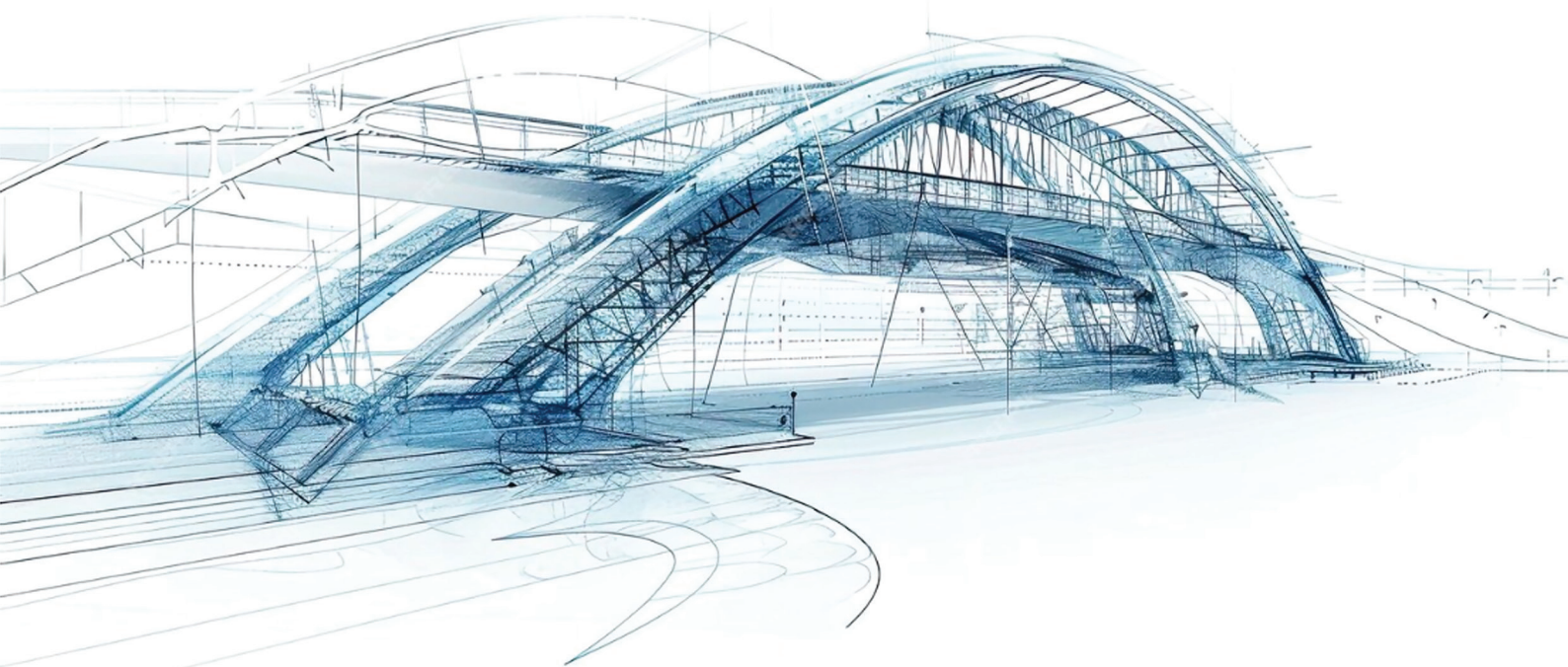


Bridges:
A Challenge and an Opportunity for Engineering Creativity
Case Studies and Construction Innovations from Experience



Dragan Majkic, P.Eng., M.Sc.

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Academic mind

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I dedicate this book to my wife Branka, who, throughout all these years, has patiently and silently witnessed the making of every one of these bridges.

Contents

Foreword by Nigel Brown 18

Foreword 19

1 Lions Gate Bridge, Vancouver, BC, Canada 21

- 1.1 Overview of the Bridge Type and Its Current Condition 24
- 1.2 Specification of the type of inspection(s) that needed to be carried out 24
- 1.3 Primary Components of the Bridge to be Inspected 25
- 1.4 Construction Sequence 26
 - 1.4.1 Sector-Wise Categorization 27
 - 1.4.2 Deck segments of 10m in length at the Stanley Park cable bent: 28
 - 1.4.3 Preparatory Repair Work 28
 - 1.4.4 Outline of Erection Procedure 29
 - 1.4.5 Primary Characteristics of the Erection Equipment 30
- 1.5 Winglet Pairs to Improve Stability 36
- 1.6 Main and North Span Bridge Deck Erection Procedure 42
- 1.7 South Span Bridge Deck Erection Procedure 50

2 Coal River Bridge, BC Canada 63

- 2.1 Introduction 65
- 2.2 Construction method 65
- 2.3 Physical Properties of Ice and Fresh Water 72
- 2.4 Mechanical Properties of Freshwater Ice 72

3 Kikomun Bridge, BC Canada 75

- 3.1 Introduction 76
- 3.2 Raising of the Piers – Pre-Launching Work 77
- 3.3 De-Launch/Launch 78

