Proceedings of

The 31st Symposium on Developments in Prestressed Concrete

Contents

Invited Lecture			
I	Establishment of Matsue Town That Has a Castle and Castle Peek	ADACHI Masanori	(1)
П	Advances in Prestressing Techniques for Concrete Girders with Corrosion-Resistant Reinforcements	Abdeldjelil Belarbi Dario Vecchio	(13)
Gene	eral Paper		
(1)	Construction of Hokuriku Expressway Tachibana Viaduct Floor Slab Replacement Work	SHIBATA Yoshihiro KATO Keisuke HOSOE Hisasi OKADA Tohru	1
(2)	Design and Construction of Floor Slab Replacement Work on Shijihara River Bridge (Upline) on the Chugoku Expressway	FUKUYADO Yoshitaka FUKUDA Kensaku NOGAMI Tomokazu KUROKI Takeshi	5
(3)	Design and Construction of Precast PC Slabs in Slab Replacement Project of Steel Truss Girder Bridge	HOU Chenwei YOSHIKAWA Masahito TOMINAGA Takayuki AMANO Hironori	9
(4)	Three Bridges Simultaneous Construction in Concrete Slab Replacement Work of Tohoku Expressway Kosugou Bridge	AOIKE Shohei KANEKO Takeshi KASAHARA Rei NAGASHIMA Kazuhiro	13
(5)	Replacement of Deck Slab in Consideration of the Traffic Opening -HAYAKAWA Ramp Way on SEISHO By-Pass-	SATOHO Hideyuki ISHIWATA Masaru NAKAMURA Yoshiki HASUNUMA Masato	17
(6)	Construction Report on how to Remove Decks for Simple Steel Truss Bridges	OGAWA Hiroki NAKANO Hirofumi MITSUNAGA Tomohiro	21
(7)	Replacement of Floor Slab by Using Girder for Composite Girder with Skew Angle of Tadeno 4th Bridge of Chugoku Expressway	NITTA Seiya MITSUNAGA Tomohiro KIDERA Hisayuki KAMINAGA Yuuki	25
(8)	Design and Construction in Replacement of Floor Slab of Osakabekawa Bridge in Chugoku Expressway	NAKAJIMA Daiki YAHASHI Masanari HISANO Shingo NAKATSUMI Kenichi	29

(9)	Design and Construction for Floor Slab Replacement of Tomizawadaiichi Bridge on the Tomei Expressway	KATSUDA Yuya KANADA Haruka SUGIMOTO Shin ABE Shingo	33
♦(10)	Development of Durable Prestressed Concrete Structure Using Stainless Steel for All Internal Steel Materials	SHIMOMURA Takumi KOMATSU Yuya SAITO Syunsuke	37
♦(11)	Evaluation of Tension Softening Curves of Fiber-Reinforced PFC and Shear Capacity of the Beams	YANAGIDA Ryohei KURODA Takumi CHIYONOBU Akira KONO Katsuya	43
♦(12)	Cracks Resistance of Steel Fiber Reinforced Porosity Free Concrete	MIZOGUCHI Manami MASAKI Mamoru YOSHITSUGU Yusuke KONO Katsuya	49
♦(13)	Long-term Deformation Characteristics of PC Beams Using Steel Fiber Reinforced Porosity Free Concrete	KOJIMA Katsuhito KISHIRA Ryo KONO Katsuya YOSHITSUGU Yusuke	55
♦(14)	Experimental Study on Shear Capacity of PC Beams with High Strength Lightweight Concrete Type1	MIZUKOSHI Mutsumi MITA Takehiro YOKOHATA Katsuhiko	59
♦(15)	Experimental Study on Repair Method and Reinforcement of Unbonded PC Beams with Dampers	SUZUKI Toshihiro SHIRAI Yuki SHIMAZAKI Kazushi	65
♦(16)	Contemplation on Nonlinear Elasticity Characteristics of Prestressed Concrete Structures	IKEDA Shoji KUROSAWA Ryohei HIRAI Kei	69
♦(17)	Fundamental Study on Improvement of Bending Tensile Strength of Vertical Joint Surfaces	YOSHITSUGU Yusuke. MIDORIKAWA Takehiko MASAKI Mamoru	75
♦(18)	Vibration Experiments of PC Bridges Constructed in 1980s	MATSUO Yuko HAMANOYA Takumi MIYAMORI Yasunori OBATA Takashi	81
(19)	Using Robot Arm Rebar Assembly System to Prestressed Concrete Slab	OKAMOTO Nari TAKENOI Isamu MIZUTA Taketoshi SAITO Moeko	85
(20)	Labor-saving and Accuracy Improvement Efforts Using Automatic Tensioning Control and Management System	SUZUKI Satoshi IMAMURA Tadaki	89
(21)	Development of Concrete Compaction Management System Utilizing AR Technology	AZUMA Yosuke SHOJI Akio YAMAZAKI Fuminori NOJIMA Shoji	93

