

TABLE OF CONTENTS

CHAPTER ONE: CURRENT AND FUTURE TRANSPORTATION CONDITIONS

1.1 Introduction	1-1
1.2 Study Area	1-1
1.3 Traffic Conditions & Congestion Summary	1-5
1.4 Transit.....	1-12
1.5 Traffic Signals.....	1-15
1.6 ITS Equipment.....	1-19
1.7 Communications Equipment.....	1-22
1.8 Emergency Management.....	1-25
1.9 Incident Management	1-26
1.10 Special Events.....	1-27
1.11 Freight.....	1-31
1.12 Traveler Information	1-32
1.13 Summary of Relevant Documents	1-32

CHAPTER TWO: USER NEEDS ASSESSMENT

2.1 Introduction	2-1
2.2 Stakeholders and System Users	2-1
2.3 Project Mission, Goals and Objectives.....	2-2
2.4 Summary of User Needs.....	2-4
2.5 Strengths, Weaknesses, Opportunities and Challenges.....	2-11

CHAPTER THREE: REGIONAL ITS ARCHITECTURE

3.1 Introduction	3-1
3.2 National ITS Architecture Overview.....	3-2
3.3 Eugene-Springfield Regional ITS Architecture	3-6
3.4 ITS Standards.....	3-11

CHAPTER FOUR: CONCEPT OF OPERATIONS

4-1 Introduction	4-1
4-2 Concept of Operations Overview	4-2
4-3 Program Area Concept of Operations.....	4-5

CHAPTER FIVE: COMMUNICATIONS REQUIREMENTS

5.1 Introduction	5-1
5.2 Existing Communication Infrastructure.....	5-3
5.3 Communications Requirements.....	5-7
5.4 Network Architecture.....	5-15
5.5 Communications Plan Recommendations.....	5-29
5.6 Maintenance & Operations	5-41

CHAPTER SIX: TRANSPORTATION OPERATIONS CENTER STRATEGY

6.1 Introduction	6-1
6.2 Summary of Existing Centers and Operations	6-1
6.3 Functions of a TOC and Benefits of a Coordinated TOC Approach.....	6-6
6.4 Physical Architecture of a Regional TOC.....	6-8
6.5 Findings for Eugene-Springfield.....	6-9
6.6 TOC Vision for the Eugene-Springfield Metropolitan Area	6-13

CHAPTER SEVEN: DEPLOYMENT PLAN

7.1 Introduction	7-1
7.2 Deployment Projects.....	7-2
7.3 Deployment Plan Schedule	7-14
7.4 5-Year Plan Projects	7-14

CHAPTER EIGHT: BENEFITS ANALYSIS

8.1 Introduction	8-1
8.2 IDAS Overview	8-3
8.3 Analysis Methodology.....	8-4
8.4 ITS Options Evaluated.....	8-9
8.5 Ten-Year (2015) ITS Deployment Plan Benefits Analysis Results.....	8-16
8.6 Lessons Learned	8-17
8.7 Other Benefits Data	8-18

APPENDICES

Appendix A:	ITS Acronyms
Appendix B:	Key Regional Facility Locations
Appendix C:	Accident Data
Appendix D:	Travel Time Data
Appendix E:	Traffic Signal Inventory
Appendix F:	ITS Equipment Inventory
Appendix G:	University of Oregon Football Parking & Shuttles
Appendix H:	Interview Notes
Appendix I:	Expanded Stakeholder User Needs Meeting
Appendix J:	ODOT District 5 User Needs & ITS Projects
Appendix K:	Inventory Report
Appendix L:	Market Package Descriptions
Appendix M:	Regional Architecture Flows
Appendix N:	Concept of Operations Database
Appendix O:	Expanded Stakeholder Deployment Plan Meeting
Appendix P:	ITS Device Numbering System
Appendix Q:	IDAS Volume-Delay Curve Values
Appendix R:	Default and Adjusted IDAS Values
Appendix S:	ITS Equipment Deployed in IDAS
Appendix T:	Detailed IDAS Output
Appendix U:	Steering Committee Meetings
Appendix V:	References