4 More Canyon Bridge, BC Canada 85

- 4.1 Introduction 86
- 4.2 Proposed Construction Method 87
- 4.3 Skyline Installation in Canyon Bridge Construction 90
- 4.4 Main Cable Installation 92
- 4.5 Catwalks and Pre-Loading 92
- 4.6 Launch Girder and Strut Installation 93
- 4.7 Wind Considerations During Erection 94
- 4.8 Main Girder Launching 97
- 4.9 Hinge Utilization 98
- 4.10 Launch Modelling and Deflection Control 100
- 4.11 Dynamic Behavior 106
- 4.12 Wind Tunnel Testing 106
- 4.13 Live Load and Rolling Stock Analysis 107
- 4.14 Post-Construction Load Comparison 108

5 Cameron Street Bridge, Prince George, BC 111

- 5.1 Introduction 112
- 5.2 Construction Execution Strategy 112

6	Holt Creek Bridge, Vancouver Island, BC	129
6.1	Project Overview and Method Selection	130
6.2	Assessment of Existing Timber Structure	133
6.3	Construction Sequence and Structural Adaptation	133
6.4	Permanent Abutment Evaluation and Modifications	133
6.5	Engineering Innovation and Technological Advancement	134
6.6	Conclusion	146
7	Self – Anchored Suspension (SAS) Bridge , San Francisco, CA, USA	147
7.1	Introduction	148
7.2	Lifting Frame	153
7.3	Pushing Frame	157
7.4	Erection of Cross Beams	159
8	Stonecutters Bridge Back Span, Hong Kong	165
8.1	Introduction	166
8.2	Geometry and Structural Configuration of the Back Span	166
8.3	Falsework System for Concrete Back Span Construction	170
9	Holdings Bridge, BC, Canada	177
9.1	Introduction	178
9.2	Construction Method	178
10	Walterdale Bridge, Edmonton, AB, Canada.	185
10.1	Introduction	186
10.2	Structural Description	187
10.3	Arch Installation Procedure	192
10.4	Arch Installation	199
10.5	Target Geometry	203
10.6	Locked In Stresses	205
10.7	Deck And Sup Installation and Hanger Tuning	206
10.8	Target Geometry and Fine-Tuning Tensions	207
11	Broadway Subway Project -Temporary Traffic Deck	217
11.1	Introduction	218
11.2	Traffic Continuity and Design Objectives	219
11.3	Temporary Deck Structural System	220
11.4	Excavation Support and Shoring Integration	221
11.5	Construction Sequence	222
11.6	Monitoring and Strut Force Measurement	224
11.7	Utility Protection	228
11.8	Demolition, Reuse, and Sustainability	229
11.9	Conclusion	232
12	Simon Fraser Bridge, Prince Georg, BC, Canada	233
12.1	Description of the Bridge Structure	234
12.2	Construction Method	234

13	Peace River Pipeline Bridge, BC, Canada	247
13.1	Introduction	248
13.2	Computer Model and Simulation of Construction	249
13.3	Some interesting Bridge Detail	250
13.4	Proposed Method of Construction of Bridges	254
13.5	Wind Study	262
13.6	Topographical Model Studies	262
13.7	Sectional Model Tests Model 1:30	262
14	Slims River Bridge, Yukon, Canada	265
14.1	Introduction	266
14.2	Bridge launching	266
15	Yukon Pedestrian Bridge, Yukon, Canada	275
15.1	Introduction	276
15.2	Structure description	276
15.3	Construction method	276
16	Second Narrows Bridge, Vancouver, BC, Canada	281
16.1	Seismic Assessment and Retrofit of Bridges	282
16.2	Case Study: Second Narrows Bridge Seismic Upgrade	282
16.3	Brace Replacement Under Live Traffic Conditions:	283
16.4	Engineering Methods and Structural Control	284
16.5	Bearing Replacement and Corroded Pin Removal	292
17	Thompson River Aerial Crossing, BC, Canada	297
17.1	Introduction	298
17.2	Assessment of the Thompson River Aerial Crossing	298
17.3	Sensitivity Analysis for Validation of the SAP2000 Model	301
17.4	Structural Analysis of the Thompson River Aerial Crossing	302
17.5	Analysis Methodology	304
17.6	Analysis Results	304
17.7	Ice and Wind Load Combinations	309
17.8	Tensioning Procedure	309
17.9	Calculated Cable Forces	310
17.10	Design Check	312
	Reference	321
	Tables	
	Table 2-1 Comparative values obtained from laboratory testing of ice by Gerard (1990)	74
	Table 4-1 Summary of the Demand/Capacity ratio of some of the critical structural members of the bridge	110
	Table 13-1 Definition of geometric control during execution	256
	Table 13-2 Demand over capacity for main structural elements	263
	Table 17-1 Cable Diameters and WLL (Lamb and McManus 1988)	303
	Table 17-2 Ice Loading	303
	Table 17-3 Wind Loading	303
	Table 17-4 Pipeline Results for Axial Force, Shear, and Moment at Multiple Temperatures	307
	Table 17-5 Maximum and Minimum Cable Tensions for Dead Load Only	309

Table 17-6 Measured Versus Calculated Cable Tensions	313
Table 17-7 Cable Tensions Before and After Slackening of Diagonal Stiffeners	313
Table 17-8 Measured and Expected Cable Tensions Before and After Diagonal Stiffener Slackening	314

