

# TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 PURPOSE OF GUIDELINES .....	1
1.2 BACKGROUND .....	1
1.3 METHODOLOGY .....	1
1.4 USING THE GUIDELINES.....	2
<b>2. FUNCTIONALITY OF SPEED DISPLAY DEVICES .....</b>	<b>3</b>
2.1 DEFINITION .....	3
2.2 COMPONENTS.....	3
<b>3. APPLICATIONS .....</b>	<b>5</b>
3.1 PREVENTATIVE SAFETY APPLICATIONS.....	6
3.1.1 URBAN AND RURAL ROADWAYS.....	6
3.1.2 Work Zones .....	9
3.2 INCIDENT EVIDENCE-BASED APPLICATIONS.....	10
<b>4. WARRANTS FOR USE.....</b>	<b>11</b>
4.1 URBAN AND RURAL ROADWAYS .....	11
4.2 WORK ZONES.....	12
<b>5. HUMAN FACTORS .....</b>	<b>13</b>
<b>6. DESIGN OF DISPLAY .....</b>	<b>17</b>
6.1 STATIC COMPONENT .....	17
6.1.1 SIGN.....	17
6.1.2 BACKBOARDS.....	18
6.1.3 TEXT AND SYMBOLS .....	18
6.2 DYNAMIC COMPONENT.....	18
6.3 COMBINATIONS .....	19
<b>7. INSTALLATION .....</b>	<b>21</b>
7.1 LOCATION.....	21
7.1.1 URBAN AND RURAL ROADWAYS.....	21
7.1.2 WORK ZONES.....	22
7.2 LONGITUDINAL PLACEMENT.....	22
7.2.1 URBAN AND RURAL ROADWAYS.....	22
7.2.2 WORK ZONES.....	23
7.3 LATERAL PLACEMENT.....	23
7.3.1 URBAN AND RURAL ROADWAYS.....	23
7.3.2 WORK ZONES.....	24
7.4 VERTICAL PLACEMENT.....	24

<b>8. OPERATION .....</b>	<b>25</b>
8.1 ACTIVE OPERATIONS.....	25
8.1.1 URBAN AND RURAL ROADWAYS.....	25
8.1.2 WORK ZONES.....	28
8.2 OPERATIONS SUPPORT.....	30
8.2.1 SITE PREPARATION.....	30
8.2.2 DATA COLLECTION .....	30
8.2.3 ONGOING REVIEW.....	31
8.2.4 ENFORCEMENT.....	31
8.2.5 PUBLIC EDUCATION.....	31
<b>9. MATERIALS.....</b>	<b>33</b>
9.1 STATIC COMPONENT .....	33
9.2 DYNAMIC COMPONENT.....	33
9.2.1 PHOTOMETRY.....	33
9.2.2 LED.....	33
9.2.3 DISPLAY .....	33
9.2.4 DISPLAY SETTINGS .....	33
9.3 SIGN SUPPORT AND MOUNTING .....	34
9.3.1 INSTALLATION ON POSTS.....	34
9.3.2 INSTALLATION ON TRAILERS .....	34
9.4 ENCLOSURE.....	34
<b>10. TECHNOLOGY .....</b>	<b>35</b>
10.1 RADAR .....	35
10.2 ELECTRICAL COMPONENTS .....	35
10.3 COMMUNICATION.....	35
10.4 DATA COLLECTION .....	36
10.5 POWER.....	36
10.5.1 SOLAR PANEL.....	36
10.5.2 BATTERY .....	37
10.5.3 OPERATIONAL PARAMETERS.....	37
<b>11. GLOSSARY .....</b>	<b>39</b>
<b>12. REFERENCES .....</b>	<b>41</b>
<b>13. BIBLIOGRAPHY .....</b>	<b>43</b>