median Type, M                                        |          | f <sub>M</sub> (mi/h)             |                     |
| FFS (measured)                                        | 54.0     | FFS (mi/h)                        | 54.0                |
| Base Free-Flow Speed, BFFS                            |          |                                   |                     |
| Operations                                            |          | Design                            |                     |
| Operational (LOS)                                     |          | Design (N)                        |                     |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                   | 640      | Required Number of Lanes, N       |                     |
| Speed, S (mi/h)                                       | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                     |
| D (pc/mi/ln)                                          | 11.6     | Max Service Flow Rate (pc/h/ln)   |                     |
| LOS                                                   | B        | Design LOS                        |                     |
| Bicycle Level of Service                              |          |                                   |                     |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 633.7 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.63  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                 |          |                                   |                     |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|---------------------|
|                                                                                                           |          |                                   |                     |
| General Information                                                                                       |          | Site Information                  |                     |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | River Rd (NJ 29)    |
| Agency or Company                                                                                         | Pennoni  | From/To                           | Upper Ferry Rd/I-95 |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT               |
| Analysis Time Period                                                                                      | PM Peak  | Analysis Year                     | 2015                |
| Project Description   Pre-Construction Traffic Study                                                      |          |                                   |                     |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                     |
| Flow Inputs                                                                                               |          |                                   |                     |
| Volume, V (veh/h)                                                                                         | 783      | Peak-Hour Factor, PHF             | 0.88                |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 1                   |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                   |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level               |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00                |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00                |
|                                                                                                           |          | Number of Lanes                   | 2                   |
| Calculate Flow Adjustments                                                                                |          |                                   |                     |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                 |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 0.995               |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                     |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                     |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                     |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                     |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                     |
| FFS (measured)                                                                                            | 54.0     | FFS (mi/h)                        | 54.0                |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                     |
| Operations                                                                                                |          | Design                            |                     |
| Operational (LOS)                                                                                         |          | Design (N)                        |                     |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 447      | Required Number of Lanes, N       |                     |
| Speed, S (mi/h)                                                                                           | 55.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                     |
| D (pc/mi/ln)                                                                                              | 8.1      | Max Service Flow Rate (pc/h/ln)   |                     |
| LOS                                                                                                       | A        | Design LOS                        |                     |
| Bicycle Level of Service                                                                                  |          |                                   |                     |



|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 444.9 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.22  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 1)                                                                 |          |                                   |                    |
|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------|--------------------|
|                                                                                                           |          |                                   |                    |
| General Information                                                                                       |          | Site Information                  |                    |
| Analyst                                                                                                   | MTD      | Highway/Direction to Travel       | Scotch Rd (CR 611) |
| Agency or Company                                                                                         | Pennoni  | From/To                           | CR 546 to I-95     |
| Date Performed                                                                                            | 9/8/2015 | Jurisdiction                      | NJDOT              |
| Analysis Time Period                                                                                      | PM Peak  | Analysis Year                     | 2015               |
| Project Description    Pre-Construction Traffic Study                                                     |          |                                   |                    |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp) |          |                                   |                    |
| Flow Inputs                                                                                               |          |                                   |                    |
| Volume, V (veh/h)                                                                                         | 594      | Peak-Hour Factor, PHF             | 0.82               |
| AADT(veh/h)                                                                                               |          | %Trucks and Buses, P <sub>T</sub> | 0                  |
| Peak-Hour Prop of AADT (veh/d)                                                                            |          | %RVs, P <sub>R</sub>              | 0                  |
| Peak-Hour Direction Prop, D                                                                               |          | General Terrain:                  | Level              |
| DDHV (veh/h)                                                                                              |          | Grade    Length (mi)              | 0.00               |
| Driver Type Adjustment                                                                                    | 1.00     | Up/Down %                         | 0.00               |
|                                                                                                           |          | Number of Lanes                   | 2                  |
| Calculate Flow Adjustments                                                                                |          |                                   |                    |
| f <sub>p</sub>                                                                                            | 1.00     | E <sub>R</sub>                    | 1.2                |
| E <sub>T</sub>                                                                                            | 1.5      | f <sub>HV</sub>                   | 1.000              |
| Speed Inputs                                                                                              |          | Calc Speed Adj and FFS            |                    |
| Lane Width, LW (ft)                                                                                       | 12.0     | f <sub>LW</sub> (mi/h)            |                    |
| Total Lateral Clearance, LC (ft)                                                                          | 12.0     | f <sub>LC</sub> (mi/h)            |                    |
| Access Points, A (A/mi)                                                                                   | 0        | f <sub>A</sub> (mi/h)             |                    |
| Median Type, M                                                                                            |          | f <sub>M</sub> (mi/h)             |                    |
| FFS (measured)                                                                                            | 48.0     | FFS (mi/h)                        | 48.0               |
| Base Free-Flow Speed, BFFS                                                                                |          |                                   |                    |
| Operations                                                                                                |          | Design                            |                    |
| Operational (LOS)                                                                                         |          | Design (N)                        |                    |
| Flow Rate, v <sub>p</sub> (pc/h/ln)                                                                       | 362      | Required Number of Lanes, N       |                    |
| Speed, S (mi/h)                                                                                           | 50.0     | Flow Rate, v <sub>p</sub> (pc/h)  |                    |
| D (pc/mi/ln)                                                                                              | 7.2      | Max Service Flow Rate (pc/h/ln)   |                    |
| LOS                                                                                                       | A        | Design LOS                        |                    |
| Bicycle Level of Service                                                                                  |          |                                   |                    |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 362.2 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 1.91  |
| Bicycle level of service (Exhibit 15-4)                                  | B     |