Figures

Figure 1-1 Lions Gate Bridge - North Tower	22
Figure 1-2 General arrangement	22
Figure 1-3 Night view of Lions Gate Bridge (Source: Division of Endocrinology Department of Medicine)	23
Figure 1-4 Typical section for existing bridge Typical section for new bridge	23
Figure 1-5 Key points on the bridge requiring survey	24
Figure 1-6 Suspension bridge components (Iowa dot 2015)	25
Figure 1-7 Sector A region for construction sequencing - 20m segments	27
Figure 1-8 Sector B region for construction sequencing - 10m segments	28
Figure 1-9 Sector C region for construction sequencing - last segment	28
Figure 1-10 Stiffening truss diagonals preparing for deck segments replacement	29
Figure 1-11 The principle of main cable dehumidification	30
Figure 1-12 Main span – cutting and controlled lowering existing segment utilizing a Jacking Traveler system	31
Figure 1-13 Jacking traveler for north and main span general arrangement – Elevation	32
Figure 1-14 Jacking traveler Jacking traveler for north and main span general arrangement – Plan	32
Figure 1-15 Jacking traveler during construction at first North segment	33
Figure 1-16 Jacking travelers positioned for removal of the second North segment	34
Figure 1-17 Removal of existing and installation of new bridge segment using jacking traveler	34
Figure 1-18 Jacking traveler and shear flipper position during the traveler moving and lifting	35
Figure 1-19 Position of continuity Link for connecting new and existing segments	36
Figure 1-20 General arrangement of winglet pair used as work platform	36
Figure 1-21 Winglet pair installation Zone Along the Main Span	37
Figure 1-22 North main tower elevation - during lowering exist. Panel 12	37
Figure 1-23 Hydraulic system for continuity link	38
Figure 1-24 Plan view of wind-induced displacements during Stage CN17-15 (wind speed 112 km/h, gust factor 2.0).	38
Figure 1-25 Continuity link	38
Figure 1-26 Continuity link - FEM model	39
Figure 1-27 Adjustable hanger support detail and presentation of bridge deformation at erection front	40
Figure 1-28 Adjustable hanger support detail and presentation of bridge deformation at erection front	40
Figure 1-29 Hanger support assembly	41
Figure 1-30 Step 6 - The existing truss segment has been detached from the bridge structure – View from South	471
Figure 1-31 Lions Gate Bridge – Main span construction photos 1	47
Figure 1-32 Lions Gate Bridge – Main span construction photos 2	48
Figure 1-33 Lions Gate Bridge – Main span construction photos 3	49
Figure 1-34 Lions Gate Bridge – South span construction Photos 1	50
Figure 1-35 Lions Gate Bridge – South span construction photos 2	51
Figure 1-36 South Side (Stanley Park) jacking traveler	52
Figure 1-37 Plan view of panel rotation schematic	52
Figure 1-38 South Side Span - Stanley Park side	53
Figure 1-39 Transporter layout for removal existing and installation of new bridge segments	57
Figure 1-40 South Side Jacking Travelers – looking from South	58
Figure 1-41 Jacking traveler positions for removal of the final segment removable using jacking travelers	58
Figure 1-42 Stage CS15 – Deck replacement procedure – part print	59
Figure 1-43 Example of Load verification – Input Loading data – Part print for Stage CN25	60
Figure 1-44 Lions Gate Bridge in relation to Vancouver city and harbor (Source: Wikipedia)	61
Figure 1-45 Lions Gate Bridge in clouds (Source: Ministry of Transportation and Transit)	61
Figure 2-1 Coal River Bridge along the Alaska Highway in BC	64
Figure 2-2 General arrangement	64
Figure 2-3 Completed bridge view from West	65