(22)	Development of the Automatic Measurement System for Bridge Surface and Application of Productivity Improvement Technology in Cantilever Method	TSUNODA Shinsuke MIYAZAWA Yuzo MINBUTA Shoya AKIYAMA Hiroshi	97
(23)	Labor and Manpower Saving by Reinforcing Bar Measurement System Utilizing AI	MIYAKOSHI Ryo INOUE Masumi OKAJIMA Shohgo YOSHIOKA Kenichi	101
(24)	Utilization of BIM/CIM in P2-P4 Construction of Hakawa Viaduct	TAKEUCHI Hirohiko KIZUKI Kazuhiro	105
(25)	Efforts to Improve Construction Quality and Productivity Using ICT for OSAGAWA Bridge	MAEDA Ryo ARAI Kento SAKAGUCHI Taichi TANAKA Shinya	109
(26)	Construction Information Modeling for the Yogominami Fourth Viaduct	HARA Masatami IMAZATO Hajime FUKUHARA Keiko KAMEMOTO Yuichiro	113
(27)	Use of Digital Twin in Bridge Construction	KOBAYASHI Shu IWASE Masayoshi WAKABAYASHI Yoshiyuki NAGAKI Sadayuki	117
(28)	Development of Bridge Renewal Integrated Management System	HIGURE Kazumasa MITAMURA Kenji YASUDA Keiichi	121
♦(29)	Lead to Steel Concrete Composite Balanced Arch Bridge Based on Conceptual Design	YAMAZAKI Keiji WAKABAYASHI Dai HIRAYAMA Takehiro OKAMOTO Takuya	125
(30)	Design and Construction of YUBUNE VIADUCT in SHIN-TOMEI Expressway	TSURUBAYASHI Yuta KOYACHI Yuya FUKUDA Kenta NAKAGAWA Takeshi	131
(31)	Design and Construction of SHIINO HANAEMI OHASHI BRDIGE	LINAN Carlos SAKAMOTO Takashi MATSUNAGA Hideaki YOSHIDA Naoki	135
(32)	Design and Construction of the Kitashioya High Bridge on the Hanwa Expressway	HIMENO Ryota FUJINOKI Tsutomu IBUKI Shinichi	139
(33)	Design of the First Nariai Viaduct	NAKATA Yorishige FUKUDA Masato OMURA Takafumi AIURA Satoru	143

