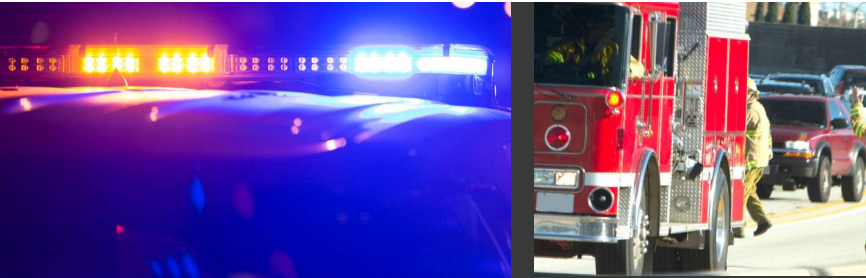


THE FULL PACKAGE

System and Network Planning, Design, and Operations





The City of Altoona **THE PLAN TO IMPLEMENTATION**

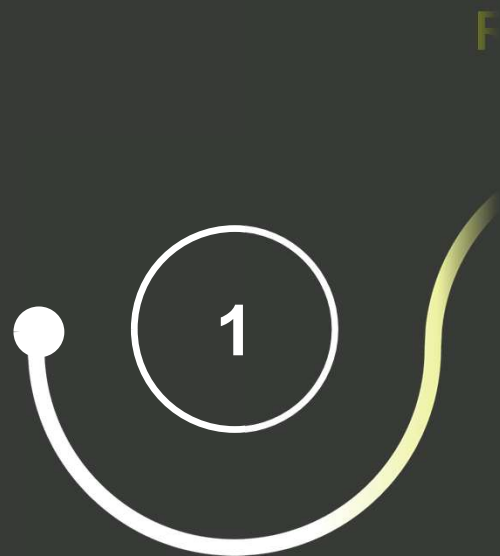


Image Source: Corey Coyle, CC BY 3.0, via Wikimedia Commons



The Why

City's Needs



GROWTH

Slide 3

BH0 [@Blake G. Hansen] To make these transition smooth I set it up with 3 slides. It is all on click so just take a few times through it to get used to the clicking.

Brooke Hilt, 2023-04-27T17:07:16.735

The Why

City's Needs



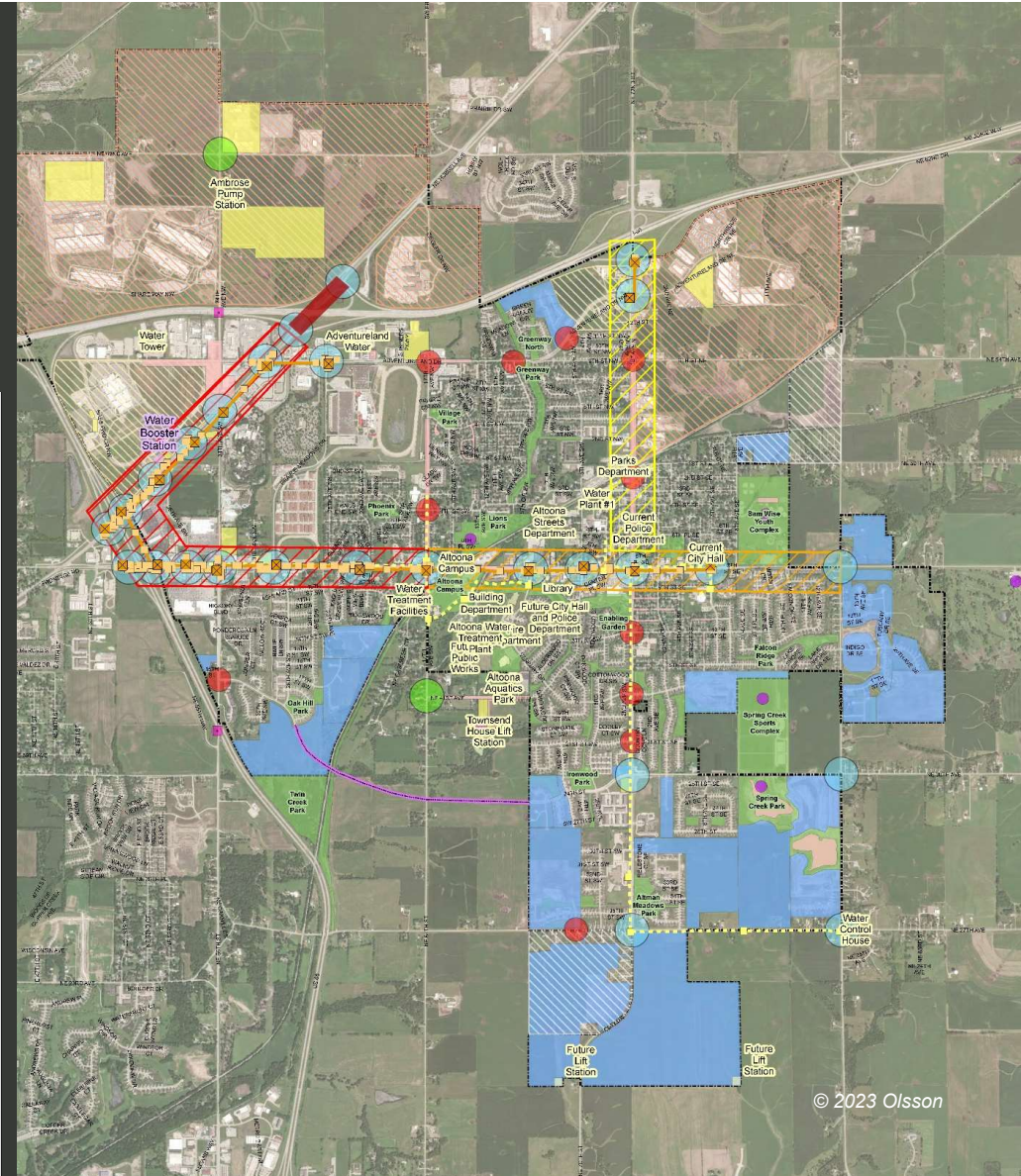
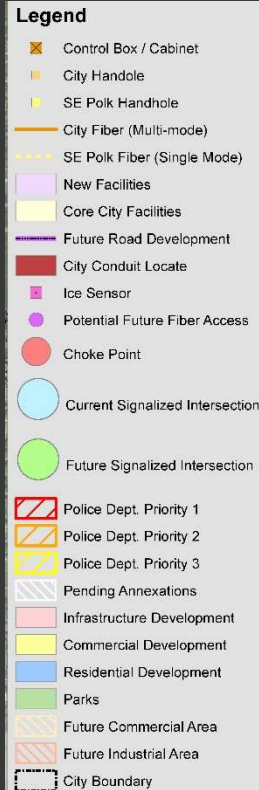
The Why

