

A STUDY OF THE EFFECTIVENESS OF UNMANNED RADAR  
AS A SPEED CONTROL TECHNIQUE  
IN FREEWAY WORK ZONES

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(ABSTRACT)

The focus of highway work is shifting from new construction further into maintenance, rehabilitation, and reconstruction of existing facilities. Work zones constitute sections of highway where these efforts are actively pursued. Excessive speed is often a contributing factor to work zone accidents. One method of speed control in work zones is the deployment of unmanned, or drone, radar transmitters, to simulate and supplement police presence in work zones.

A review of the literature and past research on speed control techniques was conducted, and data was collected in several work zones on Interstate 81 in Virginia. Traffic data were gathered both upstream and in the range of the unmanned radar units. Effectiveness of the unmanned radar was expressed as changes in mean speed, speed variance, percent of traffic exceeding the speed limit, and eighty-fifth percentile speed. Statistical analyses on the resulting speed distributions utilized hypothesis testing to determine the significance of differences in the measures of effectiveness among speed control conditions in work zones. User costs associated with work zones were also examined.

At the sites studied, significant reductions in mean speed and in percent of traffic exceeding the speed limit were observed, as were minor reductions in speed variance and eighty-fifth percentile speed. Unmanned radar was found to be particularly effective when police presence was expected by motorists. From this research effort, recommendations were developed to assist traffic engineers in determining the most effective way to use unmanned radar to maximize their safety benefit on the traffic stream.

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# TABLE OF CONTENTS

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Background	1
1.2	Problem Statement	2
1.3	Research Objectives	4
1.4	Organization of This Thesis	5
<b>2</b>	<b>Literature Review</b>	<b>6</b>
2.1	Highway Work Zones	6
2.2	Speeds in Work Zones	8
2.3	Speed Control Techniques in Freeway Work Zones	12
2.3.1	Flagging	14
2.3.2	Lane Width Reduction	16
2.3.3	Speed Monitoring Display	17
2.3.4	Changeable Message Signs	18
2.3.5	Rumble Strips	20
2.3.6	Summary: Past Research on Speed Control Techniques	21
2.4	Police Presence and Unmanned Radar Techniques	22
2.4.1	Police Presence	24
2.4.2	Unmanned Radar	26
2.4.3	Summary: Past Research on Police Presence and Unmanned Radar in Freeway Work Zones	33
<b>3</b>	<b>Methodology</b>	<b>35</b>
3.1	Work Zone Parameters	35
3.2	Unmanned Radar Units	36
3.3	Police Presence	37

3.4	Data Collection Methodology	38
3.4.1	Sample Size	38
3.4.2	Data Collection Procedure	39
3.5	Site Selection Considerations	43
3.6	Site Descriptions	45
<b>4</b>	<b>Data Analysis</b>	<b>49</b>
4.1	Testing of Speed Data	49
4.2	Statistical Analysis of Data	49
4.2.1	Changes in Mean Speed	49
4.2.2	Changes in Speed Variance	53
4.2.3	Changes in Percent of Traffic Exceeding Threshold Speeds	54
4.2.4	Changes in Eighty-fifth Percentile Speeds	56
4.3	Effectiveness of Speed Control Techniques by Site	66
4.3.1	Effects at Site 1	66
4.3.2	Effects at Site 2	68
4.3.3	Effects at Site 3	70
<b>5</b>	<b>Additional Impacts of Highway Work Zones</b>	<b>73</b>
5.1	Costs, Benefits, and Levels of Service of Work Zones	73
5.2	Work Zone Accidents	73
5.2.1	Work Zone Accident Characteristics and Rates	74
5.2.2	Accident Costs	77
5.3	User Impacts	78
5.3.1	User Costs at Sites Studied	79
5.3.2	General Application of User Costs	83
5.4	Owner Impacts	86

<b>6</b>	<b>Conclusions and Recommendations</b>	<b>89</b>
6.1	Conclusions on Unmanned Radar and Police Presence	89
6.2	Recommendations on the Use of Unmanned Radar	92
6.3	Recommendations for Further Research	93
References		94
Appendix A	Traffic Control Plans	97
Appendix B	Traffic Volume Information	102
B.1	Traffic Volume at Site 1	102
B.2	Traffic Volume at Site 2	103
B.3	Traffic Volume at Site 3	104
B.4	Capacity Analyses	108
Appendix C	Sample Speed Data	113
Appendix D	Site Results	115
Appendix E	Speed Data Under Normal Conditions	128

## LIST OF TABLES

2.1	Mean Speed Changes for Various Techniques	21
3.1	Summary of Data Collection Sites	47
4.1	Summary of Changes in Mean Speed	58
4.2	Summary of Statistical Analysis of Mean Speed Changes for a Given Speed Control Condition	59
4.3	Summary of Statistical Analysis of Changes in Mean Speed between Control and Treatment Conditions	60
4.4	Summary of Changes in Standard Deviation of Speed	61
4.5	Summary of Statistical Analysis of Changes in Standard Deviation of Speed for a Given Speed Control Condition	62
4.6	Summary of Changes in Percent of Traffic Exceeding Threshold Speeds	63
4.7	Summary of Statistical Analysis of Changes in Percent of Traffic Exceeding Threshold Speeds for a Given Speed Control Condition	64
4.8	Summary of Changes in Eighty-fifth Percentile Speeds	65
5.1	Accident Rate Changes Due to Work Zones on Freeways	76
5.2	Levels of Service at Sites Studied	82
B.1	Traffic Counts at Site 1	105
B.2	Traffic Counts at Site 2	106
B.3	Traffic Counts at Site 3	107
C.1	Summary of Speed Data Testing	114
D.1	Study Statistics at Site 1A	117
D.2	Study Statistics at Site 1B	119
D.3	Study Statistics at Site 2A	121
D.4	Study Statistics at Site 2B	123
D.5	Study Statistics at Site 2C	125
D.6	Study Statistics at Site 3	127
E.1	Comparative Speed Statistics at Site 3	129
E.2	Comparative Speed Statistics at Site 1	130

## LIST OF FIGURES

3.1	Data Collection Sites	48
5.1	Traffic Volume - Travel Time Relationship	81
A.1	Traffic Control Plan for Left Lane Closure	98
A.2	Traffic Control Notes for Left Lane Closure	99
A.3	Traffic Control Plan for Right Lane Closure	100
A.4	Traffic Control Notes for Right Lane Closure	101
D.1	Conditions at Study Site 1A	116
D.2	Conditions at Study Site 1B	118
D.3	Conditions at Study Site 2A	120
D.4	Conditions at Study Site 2B	122
D.5	Conditions at Study Site 2C	124
D.6	Conditions at Study Site 3	126