

Precast Segmental Box Girder Bridge Manual

Precast Segmental Box Girders Design of Pier Segments in Segmental Hollow Box Girder Bridges Precast Segmental Box Girder Bridge Manual Construction of Precast Segmental Box Girder Bridge Using Overhead Gantry Analysis of Precast Segmental Box Girder Bridges Construction of Precast Segmental Box Girder Bridge Using Overhead Gantry Segmental and system bridge construction Precast Post-tensioned Segmental Box Girder Bridges in Vancouver Superstructure Design of a Precast Segmental Box Girder Highway Bridge Study of the Segmental Box Girder Bridge at Turkey Run Extending Span Ranges of Precast Prestressed Concrete Girders Strengthening of Two Prestressed Segmental Box Girder Bridges Feasibility of Standards for Segmental P/S Box Girder Bridges Construction and Load Tests of a Segmental Precast Box Girder Bridge Model Design of a Precast, Segmental, Balanced, Cantilever, Box Girder Bridge Study of the Segmental Box Girder Bridge at Turkey Run Formwork for Concrete Enhancing the strength and ductility of post-tensioned segmental box-girder bridges Concrete Segmental Bridges Transverse Analysis and Field Measurements for Segmental Box Girder Wings Fadzli Mohamed Nazri Nigatu Chaffo Jazlan Salleh @ Mohamed Salleh Mohamed Abdelfatah Elmahadi Mohamad Ibrahim Mohamad Transportation Research Board Louis J. Tilatti David W. Floyd Reid W. Castrodale Satoshi Kashima Joseph Showers Stephen P. Wanders Mary Krumboltz Hurd Azez Nafei A. Hindi Dongzhou Huang

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this book explores the fundamentals of the elastic behaviour of erected precast segmental box girders sbg when subjected to static load as well as the construction process casting and erection work involved it analyzes and compares the experimental results with those obtained using the finite element method and theoretical calculations a short term deflection analysis for different loads is obtained by determining the maximum deflection stress and strain value of single span precast sbg under a variety of transversal slope the outcome of this work provides a better understanding of the behaviour of precast sbg in terms of structural responses as well as defects so that maintenance work can then be focused on the critical section at mid span area specifically for the bridge project longitudinally and transversely the book is of interest to industry professionals involved in conducting static load tests on bridges and all researchers designers and engineers seeking to validate experimental work with numerical and analytical approaches

recent projects executed in the greater vancouver area have demonstrated that precast post tensioned segmental box girder bridges may be successfully applied to moderately sized medium span structures advantages include rapid economical constructions shallow construction depth and favourable aesthetic qualities low life cycle costs resulting from high quality factory produced concrete girders and longitudinally post tensioned deck slabs are an additional benefit three bridges illustrating the range of application of this bridge building system are presented it is shown how a variety of span configurations as well as curvature in plan may be tackled suggestions are made for economical application of this construction method for the covering abstract of the conference see irrd abstract no 807839

at head of title national cooperative highway research program

through the years significant cracks and critical deflections of the central span were monitored in the first segmental cast in place prestressed concrete bridge constructed in north america structural analysis following usual standards showed extensive tension zones in the bottom slab of the end and centre spans an examination of the drawings also revealed that the end segments were not properly connected to the rest of the bridge by prestressing moreover a lack of vertical reinforcement was detected in the interior face of the box girder webs near their junction with the top slab the lack of longitudinal prestressing was corrected by the addition of external tendons placed on both sides of each web and anchored on concrete blocks connected to the webs with prestressed bars to correct the transverse flexural problem high tensioned bars were placed in concrete columns tied up to the interior face of the webs and stressed from the top of the slab strengthening works were carried out during the summer of 1988 without traffic

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this report deals with a study on the feasibility of developing standard sections for segmental prestressed concrete box girder bridges this type of bridge was introduced to america from europe in the last fifteen years and the projects completed to date attest to its viability in the american market at an economical solution for certain crossings since the present use in this field is limited in uniformity standardization of the box girders could promise the consistency needed for wider use and greater cost effectiveness an extensive survey was made of segmental prestressed concrete box girder bridges in the united states and canada which permitted statistical studies to determine the uniformity of significant parameters such as span depth ratios cross sectional geometry and others the statistical analyses were supplemented by analytical studies where data did not exist

formwork for concrete has been written to serve a broad range of needs for information on formwork for the experience designer or builder of formwork it is a ready reference on material properties design data and construction suggestions for the engineer architect it adds guidance in relating details of the structure s design to the problems and possibilities of executing them in concrete for the novice the book provides an introduction to many common formwork practices explaining basic design principles and encouraging a rational rather than rule of thumb approach to formwork book jacket

segmental concrete bridges have become one of the main options for major transportation projects world wide they offer expedited construction with minimal traffic disruption lower life cycle costs appealing aesthetics and adaptability to a curved roadway alignment the literature is focused on construction so this fills the need for a design oriented book for less experienced bridge engineers and for senior university students it presents comprehensive theory design and key construction methods with a simple design example based on the aashto lrd design specifications for each of the main bridge types it outlines design techniques and relationships between analytical methods specifications theory design construction and practice it combines mathematics and engineering mechanics with the authors design and teaching experience

parapets placed on bridge deck surfaces commonly known as barriers are purposes omitted from the structural analysis model for design or load rating barriers should not be considered primary structural members because they are designed to withstand the impact of a vehicular collision after a forceful collision a barrier may sustain some structural damage and would no longer support or strengthen the bridge deck however when completely intact these secondary structural members do significantly absorb and distribute any applied load thus acting as fully functional structural members the amount that appurtenances specifically parapets contribute to deck strength is of interest to permitting agencies such as the florida department of transportation fdot for a concrete

segmental box girder bridge load ratings for oversized load permits are currently determined with a calculation that involves the transverse analysis of the bridge without factoring in the extra strength of fully intact appurtenances moreover within the transverse analysis the maximum moment generated from the live load is typically calculated from homberg charts these generalized influence surfaces were designed based on plate surface models and are conservative when added to the standard error on the side of caution design methods this moment estimation and the lack of consideration for the appurtenances create a conservative transverse load rating for the bridge with 3d finite element bridge models created using lusas it is shown qualitatively and quantitatively how much of an effect the barrier has on the live load distribution for three concrete segmental box girder bridges located in the florida keys data obtained from these models is directly compared to measurements obtained from fdot load tests on the actual bridges and also to predictions made from homberg influence surfaces modifying the current method of test rating for structurally sound bridges with fully functional appurtenances should interest permitting agencies and would prove beneficial to those transporting oversized loads

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