LIST OF TABLES

Table 1-1: Study Area Corridors.....	1-3
Table 1-2: Corridor Travel Time Summary – AM Peak Period	1-11
Table 1-3: Corridor Travel Time Summary – PM Peak Period.....	1-12
Table 1-4: Traffic Signal Operations Contacts.....	1-15
Table 1-5: <i>I-5 State of the Interstate</i> ITS Components in Eugene-Springfield.....	1-35
Table 1-6: <i>TransPlan</i> Financially Constrained Projects Affecting Study Area	1-37
Table 2-1: Strengths	2-11
Table 2-2: Weaknesses	2-12
Table 2-4: Opportunities	2-13
Table 3-1: User Needs Mapped to ITS Architecture User Services	3-7
Table 3-2: Eugene-Springfield Market Packages by Key Stakeholder	3-9
Table 3-3: NTCIP Center-to-Field Standards	3-13
Table 4-1: Agency-to-Agency Relationships	4-3
Table 4-2: Information Flow Definitions	4-4
Table 4-3: Traffic Operations & Management Responsibility Matrix	4-7
Table 4-4: Traveler Information Responsibility Matrix	4-9
Table 4-5: Incident Management Responsibility Matrix.....	4-12
Table 4-6: Public Transportation Management Responsibility Matrix.....	4-15
Table 4-7: Emergency Management Responsibility Matrix.....	4-18
Table 4-8: Information Management Responsibility Matrix.....	4-20
Table 4-9: Maintenance and Construction Management Responsibility Matrix.....	4-23
Table 5-1: Traffic Signals in the Region.....	5-9
Table 5-2: Center-to-Center Links.....	5-13
Table 5-3: Quantity of Devices by Logical Group	5-38
Table 5-4: Standard Node Requirements	5-39
Table 6-1: Traffic Management Systems.....	6-3
Table 6-2: Regional Emergency Operations Centers.....	6-4
Table 6-3: Call-Taking and Dispatch Provided by Central Lane 911.....	6-5
Table 6-4: Center-to-Center Information Exchange.....	6-18
Table 7-1: Proposed Deployment Projects	7-5
Table 7-2: Deployment Plan Schedule.....	7-16
Table 8-1: Traditional Benefits From Ramp Meters on Beltline Highway	8-11
Table 8-2: Benefit-to-Cost Summary for Ramp Meters on Beltline Highway.....	8-12
Table 8-3: Benefit-to-Cost Summary for Gateway Traffic Responsive Signal Timing	8-13
Table 8-4: Benefits From 10-Year ITS Deployment Plan.....	8-17
Table 8-5: Benefit-to-Cost Summary for 10-Year (2015) ITS Deployment Plan.....	8-17

LIST OF FIGURES

Figure 1-1: Study Area.....	1-2
Figure 1-2: Regional Facilities.....	1-4
Figure 1-3: Primary Corridor Existing Problem Areas	1-6
Figure 1-4: Primary Corridor Future (2015) Problem Areas	1-7
Figure 1-5: High Collision Locations and Safety Corridors	1-9
Figure 1-6: Existing & Planned Transit Infrastructure.....	1-14

Figure 1-7: Existing & Planned Traffic Signal and Video Detection Locations.....	1-16
Figure 1-8: Existing & Planned ITS Equipment	1-20
Figure 1-9: Existing & Planned Communications Infrastructure	1-23
Figure 1-10: Alternate Routes for Major Incidents on I-5.....	1-28
Figure 3-1: Regional ITS Architecture Development Process.....	3-2
Figure 3-2: National ITS Architecture Physical Entities.....	3-4
Figure 3-3: Regional Traffic Control Market Package	3-6
Figure 3-4: Eugene-Springfield High-Level Physical Architecture	3-8
Figure 4-1: Traffic Operations & Management Flow Diagram.....	4-6
Figure 4-2: Traveler Information Flow Diagram.....	4-8
Figure 4-3: Incident Management Flow Diagram	4-11
Figure 4-4: Public Transportation Management Flow Diagram	4-14
Figure 4-5: Emergency Management Flow Diagram	4-17
Figure 4-6: Information Management Flow Diagram	4-19
Figure 4-7: Maintenance and Construction Management Flow Diagram.....	4-22
Figure 5-1: Existing & Planned Communications Infrastructure	5-4
Figure 5-2: ITS Deployment Plan.....	5-8
Figure 5-3: Traffic Signal Communications.....	5-10
Figure 5-4: CCTV Video	5-12
Figure 5-5: Communications Network Elements	5-16
Figure 5-6: Generic Star and Multidrop Configuration	5-19
Figure 5-7: Generic Mesh Configuration.....	5-20
Figure 5-8: Generic Hybrid Configuration.....	5-21
Figure 5-9: Generic Redundant Star Configuration.....	5-22
Figure 5-10: Required Equipment for SONET Backbone	5-23
Figure 5-11: Required Equipment for Gigabit Ethernet Communication.....	5-24
Figure 5-12: ITS Distribution – RS 232	5-26
Figure 5-13: Video Links.....	5-27
Figure 5-14: TCP/IP Network.....	5-27
Figure 5-15: ITS Distribution	5-28
Figure 5-16: Proposed Backbone Communications Corridors.....	5-31
Figure 5-17: Distribution Links.....	5-36
Figure 5-18: Connecting Isolated Sections Using Leased Facilities.....	5-37
Figure 5-19: Conceptual Communications Network	5-42
Figure 6-1: ODOT ITS Message Broker Architecture	6-11
Figure 7-1: ITS Deployment Plan.....	7-4
Figure 8-1: IDAS Within the ITS Plan Approach.....	8-2
Figure 8-2: Comparison of IDAS to a Travel Demand Model	8-3
Figure 8-3: IDAS Process	8-5
Figure 8-4: Study Sector and Ramp Meter Locations	8-10
Figure 8-5: ITS Elements Deployed for Benefits Analysis.....	8-14
ITS Deployment Plan for 2004 – 2024 (34” x 22”)	Back Cover