

Table of Contents

Chapter 1.	Introduction.....	1
1.1	Purpose	1
1.2	Organization	1
1.3	Signing and wayfinding process.....	2
1.4	Analysis.....	2
1.5	Systems analysis approach	2
1.5.1	Goal of signing system	3
1.5.2	Airport user categories.....	3
1.5.3	Structuring the signing system.....	3
1.5.4	Considering user limitations in sign design and location	3
1.5.5	Evaluation methods.....	5
1.5.6	Passenger circulation analysis.....	5
1.5.7	Evaluation of current wayfinding system	8
1.5.8	Asset management	9
1.5.9	Temporary signs	9
1.6	Developing a wayfinding strategy.....	10
1.6.1	Buy-In	10
1.6.2	Philosophy	10
1.6.3	Logic	13
Chapter 2.	Airport Roadways.....	21
2.1	Wayfinding philosophy and principles.....	21
2.1.1	Considering user requirements and limitations.....	22
2.1.2	Positive guidance	24
2.2	Applicable federal standards	24
2.2.1	Airport roadways and the MUTCD	25
2.3	Airport roadway decision points	25
2.3.1	Airport exit signs	26
2.4	Static sign design elements.....	27
2.4.1	Terminology.....	27
2.4.2	Symbology	29
2.4.3	Typography.....	29
2.4.4	Arrows	30
2.4.5	Color and shape	31
2.4.6	Wayfinding sign placement, spacing and design speeds	33
2.5	Sign structures and illumination.....	35
2.5.1	Sign structures.....	35
2.5.2	Safety considerations	36
2.5.3	Illumination.....	36
2.6	Changeable Message Signs (CMSs).....	36
2.6.1	Appropriate use of CMSs	36
2.6.2	CMS technology	37
2.6.3	Message design and layout	38
2.6.4	CMS display elements	39
2.6.5	Passenger advisory CMS	40
2.7	Sign maintenance	40
Chapter 3.	Parking.....	43
3.1	Considering parking users in design (human factors)	43

- 3.2 Signs and wayfinding 44
 - 3.2.1 Planning for parking signing..... 44
 - 3.2.2 Communicating parking options..... 45
 - 3.2.3 Connecting parking and terminals 46
- 3.3 Sign categories 46
 - 3.3.1 Directional signs 46
 - 3.3.2 Identification signs..... 47
 - 3.3.3 Informational signs 48
 - 3.3.4 Regulatory signs 50
 - 3.3.5 Unique situations and systems 50
- 3.4 Sign design elements 51
 - 3.4.1 Terminology..... 51
 - 3.4.2 Symbology 52
 - 3.4.3 Typography 52
 - 3.4.4 Arrows 53
 - 3.4.5 Color 53
- 3.5 Sign locations, structures, materials and safety 53
 - 3.5.1 Sign locations..... 53
 - 3.5.2 Illumination options 53
 - 3.5.3 Sign structures..... 54
 - 3.5.4 Pedestrian safety considerations 54
- 3.6 Sign maintenance 55
- 3.7 Accessibility 56
 - 3.7.1 Audit of elements..... 56
- Chapter 4. Curbside and Ground Transportation..... 59**
 - 4.1 Planning for curbside signing 59
 - 4.2 Signing areas 60
 - 4.2.1 Departures 61
 - 4.2.2 Arrivals 62
 - 4.2.3 Ground transportation 62
 - 4.2.4 Passengers arriving/departing the airport..... 63
 - 4.2.5 External versus internal rail systems..... 64
 - 4.2.6 Technology 64
 - 4.2.7 Accessibility..... 64
 - 4.3 Sign design elements 65
 - 4.3.1 Terminology..... 65
 - 4.3.2 Symbology 65
 - 4.3.3 Typography 66
 - 4.3.4 Arrows 66
 - 4.3.5 Color 66
 - 4.4 Sign locations, structures, materials and safety 66
 - 4.4.1 Sign locations..... 66
 - 4.4.2 Illumination options for night-time visibility 67
 - 4.4.3 Structures and mounting 67
 - 4.4.4 Safety 68
 - 4.5 Sign maintenance 68
 - 4.6 Accessibility 69
 - 4.6.1 Accessibility audit..... 69
- Chapter 5. Terminal 71**
 - 5.1 Wayfinding philosophy and principles..... 71

