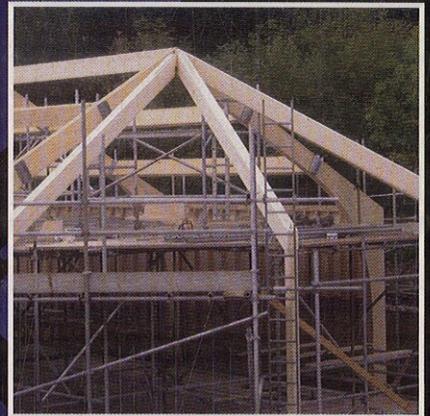
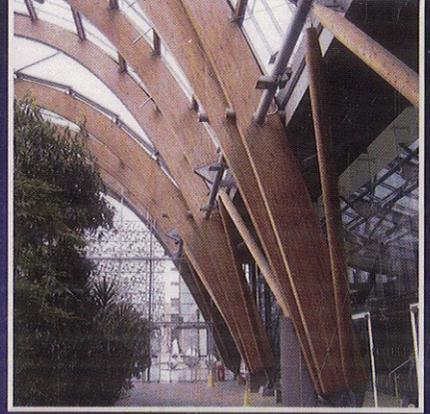


CONSTRUCTION PRACTICE

BRIAN COOKE



Contents

Introduction		vii
Acknowledgements		viii
CHAPTER ONE	ESTABLISHING THE SITE	1
	1.1 Procedure prior to commencing a project	3
	1.2 Site layout planning considerations	5
	1.3 Location of tower cranes	7
	1.4 Site signage examples	10
	1.5 Site accommodation situations	12
	1.6 Site layout planning examples	14
	1.7 Procedure when visiting a project	18
	1.8 Site induction procedures	19
	1.9 contract preliminaries	21
	1.10 Site logistics	26
CHAPTER TWO	MATERIALS MANAGEMENT	33
	2.1 Responsibilities for material management	35
	2.2 Creating waste streams	37
	2.3 Good site practice observations	38
	2.4 Bad site practice observations	41
	2.5 Use of skips on site – waste separation practices	44
	2.6 The waste disposal process	47
CHAPTER THREE	DEMOLITION AND EXCAVATION	51
	3.1 Demolition methods	53
	3.2 Demolition case studies	54
	3.3 Method statement extract for demolition works	60
	3.4 Method statements – format	62
	3.5 Excavation work – excavator types	65
	3.6 Excavation work case studies	70
CHAPTER FOUR	FOUNDATIONS AND PILING	79
	4.1 Foundation types – strip foundations	81
	4.2 Foundation types – pad foundations	88
	4.3 Foundation types – raft foundations	93
	4.4 Piling in construction	102

4.5	Displacement piles—precast driven systems	105
4.6	Replacement piles—continuous flight augered bored piling system	113
4.7	Ground treatment – vibro replacement techniques	116
CHAPTER FIVE	EARTH SUPPORT AND BASEMENTS	121
5.1	Earth support considerations	123
5.2	Earth support to service trenches and drainage	124
5.3	Sheet piling support principles	126
5.4	Use of steel H piles with precast infill panels	129
5.5	Earth support – battered excavation	133
5.6	Sequence of forming a bored pile wall	135
5.7	Groundwater control considerations	140
5.8	Dewatering case study	140
5.9	Basement construction methods	146
5.10	Precast concrete basement	148
5.11	Precast underground storage tank	151
CHAPTER SIX	HANDLING CONCRETE	159
6.1	Handling concrete	161
6.2	Identification of hazards	162
6.3	Concrete placing by direct discharge	163
6.4	Concrete placing by excavator	164
6.5	Concrete placing by crane and skips	166
6.6	Concrete placing via wet hoppers	170
6.7	Concrete pumping	171
6.8	Basement slab case study	177
6.9	Large floor slab pour	182
CHAPTER SEVEN	BUILDING FRAMES	185
7.1	Building frame types	187
7.2	In-situ concrete frame with downstand beams	189
7.3	Flat slab construction	191
7.4	Crosswall construction	196
7.5	Crosswall construction – Eastlands project	203
CHAPTER EIGHT	STEEL-FRAMED STRUCTURES AND ROOFS	207
8.1	Introduction to skeleton frames	209
8.2	Steel portal frames	212
8.3	Cellular beam frames	216
8.4	Space frames	226
8.5	Arched tubular roof	230
8.6	Cable-stayed buildings	235
8.7	Cable-stayed roof	239
8.8	Bowstring roof to entrance foyer	243

	8.9	Glulam portal frame	245
	8.10	Glulam portal frame – Sheffield winter gardens project	251
CHAPTER NINE		FORMWORK IN CONSTRUCTION	253
	9.1	Formwork to foundations	255
	9.2	Formwork to walls	256
	9.3	Formwork to columns	262
	9.4	Formwork to floor slabs	264
	9.5	Formwork for staircase tower cores	266
CHAPTER TEN		FLOOR CONSTRUCTION	273
	10.1	Beam and block floors	275
	10.2	Metal deck floors	280
	10.3	Precast concrete floors	282
	10.4	Plank floors	286
CHAPTER ELEVEN		CLADDING BUILDINGS	289
	11.1	Cladding buildings	291
	11.2	Cladding case studies	293
		Case study 1 – Spinningfields project	293
		Case study 2 – Four-storey office block	296
		Case study 3 – Stockport College project	297
		Case study 4 – Twelve-storey residential block – Liverpool	298
		Case study 5 – Eleven-storey hotel project	304
	11.3	Structural insulated panels	307
	11.4	SIP – McVeigh Insulations	312
CHAPTER TWELVE		TIMBER-FRAMED CONSTRUCTION	315
	12.1	Timber-framed construction	317
	12.2	Site-build platform frame	322
	12.3	Small panel platform frame	325
	12.4	Timber frame construction detail	328
	12.5	Large panel platform frame	332
	12.6	Structural insulated panels for housing	335
	12.7	SIP build project – Cyprus	338
CHAPTER THIRTEEN		DOMESTIC HOUSING CONSTRUCTION	343
	13.1	Erection of a pair of semi-detached houses	345
	13.2	Application of the Building Regulations	346
	13.3	Construction sequence and programme	350
	13.4	Sequence 1 – foundations and ground floor	352
	13.5	Sequence 2 – external wall construction	355
	13.6	Sequence 3 – first floor construction	360
	13.7	Sequence 4 – external walls: first floor to second floor	363
	13.8	Sequence 5 – second floor construction	364

vi Contents

13.9	Sequence 6 – gable wall construction	365
13.10	Sequence 7 – roof construction	366
13.11	Sequence 8 – roof tiling	370
13.12	Sequence 9 – internal areas	371
13.13	Domestic stair construction	375
13.14	Forms of roof construction	377
13.15	Gabled roof construction	378
13.16	Formation of a manhole base and connections	382
13.17	Insulating a room	384
	Other publications	387
	Website references	389