| MULTILANE HIGHWAYS WORKSHEET(Direction 2)                                                                                            |          |                                                                                                                                       |                    |
|--------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|                                                     |          |                                                                                                                                       |                    |
| General Information                                                                                                                  |          | Site Information                                                                                                                      |                    |
| Analyst                                                                                                                              | MTD      | Highway/Direction to Travel                                                                                                           | Scotch Rd (CR 611) |
| Agency or Company                                                                                                                    | Pennoni  | From/To                                                                                                                               | CR 546 to I-95     |
| Date Performed                                                                                                                       | 9/8/2015 | Jurisdiction                                                                                                                          | NJDOT              |
| Analysis Time Period                                                                                                                 | PM Peak  | Analysis Year                                                                                                                         | 2015               |
| Project Description    Pre-Construction Traffic Study                                                                                |          |                                                                                                                                       |                    |
| <input type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des. (N) <input type="checkbox"/> Plan. (vp)                            |          |                                                                                                                                       |                    |
| Flow Inputs                                                                                                                          |          |                                                                                                                                       |                    |
| Volume, V (veh/h)                                                                                                                    | 393      | Peak-Hour Factor, PHF                                                                                                                 | 0.88               |
| AADT(veh/h)                                                                                                                          |          | %Trucks and Buses, P <sub>T</sub>                                                                                                     | 5                  |
| Peak-Hour Prop of AADT (veh/d)                                                                                                       |          | %RVs, P <sub>R</sub>                                                                                                                  | 0                  |
| Peak-Hour Direction Prop, D                                                                                                          |          | General Terrain:                                                                                                                      | Level              |
| DDHV (veh/h)                                                                                                                         |          | Grade    Length (mi)                                                                                                                  | 0.00               |
| Driver Type Adjustment                                                                                                               | 1.00     | Up/Down %                                                                                                                             | 0.00               |
|                                                                                                                                      |          | Number of Lanes                                                                                                                       | 2                  |
| Calculate Flow Adjustments                                                                                                           |          |                                                                                                                                       |                    |
| f <sub>p</sub>                                                                                                                       | 1.00     | E <sub>R</sub>                                                                                                                        | 1.2                |
| E <sub>T</sub>                                                                                                                       | 1.5      | f <sub>HV</sub>                                                                                                                       | 0.976              |
| Speed Inputs                                                                                                                         |          | Calc Speed Adj and FFS                                                                                                                |                    |
| Lane Width, LW (ft)                                                                                                                  | 12.0     | f <sub>LW</sub> (mi/h)                                                                                                                |                    |
| Total Lateral Clearance, LC (ft)                                                                                                     | 12.0     | f <sub>LC</sub> (mi/h)                                                                                                                |                    |
| Access Points, A (A/mi)                                                                                                              | 0        | f <sub>A</sub> (mi/h)                                                                                                                 |                    |
| Median Type, M                                                                                                                       |          | f <sub>M</sub> (mi/h)                                                                                                                 |                    |
| FFS (measured)                                                                                                                       | 48.0     | FFS (mi/h)                                                                                                                            | 48.0               |
| Base Free-Flow Speed, BFFS                                                                                                           |          |                                                                                                                                       |                    |
| Operations                                                                                                                           |          | Design                                                                                                                                |                    |
| <u>Operational (LOS)</u><br>Flow Rate, v <sub>p</sub> (pc/h/ln)    228<br>Speed, S (mi/h)    50.0<br>D (pc/mi/ln)    4.6<br>LOS    A |          | <u>Design (N)</u><br>Required Number of Lanes, N<br>Flow Rate, v <sub>p</sub> (pc/h)<br>Max Service Flow Rate (pc/h/ln)<br>Design LOS |                    |
| Bicycle Level of Service                                                                                                             |          |                                                                                                                                       |                    |

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h | 223.3 |
| Effective width, $W_v$ (Eq. 15-29) ft                                    | 24.00 |
| Effective speed factor, $S_t$ (Eq. 15-30)                                | 4.79  |
| Bicycle level of service score, BLOS (Eq. 15-31)                         | 2.91  |
| Bicycle level of service (Exhibit 15-4)                                  | C     |