(34)	Adoption of Steel-Concrete Composite Girde for Design Work on Rigid Structure for Tabikawa Bridge	HASHIMI Ryuto OKUNARI Tetsuya NAKAMINAMI Takaaki MURAKAMI Kenji	147
(35)	Design and Construction of Precast Wall Balustrade -Hokuriku Expressway-	TOYOTA Tadashi KOBOTA Gouki ONO Yuga KATOU Takuya	151
(36)	Design of the Sasebo Viaduct Widening Construction Considered in a Connection with an Existing Bridge	MATSUSHIMA Shun NOGUCHI Kaito MURAKAMI Kouhei	155
(38)	Design and Construction of "Tadeno No.2 Bridge" Utilizing Ultra-High Durable Slab as the Deck	MATSUO Yusuke UCHIBORI Hiroyuki MATSUI Takayuki KIDERA Hisayuki	163
(39)	Design and Construction of Precast PC Slabs for Renewal Project of Chugoku-Expressway	IWAI Toshihiro HAYASHI Toshitsugu TANAKA Hironori	167
(40)	Fatigue Durability Test of Semi-Rigid Connection in Precast PC Slabs Using Wheel Load Running Test	SHIMO Yuki MIMOTO Tatsuhiko SAKURAI Nobuaki MATSUI Shigeyuki	171
(41)	Fatigue Durability of Vertical Joint of Bridge Deck Slabs	NAKAMURA Masayuki TAKEYAMA Tadaomi NISHIMURA Kazuhiro TAKAHASHI Yuki	175
♦(42)	Development of Temporary Joint Mechanism for Split Construction Work in Width Direction under Replacing Slab	NAGAI Yusuke ICHINOMIYA Toshimichi YAMANAKA Hiroyuki IWAI Minoru	179
♦(43)	Tensile Element Tests on Precast Concrete Slab Loop Joints Reinforced with Aramid Rod	OZAKI Koki FUJIKURA Syuichi THAY Visal TATEGAMI Hisao	185
(44)	A Case Study Report on Utilizing Composite PC Slabs in the Slab Replacement Works of Continuous Composite PC Girder Bridges	OKIMOTO Kengo MURAKAMI Rikiya SHIDA Yushiro NAKAKO Daiki	189
(45)	Assessing the Applicability of Using Rebar Joint and PC Joint Simultaneously in Segmental PC Bridges	MURAKAMI Rikiya ONOUE Kouzou	193
(46)	Futaba POD Construction Report	NAKAMURA Hiroki MOURI Hiroshi HARAKO Kazuo	197

(47)	Rapid Construction of Substructure Widening Using Precast Beams and External Cable Reinforcement	MARUTA Masaharu KANAMOTO Taketo YOSHIKAWA Masahito TOMINAGA Takayuki	201
(48)	Construction Test for Increasing in Size of Butterfly-Shaped Precast PC Web Panel	KAWANE Masaya NAKATSUMI Kenichi WAKABAYASHI Dai MIYAJI Kensuke	205
(49)	The Challenge on Innovation of Construction Method on Column Capital Part of PC Rigid Frame Box Girder Bridge -Takizawakawa Bridge on the Shin-Tomei Express Way-	MIHO Yuji KUGA Kensaku EBISAWA Yuki YOSHINO Masamichi	209
♦(50)	Our Efforts in Productivity Improvement and Low-Carbonization for Pre-cast Concrete Products	NAKAMURA Toshiyuki NAMIKI Masayuki KIKUCHI Kazuyoshi NIITANI Kyoji	213
(51)	Segment Girder Manufacturing and Main Girder Jointing Management Method Using Blast Furnace Slag Fine Powder	WADA Takumi SAITOU Ren SATO Manabu NAKAMURA Masaki	219
(52)	Construction of Highly Durable Precast Segment Girders Using Flyash Type 2	ADACHI Yuya SHIOIRI Toru YOSHIDA Ryuichi	223
(53)	Report on Seismic Retrofitting Work Using an External PC Frame for Overhanging Staircase Houses	KAGEYAMA Syousuke KITAHARA Takashi TOMINAGA Satoshi	227
(54)	Development of Coupler for Existing Anchorage without Connection Structure	YAMAMOTO Keiichiro ITAYA Hidekatsu MATSUDA Sho YAMAGUCHI Hiroki	231
♦(55)	Seismic Behavior of Diagonal Tension Cables Placed on Balanced Arch Bridge and Development of a New Anchorage System	WAKABAYASHI Dai YAMAZAKI Keiji HIRAYAMA Takehiro ARIJI Ryohei	235
(56)	Fabrication and Erection of Precast Beam Using Carbon Fiber Composite Cable	HIGAKI Makoto OOAIRA Yukio SAKAI Kazuhiko HAMAHATA Yasuhiro	241
♦(57)	Bending Properties of Pre-tension Specimen with CFRTP Strands as Tendon	YAMADA Koji AMAYA Kimihiko MIYAZATO Shinichi ABE Takuya	245
(58)	Injection Test Report of Thixotropic Grout	ITOH Hiraku FUJIWARA Hiromi TANADA Naohiro MUKAI Yuya	251