City's Needs

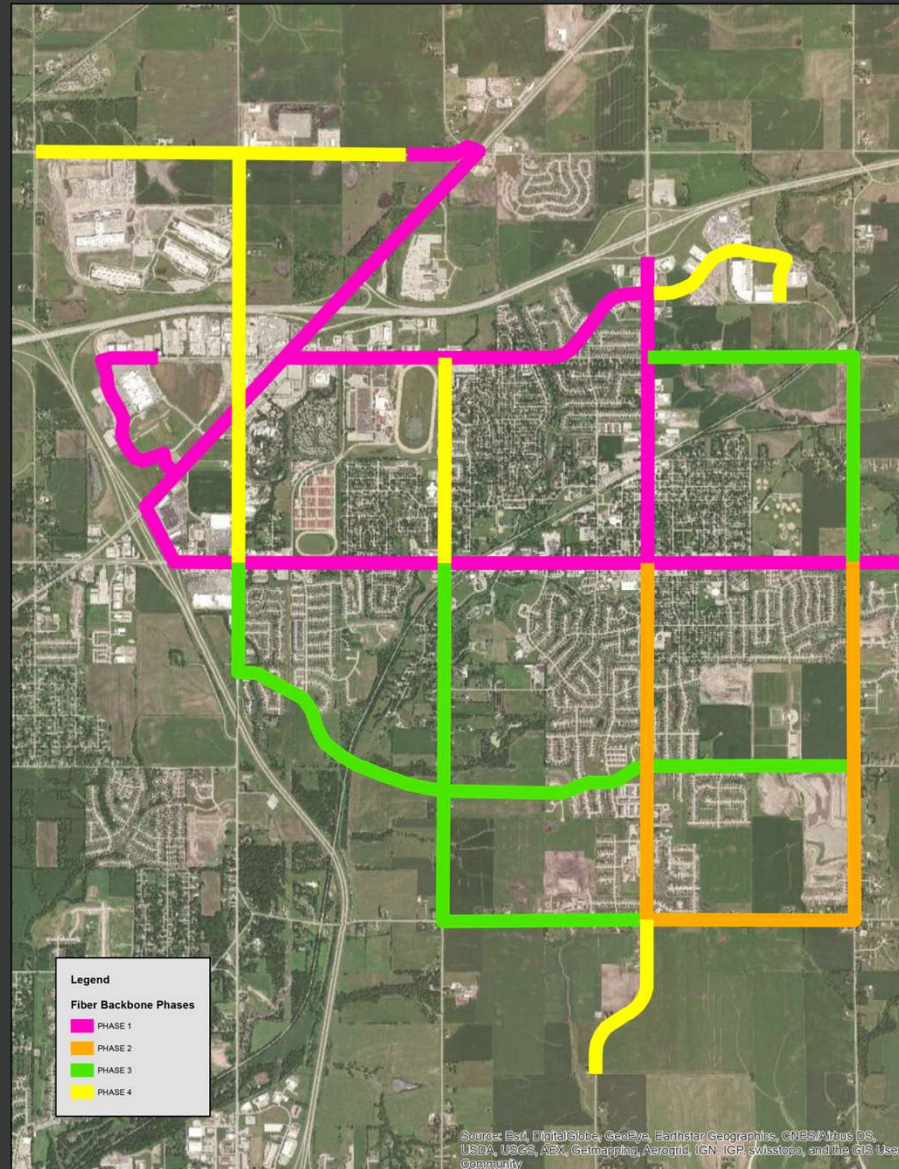


The Communication Plan

- Understand the existing network
- Prioritized their needs
- Explored all the options
- Tailored the solutions



Implementation Phasing

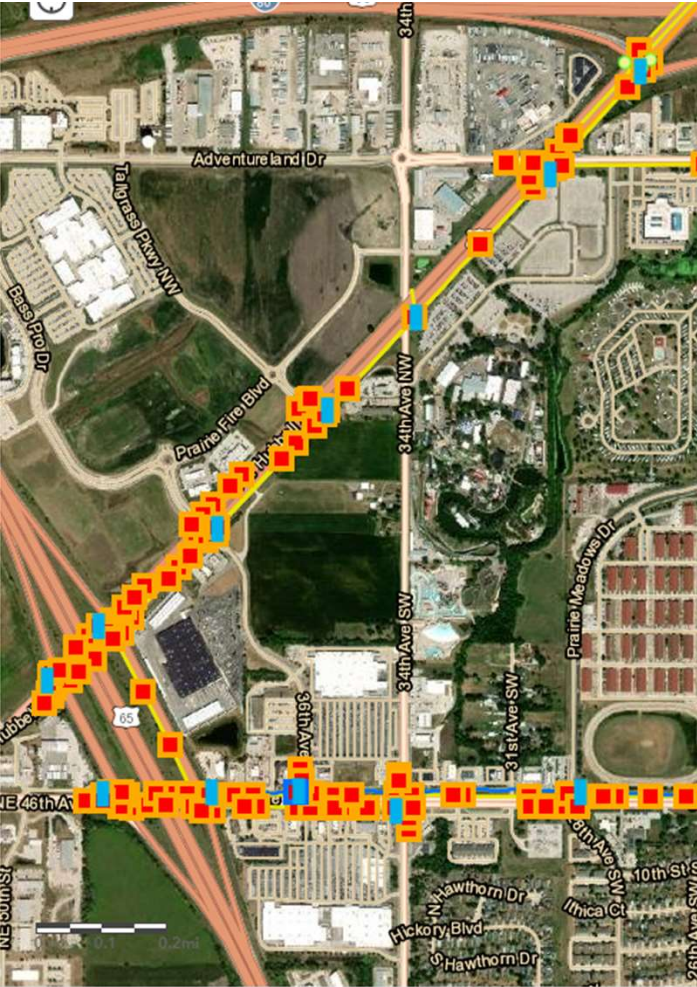


BH0

Slide 7

BHO [[@Blake G. Hansen](#)] the phases are set to come in on click on this one. [[@Kara Kosiski](#)] Tagging you too so that way you are aware. I made the adjustments to the lines based on your KMZ file.