Figure 2-4 Arch scaffolding supported on ice and geometry temperature adjustment	66
Figure 2-5 Scaffolding supported on ice during installation	67
Figure 2-6 Building ice by pumping river water through pre-drill holes in ice	67
Figure 2-7 Prepared ice surface capable of supporting the bridge scaffolding load	68
Figure 2-8 Building scaffolding on prepared ice support surface	68
Figure 2-9 Scaffolding supported on naturally formed ice, 1.5–1.8 m thick (green mark)	69
Figure 2-10: Site work on arch splice	69
Figure 2-11 Detail for increasing erection tolerance for arch segment	70
Figure 2-12 Erected bridge steel arch structure	70
Figure 2-13 Erection precast partial deck and casting concrete deck	71
Figure 2-14 Completed bridge	71
Figure 3-1 Old Acrow panel bridge superstructure	76
Figure 3-2 New Kikomun Bridge	76
Figure 3-3 Old Acrow double-double reinforced bridge general arrangement and typical section	77
Figure 3-4 Dismantling wood deck	78
Figure 3-5 Pre-launch jacking procedure apparatus	79
Figure 3-6 Pre-launch jacking stages	79
Figure 3-7 Temporary launching splice and sliding support for new girders	80
Figure 3-8 Installation link connection between new and old structure - rigid connection	81
Figure 3-9 Link connection – erection	81
Figure 3-10 Launching support geometry - relationship between new and old structure	81
Figure 3-11 De-launch/launch	82
Figure 3-12 De-launching/ launch computer simulation	82
Figure 3-13 View on bridge during de-launching	82
Figure 3-14 Erection stage 9	83
Figure 3-15 De-launch/launch pulling system	83
Figure 3-16 De-launch pulling system	84
Figure 3-17 Construction team	84
Figure 4-1 More Canyon Bridge - General arrangement	86
Figure 4-2 General arrangement - Plan end elevation.	87
Figure 4-3 Final bridge geometry	88
Figure 4-4 Main bridge structural elements	88
Figure 4-5 Typical cross section	89
Figure 4-6 Clamp connection between strut and main cable system	89
Figure 4-7 Installation of main cable by skyline	90
Figure 4-8 Initial main cable force and deformation	90
Figure 4-9 Skyline anatomy in logging application	91
Figure 4-10 Main cable re-shaping via preload application to increase cable axial stiffness	92
Figure 4-11 Catwalk constructed after main cable installed	93
Figure 4-12 Erection launching beam and struts by skyline	94
Figure 4-13 Calculated cable force and elongation and reaction force during erection segment Stage A7-6	95
Figure 4-14 Bridge wind deformation during construction	95
Figure 4-15 Temporary wind bracing cable during erection	96
Figure 4-16 Install wind cable along upper strut frame	96
Figure 4-17 Launch main girder over previously erected launch girder	96
Figure 4-18 Launching 2.0m main bridge girder over installed launch girder	97
Figure 4-19 Main bridge girder launching hinge	98
Figure 4-20 Investigation of the structural response of the launching platform without hinge incorporation.	99
Figure 4-21 Investigation of the structural response of the launching platform with using hinge incorporation.	99
Figure 4-22 Computer simulation launching main bridge girder with three hinges	99
Figure 4-23 Evolution of deflections at key structural locations during the launching process	100
Figure 4-24 Moment in main girder during launching	101
Figure 4-25 Anchor – Section A 1/4	102
Figure 4-26 Anchor - Plan 2/4	102
Figure 4-27 Anchor detail – rendering 3/4	103

Figure 4-28 Anchor detail – main cable tensioning 4/4	103
Figure 4-29 Preloading impact on deformation in quaters and mid span during launching	104
Figure 4-30 Main cable tension force during construction	105
Figure 4-31 Deformation of main cable during construction & in service load	105
Figure 4-32 Wind tunnel testing - topographical model studies - Model 1:3000	106
Figure 4-33 Sectional model tests - Model 1:30	107
Figure 4-34 Rollingstock analysis	91
Figure 4-35 Post-construction load comparison (Force [kN, kNm]; Deformations [mm])	107
Figure 4-36 Sensitivity analysis graphs	108
Figure 4-37 Main cable tension sensitivity for several parameters (Deformation, Main cable E, Dead Load $\pm 5\%$...)	109
Figure 5-1 Howe truss bridge – Typical detail	112
Figure 5-2: Cameron Street Bridge	112
Figure 5-3 Cameron Street Bridge	113
Figure 5-4 General arrangement of existing Howe bridge	114
Figure 5-5 Existing bridge section	114
Figure 5-6 Elevation of new bridge	115
Figure 5-7 New bridge section	115
Figure 5-8 General arrangement launching working platform and new bridge	115
Figure 5-9 Advancing demolition girder 1/3 – Phase #5 - View from inside of bridge	118
Figure 5-10 Advancing demolition girder 3/3 – Phase #5 – View from inside of bridge	118
Figure 5-11 Advancing demolition girder 2/3 – Phase #5 – Side view	119
Figure 5-12 View on working wooden platform installed over launched demolition girder – Phase# 6	120
Figure 5-13 Pier cap modifications and slider location	122
Figure 5-14 Demolishing Howe trass span – Phase #11	123
Figure 5-15 Completed demolishing Howe truss in one span. Demolition girder ready to advancing towards to next span	123
Figure 5-16 Working platform at location of first span	127
Figure 5-17 The work platform has reached span four; the bridge launch is complete to span three	127
Figure 5-18 Cameron Street Bridge completed	127
Figure 6-1 Old bridge side view	130
Figure 6-2 Old bridge bird view	131
Figure 6-3 New pedestrian bridge plan	131
Figure 6-4 New pedestrian bridge elevation	132
Figure 6-5 New bridge – Typical section	132
Figure 6-6 Launching girders of new bridge over existing wooden bridge	132
Figure 6-7 View on existing wood structure from bottom 1/2	134
Figure 6-8 View on existing wood structure from bottom 2/2	135
Figure 6-9 Bent reaction during launching	135
Figure 6-10 view on trolley and portal frame	141
Figure 6-11 Portal frame	141
Figure 6-12 Trolly 1/3	142
Figure 6-13 Trolly view from top 2/3	142
Figure 6-14 Trolly - view from bottom 3/3	143
Figure 6-15 Launching new bridge girder assembly over existing bridge 1/2	143
Figure 6-16 Launching new bridge girder assembly over existing bridge 2/2	144
Figure 6-17 Bridge girders lifted after launching (Stage 10)	144
Figure 6-18 Removal of the existing superstructure utilizing the newly erected girders as temporary gantry beams 1/3	145
Figure 6-19 Removal of the existing superstructure utilizing the newly erected girders as temporary gantry beams 2/3	145
Figure 6-20 Removal of the existing superstructure utilizing the newly erected girders as temporary gantry beams 3/3	146
Figure 6-21 Bridge completed – Bird view	146

