Lecture 5
(Chapter 16)
Intersection Control

Hierarchy of intersection control
• Unsignalized
  • Uncontrolled
  • Yield
  • Stop controlled
    TWSC
    AWSC
  • Roundabout
• Signalized

Traffic Signals

Is signal control always better?
• Advantages
• Disadvantages
• MUTCD Signal Warrants
  • What does a warrant mean?
  • Eight signal warrants (pp.455 – 462)
    • #1: Eight-hour vehicular volume
    • #2: Four-hour vehicular volume
    • #1: Peak-hour vehicular volume
Signal Warrants

Warrant #1: Eight-hour vehicular volume

- Volume: Major - both directions; Minor - highest approach
- Any 8 hour, but the same period for both streets
- Two conditions: A, B
- Either A or B at 100% level
- Either A or B at 70% level with rural communities
- Both A and B at 80% level

Warrant #2: Four-hour vehicular volume

- Volume: Major - both directions; Minor - highest approach
- Any 4 hour, but the same period for both streets
- 100% level and 70% level
- A minimum minor street volume threshold
Signal Warrants

- Warrant #3: Peak-hour
  - Volume
    - Similar to 4-hour volume
  - Delay
    - Stop control
      - one lane: 4 veh-hr; two-lane: 5 veh-hr
Figure 4C-3. Warrant 3 - Peak Hour

Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Figure 4C-4. Warrant 3 - Peak Hour (70% Factor)

Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Peak Hour Delay
(Single-Lane, 4 veh-hr)
Signal Warrant Example

East-west is the major street with two lanes on each direction. North-south is the minor street with one lane on each direction. Determine if the intersection meets the 4-hr volume warrant.

<table>
<thead>
<tr>
<th>Time</th>
<th>Major Street Volume, vph</th>
<th>Minor Street Volume, vph</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2 AM</td>
<td>430</td>
<td>425</td>
<td>855</td>
</tr>
<tr>
<td>2-3 AM</td>
<td>485</td>
<td>525</td>
<td>1010</td>
</tr>
<tr>
<td>3-4 AM</td>
<td>515</td>
<td>525</td>
<td>1040</td>
</tr>
<tr>
<td>4-5 AM</td>
<td>545</td>
<td>525</td>
<td>1070</td>
</tr>
<tr>
<td>5-6 AM</td>
<td>530</td>
<td>560</td>
<td>1090</td>
</tr>
<tr>
<td>6-7 AM</td>
<td>525</td>
<td>545</td>
<td>1070</td>
</tr>
<tr>
<td>7-8 AM</td>
<td>515</td>
<td>505</td>
<td>1020</td>
</tr>
<tr>
<td>8-9 AM</td>
<td>475</td>
<td>475</td>
<td>950</td>
</tr>
<tr>
<td>9-10 AM</td>
<td>465</td>
<td>465</td>
<td>930</td>
</tr>
</tbody>
</table>

Highest SBNB Total WB

East-west is the major street with two lanes on each direction. North-south is the minor street with one lane on each direction. Determine if the intersection meets the 4-hr volume warrant.

Figure 4C-1. Warrant 2 - Four-Hour Vehicular Volume

*Note: 195 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor street approach with one lane.