Brooke Hilt, 2023-04-27T18:49:05.452



9:58

< Altoona Collections

Handholes
41.643988°N 93.503414°W 133.3 mi

Edited by
jjones@olsson.com_olsson · May 18, 2021

Fields

Notes
-

ID1
HH68

Attachments

- Photo 5.jpg 755 KB
- Photo 3.jpg 464 KB
- Photo 1.jpg 418 KB
- Photo 6.jpg 631 KB
- Photo 2.jpg



The Design

- Design, bid, build process
- Utilized the City's GIS database
- Extensive data collection
- Benefits to design and construction

The Support

- Identified the needs for all staffing levels
- Prepare for the future
- Right size the strategy
- Provide the tools and HOW to use them
 - We don't know what we don't know!

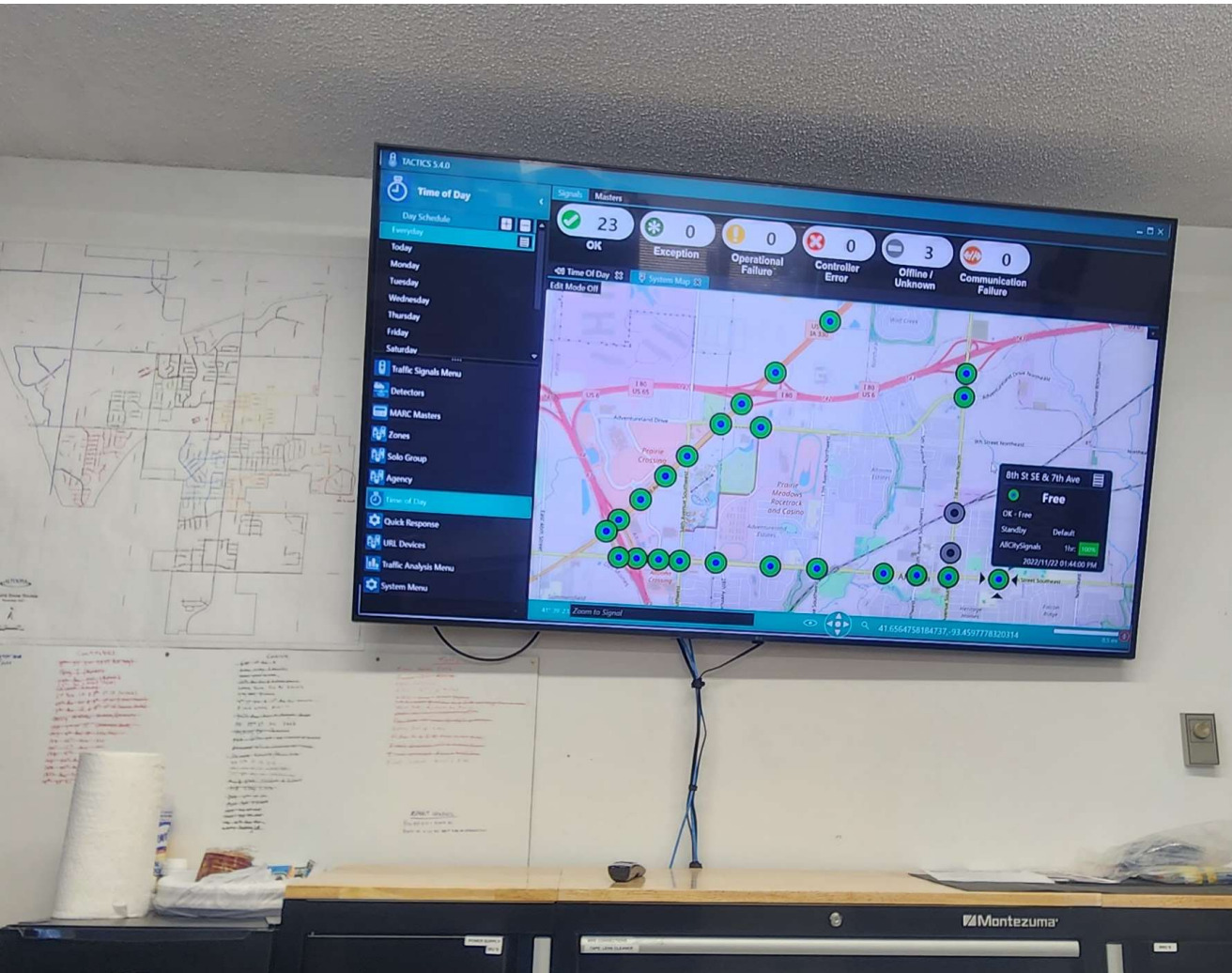


City of Altoona: Parameter Updates

Comparison of Local Controller Settings (Pedestrian and Vehicle Clearance Intervals)