5.1.1	Wayfinding analysis and checklist.....	71
5.1.2	Architectural complexity	76
5.2	Considering terminal users in design (human factors)	77
5.2.1	Terminal users categories	77
5.2.2	Terminal user tasks and information requirements.....	77
5.2.3	Meeting point for non-travelling visitors.....	78
5.2.4	Visibility Index (VI)	78
5.3	Signs and wayfinding	79
5.3.1	Departures and arrivals sequence.....	79
5.3.2	Transit – internal rail system versus external	79
5.3.3	Security Screening Checkpoints (SSCP)	80
5.4	Sign categories	80
5.4.1	Informational	80
5.4.2	Directional	83
5.4.3	Identification.....	83
5.4.4	Regulatory.....	83
5.5	Sign design elements	83
5.5.1	Terminology.....	83
5.5.2	Symbology.....	86
5.5.3	Typography.....	97
5.5.4	Arrows	101
5.5.5	Color	106
5.6	Sign locations, databases, illumination, materials, and safety.....	110
5.6.1	Sign locations.....	110
5.6.2	Information databases	114
5.6.3	Illumination.....	115
5.6.4	Mounting.....	116
5.6.5	Safety	116
5.7	Sign maintenance	116
5.8	Accessibility	117
5.8.1	Wayfinding for the blind and visually impaired	117
5.8.2	Analyzing pedestrian airport wayfinding.....	118
5.8.3	Managing codes and code compliance	120
5.8.4	Types of visual impairments.....	120
5.8.5	Strategies for the blind.....	121
5.9	Accessibility audit	128
5.9.1	Strategy	128
Chapter 6.	Technology.....	131
6.1	Overview	131
6.1.1	Importance of sign manager knowledge of systems	131
6.1.2	Application.....	131
6.1.3	Wayfinding planning process	132
6.1.4	Integration with entire sign system	132
6.1.5	Integration with static signs	132
6.2	Systems and visual displays	133
6.2.1	Multiple User Flight Information Display System (MUFIDS) and Baggage Information Displays (BIDs).....	133
6.2.2	Concourse-specific versus airport-wide MUFIDS displays.....	133
6.2.3	Key decision points.....	133
6.2.4	Content and display goals	134

6.2.5	Display mounting options	135
6.2.6	Readability of text for FIDs	135
6.2.7	Departure versus arrivals MUFIDS information	135
6.2.8	Visual paging	136
6.2.9	Integration with MUFIDS	136
6.2.10	Ticketing area displays	136
6.2.11	Dedicated ticket counter positions	137
6.2.12	Common-use ticket counter positions.....	137
6.2.13	Common Use Self Service (CUSS) kiosks	137
6.3	Departure area displays	137
6.3.1	Standards for gate podium displays	138
6.3.2	Multi-airline commuter gates.....	138
6.3.3	Dedicated commuter gates.....	138
6.3.4	Multi-airline domestic gates	139
6.3.5	Dedicated domestic gates.....	139
6.3.6	Multi-airline international gates.....	139
6.3.7	Dedicated international gates.....	139
6.3.8	Jet bridge door signage	139
6.3.9	Baggage Information Display Systems (BIDs).....	139
6.3.10	Dynamic directories	140
6.3.11	Interactive systems.....	140
6.3.12	Flight information kiosks.....	140
6.4	Design elements	141
6.4.1	Regulatory requirements – ADA and display systems	141
6.4.2	Sign lighting controllers (dimming, groups of signs)	141
6.5	Open system architecture	141
6.5.1	System testing	141
Chapter 7.	Required Regulatory and Information Signs	143
7.1	United States Code	143
7.2	Code of Federal Regulations (CFR)	143
7.3	Federal agencies	143
7.3.1	Department of Homeland Security (DHS).....	143
7.3.2	Federal Highway Administration (FHWA)	144
7.3.3	Department of Justice	144
7.4	Signage requirements	144
7.5	Current standards.....	144
7.6	State and local requirements.....	145
7.7	Other codes and standards	145
Appendix A. Evaluation Forms		147
Appendix B. Parking — Basic Mounting Types		153
Appendix C. Curbside — Basic Mounting Types		159
Appendix D. Terminals — Basic Mounting Types		163
Appendix E. Roadway Signing — Additional Resources		167
Appendix F. Related Federal Regulatory and Informational Signage Requirements		169
Appendix G. Acronym List.....		189
Appendix H. References		193

