**EXHIBIT 11-A  GEOMETRIC DESIGN GUIDELINES FOR LOCAL 3R PROJECTS (OFF THE SHS)**

### Table 11-1: Lane and Shoulder Widths Arterial Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Design Speed (mph)</th>
<th>Lane Width (feet)</th>
<th>Shoulder Width [a] (feet)</th>
<th>Total Roadway Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Volumes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 750 ADT</td>
<td>All</td>
<td>10</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>High Volumes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>751 - 2,000 ADT</td>
<td>All</td>
<td>12</td>
<td>2 [b]</td>
<td>28 [c]</td>
</tr>
<tr>
<td>Over 2,000 ADT</td>
<td>All</td>
<td>12</td>
<td>6 [b]</td>
<td>36 [c]</td>
</tr>
</tbody>
</table>

[a] All shoulders on rural and urban arterials to be paved.
[b] Reduce by 1 foot for highways on mountainous terrain.
[c] Reduce by 2 feet for highways on mountainous terrain.

### Table 11-2: Lane and Shoulder Widths Collector Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Design Speed [a] (mph)</th>
<th>Lane Width (feet)</th>
<th>Shoulder Width [b] (feet)</th>
<th>Total Roadway Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Volumes:</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 750 ADT</td>
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<td>24</td>
</tr>
<tr>
<td>High Volumes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>751 - 2,000 ADT</td>
<td>Under 50</td>
<td>10</td>
<td>2 [c]</td>
<td>24 [d]</td>
</tr>
<tr>
<td></td>
<td>50 and over</td>
<td>12</td>
<td>2 [c]</td>
<td>28 [d]</td>
</tr>
<tr>
<td>Over 2,000 ADT</td>
<td>All</td>
<td>12</td>
<td>4 [c]</td>
<td>32 [d]</td>
</tr>
</tbody>
</table>

[a] Highway segments should be classified as “under 50” only if most vehicles have an average speed of less than 50 mph over the length of the segment.
[b] All shoulders on collector roads and streets to be paved.
[c] Reduce by 1 foot for highways on mountainous terrain.
[d] Reduce by 2 feet for highways on mountainous terrain.

### Table 11-3: Lane and Shoulder Widths Local Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Design Speed [a] (mph)</th>
<th>Lane Width (feet)</th>
<th>Shoulder Width (feet)</th>
<th>Total Roadway Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Volumes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 750 ADT</td>
<td>All</td>
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<td>2</td>
<td>24</td>
</tr>
<tr>
<td>High Volumes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>751 - 2,000 ADT</td>
<td>Under 50</td>
<td>10</td>
<td>2 [b]</td>
<td>24 [c]</td>
</tr>
<tr>
<td></td>
<td>50 and over</td>
<td>12</td>
<td>2 [b]</td>
<td>28 [c]</td>
</tr>
<tr>
<td>Over 2,000 ADT</td>
<td>All</td>
<td>12</td>
<td>4 [b]</td>
<td>32 [c]</td>
</tr>
</tbody>
</table>

[a] Highway segments should be classified as “under 50” only if most vehicles have an average speed of less than 50 mph over the length of the segment.
[b] Reduce by 1 foot for highways on mountainous terrain.
[c] Reduce by 2 feet for highways on mountainous terrain.
### Table 11-4: Lane Widths Urban Roads and Streets

<table>
<thead>
<tr>
<th>Type of Lane</th>
<th>Minimum Width (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curb Lane</td>
<td></td>
</tr>
<tr>
<td>No Parking Anytime [a]</td>
<td>11</td>
</tr>
<tr>
<td>Part-time Use (peak hour/high volume/low speed)</td>
<td>9</td>
</tr>
<tr>
<td>With Parking</td>
<td>19</td>
</tr>
<tr>
<td>Interior Lane</td>
<td>10</td>
</tr>
<tr>
<td>Lane Adjacent to Median</td>
<td></td>
</tr>
<tr>
<td>Raised Curb</td>
<td>10</td>
</tr>
<tr>
<td>Painted Median</td>
<td>10</td>
</tr>
<tr>
<td>Left-Turn Lane</td>
<td></td>
</tr>
<tr>
<td>One-Way (one lane only)</td>
<td>10</td>
</tr>
<tr>
<td>Two-Way (continuous)</td>
<td>10</td>
</tr>
<tr>
<td>Bicycle Lane (Within Roadway)</td>
<td></td>
</tr>
<tr>
<td>One-Way</td>
<td>4</td>
</tr>
<tr>
<td>Bicycle Lane and Parking (One-Way)</td>
<td>12</td>
</tr>
</tbody>
</table>

[a] A 1 foot curb lane, with up to 2 feet wide gutter, may be used at intersections.