(59)	Carbon Neutrality Efforts at a Frontage Road Bridge in the TERADA Area	KATOU Moe INOUE Masumi HOSHINO Kazuki SAITOU Ryouichi	255
(60)	Examination of Applicability and Rust Prevention Performance of Rust Preventive Grout for Reinjection	KAWAGUCHI Chihiro KITANO Yuichi NAOE Koji	259
(61)	Proposal of Grout Filling Evaluation by Impact Elastic Wave Method Applying Machine Learning	HONJO Akira AZUMA Yosuke HAGIHARA Yuki NOJIMA Shoji	263
(62)	Efforts to Ensure Reliability in Re-grout	HAGIWARA Naoki MURANAKA Makoto OSADA Koji	267
♦(63)	Application of Prestressed Concrete U-shaped Girder in JRTT and Design for High Speed Railway	SAITO Masahide SHINDO Yoshinori TOMONAGA Hikaru TANITA Soichiro	271
(64)	A Proposal on Structural Planning Considering the Landscape of the Railway PC Lower Girder Type Bridge	KUTOMI Osamu HIRAYAMA Kunihiro KAWAMURA Ayumi UMINO Haruka	277
(65)	A Study on the Structural Planning of Railway PRC Rigid Frame Viaduct	MITSUKE Yuki KUTOMI Osamu SHINODA Kenji TOMOTAKE Kouji	281
♦(66)	Structural Characteristics and Effects of PC Cable-Stayed Bridges Using Cross-Type Cable-Stayed Bridges	MINAGAWA Syun SEKI Fumio	285
♦(67)	Attempt of Practical Structural Education and Maintenance Learning by Bridge Studio	SEKI Fumio SAITO Yoshitaka	291
(68)	Crack Control by Thermal Stress Analysis and Local Stress Analysis of PC Bridges	TAKENAGA Hiroki FUKUSHIMA Kuniharu MIGITA Masato	297
(69)	Crack Control by Thermal Stress of PC Tank	ITO Mizuki FUKUSHIMA Kuniharu NAKAUCHI Eiichiro KOORIYAMA Takuya	301
(70)	Report on Site Management Using BIM / CIM	YAMAGUCHI Youichi MORI Naotsugu	305
(71)	Development of BIM/CIM System to Support Productivity Improvement of Concrete Slab Replacement Work	YASUDA Keiichi KYUSAI Seiya HIGURE Kazumasa MITAMURA Kenji	309