| # | Intersection | Intersection Geometry | Clearance Intervals | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|-------------------|--|---------------------|------------|------------|------------|-----------|------------|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|------|--|------|--|------|--|--|----|----|--|-----|--|----|--|--|----|----|--|----|--|----|--|--|---|-------|---|---|---|---|---|---|---|---|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|----------|-----------|----------|-----------|----------|-----------|----------|----------|------------------|------------|------------|--|------------|------------|------------|--|------------|---------------------|------------|------------|--|------------|------------|------------|--|------------|----------------|------------|------------|--|------------|------------|------------|--|------------|--|----------|----------|--|-----------|----------|----------|--|----------|
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| NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63 | 87 | 48 | 80 | 45 | 46 | 56 | 78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0.5 | 0.7 | | -0.1 | | 0.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 87 | 89 | | 37 | | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 13 | | 12 | | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movement | | E/W | | N/S | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Y AR | | 4.0 3.0 | | 3.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Clear. | | 5.7 | | 5.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Y AR | | 3.6 2.1 | | 2.9 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen Y AR | | 3.6 2.1 | | 3.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | DEC DEC | | SAME SAME | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing W FDW | | 7.0 14.0 | | 7.0 23.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical W FDW | | 3.0 8.0 | | 4.0 23.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen W FDW | | 7.0 10.0 | | 7.0 23.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SAME DEC | | SAME SAME | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 8th St/1st Ave | <table border="1"> <thead> <tr> <th>NBL</th> <th>NBT</th> <th>SBL</th> <th>SBT</th> <th>EBL</th> <th>EBT</th> <th>WBL</th> <th>WBT</th> </tr> </thead> <tbody> <tr> <td>68</td> <td>96</td> <td>77</td> <td>97</td> <td>74</td> <td>99</td> <td>82</td> <td>85</td> </tr> <tr> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>35</td> <td>25</td> <td>35</td> </tr> <tr> <td>1.2</td> <td>0.6</td> <td></td> <td>0.6</td> <td></td> <td>-0.2</td> <td></td> <td></td> </tr> <tr> <td>98</td> <td>91</td> <td></td> <td>102</td> <td></td> <td>82</td> <td></td> <td></td> </tr> <tr> <td>17</td> <td>18</td> <td></td> <td>18</td> <td></td> <td>13</td> <td></td> <td></td> </tr> </tbody> </table> <p>** 3 seconds of calculated ped clear time incluc 'Don't Walk' as allowed by MUTCD. Therefore, reduced by 3 seconds. **</p> | NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | 68 | 96 | 77 | 97 | 74 | 99 | 82 | 85 | 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | 1.2 | 0.6 | | 0.6 | | -0.2 | | | 98 | 91 | | 102 | | 82 | | | 17 | 18 | | 18 | | 13 | | | <table border="1"> <thead> <tr> <th>Phase</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Movement</td> <td>NBL</td> <td>SBT</td> <td>EBL</td> <td>WBT</td> <td>SBL</td> <td>NBT</td> <td>WBL</td> <td>EBT</td> </tr> <tr> <td>Existing Y AR</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> </tr> <tr> <td>Theoretical Clear.</td> <td>5.2</td> <td>6.1</td> <td>5.5</td> <td>5.7</td> <td>5.6</td> <td>6.0</td> <td>5.7</td> <td>6.0</td> </tr> <tr> <td>Theoretical Y AR</td> <td>2.8 2.4</td> <td>2.9 3.2</td> <td>2.9 2.6</td> <td>3.6 2.1</td> <td>2.9 2.7</td> <td>2.8 3.2</td> <td>2.9 2.8</td> <td>3.6 2.4</td> </tr> <tr> <td>Chosen Y AR</td> <td>3.0 2.4</td> <td>3.1 3.0</td> <td>3.0 2.6</td> <td>3.6 2.4</td> <td>3.0 2.7</td> <td>3.1 3.0</td> <td>3.0 2.8</td> <td>3.6 2.4</td> </tr> <tr> <td></td> <td>SAME DEC</td> <td>INC SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> <td>SAME DEC</td> <td>INC SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> </tr> <tr> <td>Existing W FDW</td> <td></td> <td>7.0 22.0</td> <td></td> <td>7.0 21.0</td> <td></td> <td>7.0 22.0</td> <td></td> <td>7.0 21.0</td> </tr> <tr> <td>Theoretical W FDW</td> <td></td> <td>6.0 23.0</td> <td></td> <td>4.0 21.0</td> <td></td> <td>5.0 25.0</td> <td></td> <td>5.0 27.0</td> </tr> <tr> <td>Chosen W FDW</td> <td></td> <td>7.0 23.0</td> <td></td> <td>7.0 21.0</td> <td></td> <td>7.0 25.0</td> <td></td> <td>7.0 27.0</td> </tr> <tr> <td></td> <td></td> <td>SAME INC</td> <td></td> <td>SAME SAME</td> <td></td> <td>SAME INC</td> <td></td> <td>SAME INC</td> </tr> </tbody> </table> | Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Movement | NBL | SBT | EBL | WBT | SBL | NBT | WBL | EBT | Existing Y AR | 3.0 3.0 | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | 3.0 3.0 | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | Theoretical Clear. | 5.2 | 6.1 | 5.5 | 5.7 | 5.6 | 6.0 | 5.7 | 6.0 | Theoretical Y AR | 2.8 2.4 | 2.9 3.2 | 2.9 2.6 | 3.6 2.1 | 2.9 2.7 | 2.8 3.2 | 2.9 2.8 | 3.6 2.4 | Chosen Y AR | 3.0 2.4 | 3.1 3.0 | 3.0 2.6 | 3.6 2.4 | 3.0 2.7 | 3.1 3.0 | 3.0 2.8 | 3.6 2.4 | | SAME DEC | INC SAME | SAME DEC | DEC DEC | SAME DEC | INC SAME | SAME DEC | DEC DEC | Existing W FDW | | 7.0 22.0 | | 7.0 21.0 | | 7.0 22.0 | | 7.0 21.0 | Theoretical W FDW | | 6.0 23.0 | | 4.0 21.0 | | 5.0 25.0 | | 5.0 27.0 | Chosen W FDW | | 7.0 23.0 | | 7.0 21.0 | | 7.0 25.0 | | 7.0 27.0 | | | SAME INC | | SAME SAME | | SAME INC | | SAME INC |
| NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68 | 96 | 77 | 97 | 74 | 99 | 82 | 85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 | 0.6 | | 0.6 | | -0.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 98 | 91 | | 102 | | 82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 18 | | 18 | | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movement | NBL | SBT | EBL | WBT | SBL | NBT | WBL | EBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Y AR | 3.0 3.0 | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | 3.0 3.0 | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Clear. | 5.2 | 6.1 | 5.5 | 5.7 | 5.6 | 6.0 | 5.7 | 6.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Y AR | 2.8 2.4 | 2.9 3.2 | 2.9 2.6 | 3.6 2.1 | 2.9 2.7 | 2.8 3.2 | 2.9 2.8 | 3.6 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen Y AR | 3.0 2.4 | 3.1 3.0 | 3.0 2.6 | 3.6 2.4 | 3.0 2.7 | 3.1 3.0 | 3.0 2.8 | 3.6 2.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SAME DEC | INC SAME | SAME DEC | DEC DEC | SAME DEC | INC SAME | SAME DEC | DEC DEC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing W FDW | | 7.0 22.0 | | 7.0 21.0 | | 7.0 22.0 | | 7.0 21.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical W FDW | | 6.0 23.0 | | 4.0 21.0 | | 5.0 25.0 | | 5.0 27.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen W FDW | | 7.0 23.0 | | 7.0 21.0 | | 7.0 25.0 | | 7.0 27.