### Table 11-5: Bridges on Arterial Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Minimum Usable Bridge Width [a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 750</td>
<td>Width of approach lanes [b]</td>
</tr>
<tr>
<td>751 - 2,000</td>
<td>Width of approach lanes plus 2 feet each side</td>
</tr>
<tr>
<td>2,001 - 6,000</td>
<td>Width of approach lanes plus 4 feet each side</td>
</tr>
<tr>
<td>Over 6,000</td>
<td>Width of approach lanes plus 8 feet each side</td>
</tr>
</tbody>
</table>

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.

[b] Minimum usable bridge width to be 24 feet.
### Table 11-6: Bridges on Collector Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Minimum Usable Bridge Width [a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 750</td>
<td>Width of approach lanes [b]</td>
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<tr>
<td>751 - 2,000</td>
<td>Width of approach lanes plus 2 feet each side</td>
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<tr>
<td>2,001 - 6,000</td>
<td>Width of approach lanes plus 4 feet each side</td>
</tr>
<tr>
<td>Over 6,000</td>
<td>Width of approach lanes plus 8 feet each side</td>
</tr>
</tbody>
</table>

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.  
[b] Minimum usable bridge width to be 24 feet.

### Table 11-7: Bridges on Local Roads and Streets

<table>
<thead>
<tr>
<th>Design Year Volume (ADT)</th>
<th>Minimum Usable Bridge Width [a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 750</td>
<td>Width of approach lanes</td>
</tr>
<tr>
<td>751 - 2,000</td>
<td>Width of approach lanes plus 2 feet each side</td>
</tr>
<tr>
<td>Over - 2,000</td>
<td>Width of approach lanes plus 4 feet each side</td>
</tr>
</tbody>
</table>

[a] If lane widening is planned as part of a 3R project, the usable bridge width should be compared with the planned width of the approaches after they are widened.

### Table 11-8: Horizontal and Vertical Alignment Arterial Roads and Streets

<table>
<thead>
<tr>
<th>Design Speed (mph)</th>
<th>Minimum Stopping Sight Distance (feet)</th>
<th>Minimum Radius of Horizontal Curve (feet)</th>
<th>Maximum Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Super-</td>
<td>Super-</td>
<td>Rural</td>
</tr>
<tr>
<td></td>
<td>Elevation 10% (a)</td>
<td>Elevation 8% (b)</td>
<td>Level</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
<td>230</td>
<td>250</td>
</tr>
<tr>
<td>40</td>
<td>275</td>
<td>430</td>
<td>470</td>
</tr>
<tr>
<td>50</td>
<td>400</td>
<td>695</td>
<td>765</td>
</tr>
<tr>
<td>60</td>
<td>525</td>
<td>1,090</td>
<td>1,205</td>
</tr>
</tbody>
</table>

[a] Generally, superelevation should not exceed 10 percent.  
[b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.
### Table 11-9: Horizontal and Vertical Alignment Collector Roads and Streets

<table>
<thead>
<tr>
<th>Design Speed (mph)</th>
<th>Minimum Stopping</th>
<th>Minimum Radius of Horizontal Curve (feet)</th>
<th>Maximum Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sight Distance (feet)</td>
<td>Super-elevation 10% (a)</td>
<td>Super-elevation 8% (b)</td>
</tr>
<tr>
<td>20</td>
<td>125</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
<td>230</td>
<td>250</td>
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</tbody>
</table>

[a] Generally, superelevation should not exceed 10 percent.
[b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.

### Table 11-10: Horizontal and Vertical Alignment Local Roads and Streets

<table>
<thead>
<tr>
<th>Design Speed (mph)</th>
<th>Minimum Stopping</th>
<th>Minimum Radius of Horizontal Curve (feet)</th>
<th>Maximum Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sight Distance (feet)</td>
<td>Super-elevation 10% (a)</td>
<td>Super-elevation 8% (b)</td>
</tr>
<tr>
<td>20</td>
<td>125</td>
<td>100</td>
<td>105</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
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<td>60</td>
<td>525</td>
<td>1,090</td>
<td>1,205</td>
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</tbody>
</table>

[a] Generally, superelevation should not exceed 10 percent.
[b] Superelevation should not exceed 8 percent where snow and ice conditions prevail.