### Design Notes

**Typical Application for Reference Only, Not to Be Inserted Into Plan:**

1. Insert spacing chart distances into layouts.
2. Determine if "End Road Work" signs are needed.
3. Consider the installation of a PCMS and/or G20-X2 or special sign if congestion is expected, if advance signing to divert traffic is needed, or if other conditions are deemed by the engineer.
4. Consider the installation of a PCMS and/or G20-X1 sign (modified) or G20-X2 sign for seven day advance marking of restriction.
5. For any excavation or drop-off in excess of 12 in., see the Minnesota Department of Transportation "Temporary Barriers Guidance Manual".
6. If backups are expected consider use of "lane closure with zipper merge" layout.
7. Use appropriate lane closure layout.
8. Mask or remove all conflicting pavement markings, determine quantity of markings to be masked or removed for pay item quantities.
9. All temporary pavement markings shall be a wet reflective material.
10. List all conflicting inplace signing that must be modified, covered, and/or removed. Include sign modifications, covers and/or removals in the traffic control plan.
11. When impacting detour or alternate routes must be posted. All lengths shown and speeds in the Minnesota Manual on Uniform Traffic Control Devices.
12. Contact appropriate road authority for signal timing, signal head location modifications, and possible turn restrictions before beginning work at or near any signalized intersection.
13. Consider placement and length of turn lane based on expected queue lengths.

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**Table: Spacing of Warning Signs**

<table>
<thead>
<tr>
<th>Speed (MPH)</th>
<th>0 - 30</th>
<th>35 - 50</th>
<th>55 - 60</th>
<th>65 - 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feet</td>
<td>100</td>
<td>300</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Feet</td>
<td>200</td>
<td>600</td>
<td>1000</td>
<td>1400</td>
</tr>
<tr>
<td>Feet</td>
<td>300</td>
<td>900</td>
<td>1500</td>
<td>2100</td>
</tr>
<tr>
<td>Feet</td>
<td>400</td>
<td>1200</td>
<td>2000</td>
<td>2800</td>
</tr>
<tr>
<td>Feet</td>
<td>500</td>
<td>1500</td>
<td>2500</td>
<td>3500</td>
</tr>
</tbody>
</table>

All distances based on 12 ft lane width.

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**Figure: Right Lane Closure**

- Work space beyond intersection.
- Multi-lane divided road.

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**Typical Application**

- **6SW = 6 INCH SOLID LINE WHITE WET REFLECTIVE**
- **Drums**
- **Temporary Wet Reflective Pavement Marking**

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**Notes:***

- Updated 01/30/2020.
- Long Term Typical Application 34.