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SAME INC | | SAME SAME | | SAME INC | | SAME INC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 8th St/5th Ave | <table border="1"> <thead> <tr> <th>NBL</th> <th>NBT</th> <th>SBL</th> <th>SBT</th> <th>EBL</th> <th>EBT</th> <th>WBL</th> <th>WBT</th> </tr> </thead> <tbody> <tr> <td>75</td> <td>89</td> <td>72</td> <td>90</td> <td>82</td> <td>91</td> <td>66</td> <td>76</td> </tr> <tr> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>35</td> <td>25</td> <td>35</td> </tr> <tr> <td>2.9</td> <td>-1.0</td> <td></td> <td>1.3</td> <td></td> <td>-1.9</td> <td></td> <td></td> </tr> <tr> <td>70</td> <td>72</td> <td></td> <td>75</td> <td></td> <td>46</td> <td></td> <td></td> </tr> <tr> <td>16</td> <td>20</td> <td></td> <td>16</td> <td></td> <td>26</td> <td></td> <td></td> </tr> </tbody> </table> <p>** 3 seconds of calculated ped clear time incluc 'Don't Walk' as allowed by MUTCD. Therefore, reduced by 3 seconds. **</p> | NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | 75 | 89 | 72 | 90 | 82 | 91 | 66 | 76 | 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | 2.9 | -1.0 | | 1.3 | | -1.9 | | | 70 | 72 | | 75 | | 46 | | | 16 | 20 | | 16 | | 26 | | | <table border="1"> <thead> <tr> <th>Phase</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Movement</td> <td></td> <td>SB</td> <td>EBL</td> <td>WBT</td> <td></td> <td>NB</td> <td>WBL</td> <td>EBT</td> </tr> <tr> <td>Existing Y AR</td> <td></td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> <td></td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> </tr> <tr> <td>Theoretical Clear.</td> <td></td> <td>5.9</td> <td>5.6</td> <td>5.7</td> <td></td> <td>5.7</td> <td>5.4</td> <td>5.7</td> </tr> <tr> <td>Theoretical Y AR</td> <td></td> <td>2.9 3.0</td> <td>2.8 2.8</td> <td>3.8 1.9</td> <td></td> <td>2.7 3.0</td> <td>3.0 2.4</td> <td>3.5 2.2</td> </tr> <tr> <td>Chosen Y AR</td> <td></td> <td>3.0 3.0</td> <td>3.0 2.8</td> <td>3.8 2.2</td> <td></td> <td>3.0 3.0</td> <td>3.0 2.4</td> <td>3.8 2.2</td> </tr> <tr> <td></td> <td></td> <td>SAME SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> <td></td> <td>SAME SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> </tr> <tr> <td>Existing W FDW</td> <td></td> <td>7.0 20.0</td> <td></td> <td>7.0 17.0</td> <td></td> <td>7.0 20.0</td> <td></td> <td>7.0 17.0</td> </tr> <tr> <td>Theoretical W FDW</td> <td></td> <td>6.0 18.0</td> <td></td> <td>7.0 11.0</td> <td></td> <td>5.0 17.0</td> <td></td> <td>4.0 19.0</td> </tr> <tr> <td>Chosen W FDW</td> <td></td> <td>7.0 18.0</td> <td></td> <td>7.0 11.0</td> <td></td> <td>7.0 17.0</td> <td></td> <td>7.0 19.0</td> </tr> <tr> <td></td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME INC</td> </tr> </tbody> </table> | Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Movement | | SB | EBL | WBT | | NB | WBL | EBT | Existing Y AR | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | Theoretical Clear. | | 5.9 | 5.6 | 5.7 | | 5.7 | 5.4 | 5.7 | Theoretical Y AR | | 2.9 3.0 | 2.8 2.8 | 3.8 1.9 | | 2.7 3.0 | 3.0 2.4 | 3.5 2.2 | Chosen Y AR | | 3.0 3.0 | 3.0 2.8 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.4 | 3.8 2.2 | | | SAME SAME | SAME DEC | DEC DEC | | SAME SAME | SAME DEC | DEC DEC | Existing W FDW | | 7.0 20.0 | | 7.0 17.0 | | 7.0 20.0 | | 7.0 17.0 | Theoretical W FDW | | 6.0 18.0 | | 7.0 11.0 | | 5.0 17.0 | | 4.0 19.0 | Chosen W FDW | | 7.0 18.0 | | 7.0 11.0 | | 7.0 17.0 | | 7.0 19.0 | | | SAME DEC | | SAME DEC | | SAME DEC | | SAME INC |
| NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 | 89 | 72 | 90 | 82 | 91 | 66 | 76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.9 | -1.0 | | 1.3 | | -1.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | 72 | | 75 | | 46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 20 | | 16 | | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movement | | SB | EBL | WBT | | NB | WBL | EBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Y AR | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Clear. | | 5.9 | 5.6 | 5.7 | | 5.7 | 5.4 | 5.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Y AR | | 2.9 3.0 | 2.8 2.8 | 3.8 1.9 | | 2.7 3.0 | 3.0 2.4 | 3.5 2.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen Y AR | | 3.0 3.0 | 3.0 2.8 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.4 | 3.8 2.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Existing W FDW | | 7.0 20.0 | | 7.0 17.0 | | 7.0 20.0 | | 7.0 17.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical W FDW | | 6.0 18.0 | | 7.0 11.0 | | 5.0 17.0 | | 4.0 19.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen W FDW | | 7.0 18.0 | | 7.0 11.0 | | 7.0 17.0 | | 7.0 19.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SAME DEC | | SAME DEC | | SAME DEC | | SAME INC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 8th St/Venbury Dr | <table border="1"> <thead> <tr> <th>NBL</th> <th>NBT</th> <th>SBL</th> <th>SBT</th> <th>EBL</th> <th>EBT</th> <th>WBL</th> <th>WBT</th> </tr> </thead> <tbody> <tr> <td>81</td> <td>90</td> <td>77</td> <td>86</td> <td>59</td> <td>97</td> <td>64</td> <td>90</td> </tr> <tr> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>35</td> <td>25</td> <td>35</td> </tr> <tr> <td>-1.5</td> <td>-1.7</td> <td></td> <td>1.6</td> <td></td> <td>-1.7</td> <td></td> <td></td> </tr> <tr> <td>76</td> <td>70</td> <td></td> <td>60</td> <td></td> <td>52</td> <td></td> <td></td> </tr> <tr> <td>25</td> <td>22</td> <td></td> <td>20</td> <td></td> <td>23</td> <td></td> <td></td> </tr> </tbody> </table> <p>** 3 seconds of calculated ped clear time incluc 'Don't Walk' as allowed by MUTCD. Therefore, reduced by 3 seconds. **</p> | NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | 81 | 90 | 77 | 86 | 59 | 97 | 64 | 90 | 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | -1.5 | -1.7 | | 1.6 | | -1.7 | | | 76 | 70 | | 60 | | 52 | | | 25 | 22 | | 20 | | 23 | | | <table border="1"> <thead> <tr> <th>Phase</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Movement</td> <td></td> <td>SB</td> <td>EBL</td> <td>WBT</td> <td></td> <td>NB</td> <td>WBL</td> <td>EBT</td> </tr> <tr> <td>Existing Y AR</td> <td></td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> <td></td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td>4.0 3.0</td> </tr> <tr> <td>Theoretical Clear.