List of Figures

Figure 1-1. Typical circulation tree for departing passengers.....	6
Figure 1-2. Circulation analysis diagram: Departures Level 2 - Terminal B at San Jose International Airport (SJC).....	7
Figure 1-3. Circulation analysis diagram: Arrivals Level 2 - Terminal B at SJC.....	8
Figure 1-4. An example of the connector model at John F. Kennedy International Airport (JFK)	14
Figure 1-5. An example of the districts model at Atlanta where the concourses are divided into separate zones	15
Figure 1-6. An example of a streets model	15
Figure 1-7. Each origination point within the airport must connect the wayfinding system	17
Figure 1-8. Exploded axonometric flow diagram for arriving passengers.....	18
Figure 2-1. Color coding example from the 2009 MUTCD1 Figure 2D-1	27
Figure 2-2. Typical arrow shapes from MUTCD Figure 2D-2	30
Figure 2-3. Stages of mental processing and reaction to road signs illustrating MUTCD Section 2A.13..	33
Figure 3-1. Overhead directional signs	47
Figure 3-2. Forms of the customary “Parking” sign	52
Figure 5-1. Typical sign grid study.....	74
Figure 5-2. Examples of the same symbol used in various configurations.....	89
Figure 5-3. Example grid used to establish visual consistency for placement of arrows, symbols and messages	90
Figure 5-4. Current aviation symbol standards	92
Figure 5-5. Examples illustrating aspects required for a legible typeface	97
Figure 5-6. Examples illustrating preferred characteristics for legible typefaces	98
Figure 5-7. Fonts.....	98
Figure 5-8. Letter spacing examples (aka kerning).....	99
Figure 5-9. Word spacing example.....	99
Figure 5-10. Line spacing examples	100
Figure 5-11. Spacing example of relationship between an arrow, symbol, and message	100
Figure 5-12. Relational spacing within a sign grid with multiple messages, symbols, and arrow	101
Figure 5-13. The Montreal Expo arrow style.....	102
Figure 5-14. Some arrow application practices for typical sign location conditions	103
Figure 5-15. Vertical circulation arrows	104
Figure 5-16. Potential Pitfalls with angled arrows.....	105
Figure 5-17. Eliminating angled arrows	106
Figure 5-18. The percentage of area a colored sign has to exceed a white sign to be equally conspicuous is shown here	107
Figure 5-19. Color contrast.....	108
Figure 5-20. Best color combinations used in lettering of outdoor advertising displays ranked in order of legibility of letters from a distance	109
Figure 5-21. Minimum sign height	111
Figure 5-22. Typical example of the X axis wayfinding information zone	112
Figure 5-23. Mounting heights	113
Figure 5-24. Mounting heights for people in wheelchairs	113
Figure 5-25. Approved fonts for the ADA.....	122
Figure 5-26. Sign height diagram	122
Figure 5-27. Sign location diagram.....	123
Figure 5-28. Accessibility symbols.....	125
Figure 5-29. Symbol sign.....	126
Figure 5-30. A sample of required documentations for accessible tactile signs	130

List of Tables

Table 2-1. Example of trip purpose and travel path analysis	26
Table 2-2. MUTCD's Table 2A-4 "Use of Sign Shapes"	33
Table 3-1. Sample parking signage checklist.....	44
Table 3-2. Why airport parking terminology can be confusing	52
Table 3-3. Possible treatments to enhance pedestrian safety	55
Table 4-1. Curbside signage checklist sample	59
Table 4-2. Curbside users and associated vehicle types	60
Table 4-3. Possible treatments to enhance pedestrian safety	68
Table 5-1. Wayfinding experience to the gate	118
Table 5-2. Wayfinding experience from the gate.....	120
Table 5-3. Americans with Disabilities Act Accessibility Standards (ADAAS) legibility chart.....	124