Figure 7-1 Old and new SAS Bay Bridge - The eastern span, between Yerba Buena Island and Oakland	148
Figure 7-2 Major bridge components	149
Figure 7-3 Typical bridge section (Source - James Duxxbury and Marwan Nader, T.Y. Lin International)	150
Figure 7-4 Scaffolding -Temporary truss bridge for supporting bridge steel deck	150
Figure 7-5 Typical bridge section	151
Figure 7-6 Cradle layout	152
Figure 7-7 Delivered bridge deck segment temporary supported	152
Figure 7-8 Temporary truss bridge supporting bridge deck segment ready to be pushed to final location	152
Figure 7-9 1700 t Capacity marine crane with biggest OBG (Length=70m and W=1483,000 kg)	153
Figure 7-10 Preparing orthotropic box girder (OBG) for lifting by attaching lifting frame	153
Figure 7-11 Lifting frame - General arrangement	154
Figure 7-12 Lifting frame – Trial test and connection between top and bottom frame (Testing load 2000t)	154
Figure 7-13 Heavy-Duty Lifting Frame – View from Below	155
Figure 7-14 600t CROSBY wide body shackle with Slings- 9 part 3" braided sling Max tension 538 t (SF=4.5) – Source	155
Figure 7-15 Lifting frame completed and ready to lift OBG	156
Figure 7-16 Sling failing simulation	156
Figure 7-17 Pushing frame structure	157
Figure 7-18 Pushing frame - General arrangement	158
Figure 7-19 Pushing frame – Main component	159
Figure 7-20 Cross beam CB1 and CB2 installed by cradle and pushing frame	160
Figure 7-21 Lifting cross beam together with gantry crane	160
Figure 7-22 General arrangement gantry crane, pushing frame and cradle for erection cross beam	161
Figure 7-23 Cross beam 1 & 2 erection procedure	161
Figure 7-24 Cross beam erection	162
Figure 7-25 Cross beam erection – Temporary support	162
Figure 7-26 Apparatus for lifting and moving cross beams	163
Figure 7-27 Completed bridge - Source: [Caltrans]	163
Figure 8-1 Stonecutters bridge general arrangement	166
Figure 8-2 Typical steel section at main span	166
Figure 8-3 Typical concrete section at back span	167
Figure 8-4 Typical back span section	167
Figure 8-5 Back Span scaffolding general arrangement	168
Figure 8-6 View on back span during construction -Source - (Full-Scale Testing of Dynamic Control Devices)	168
Figure 8-7 Back span scaffolding during construction	169
Figure 8-8 Concrete column precast element at connection joints	170
Figure 8-9 Sequence diagram for deck structure concrete pouring	171
Figure 8-10 Scaffolding for back span	172
Figure 8-11 Prepared scaffolding for cross girders – Sage 2	172
Figure 8-12 Scaffold Interface connection between the concrete column and the steel bracing members	172
Figure 8-13 preparing reinforcement for cross girders	173
Figure 8-14 View on casted cross girders	173
Figure 8-15 Transverse prestressing	174
Figure 8-16 Stonecutters Bridge – Completed view (Source: Wikipedia, Edward Wong, Hong Kong)	175
Figure 9-1 Holding bridge - General arrangement	178
Figure 9-2 South pier – Existing structures	179
Figure 9-3 Burnt south pier	179
Figure 9-4 General arrangement of the proposed south pier replacement method	180
Figure 9-5 General arrangement of temporary support beams for replacing south pier – Plan view	181
Figure 9-6 General arrangement of temporary support beams for replacing south pier – View from west	181
Figure 9-7 Jacking support beams-releasing force from south pier and transferring on temporary structure	182
Figure 9-8 Removing south pier existing structure	182
Figure 9-9 Drive two outside of bridge footprint new piles	182
Figure 9-10 Install south new cap beam supported on new driven piles	183
Figure 9-11 Release and remove temporary support girder system-transfer load on new south pier structure	183