</td> <td></td> <td>5.9</td> <td>5.0</td> <td>6.0</td> <td></td> <td>6.0</td> <td>5.3</td> <td>5.8</td> </tr> <tr> <td>Theoretical Y AR</td> <td></td> <td>3.0 2.9</td> <td>2.8 2.2</td> <td>3.8 2.2</td> <td></td> <td>3.0 3.0</td> <td>3.0 2.3</td> <td>3.5 2.3</td> </tr> <tr> <td>Chosen Y AR</td> <td></td> <td>3.0 3.0</td> <td>3.0 2.3</td> <td>3.8 2.2</td> <td></td> <td>3.0 3.0</td> <td>3.0 2.3</td> <td>3.8 2.2</td> </tr> <tr> <td></td> <td></td> <td>SAME SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> <td></td> <td>SAME SAME</td> <td>SAME DEC</td> <td>DEC DEC</td> </tr> <tr> <td>Existing W FDW</td> <td></td> <td>7.0 20.0</td> <td></td> <td>7.0 16.0</td> <td></td> <td>7.0 20.0</td> <td></td> <td>7.0 16.0</td> </tr> <tr> <td>Theoretical W FDW</td> <td></td> <td>7.0 17.0</td> <td></td> <td>7.0 12.0</td> <td></td> <td>7.0 19.0</td> <td></td> <td>5.0 15.0</td> </tr> <tr> <td>Chosen W FDW</td> <td></td> <td>7.0 17.0</td> <td></td> <td>7.0 12.0</td> <td></td> <td>7.0 19.0</td> <td></td> <td>7.0 15.0</td> </tr> <tr> <td></td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> </tr> </tbody> </table> | Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Movement | | SB | EBL | WBT | | NB | WBL | EBT | Existing Y AR | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | Theoretical Clear. | | 5.9 | 5.0 | 6.0 | | 6.0 | 5.3 | 5.8 | Theoretical Y AR | | 3.0 2.9 | 2.8 2.2 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.3 | 3.5 2.3 | Chosen Y AR | | 3.0 3.0 | 3.0 2.3 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.3 | 3.8 2.2 | | | SAME SAME | SAME DEC | DEC DEC | | SAME SAME | SAME DEC | DEC DEC | Existing W FDW | | 7.0 20.0 | | 7.0 16.0 | | 7.0 20.0 | | 7.0 16.0 | Theoretical W FDW | | 7.0 17.0 | | 7.0 12.0 | | 7.0 19.0 | | 5.0 15.0 | Chosen W FDW | | 7.0 17.0 | | 7.0 12.0 | | 7.0 19.0 | | 7.0 15.0 | | | SAME DEC | | SAME DEC | | SAME DEC | | SAME DEC |
| NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 81 | 90 | 77 | 86 | 59 | 97 | 64 | 90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -1.5 | -1.7 | | 1.6 | | -1.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76 | 70 | | 60 | | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 22 | | 20 | | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movement | | SB | EBL | WBT | | NB | WBL | EBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Y AR | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | 3.0 3.0 | 3.0 3.0 | 4.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Clear. | | 5.9 | 5.0 | 6.0 | | 6.0 | 5.3 | 5.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Y AR | | 3.0 2.9 | 2.8 2.2 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.3 | 3.5 2.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen Y AR | | 3.0 3.0 | 3.0 2.3 | 3.8 2.2 | | 3.0 3.0 | 3.0 2.3 | 3.8 2.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Existing W FDW | | 7.0 20.0 | | 7.0 16.0 | | 7.0 20.0 | | 7.0 16.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical W FDW | | 7.0 17.0 | | 7.0 12.0 | | 7.0 19.0 | | 5.0 15.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen W FDW | | 7.0 17.0 | | 7.0 12.0 | | 7.0 19.0 | | 7.0 15.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SAME DEC | | SAME DEC | | SAME DEC | | SAME DEC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 8th St/17th Ave | <table border="1"> <thead> <tr> <th>NBL</th> <th>NBT</th> <th>SBL</th> <th>SBT</th> <th>EBL</th> <th>EBT</th> <th>WBL</th> <th>WBT</th> </tr> </thead> <tbody> <tr> <td>66</td> <td>91</td> <td>63</td> <td>88</td> <td>70</td> <td>76</td> <td>69</td> <td>79</td> </tr> <tr> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>25</td> <td>35</td> <td>25</td> <td>35</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | 66 | 91 | 63 | 88 | 70 | 76 | 69 | 79 | 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | <table border="1"> <thead> <tr> <th>Phase</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Movement</td> <td>EBL</td> <td>WBT</td> <td></td> <td>SB</td> <td>WBL</td> <td>EBT</td> <td></td> <td>NB</td> </tr> <tr> <td>Existing Y AR</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td></td> <td>4.0 3.0</td> <td>3.0 3.0</td> <td>5.0 3.0</td> <td></td> <td>4.0 3.0</td> </tr> <tr> <td>Theoretical Clear.</td> <td>5.9</td> <td>5.9</td> <td></td> <td>6.0</td> <td>6.0</td> <td>6.0</td> <td></td> <td>6.0</td> </tr> <tr> <td>Theoretical Y AR</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td></td> <td>3.8 2.2</td> <td>3.0 3.0</td> <td>3.0 2.3</td> <td></td> <td>3.5 2.3</td> </tr> <tr> <td>Chosen Y AR</td> <td>3.0 3.0</td> <td>3.0 3.0</td> <td></td> <td>3.8 2.2</td> <td>3.0 3.0</td> <td>3.0 2.3</td> <td></td> <td>3.8 2.2</td> </tr> <tr> <td></td> <td>SAME DEC</td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td>SAME DEC</td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> </tr> <tr> <td>Existing W FDW</td> <td>7.0 20.0</td> <td>7.0 20.0</td> <td></td> <td>7.0 16.0</td> <td>7.0 20.0</td> <td>7.0 20.0</td> <td></td> <td>7.0 16.0</td> </tr> <tr> <td>Theoretical W FDW</td> <td>7.0 17.0</td> <td>7.0 17.0</td> <td></td> <td>7.0 12.0</td> <td>7.0 19.0</td> <td>7.0 19.0</td> <td></td> <td>5.0 15.0</td> </tr> <tr> <td>Chosen W FDW</td> <td>7.0 17.0</td> <td>7.0 17.0</td> <td></td> <td>7.0 12.0</td> <td>7.0 19.0</td> <td>7.0 19.0</td> <td></td> <td>7.0 15.0</td> </tr> <tr> <td></td> <td>SAME DEC</td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> <td>SAME DEC</td> <td>SAME DEC</td> <td></td> <td>SAME DEC</td> </tr> </tbody> </table> | Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Movement | EBL | WBT | | SB | WBL | EBT | | NB | Existing Y AR | 3.0 3.0 | 3.0 3.0 | | 4.0 3.0 | 3.0 3.0 | 5.0 3.0 | | 4.0 3.0 | Theoretical Clear. | 5.9 | 5.9 | | 6.0 | 6.0 | 6.0 | | 6.0 | Theoretical Y AR | 3.0 3.0 | 3.0 3.0 | | 3.8 2.2 | 3.0 3.0 | 3.0 2.3 | | 3.5 2.3 | Chosen Y AR | 3.0 3.0 | 3.0 3.0 | | 3.8 2.2 | 3.0 3.0 | 3.0 2.3 | | 3.8 2.2 | | SAME DEC | SAME DEC | | SAME DEC | SAME DEC | SAME DEC | | SAME DEC | Existing W FDW | 7.0 20.0 | 7.0 20.0 | | 7.0 16.0 | 7.0 20.0 | 7.0 20.0 | | 7.0 16.0 | Theoretical W FDW | 7.0 17.0 | 7.0 17.0 | | 7.0 12.0 | 7.0 19.0 | 7.0 19.0 | | 5.0 15.0 | Chosen W FDW | 7.0 17.0 | 7.0 17.0 | | 7.0 12.0 | 7.0 19.0 | 7.0 19.0 | | 7.0 15.0 | | SAME DEC | SAME DEC | | SAME DEC | SAME DEC | SAME DEC | | SAME DEC |
| NBL | NBT | SBL | SBT | EBL | EBT | WBL | WBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 66 | 91 | 63 | 88 | 70 | 76 | 69 | 79 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 25 | 25 | 25 | 25 | 35 | 25 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Movement | EBL | WBT | | SB | WBL | EBT | | NB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing Y AR | 3.0 3.0 | 3.0 3.0 | | 4.0 3.0 | 3.0 3.0 | 5.0 3.0 | | 4.0 3.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Clear. | 5.9 | 5.9 | | 6.0 | 6.0 | 6.0 | | 6.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical Y AR | 3.0 3.0 | 3.0 3.0 | | 3.8 2.2 | 3.0 3.0 | 3.0 2.3 | | 3.5 2.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen Y AR | 3.0 3.0 | 3.0 3.0 | | 3.8 2.2 | 3.0 3.0 | 3.0 2.3 | | 3.8 2.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SAME DEC | SAME DEC | | SAME DEC | SAME DEC | SAME DEC | | SAME DEC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Existing W FDW | 7.0 20.0 | 7.0 20.0 | | 7.0 16.0 | 7.0 20.0 | 7.0 20.0 | | 7.0 16.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theoretical W FDW | 7.0 17.0 | 7.0 17.0 | | 7.0 12.0 | 7.0 19.0 | 7.0 19.0 | | 5.0 15.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chosen W FDW | 7.0 17.0 | 7.0 17.0 | | 7.0 12.0 | 7.0 19.0 | 7.0 19.0 | | 7.0 15.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | SAME DEC | SAME DEC | | SAME DEC | SAME DEC | SAME DEC | | SAME DEC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