v

(72)	Examination of New Technology Utilization Effect in Detailed Survey of Existing PC Bridges	AIBA Junpei YONEZAWA Subaru YOKOTOBI Shota IKEMATSU Jiro	313
♦(73)	Survey on the Temperature Environment of PC Sleepers Placed in Areas with a High Risk of Frost Damage	MINOURA Shintaro WATANABE Tsutomu OKAZAWA Masaki	317
◇(74)	Load Environment of Prestressed Concrete Sleeper for High-speed Train and Evaluation of Bending Load Capacity	WATANABE Tsutomu MINOURA Shintaro KANO Shuji YONEKAWA Hideshige	323
(75)	Study on Application of Deep Learning to Evaluation of PC Grouted Ducts	TAMURA Seiichi SUGIE Masaki NAKAMURA Hideaki	329
◇(76)	Study on Applicability of Distributed Optical Fiber Measurement Method to PC Members	KOJIMA Shintaro TAIRA Yohei TAMANO Keigo SOGABE Naoki	333
♦(77)	Proposal of Concrete Stress Estimation Method for Continuous PC Box-girder Bridge by Ultrasonic Method and Verification on Actual Bridge	OHNO Kentaro TAMAKI Kazukiyo NAGAMOTO Naoki HIRONO Kunihiko	339
(78)	Measurement Report on the Dismantling and Removal of the PC-Continuous Hollow Slab Bridge (Part1)	OTSUKI Yoshihiro FUJIWARA Toshiaki OKUBO Takashi OKUYAMA Yohei	343
(79)	Measurement Report on the Dismantling and Removal of the PC-Continuous Hollow Slab Bridge (Part2)	FUJIWARA Toshiaki OTSUKI Yoshihiro OKUBO Takashi KUBOTA Jyun	347
(80)	Measurement Report on the Dismantling and Removal of the PC-Continuous Hollow Slab Bridge (Part3)	WATANABE Hirofumi KAWAGUCHI Chihiro FUJIWARA Toshiaki OKUBO Takashi	351
(81)	On the Construction of Hollow Slab Bridge with Wide Section - SHIMOIMUTA AKASAKI Viaduct -	NAKAHIRA Hirofumi NAKANISHI Daishi SAKURAI Yoshiyuki KOMIYA Junichiro	355
(82)	Construction of Hojo Viaduct (P4-P8) Inbound Lane	ASADA Hiroshi CHAKI Satoru EMI Kazuki	359
(83)	Construction Report of HOJYO Viaduct on the National Route 9	MAEKAWA Shouya KAWAHARA Kouji KODAMA Nobuyuki MATSUMOTO Masayuki	363

(84)	Arch Rib Construction of Shimogou Bridge	ARIGA Shun TORAMOTO Shinichi TAKAYA Takatomo WATANABE Kohei	367
(85)	Report on the Productivity Improvement and Digitalization of the KAMITARUWARA Overpass	NAKAI Taiki HIYOSHI Naohisa TAKENAGA Hiroki	371
(86)	Construction of KAWAGUCHI Bridge	TOMINAGA Takao SASAKI Takeshi ISONO Kazuya KIKUCHI Akiko	375
(87)	Construction of the Large Cross Section-Pier Template on Kinosaki Bridge	HIRATA Noritake FUJIWARA Toshiaki YANAGIDA Hayami	379
(88)	Construction of 2nd Naruse-Dam Bridge	SUZUKI Hiroyuki OYAMA Takashi HIRAOKA Masaharu KOGAWA Masahiro	383
(89)	Change of Construction Method for the Purpose of Shortening the Process: Ohisa River Bridge of Johan Expressway	TSUTSUMI Hidetoshi NAKAMURA Kazumi CHISAKA Toshiharu KUSAKA Hiroki	387
(90)	Construction of Lateral Movement and Jack Down for Hokuriku Shinkansen ASUWAGAWA BRIDGE	KATO Shun KOBAYASHI Takahiro MASUDA Ryuta	391
(91)	Study on Applicability of Electrochemical Repair Method Using Galvanic Anode Material to I Type Prestressed Concrete Bridge	AOYAMA Toshiyuki FUKUYA Teruki OKIMURA Takashi MORIKAWA Hidenori	395
♦(92)	Chemical Analysis of the Concrete Cover of the PCT Girder 19 Years after Desalination	NAKAMURA Fumika MASAKI Mamoru NANASAWA Akira MIYAZATO Shinichi	399
♦(93)	Study on Application of Surface Protection Method to PC Bridges Damaged by Salt	KITANO Yuichi KUNITOMI Yasushi YOSHIDA Eiji UCHIDA Masakazu	405
♦(94)	Corrosion Rate Evaluation of Stainless PC Steel Stranded Wire	URAGAMI Kazuya MIYAZATO Shinichi	411
♦(95)	Quality Evaluation Method for the Chloride Ingress Resistance of Precast PC in Manufacturing Process	TSUNODA Takaya SAKURABA Hiroki SUZUKI Masahiro KOGA Hirohisa	417