Figure 9-12 South pier –New pier structure	183
Figure 9-13 Construction new pier structure	184
Figure 9-14 Completed new pier structure	184
Figure 10-1 Walterdale bridge – Typical section	186
Figure 10-2 Walterdale Bridge general arrangement	187
Figure 10-3 Bridge typical section	188
Figure 10-4 Ach footings	188
Figure 10-5 Typical steel arch segments at support and in midspan	189
Figure 10-6 86 m midspan section of the arches was fully assembled on the ground near bridge	189
Figure 10-7 86 m midspan section – Assembled on the ground	190
Figure 10-8 Construction of middle arch on the ground	190
Figure 10-9 Stage 14; 15 and 16 - Transferring middle arch from ground to barge	191
Figure 10-10 Arch midspan skidding towers	191
Figure 10-11 Load transfers to barge 1/3	193
Figure 10-12 Load transfers to barge 2/3	193
Figure 10-13 Top view during transferring middle arch from ground to barges 3/3	194
Figure 10-14 Arch slider	194
Figure 10-15 Procedure transferring second scaffolding column to the barge	195
Figure 10-16 Moment when middle arch was fully supported on two barges	195
Figure 10-17 Navigation to barges with middle arch load (1000t)	196
Figure 10-18 Navigation middle arch to erection position	197
Figure 10-19 Transferring middle arch load from barges to land support 1 of 3	198
Figure 10-20 Transferring middle arch load from barges to land support 2 of 3	198
Figure 10-21 Transferring middle arch load from barges to land support 3 of 3	199
Figure 10-22 Stage 1 – Center arc segment ready for lift [1000 t]	200
Figure 10-23 Stage 2 – The center arch was lifted and connected to arch segments 2	200
Figure 10-24 Stage 3 – The second bowstring was installed and tensioned, resulting in a reduction of force in the first	200
Figure 10-25 Stage 4 – The first bowstring was removed	200
Figure 10-26 Stage 5 – The top of Tower 6 was removed, and the second arch arrangement was prepared for lifting	201
Figure 10-27 Stage 6 – The second arch arrangement was lifted and connected to arch segments 3	201
Figure 10-28 Bowstring tension transfer to bottom bowstring (Stage3)	202
Figure 10-29 Mid arch with bowstring arrangement	203
Figure 10-30 Middle arch sited on scaffolding support 1/2	204
Figure 10-31 Middle arch sited on scaffolding support 2/2	204
Figure 10-32 Tools for splicing arch units	205
Figure 10-33 Part print of site record during arch lifting	206
Figure 10-34 Deck installation procedure	207
Figure 10-35 Lateral bracing during deck erection	208
Figure 10-36 Calculated deck deflection during construction	209
Figure 10-37 Impact of high and low temperature on sup scaffolding tower	210
Figure 10-38: SUP (shared-use pathway) erection	211
Figure 10-39 Casting bridge deck	211
Figure 10-40 SUP under construction	212
Figure 10-41: Fine tuning bridge hangers	213
Figure 10-42 SUP erection completed	213
Figure 10-43 Completed bridge 1/4– Source (Al-Terra)	214
Figure 10-44 Completed bridge 2/4– Source (City of Edmonton)	214
Figure 10-45 Completed bridge 3/4– Source (HLB Lighting Design)	215
Figure 10-46 Bridged complete 4/4	215
Figure 11-1 View on busy Broadway St.	218
Figure 11-2 Plan of five metro station	218
Figure 11-3 Temporary deck at Mount Pleasant Station -view from excavation side	219
Figure 11-4 Main girders at Mount Pleasant Station -view from excavation side	219

Figure 11-5 Traffic decks	220
Figure 11-6 Traffic load on first erected prefabricated decks	221
Figure 11-7 South Granville Station – Main deck girder resist significant lateral earth pressures	221
Figure 11-8 City Hall Station – soil load transfer detail on main deck girders	222
Figure 11-9 Main girder supporting the deck and acting as a strut to resist lateral earth pressures	222
Figure 11-10 Stage 1: Excavation of half platform of Broadway’s width at north end	223
Figure 11-11 Erection of half of the transverse beams and deck panels ½	223
Figure 11-12 Erection of half of the transverse beams and deck panels 2/2	223
Figure 11-13 Erection prefabricated traffic deck	224
Figure 11-14 Stage 3: Transferring traffic to temporary street deck and excavation Southside Broadway	224
Figure 11-15 Stage 4: Erection of the other half of the transverse beam and upper struts	224
Figure 11-16 Installed traffic deck	225
Figure 11-17 Stage 5: Continuing excavation up to the second strut level and installing struts	225
Figure 11-18 Stage 5: Continuing excavation up to the second strut level and installing struts	225
Figure 11-19 Stage 7: Installing second level strut	226
Figure 11-20 Stage 8: Continuing excavation up to bottom of future station floor ½	226
Figure 11-21 Stage 8: Continuing excavation up to bottom of future station floor 2/2 (Arbutus Station)	227
Figure 11-22 City Hall Station fully excavated	227
Figure 11-23 Monitoring the strut forces using four strain gauges oriented in 90 degrees	228
Figure 11-24 Typical strut force documented in the weekly monitoring report	228
Figure 11-25 South Granville Station excavated up to second strut level	229
Figure 11-26 Oak Station excavated up to second strut level	229
Figure 11-27 City Hall – Bird view from North-South	230
Figure 11-28 Mount Pleasant Station – east view (Source: Ministry of Transportation and Infrastructure)	230
Figure 11-29 Mount Pleasant Station – Bird’s-eye view (Source: Ministry of Transportation and Infrastructure)	231
Figure 11-30 Mount Pleasant Station – view from bottom of excavation (Source: MTI)	231
Figure 12-1 View of the bridge	234
Figure 12-2 General arrangement of bridge	235
Figure 12-3 Bridge typical section	235
Figure 12-4 Temporary bridge general arrangement - Plan view	235
Figure 12-5 Construction method of temporary bridge	236
Figure 12-6 Site photo - Construction of temporary bridge using construction sled	237
Figure 12-7 Construction sled – Plan view	238
Figure 12-8 Work from temporary bridge	238
Figure 12-9 installation of bridge girders in the delta frame zone with geometry control cables	239
Figure 12-10 Transporting Steel Bridge Girder	239
Figure 12-11 Temporary Bridge – Stage 5: Crane Position During Lifting of Girders C and B	240
Figure 12-12 Delta frame in construction stage – Stage 1	243
Figure 12-13 Erection bridge girder to connect with delta frame – Stage 3 and Stage 4	243
Figure 12-14 Connecting bridge girder to delta frame _ Stage 3 and Stage 4	244
Figure 12-15 Erection of main span central segment- Stage 5 – Source: Surespan	244
Figure 12-16 Completed steel bridge structure	245
Figure 12-17 Simon Fraser Bridge completed - Source: [Advantage Steel]	245
Figure 13-1 Peace River Pipeline Bridge - General Arrangement	248
Figure 13-2 Pipeline bridge computer rendering	249
Figure 13-3 Bridge typical section	250
Figure 13-4 Main component of pipeline bridge structure	251
Figure 13-5 Partial plan of floor structure	251
Figure 13-6 Main cable clamps	252
Figure 13-7 Wind cable clamps	252
Figure 13-8 Top of tower main cable connection	253
Figure 13-9 Main cable anchor block	253
Figure 13-10 Computer model of structure	254
Figure 13-11 Cable crane system for main cable erection	254
Figure 13-12 Basic phases of bridge construction	255