The Integration

- Support and collaboration
- Ask “the right” questions
- Reorganized for ease of use
 - Get it right at the start
 - System consistency

The Details

- Detection
 - Video zones fine-tuned and located
 - Databases tailored to the implemented infrastructure
- Dynamic Maxes
 - Using detection sources for volumes
 - Responsive to traffic needs



GRIDSMATM App 22.1 - 8th St Sw & 34th Ave Sw (21.3)

Status: 8th St SW & 34th Ave
8th St SW & 34th Ave: 8th St SW @ 34th Ave SW Poll Level

Pattern
 Status: **Online** Sub: **Free** Mode: **LocalManual**
 Actual: **Free** Broadcast: **Standby** Adaptive: **Off**
 Current Zone: **AllCitySignals** Ext Mode: **Command** Cmd Source: **Default**

| Phases | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|------------|------|------|------|------|------|------|------|-----------|------|------|------|
| Programmed | | | | | | | | | | | |
| Split | | | | | | | | | | | |
| Actual | 12 | 25 | | 46 | 22 | 15 | 21 | 24 | | | |
| Status | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● |
| Veh. | | | | GRS | | | | MX1 20 | | | |
| Timer | | | | | | | | | | | |
| Ped. | | | | | | | | | | | |
| Status | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● | ●●●● |
| Timer | | | | | | | | | | | |
| Phase Next | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Last Term. | GAP | GAP | MAX | MAX | GAP | GAP | GAP | MAX | | | |
| Overlap | ●● | ●● | ●● | ●● | ●● | ●● | ●● | ●● | ●● | ●● | ●● |

Phase Input Detectors

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------------|---|---|---|---|---|---|---|---|---|----|----|----|
| Veh. Actuation | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Veh. Call | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

