




---

# Contents

---

<i>About the Authors</i>	ix
<i>Preface to the Second Edition</i>	xi
<i>Preface to the First Edition</i>	xiii
<b>1 Introduction</b>	1
1.1 General	1
1.1.1 Purpose of this book	2
1.1.2 Guidance	4
1.1.3 Construction planning and programming	5
1.2 Construction delays	6
1.2.1 Identifying delays	6
1.2.2 Analysing construction delays	7
1.2.3 Delay claim life cycle	9
1.3 Burning issues in delay analysis	10
1.4 Presentation and case study	11
<b>2 Construction Programmes</b>	13
2.1 Introduction	13
2.1.1 Planning, programming and project controls	13
2.1.2 Elements of a successful project	15
2.2 Planning and programming	16
2.2.1 Project planning	17
2.2.2 Work breakdown structure	18
2.3 CPM programming techniques: the fundamentals	21
2.3.1 Activity durations	22
2.3.2 Activity relationships	24
2.3.3 Event date calculations	28
2.3.4 Forward pass	30
2.3.5 Backward pass	32
2.3.6 Total float	34
2.3.7 Constraints	37
2.4 Baseline validation	38
2.4.1 Joint baseline review	38
2.4.2 Programme approval	38
2.4.3 The project baseline	41

2.5	Other planning techniques	41
2.5.1	PERT – Project Evaluation and Review Technique	41
2.5.2	Gantt charts (bar charts)	43
2.5.3	Line of balance	45
2.5.4	Critical chain method/theory of constraints	47
2.6	Why use CPM planning or scheduling techniques?	49
2.6.1	Project management	49
2.6.2	As-planned programmes	50
2.7	Project controls and the project control cycle	51
2.7.1	Progress monitoring	52
2.7.2	Process and analyse information – Earned Value Method	54
2.7.3	The cost and schedule performance curves	56
2.7.4	Time control	58
2.7.5	Programme updates	58
2.8	Records, records, records ...	64
2.8.1	Electronic records: management and storage	66
2.8.2	Electronic records in practice	67
2.8.3	Document controls	68
2.9	Predatory programming practices	71
2.10	Guidance	72
<b>3</b>	<b>Identification of Construction Delays</b>	<b>73</b>
3.1	Establishing a basis for identifying delay	73
3.1.1	General requirements	74
3.1.2	Validation of an as-planned programme	75
3.2	Factual evidence and as-built programmes	77
3.2.1	As-built programme preparation	78
3.2.2	Summary	86
3.3	Identification of delay events	86
3.3.1	Delay identification	87
3.3.2	Recording delays	89
3.4	Identification and analysis of disruption	92
3.4.1	Disruption and delay	92
3.4.2	Calculating disruption	94
3.4.3	Establishing cause	95
3.4.4	Total cost claims/global claims	97
3.4.5	Measured mile	99
3.4.6	Graphical presentation	103
3.4.7	Summary	109
<b>4</b>	<b>Analysis of Construction Delays</b>	<b>111</b>
4.1	Introduction	111
4.1.1	The use of CPM techniques	111
4.1.2	Project planning software	113
4.1.3	Identifying delays: cause or effect?	115

## Contents

vii

4.2	Selection criteria and guidance	117
4.2.1	The SCL Delay and Disruption Protocol	118
4.2.2	The core statements of principle	120
4.2.3	AACEI Recommended Practice No. 29R-03: <i>Forensic Schedule Analysis</i>	124
4.2.4	Which technique to use under given circumstances	131
4.3	Summary	132
<b>5</b>	<b>Delay Analysis Techniques</b>	<b>135</b>
5.1	Introduction to delay analysis techniques	135
5.1.1	Additive methods of delay analysis	137
5.1.2	Impacted as-planned	137
5.1.3	Time impact analysis	142
5.1.4	Collapsed as-built	151
5.1.5	As-built based methods of analysis	159
5.1.6	Total time assessments (observational/static/gross)	162
5.1.7	As-planned versus as-built windows analysis	169
5.1.8	Contemporaneous windows analysis	172
5.1.9	Month-to-month update analysis	175
5.2	Summary	180
<b>6</b>	<b>Problematic Issues</b>	<b>183</b>
6.1	Introduction	183
6.2	Float and delay claims	183
6.2.1	General definitions: what is 'float'?	183
6.2.2	How float is used	184
6.2.3	Float loss and the impact	187
6.2.4	Measurement of float loss	188
6.2.5	Who owns the float?	190
6.3	Concurrency	194
6.3.1	Definitions	195
6.3.2	Delay analysis and Concurrency	196
6.3.3	SCL Delay and Disruption Protocol	205
6.3.4	Delay scenarios	205
6.3.5	Common questions	208
6.3.6	Experience and common sense	209
6.3.7	The concept of pacing	210
6.4	Programme approvals and onerous specifications	211
6.4.1	Programme requirements, format and compliance	211
6.4.2	Approval or acceptance of construction programme	217
6.5	Acceleration and mitigation	218
6.5.1	Mitigation	218
6.5.2	Acceleration	219
6.5.3	Contractors' right to early completion	221



<b>7 Effective Presentation of Delay Analysis</b>	223
7.1 Introduction	223
7.2 Case study: airport terminal expansion	223
7.2.1 Initial analysis by party-appointed planning experts	224
7.2.2 Using time impact analysis for prolongation	227
7.2.3 Tribunal planning expert's contemporaneous approach	228
7.2.4 Runway Extension: are delays to the runway extension relevant?	230
7.2.5 Terminal Building: are delays to the terminal building relevant?	231
7.3 Float mapping: approach and methodology	231
7.3.1 Extracting float values	233
7.3.2 Creating a float map	233
7.3.3 Identify driving activities	236
7.3.4 As-built critical path	237
7.4 Demonstrating acceleration	246
7.5 Presentation skills: demonstrative evidence	248
7.5.1 Demonstration	250
7.5.2 Reconstruction	251
7.5.3 Weather	252
7.5.4 Summary	252
<i>Appendix</i>	255
<i>Glossary</i>	259
<i>Table of Cases</i>	267
<i>Index</i>	271



<http://www.pbookshop.com>