♦(96)	Study on Improvement of Frost Damage Resistance of Concrete by Coating Antifreeze Material	LIANG Shihang XIE Jiahe TSURUTA Hiroaki KAWAHARA Hidehisa	423
(97)	Experimental Study of Electric Corrosion Protection Method that is Combined with Aramid Continuous Fiber Sheet Reinforcement	SHIMIZU Koichiro SASAKI Wataru YAMAMOTO Makoto ANDO Shigehiro	429
(98)	Effect of Hygroscopic Aqueous Solution on Salt Removal of Concrete Structure	JINNAI Mao KITANO Yuichi ONOE Kaoru UTSUMI Hideyuki	433
(99)	Design and Construction of YONAGO Expressway FUNATANIGAWA BRIDGE -Installation Method of Steel Corrugated Web-	IMAMURA Koki IMAI Yohei TSURUTA Yoshitaka	437
(100)	Construction of Kawazu Shimoda Road B-Ramp Bridge Using 3D Model	KUJIRA Shigeyoshi TAKUMI Masatoshi TAKEBAYASHI Yasuhiro KAGEYAMA Mikihiro	441
(101)	New Structure of Corrugated Steel Web Prestressed Concrete Bridge Using Precast Members	KOYACHI Yuya WAKABAYASHI Dai NAKATSUMI Kenichi HOSONO Hiromi	445
(102)	Construction of Corrugated Steel Web Bridge in Consideration of Space and Process	SATOU Junya HATTORI Yoshinori OKUNARI Tetsuya NAKAMINAMI Takaaki	449
(103)	Construction Report of Tokai Hokuriku Expressway Kamihara Bridge	IKEDA Kakeru SAITOU Yutaka HASHIMOTO Satoshi	453
(104)	Displacement Measurement and Bridge Surface Height Management by Automatic Measurement	OONO Shunpei YOSHITAKE Ryousuke OONISHI Harunobu NISHIMURA Naotaka	457
(105)	Construction of Moseushi Bridge 1 Construction Area by Reaction Force Concentrated Extrusion Method Using Side Brackets	SUGAWARA Kenji OKADA Hiroaki HIROSAWA Yoshiharu ABE Mitsuaki	461
(106)	Construction of AWASE BRIDGE	ASO Shuji OYAKAWA Kenichi YOSHIMOTO Masahide HOKAMA Yuhei	465
(107)	An Example of Measures to Extend the Life of Post-tension T-girder Bridges in Cold, Mountainous Areas	NOMURA Hajime	469