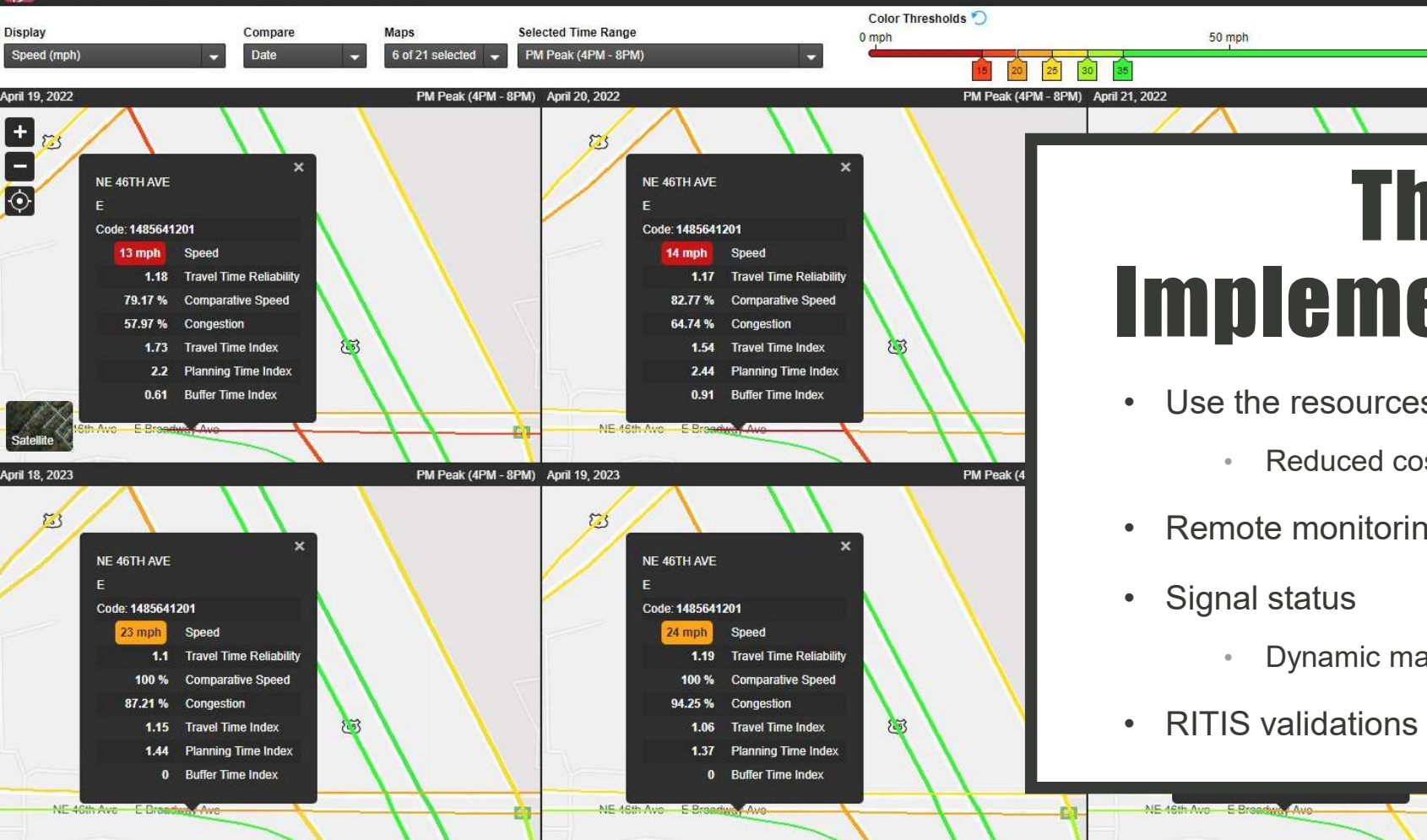
Front Panel For : 8th St SW & 34th Ave

```

INTERSECTION SEQ:01 B:1
PHASE...1234.5678.9012.3456
V SIG...RRRG RRRG...
P SIG...DDDD DDDD...
V CALL...CC..CC.C...
P CALL...
OVERLAP...ABCD.EFGH.IJKL.MNOP
V/P SIG...RgRg...
RING TIMERS SEQ:01 B:1:1:1:1
RING 1 RING 2 PHS..12345678 90123456
O/N ...0...0...
VEH CC..CC.C...
PED ...
H/O .....00000000
GRN RST PASS 2
MAX OUT MAX1 19
    
```

F1 F2 F3 F4 F5 HELP

Temporal Comparison Maps - Using INRIX XD data



The Implementation

- Use the resources available
 - Reduced costs
- Remote monitoring
- Signal status
 - Dynamic max use
- RITIS validations

Results

| SPEED (MPH) | | | | | | |
|------------------------------|--------------------|-------------------|-------------------|-------------------|--------------------|---------------------|
| Time Period | 12:00 AM - 6:30 AM | 6:30 AM - 9:00 AM | 9:00 AM - 3:30 PM | 3:30 PM - 6:00 PM | 6:00 PM - 12:00 AM | 12:00 AM - 12:00 AM |
| TOTAL COMBINED SYSTEM | | | | | | |
| Before | 30.47 | 29.25 | 28.93 | 27.90 | 29.95 | 29.43 |
| After | 32.17 | 30.84 | 30.15 | 29.23 | 31.16 | 30.83 |
| Difference | 1.70 | 1.59 | 1.22 | 1.33 | 1.21 | 1.40 |
| Percent Change | 6% | 5% | 4% | 5% | 4% | 5% |

| TRAVEL TIME (MIN) | | | | | | |
|------------------------------|--------------------|-------------------|-------------------|-------------------|--------------------|---------------------|
| Time Period | 12:00 AM - 6:30 AM | 6:30 AM - 9:00 AM | 9:00 AM - 3:30 PM | 3:30 PM - 6:00 PM | 6:00 PM - 12:00 AM | 12:00 AM - 12:00 AM |
| TOTAL COMBINED SYSTEM | | | | | | |
| Before | 40.17 | 42.24 | 42.91 | 44.75 | 41.00 | 41.80 |
| After | 37.94 | 40.12 | 41.26 | 42.95 | 39.52 | 39.98 |
| Difference | -2.23 | -2.12 | -1.65 | -1.80 | -1.48 | -1.82 |
| Percent Change | -6% | -5% | -4% | -4% | -4% | -4% |



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