Figure 13-13 Tower tip movement during construction	256
Figure 13-14 Stages of construction of the supporting structure of the pipeline	257
Figure 13-15 Deformation of the supporting structure of the pipeline during installation	257
Figure 13-16 Deck joint at connection rotation during erection	258
Figure 13-17 Deformation of the main cable in the middle of the span during construction	258
Figure 13-18 Change in main cable force during execution	259
Figure 13-19 Summary of sensitivity analysis	259
Figure 13-20 Pipeline support forces during hydrostatic testing	260
Figure 13-21 Internal forces in the pipeline for the load combination: Constant Pressure + Gas + Wind	260
Figure 13-22 Wind tunnel test - Topographical model studies - Model 1:3000	261
Figure 13-23 Summary of key parameters at Mid-Span deck height	261
Figure 13-24 Sectional model tests - Model 1:30 (1 of 2)	262
Figure 13-25 Sectional model tests - Model 1:30 (2 of 2)	263
Figure 13-26 Wind fairing	263
Figure 13-27 Geometry sensitivity analysis illustrating the effects of various parameter uncertainties	264
Figure 13-28 Sensitivity of main cable tension to variations in selected uncertainty parameters.	264
Figure 14-1 Slims River Bridge - General arrangement	266
Figure 14-2 Typical cross section of new bridge	267
Figure 14-3 Deck formwork and catwalk arrangement is launch together with steel structure	268
Figure 14-4 Pushing system by two C8N	268
Figure 14-5 Pushing beam	269
Figure 14-6 Pushing and backup system	269
Figure 14-7 Pushing beam in touch with pushing equipment (two C8N)	270
Figure 14-8 Installing counterweight	270
Figure 14-9 Launching general arrangement	271
Figure 14-10 Main launching component	272
Figure 14-11 Launching guider at abutment and temporary pier	272
Figure 14-12 Rocker with rollers passing girder splice	273
Figure 14-13 Rocker with rollers passing girder splice and guider at abutment	273
Figure 14-14 Simulation of large prechamber influence on launching deformation	274
Figure 14-15 Slims River Bridge geometry problem during launch	274
Figure 15-1 Yukon Pedestrian Bridge	277
Figure 15-2 Yukon Pedestrian Bridge - General arrangement	277
Figure 15-3 West abutment	278
Figure 15-4 Typical section	278
Figure 15-5 View from north-west	279
Figure 15-6 View from south-east	279
Figure 15-7 View on bridge from west	280
Figure 16-1 Bridge Elevation – View from west	282
Figure 16-2 Second Narrow Bridge view from West	283
Figure 16-3 View from below on lateral bracing	284
Figure 16-4 Partial plans on existing bottom horizontal bracing	285
Figure 16-5 Installing new bottom horizontal brace member	287
Figure 16-6 Typical vertical brace at support and in midspan	287
Figure 16-7 Traveler – General arrangement - Plan	288
Figure 16-8 Traveler – General arrangement - Elevation	288
Figure 16-9 Traveler- On site assembly	289
Figure 16-10 Traveler – Erected	289
Figure 16-11 Removing diagonal member of bottom brace close to south pier in water	290
Figure 16-12 Installing new bottom brace diagonal member	290
Figure 16-13 Work on vertical main truss member over south support	291
Figure 16-14 Traveler positioning steps – Typical plan and elevation views	291
Figure 16-15 Replacement of existing bearings with seismic isolation bearings	292
Figure 16-16 Removing existing bearing pin	293