(108)	Repair and Strengthening of the INOGASHURA Line Overpass	SATO Kouichi WATANABE Hiroyoshi KAMIYAMA Atsuhiro KOEZUKA Hideaki	473
♦(109)	Numerical Analysis of Prestressed Concrete Girders Strengthened by External Tendons	SHIGETA Kojiro SAITO Shigehiko SATO Kennosuke	477
(110)	Design and Construction Report of Steel Bracket Using PC Cable for Structure Displacement Limit Device	KIMURA Shun OZAWA Takehiro SUZUKI Kazunori SAKAMOTO Takuma	483
(111)	Examination of Application of Carbon Fiber Composite Cable to the Post-tensioning System for Internal Strengthening	MIHARA Takafumi TESHIMA Moe ONO Masaki YOSHITAKE Isamu	487
(112)	Construction Report on RC Hollow Deck Replacement under Width Reduction Regulation	NAGAYOSHI Yuta KIHARA Michitaro Vuong Quoc Ninh MATUI Sayaka	491
(113)	Experiments Taking the Influence of a Temperature Change of Countermeasures Used Asphalt Pavement Against Protrusion of Vertically Tightened PC Bars	FUKAYA Takahisa TANAKA Daisuke SATO Yusuke YAMADA Masatoshi	495
♦(114)	The Effect of Prestress Loss on the Apparent Diffusion Coefficient of Chloride Ions	SAITO Junpei JYOFUKU Kazuki MAKI Kazuma	499
♦(115)	Basic Study on Corrosion Behavior of Steel under Dew Condensation-dry Cycles	NOJIMA Shoji MURANAKA Makoto WAKABAYASHI Toru TAKAYA Satoshi	505
(116)	Measurement of Concrete Using Granulated Blast Furnace Slag for Widening Work of PC Bridge	HASHINO Tetsuo KAWANAKA Ryoichi TANNO Atsushi FUKUDA Masato	511 ·
♦(117)	A Study on Application of Concrete Mixed with Ground Granulated Blast-furnace Slag for Precast and In-situ Concrete of Prestressed Concrete Bridge	SAGAWA Yasutaka CHITOSE Yasuhide FUJIWARA Fumitake	515
♦(118)	Basic Study on Free Fall Height by Placing of Slump Flow Concrete	YAMADA Daigo WATANABE Taiga NAKAMURA Toshiyuki HASHIMOTO Shinichiro	521
♦(119)	Effect of Curing Conditions on Chloride Ion Penetration Resistance of Concrete with GGBFS	OTA Chihiro SAGAWA Yasutaka WAKISAKA Hideo HORIKOSHI Naoki	527

(120)	Research for Shrinkage Characteristics and Durability of the Environmental Load Reduction Concrete with High Early Strength	SHIINO Aoi NAKASE Hirokazu SUZUKI Masahiro	533
♦(121)	Applicability of CaO,2Al ₂ O ₃ to Precast Prestressed Concrete	TAWARA Michikazu HONMA Kazuya SASAKI Takashi WU Chengning	537
♦(122)	Effect of Material Storage Temperature on Expansion Properties of CPC Members	INOUE Honoka YAMAGUCHI Ichiro LI Chunhe TSUJI Yukikazu	543
♦(123)	Performance Evaluation of Mortar Using PV Panel-Derived Fine Glass Powder and Aggregates	PARK Sangjun FUJIMOTO Mayo XIN Junqing MIYAJIMA Akira	547
♦(124)	Expansion and Compressive Strength of Mortar with Expansive Additive for Difference Temperature	WATANABE Akio DOMON Hiroyuki	553
(125)	Construction of a 3-span Continuous Rigid-frame Box Girder Bridge to be Constructed in a New Dam	KOBAYASHI Ryotaro TAKESHITA Masashi SUGAWARA Akira HASEGAWA Teruaki	557
(126)	Rational Construction of Piers by Prefabricating Buried Formwork and Reinforcing Bars	MITSUYAMA Yoshiki KITAMURA Takeshi WATANABE Yuji HARADA Takuya	561
(127)	Construction of Ohfuneohashi Bridge in National Route 278	KOBAYASHI Youhei ANAN Kouhei KAMIO Hidenori WATABE Yuji	565
(128)	Construction Report of HARUNOMACHI LAMP BRIDGE SUPERSTRUCTURE (P3-P8) on FUKUOKA ROUTE 3	URATA Sora SHIMAOKA Akira KIMURA Gou NISHIOKA Kenichi	569
(129)	Construction of IWAGI Bridge	OHMURA Keiji SHIMIZU Kouichirou	573
(130)	Erection of Sasebo Viaduct Widening Construction with Traffic Control	ONIZUKA Katsunori NAKAMURA Yuuya MATSUKAWA Shouichi TSURU Kazuto	577
(131) Construction of a PC HOLLOW FIGURE by 3 Period Division Building	EJIMA Kenichi YAMAHARA Takashi ISOBE Yoshitaka OZAWA Aya	581