Figure 16-17 Installing isolation bearing	294
Figure 16-18 Reinforcing bearing at south pier in water	295
Figure 16-19 Casting concrete pedestals at north pier in water	296
Figure 17-1 Thompson River Aerial Crossing, Canada	298
Figure 17-2 Northwest and northeast views of the bridge as seen from the south tower	299
Figure 17-3 Thompson River Crossing – General Arrangement	299
Figure 17-4 3D Scan Survey of Thompson River Crossing	300
Figure 17-5 Simplified Model of Existing Thompson River Bridge	300
Figure 17-6 Overlaid SAP2000 Model and 3D Scan Survey Simplified Model	300
Figure 17-7 Deflected Shape for Case 1 (+12 °C)	301
Figure 17-8 Deflected Shape for Case 2 (+0 °C)	301
Figure 17-9 Sensitivity Analysis Results for Main and Wind Cables	302
Figure 17-10 Pipe with cable connections	304
Figure 17-11 SAP2000 Results for Pipeline (a) Axial Force, (b) Shear Force, and (c) Moment Diagrams at 0°C	305
Figure 17-12 Axial Force Diagram for Pipeline at Multiple Temperatures	305
Figure 17-13 Shear Force Diagram for Pipeline at Multiple Temperatures	306
Figure 17-14 Moment Diagram for Pipeline at Multiple Temperatures	306
Figure 17-15 Deflection of Pipeline at Multiple Temperatures	307
Figure 17-16 Maximum Pipeline Deflection at Midspan of Pipeline	308
Figure 17-17 Span/Deflection Ratio for Pipeline	308
Figure 17-18 Pipeline Deflection Before and after Slackening Diagonal Stiffeners	310
Figure 17-19 Tower leg footing pin connection and man cable West tower South anchoring point	310
Figure 17-20 Typical section with diagonals – Existing reference drawings	311
Figure 17-21 North tower – View from anchorage point	311
Figure 17-22 Maximum Pipeline D/C Ratio Versus Temperature	312
Figure 17-23 Cables Where Measured Force Outside 20% Bound of Design	312
Figure 17-24 North tower – Detail 1/2	315
Figure 17-25 North tower – Detail 2/2	315

Foreword by Nigel Brown

I am honored to present the following record of the works of Mr. Dragan Majkic. His immeasurable efforts in Bridge Construction Engineering over the course of his career serve as a laudable example for engineers interested in the field, and yet again demonstrate Mr. Majkic's commitment to sharing his knowledge and understanding with anyone who is interested.

To quote Dragan's compatriot, Nikola Tesla;

A new idea must not be judged by its immediate results.

This is demonstrated through three key pillars of Mr. Majkic's efforts across all projects in which he has been involved.

Mr. Majkic has an unparalleled technical imagination which is the real highlight of this document. Innovative solutions require an openness to new ideas and approaches. It requires a detailed understanding of the materials of construction, and standard construction methodologies. Lastly, and most importantly, it requires imagination, which is not something which can be taught or trained.

His demonstration of consistent dedication to his work, which is often urgent, heavy and unapologetic, has resulted in a network of engineers and constructors who respect and trust him. Surely, without demonstrating his reliability wherever and whenever required, he would not have been able to present this aggregate of work.

There are few people who have the patience and generosity of spirit that Mr. Majkic shows through his willingness to teach and lead younger engineers as they progress through their careers. This has doubtlessly resulted in benefits to the industry of which even he is not aware.

This opus is not an immediate result, but a record of a commendable career. I am sure that through careful and considerate reading, this document will impart both interesting and important lessons learned to anyone invested.

Sincerely,
Nigel Brown

Foreword

Bridge construction has always represented one of the highest achievements of civil engineering. A bridge is not merely a structure connecting two banks, it is the product of a synthesis of knowledge, experience, engineering intuition, and advanced technology. Small and large bridges alike always offer unique opportunities for engineering innovation. Modern bridges, whether steel, concrete, cable-stayed, or suspension types, demand precise planning, technical discipline, and a thorough understanding of the complex construction processes that transform a design concept into a completed structure.

This book is dedicated to the technology of bridge construction, a field of engineering that often remains in the shadow of design yet ultimately determines the success of every bridge-building endeavor. Its objective is to provide readers with a clear and systematic overview of the methods, procedures, and technical solutions employed in the construction of various types of bridge structures, from short and medium spans to long-span bridges.

A particular value of this book lies in the fact that it is grounded in the author's extensive professional experience acquired on bridge projects and construction sites both domestically and abroad. All of the bridges presented in this work share a common attribute, each illustrates a unique application of engineering innovation in bridge construction technology. Numerous practical solutions, analyses, and structural details are included, all derived from actual site conditions and adapted to the specific technical and environmental constraints of individual projects. In this way, theoretical knowledge is directly linked with engineering practice, making the book especially valuable for engineers engaged in bridge planning, design, and construction.

Through practical examples, descriptions of construction stages, temporary works, launching operations, and erection techniques, the book integrates fundamental engineering principles with insights gained from real projects. Special emphasis is placed on innovative construction approaches, including the use of movable scaffolding systems, launching girders, cable-supported cranes, and other specialized equipment that define modern bridge construction practice.

A key competency that should be cultivated by all engineers involved in determining bridge construction methods is the ability to evaluate and identify effective assembly systems in terms of efficiency, cost-effectiveness, and most importantly, structural safety. Engineering imagination can be applied equally to small and large bridges, and therefore I think that this book can, in some ways, direct thinking about bridge construction in a creative direction.

It is my belief that this book will serve as a useful reference for engineers, students, and all those seeking a deeper understanding of the processes behind bridge construction, from the initial concept and analysis, through planning and execution, to the completion of a structure that connects not only spaces, but also people and time.

I would like to take this opportunity to express my deep appreciation to all colleagues and collaborators whose expertise, dedication, and partnership have been essential to the realization of the projects presented in this work. Spanning fifty years of engineering practice, I sincerely hope that no one who has contributed is inadvertently omitted from this acknowledgment:

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Dragan Majkić
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